# SCHRECKENBERGER'S NON-FERMENTERS

# THE ASHEX ENCYCLOPEDIA

Adam's Simple Helper Experiment

 $1^{st}$  Edition

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# The ASHEX Encyclopedia $1^{st}$ Edition

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#### 1 PREFACE

In 2004, my father, Dr. Paul C. Schreckenberger, then Director of the Clinical Microbiology Laboratory at the University of Illinois at Chicago (UIC), approached me with a new mission. He wanted to investigate modern computer-based identification tools to help address the challenges surrounding glucose-nonfermenting Gram-negative bacilli. Before that time, identifications were largely made with inefficient flowcharts or aged DOS-based applications.

Back then, PIBWin [1] was the most promising software option for probabilistic calculations, but the software selection covered only one piece of my new endeavor. My dad wanted to build his own Gram-negative nonfermenter table that would be represented by thousands of biochemical tests conducted on clinical isolates<sup>[A]</sup> over the course of his entire career. He believed that I was the person who could successfully organize that information.

Maintaining an accessible framework quickly became one of my critical project points. One thing that I disliked about the available identification tables was the absolute lack of context. Some let [+, -, V] suffice. Others gave percentages without the full numerical picture, and those characteristics bothered me. I wanted to record every raw tally I could, and that way, future users and readers could see things as we saw them in the laboratory.

ASHEX was born. For years, I integrated the data from the labs at UIC and the Loyola University Medical Center (LUMC). Today, the ASHEX23X matrix spans 109 taxa via 1,001 clinical isolates [2]. In 2012, I introduced a new software solution to power the identification of specimens. Gone were the days of being limited to DOS or Windows. My Web Identification Programs (WIPs) gave ID capabilities to anyone with a sheet of biochemical test results and an internet connection [3]. Since then, the public has utilized these tools to identify over 29,000 cases, and our dedication to transparency has remained.

After reaching 1,000 isolates and seeing the cross-referencing study (*performed by LUMC*) that compared results from gene-sequencing, MALDI-TOF, and ASHEX methods, this document takes the final step in our commitment to transparency. In the following pages, readers will find as many of the biochemical result sheets that I could scan. Personally Identifiable Information has been scrubbed from the images (hence the cropping decisions). These sheets represent work done at UIC and LUMC, particularly the efforts of Joyce Tjhio and Kathleen McKinley. Notes from both my father and me frequently appear on these pages. Care should be taken not to confuse the scribblings of younger, inquisitive me for final identifications.

To all of my friends in Microbiology, many of you know how much the SCHNF ASHEX Project means to me. I have continued to update the underlying software, maintain functionality, and improve solutions years after my dad's death. This was his life's research. It is also what I view as my most important scientific contribution—even more than all of my publications and undertakings in the field of physics. This system has bettered lives, and it has shown its worth even in an era when more advanced tools have been invented, commercialized, and streamlined. Special thanks to Dr. Amanda Harrington and everyone in the Clinical Microbiology Laboratory at LUMC who prepared documentation for this manuscript.

—Dr. Adam P. Schreckenberger

#### 2 MATHEMATICAL FOUNDATION & FORMALISM

The ASHEX23X matrix consists of over 40,000 biochemical test results conducted on 1,001 clinical isolates.<sup>[A]</sup> The table represents 109 taxa and contains, for each species and test: the number of positive results  $(n_+, +)$ , the number of negative results  $(n_-, -)$ , the percentage of positive results (Raw%), and the mean value of the 95% Wilson Binomial Confidence Interval (W95%).

When calculations are conducted with the online WIP, each taxon is assessed a likelihood score, defined as:

$$\mathcal{L}_t = \prod_b I_b \times M_{t,b},\tag{1}$$

where the indices t and b denote the taxon and biochemical test,  $I_b$  denotes the input factor, and  $M_{t,b}$  is the positive result probability pulled directly from the tables (either Raw% or W95% as this a settable option in the WIP).

If a positive result is reported for an isolate biochemical test,  $I_b = 1$ . If a negative result is reported, then  $I_b = (1 - M_{t,b})/M_{t,b}$ . Due to the choice of formalism described by Eq. 1,  $M_{t,b}$  values equal to exactly 0 or 1 are forbidden since they would force  $\mathcal{L}_t = 0$  in any instance where an unexpected result occurred. Therefore, in the WIP matrix, Raw% values are compressed such that the domain [0%, 100%] is remapped to [1%, 99%]. Tables included in this manuscript display the uncompressed domain. Furthermore, if there are no results for a specific biochemical test for a given taxon, the 0+/0- condition forces  $M_{t,b} = 50\%$ , which nullifies the impact the biochemical has on the Eq. 1 calculation. Tables in this text display 0+/0- cases as 50% even though the Raw% is mathematically undefined.

Once  $\mathcal{L}_t$  is calculated for all taxa in the table, the probability that the taxon "Q" matches an input query equals:

$$P_{query,Q} = \frac{\mathcal{L}_Q}{\sum \mathcal{L}_t}.$$
(2)

Equation 2 generally does a decent job identifying an input unknown when the matrix includes data from that taxon. However, if the lab conducted the suite of biochemical tests on an unknown taxon that has no representation in the table, it is possible to get a sufficiently high  $P_{query}$  that could yield a misidentification. Therefore, Eq. 2 is paired with another evaluator, called the modal score, that gauges how well the unknown specimen follows the expected trends of the top candidate. This modal score is defined as:

$$MS_{query,Q} = 100 \times \frac{\mathcal{L}_Q}{max(\mathcal{L}_Q)},$$
(3)

where  $max(\mathcal{L}_Q)$  is the highest achievable likelihood value for taxon Q. Historically, we have used the combination of  $P_{query,Q} > 95\%$  and  $MS_{query,Q} > 1$  to declare taxon Q as the final identification for an unknown isolate.<sup>[B]</sup>

We introduced the means from the 95% Wilson Binomial Confidence Intervals to address one remaining issue with this mathematical approach. When using the Raw% values, each taxon is given equal weight in the likelihood calculation. In other words, 1/1, 10/10, and 100/100 would receive the same treatment. This setup can be particularly useful for catching uncommon organisms when they appear in infected patients, but there are also instances when we want to account for sample size. The W95% method achieves this aim by reweighting Raw% values towards 50% with a strength that is dependent on the total statistics. Figure 1, shown below, clearly depicts this assertion, and Eq. 4 is the expression used to calculate the W95% values in the Wilson Binomial Value matrix.

$$W95\% = \frac{100}{1 + \frac{1.96^2}{n_+ + n_-}} \times \left[\frac{n_+}{n_+ + n_-} + \frac{1.96^2}{2(n_+ + n_-)}\right],\tag{4}$$

where 1.96 is set by the choice of 95% confidence,  $n_+$  represents the number of positive test results for a taxon, and  $n_-$  represents the negative test results for a taxon.

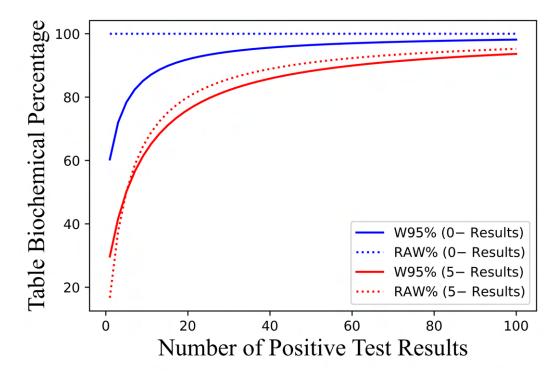


Figure 1: Demonstration of the impact of applying the mean from the 95% Wilson Binomial Confidence Interval. The dotted curves represent Raw% values in cases where zero (*blue*) or five (*red*) negative results appeared. The horizontal axis indicates the number of positive test results, and the vertical axis indicates what matrix value would exist for the plotted combinations. In the 0--result case, the Raw% value would equal 100% for any point with x > 0. The solid lines depict the percentages that emerge with the Wilson treatment. Both selected examples clearly show how the matrix values shift towards 50% and how that shift is more pronounced when the total number of statistics is low or when the Raw% value deviates from 50%.

Again, WIP users can decide to perform an identification calculation using a table constructed with either Raw% or W95% values—depending upon the laboratory's needs. Typically, LUMC defaulted to using the Raw% matrix, and the Doctors Schreckenberger utilized the W95% matrix in rare instances to glean additional insight.

To demonstrate the procedure outlined by Eqs. 1, 2, and 3, consider an ID matrix consisting of two taxa (*Taxon A*, *Taxon B*), two biochemical tests (b1,b2), and four randomly selected  $M_{t,b}$  values.

ID Matrix	b1	b2
Taxon A	0.85	0.20
Taxon B	0.01	0.10

In this fictitious example, we posit that the laboratory determined a positive result for b1 and a negative result for b2. It follows that  $I_{b1} = 1$  and  $I_{b2} = (1 - M_{t,b})/M_{t,b}$ . Therefore, we can calculate the likelihoods for our two imaginary taxa as:

$$\mathcal{L}_A = I_{b1} \times M_{A,b1} \times I_{b2} \times M_{A,b2} = 1 \times 0.85 \times 4 \times 0.20 = 0.68$$

$$\mathcal{L}_B = I_{b1} \times M_{B,b1} \times I_{b2} \times M_{B,b2} = 1 \times 0.01 \times 9 \times 0.10 = 0.009$$

The probabilities trivially follow as:

$$P_A = \frac{0.68}{0.689} = 98.7\%$$
$$P_B = \frac{0.009}{0.689} = 1.3\%$$

To derive the modal scores, we must first assess the maximum possible likelihoods one can obtain from the taxa. The simplest method for extracting this information comes through a matrix transformation in which all  $M_{t,b}$  values undergo the following shift:

$$M_{t,b} \rightarrow abs(M_{t,b} - 0.5) + 0.5,$$

where abs indicates absolute value.

Under this transformation, our example matrix would take on the form below.

Modal Matrix	b1	b2
Taxon A	0.85	0.80
Taxon B	0.99	0.90

Now, the maximum likelihoods for each taxon are just the products of the rows. In other words,  $max(\mathcal{L}_A) = 0.85 \times 0.80 = 0.68$  and  $max(\mathcal{L}_B) = 0.99 \times 0.90 = 0.891$ . In this example, the modal score for Taxon A is 100 because  $\mathcal{L}_A = max(\mathcal{L}_A)$ , which makes sense given the two hypothetical biochemical test results perfectly fit the matrix data by construction. The modal score for Taxon B is 100 \* 0.009/0.891 = 1.01. In this scenario, Taxon A would have met the criteria for identification with a probability exceeding 95% and a modal score above 1.

With the mathematical portion concluded, I hope readers take away a better understanding of the WIP calculator. Other sections of this manuscript focus on the biochemical results acquired for all Gram-negative nonfermenting species covered by the ASHEX matrix.

# 3 GENUS ACHROMOBACTER3.1 Achromobacter denitrificans

Over the course of ASHEX clinical-isolate collection, 12 individual isolates of Achromobacter denitrificans were analyzed. Seven of the 12 recorded results are pictured in this subsection.

Test	+	_	Raw%	W95%	Test	+	_	Raw%	W95%
Motility	12	0	100.00	87.87	H <sub>2</sub> S	0	12	0.00	12.13
Oxidase	12	0	100.00	87.87	Pseudo P	0	12	0.00	12.13
Catalase	12	0	100.00	87.87	Pseudo F	0	12	0.00	12.13
Yellow Pigment	0	12	0.00	12.13	NO <sub>3</sub> Reduced	12	0	100.00	87.87
Pink Pigment	0	12	0.00	12.13	Gas from $NO_3$	9	1	90.00	78.90
Beta Hemolysis	2	10	16.67	24.75	NO <sub>2</sub> Reduced	11	1	91.67	81.56
Growth on Mac	12	0	100.00	87.87	Gas from $NO_2$	8	2	80.00	71.67
DNase	0	12	0.00	12.13	OF Fructose	0	12	0.00	12.13
Starch	0	12	0.00	12.13	OF Dextrose	0	12	0.00	12.13
Lecithinase	0	10	0.00	13.88	OF Lactose	0	12	0.00	12.13
Lipase	0	11	0.00	12.94	OF Maltose	0	12	0.00	12.13
PYR	5	4	55.56	53.89	OF Mannitol	0	12	0.00	12.13
LAP	9	0	100.00	85.04	OF Xylose	0	12	0.00	12.13
ESC Spot Test	0	9	0.00	14.96	OF Sucrose	0	9	0.00	14.96
Penicillin (10U)	1	11	8.33	18.44	Arginine	0	12	0.00	12.13
Vancomycin $(30\mu g)$	0	12	0.00	12.13	Lysine	0	12	0.00	12.13
Colistin $(10\mu g)$	12	0	100.00	87.87	Ornithine	0	12	0.00	12.13
Polymyxin B (300U)	10	0	100.00	86.12	Acetamide	8	4	66.67	62.62
					Esculin	0	12	0.00	12.13
					Gelatin	0	12	0.00	12.13
					Indole	1	11	8.33	18.44
					Malonate	11	1	91.67	81.56
					PAD	0	12	0.00	12.13
					Urea 2 hrs.	0	12	0.00	12.13
					Urea 48 hrs.	0	12	0.00	12.13
					6.5% NaCl	9	3	75.00	68.94
					10% Lactose	0	12	0.00	12.13
					ONPG	0	12	0.00	12.13
					Growth 42°C	7	5	58.33	56.31

Table 1: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as  $n_+/(n_+ + n_-)$ , where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which shifts raw percentages towards 50% with a strength dependent on the total number of test occurrences. The four antibiotic tests at the bottom of Column 1 are sensitivity tests where a positive result indicates sensitivity to the drug.

Reference No./Name:			A, xylos comples (myle in)
Date Inoculated:	12-21-11 MILERI	weres Accall	(ST
	Seudemonios ALCAL	egenes/ComATIONAS	testosteroni/
Comments: Cupri	POR SEQUENCING	Achronobacta d	h on STARCH @9 DAYS enitritican AS 12/21/16
	05 - NORY MOTILE	$\begin{array}{c c} & & & & & \\ \hline \textbf{Tubes} & & & & \\ \hline \textbf{Tubes} & & & & \\ \hline \textbf{KIA} & & & & \\ \hline \textbf{H}_2 \textbf{S} & & & & \\ \hline \textbf{UCG} \end{array}$	12/29/11 8 DAYS 7 day K/K SLIGH H2S
Motility Deep $\frac{\rho_{e}}{\rho_{e}}$	25 205 05	Pseudo P NeG Pseudo F NeG	NeG
Catalase <u>PLATES</u> 48	ETRONG POS <u>8 h 7 day</u> NON C	NO <sub>3</sub> reduced $Are C$ Gas from NO <sub>3</sub> $Are C$ NO <sub>2</sub> reduced $Are C$ Gas from NO <sub>2</sub> $\lambda re C$	<u>Pos</u> <u>Nele</u> 90 <u>Fos</u> 91.67 Pos 80
Pigment on BAP	BUCG SREY TRANGLOCENT NEG POS POS - LAVENDE COL	OF Fructose BLUC OF Dextrose OF Lactose OF Maltose	Blue A. xy/ Secology (Xy)
DNase hydrolysis	NEG NEG NEG NEG NEG NEG NEG NEG NEG NEG	OF Xylose OF Sucrose	Nec-
Rapid LAP          Rapid ESC          Sensitivity to:          Penicillin (10 U) \$.*53          Vancomycin (30 ug)          Colistin (10 mcg)	$\frac{R}{R} = \frac{R}{R} + \frac{R}{5-13} = \frac{R}{5} + \frac{R}{5} = \frac$	Acetamide $N\ell G$ Esculin $N\ell G$ Gelatin $N\ell G$ Indole $N\ell G$ Malonate $N\ell G$ PAD $N\ell G$ Urea/ $M\ell G$ 2 h $N\ell G$ 0.5% NaCL $N\ell G$ 10% Lactose $N\ell G$ ONPG $N\ell G$ $-Growth 42^0$ $\rho \delta S$	Pos 66.07 Nec Nec Nec Nec Pos 11.67 Nec Nec Nec Nec Nec Nec Nec Nec

Note: All biochemical tests (except where noted) are incubated at  $30^{0}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 2: Achromobacter denitrificans isolate 1-of-12.

Date Inoculated:	12-04-06			
Final Identification:	12-13-06 Ach	romobacter	denitaificans AS	12/3/01
Comments: Zt. CREA			g Yolke, Became	
	peach color an		<i>(</i>	box #1 - #63
	/			2006 Rev. April 2005
Gram Morph. Gram Test	246	<u>Tubes</u> KIA	<u>48 h</u> <u>7 day</u> Elve Elte	
	Pos SM. Roals	-H <sub>2</sub> S	Neld Slight Hyse	interface
Motility Wet Prep	Yos - ExTRenely To		1	
Hotility Deep	POS 1 POS	Pseudo P Pseudo F	NIEG	
+ Oxidase	Pog		(Acc)	
-Catalase	STRONG POS	+ NO <sub>3</sub> reduced + Gas from NO <sub>3</sub>	1000 1000	alat 11
PLATES	$\frac{48 \text{ h}}{2000 \text{ covers}} = \frac{7 \text{ day}}{2000 \text{ covers}}$	- NO <sub>2</sub> reduced	Nea Dos Nea ZM	2113/06
Odor	Stinks chips	Gas from NO <sub>2</sub>	NEL POSTINT SN	126 1,107
Pigment on swab	flesh	- OF Fructose	BLUE DARE BLUE R	CAD BOES
Pigment on BAP	white	- OF Dextrose		POS )
Morphology on BAP	StooTh-SMEARS	- OF Lactose		Pos
<ul> <li>Beta hemolysis</li> </ul>	Nela	OF Maltose	NO2	Nece
+ Growth on Mac	POS POS	- OF Xylose	6AS	Pos(sm
<ul> <li>DNase hydrolysis</li> </ul>	NEG- NEG	- OF Sucrose	V V	butter)
- Starch hydrolysis	NeG WEER NE	Arginine	NRG Nela	
Lecithinase	KICG- Nele-	- Lysine		
Lipase	NEG NEG	Ornithine Base Control		
<ul> <li>Rapid PYR</li> </ul>	NEG	Base Control		
+ Rapid LAP	POS	+ Acetamide	POS (SCANT) POS	
- Rapid ESC	NEG	- Esculin Gelatin	NEG NEG	
Sensitivity to:	0	- Indole	NCG NCG	
- Penicillin (10 U)	$R_{R}$	+ Malonate	W+ (Light Bace) FOS	
- Vancomycin (30 ug)	R R	— PAD — Urea <i>NeG</i> 2 h	Neb Neb	
+ Colistin (10 mcg)	5-13 5	- 6.5% NaCL	TRED POS	
- + Polymyxin B (300 U)	S-16 5	- 10% Lactose	Nela Nela	
		- ONPG + Growth 42 <sup>o</sup>	POS POS(MAY B	e
		•	A Caus	AMINANT
Note: All biochemics incubation and again		ed) are incubated	at 30°C and read after 48 hrs	
incubation and again	at / uays.			1 12/13
			PO	>

Figure 3: Achromobacter denitrificans isolate 2-of-12.

Date Inoculated:

Comments:

Final Identification:

4-23-07 Achromobacter devitrificans A.S. 4/30/07 

G G Μ Μ 0 C Pl 0 Pi P Μ B G D Ŝ L L R R R <u>S</u>

Gram Morph. Gram Test Motility Wet Prep Motility Deep Oxidase	246 POS- 7 POS POS	edium Robs Very Active POS	<u>Tubes</u> KIA H <sub>2</sub> S Pseudo P Pseudo F	48 h K/NC NEG NEG NEG	<u>7 day</u> K/K Sight NCa DCa	Hz 5	
PLATES Odor	<u>37RON6</u> <u>48h</u> <u>NONE</u> BUGG	POS 7 day	$NO_3$ reduced Gas from $NO_3$ $NO_2$ reduced Gas from $NO_2$	Ne6 Ne6	POS 205 POS 205 (1	HRLE BUBBLE)	
	<u>GREY</u> Smooth <u>Nec</u> POS Neco	POS POS-LAVENDER NEG	OF Fructose OF Dextrose OF Lactose OF Maltose OF Mannitol OF Xylose OF Sucrose	BLUE	Buee		
Starch hydrolysis Lecithinase Lipase Rapid PYR	NEG NEG NEG W+ (ro	<u>NCG</u> <u>NEG</u> <u>NEG</u> (5)	Arginine Lysine Ornithine Base Control	Nes	Nee		
Rapid LAP Rapid ESC <u>Sensitivity to:</u> Penicillin (10 U) Vancomycin (30 ug) Colistin (10 mcg) Polymyxin B (300 U)	R R S-12		Acetamide Esculin Gelatin Indole Malonate PAD Urea <u>MG2</u> h 6.5% NaCL 10% Lactose ONPG Growth 42 <sup>0</sup>	Pos! Neb- Neb- Neb- Neb- Neb- Neb- Neb- Neb-	New New New New New New New New New New	(weate)?	

Note: All biochemical tests (except where noted) are incubated at 30°C and read after 48 hrs. incubation and again at 7 days.

Figure 4: Achromobacter denitrificans isolate 3-of-12.

Final Identification:

Achromobacter devitrificans P.S. 10/5/07

Comments:

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 5: Achromobacter denitrificans isolate 4-of-12.

Date Inoculated:

Final Identification:

8-25-09 Achromobacter den, trificans P.S. 9/10/09

Comments:

			8/27	9/2
Gram Morph.		Tubes	<u>48 h</u>	7 day
Gram Test		KIA	E/NC	K/K
Motility Wet Prep	Pos	$H_2S$	NEG	SLight HZ
Motility Deep	POS	Pseudo P	Nea	Nº6
Oxidase	POS POY	Pseudo F	New	Neb
Catalase	STRONG POS	NO <sub>3</sub> reduced		POS
<b>PLATES</b>	<u>48 h</u> <u>7 day</u>	Gas from NO <sub>3</sub>	NeG	POS
Odor	NONE	$NO_2$ reduced Gas from $NO_2$	POS	<u>205</u>
Pigment on swab	Glesh	Gas from NO <sub>2</sub>	109	16/
Pigment on BAP	GREY	OF Fructose	Buc	BLUER
		OF Dextrose		
Morphology on BAP	Shinny slightly mucod	OF Lactose OF Maltose		
Beta hemolysis	well	OF Mannitol		
Growth on Mac	POS POS	OF Xylose		
DNase hydrolysis	Nele Neler	OF Sucrose	V	$\sim$
Starch hydrolysis	Net Net	Arginine	NECA	NEG
Lecithinase	Ne 6 Nelo	Lysine		
Lipase	NEG NEG	Ornithine		
Rapid PYR	Here wt	Base Control		
Rapid LAP	AOS	Acetamide	Nea	Pos !
Rapid ESC	NEO	Esculin Gelatin	Nea	Nel
Sensitivity to:		Indole	Nela	Nelo
Penicillin (10 U)	$R_R$	Malonate	NeG	Pos
Vancomycin (30 ug)	RR	PAD Urea <i>Ne</i> 62 h	New	NED
Colistin (10 mcg)	5-12 5	6.5% NaCL	Wt	P05
Polymyxin B (300 U)	5-13 5	10% Lactose	Nea	NEG
		ONPG Growth 42 <sup>0</sup>	POS	POS

Note: All biochemical tests (except where noted) are incubated at 30°C and read after 48 hrs. incubation and again at 7 days.

Figure 6: Achromobacter denitrificans isolate 5-of-12.

Date Inoculated:	10/	27/10				
Final Identification:	Most	consistent 5	Alcaligunes fo	recalis.		~
Comments:	chrom	obacter	denitrific	ANS	<u>P.S./11/1/10</u>	
Gram Morph.			Tubes	<u>48 h</u>	<u>7 day</u>	
Gram Test			KIA		HE TON + NEG	
Motility Wet Prep	pos		$H_2S$	SCH	ht pas + neg	-
Motility Deep	Pos	52a. 12.	Pseudo P		neg -	
Oxidase	Pas	Statement in the second s	Pseudo F		Neg -	
Catalase	por		NO <sub>3</sub> reduced		per + Pos	
PLATES	48 h	7 day	Gas from NO <sub>3</sub>	· · · · ·	part + Pos	
Odor		nore	NO <sub>2</sub> reduced		pos + pos	
Pigment on swab		flore	Gas from NO <sub>2</sub>		<u>pos</u> + pos	
		- toory	OF Fructose		blu-grn -	
Pigment on BAP		grey	OF Dextrose		gm + NeG	-
Morphology on BAP		pinpoint	OF Lactose		blu-grn -	
Beta hemolysis		yes	OF Maltose OF Mannitol		burgrn -	
Growth on Mac	·····	yes	OF Xylose			
DNase hydrolysis		nel	OF Sucrose			
Starch hydrolysis		- neg	Arginine		heg -	
Lecithinase	-	-pot-N	CG Lysine			
Lipase		hea	Ornithine		~	

Base Control

Acetamide Esculin

Gelatin

Indole

PAD

ONPG Growth 42<sup>0</sup>

Malonate

Urea \_\_\_2 h 6.5% NaCL

10% Lactose

Note: All biochemical tests (except where noted) are incubated at 30°C and read after 48 hrs. incubation and again at 7 days.

01

S

Rapid PYR

Rapid LAP

Rapid ESC

Sensitivity to:

Penicillin (10 U)

Vancomycin (30 ug)

Polymyxin B (300 U)

Colistin (10 mcg)

Figure 7: Achromobacter denitrificans isolate 6-of-12.

FT- Neg ?

blue

ne

0

0

10

Date Inoculated:	12-12-12
Final Identification:	Achromobacter devitrificans P.S.
Comments: SA	LMON/PRACK COLOREd an STARCh 12/20/12
	12/2-1-

					12/20/12
Gram Morph.	-		<u>Tubes</u> KIA	<u>48 h</u>	$\frac{7 \text{ day}}{5}$
Gram Test	7 042		$H_2S$		Sught H2S
Motility Wet Prep	P05 -	sm. Roels	1120		Juight 12
Motility Deep	POS		Pseudo P		NEG
Oxidase	POS		Pseudo F		New
Catalase	STRONG	- A05	NO <sub>3</sub> reduced		AOS
PLATES	48 h	7 day	Gas from NO <sub>3</sub>		POS
Odor		NONE	NO <sub>2</sub> reduced		POS
		Glesh	Gas from NO <sub>2</sub>		_ <u>705</u>
Pigment on swab		6	OF Fructose		BLOCK
Pigment on BAP		GREY	OF Dextrose		BLOC
Morphology on BAP		Smeath	OF Lactose		Blue
Beta hemolysis		NEG	OF Maltose		BLUE
Growth on Mac		POS-ZAVEN	්ි CF Mannitol OF Xylose		BLUE
DNase hydrolysis		Neb	OF Sucrose		BLUE
Starch hydrolysis		NeG			
Lecithinase		Nela	Arginine Lysine		Neb
Lipase		New	Ornithine		
1	1000	1000	Base Control	· · ·	V
Rapid PYR	New				
Rapid LAP	POS		Acetamide		POS
Rapid ESC	Nelo		Esculin Gelatin		Nela
Sensitivity to:			Indole	\	NEG
Penicillin (10 U)	R		Malonate		POS
Vancomycin (30 ug)	R		PAD		NEG
Colistin (10 mcg)	5-17		Urea Vela h	Nel	NEG DOS
	S-IX		6.5% NaCL 10% Lactose		NS RG_
Polymyxin B (300 U)	3-14		ONPG		New
			Growth 42 <sup>°</sup>	Nea	Neb

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 8: Achromobacter denitrificans isolate 7-of-12.

### 3.2 Achromobacter piechaudii

Over the course of ASHEX clinical-isolate collection, 14 individual isolates of Achromobacter piechaudii were analyzed. Two of the 14 recorded results are pictured in this subsection.

Test	+	_	Raw%	W95%	Test	+	_	Raw%	W95%
Motility	11	3	78.57	72.42	$H_2S$	0	14	0.00	10.77
Oxidase	14	0	100.00	89.23	Pseudo P	0	14	0.00	10.77
Catalase	14	0	100.00	89.23	Pseudo F	0	14	0.00	10.77
Yellow Pigment	0	14	0.00	10.77	NO <sub>3</sub> Reduced	14	0	100.00	89.23
Pink Pigment	0	14	0.00	10.77	Gas from $NO_3$	0	7	0.00	17.72
Beta Hemolysis	1	6	14.29	26.94	$NO_2$ Reduced	0	14	0.00	10.77
Growth on Mac	14	0	100.00	89.23	Gas from $NO_2$	0	7	0.00	17.72
DNase	0	14	0.00	10.77	OF Fructose	0	14	0.00	10.77
Starch	0	14	0.00	10.77	OF Dextrose	0	14	0.00	10.77
Lecithinase	0	8	0.00	16.22	OF Lactose	0	14	0.00	10.77
Lipase	0	8	0.00	16.22	OF Maltose	0	14	0.00	10.77
PYR	3	3	50.00	50.00	OF Mannitol	0	14	0.00	10.77
LAP	6	0	100.00	80.48	OF Xylose	0	14	0.00	10.77
ESC Spot Test	0	6	0.00	19.52	OF Sucrose	0	6	0.00	19.52
Penicillin (10U)	0	14	0.00	10.77	Arginine	0	14	0.00	10.77
Vancomycin $(30\mu g)$	0	14	0.00	10.77	Lysine	0	14	0.00	10.77
Colistin $(10\mu g)$	13	1	92.86	83.63	Ornithine	0	14	0.00	10.77
Polymyxin B (300U)	7	0	100.00	82.28	Acetamide	6	8	42.86	44.40
					Esculin	0	14	0.00	10.77
					Gelatin	0	14	0.00	10.77
					Indole	0	14	0.00	10.77
					Malonate	8	1	88.89	77.26
					PAD	0	14	0.00	10.77
					Urea 2 hrs.	0	14	0.00	10.77
					Urea 48 hrs.	1	13	7.14	16.37
					6.5% NaCl	13	1	92.86	83.63
					10% Lactose	0	9	0.00	14.96
					ONPG	0	9	0.00	14.96
					Growth 42°C	5	9	35.71	38.79

Table 2: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as  $n_+/(n_+ + n_-)$ , where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which shifts raw percentages towards 50% with a strength dependent on the total number of test occurrences. The four antibiotic tests at the bottom of Column 1 are sensitivity tests where a positive result indicates sensitivity to the drug.

	Date Inoculated:	W 1/25/17	,				
•	Final Identification:		back pier	chaud:	Pholog7	9578 M	odal sure 12.
							What shire 100
	Comments: Lib	1D: Alcali	Jeres sp.	pha	lai Alcalig	ines sp. 1.10	
	MSRA	prid 1D: Con	prob Ma	are. Sp	60.670 A.100	1: 28.672	Alc 50 8.9%
		1	'		*		2017-2
	Gram Morph.				<u>Tubes</u> KIA	<u>48 h</u> K/NC	<u>7 day</u> Kik
	Gram Test				H <sub>2</sub> S	MAC	New
-	Motility Wet Prep						
59	Motility Deep	Neg-48	Ng 70	_	Pseudo P Pseudo F		Nes
	Oxidase	Pos					
	Catalase	pas			NO <sub>3</sub> reduced	<u> </u>	Red - HOS (+)
	PLATES	<u>48 h</u>	7 day		Gas from $NO_3$ $NO_2$ reduced	the publice	Pert Nor O
	Odor	Seight	Shipe		Gas from NO <sub>2</sub>	the pubble	- try Dego
	Pigment on swab	Parch	brown-		0.5.5		DRG Alexa
	Pigment on BAP	white	loh-gay		OF Fructose OF Dextrose	Be-G-	BE-G Neg
	Morphology on BAP	round, wit	pund, we	A spread	OF Lactose		
29	Beta hemolysis	Neg	Neg	ege	OF Maltose		
	Growth on Mac	POS. rd 1tp	ink rd er	pret	OF Mannitol OF Xylose		
	DNase hydrolysis	New	Neg		OF Sucrose		
	Starch hydrolysis	Nex	Ner		Amainina	. 1	1)0-
	Lecithinase	New	Nor		Arginine Lysine	<u></u>	N.e
	Lipase	Neg	Nor		Ornithine		Ne
50	Rapid PYR	Neg	.0		Base Control	1	-Ng
	Rapid LAP	Pos		42.86	Acetamide	N	Neg
	Rapid ESC	Neg			Esculin	N	Neg
	Sensitivity to:				Gelatin Indole	N	Neg
	Penicillin (10 U)	62	GR.	85.57		Pos	Pos
	Vancomycin (30 ug)	Lep	Lak		PAD	Neg	X
61		105	105	7,14	Urea $N_2$ h	N	Nor
.86	Polymyxin B (300 U)	11	155	17.8	6.5% NaCL 10% Lactose	_POS	Na
	(500 U)				ONPG	þ	Ner
				35/21	Growth 42 <sup>0</sup>	Neg	the colores Neg

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 9: Achromobacter piechaudii isolate 1-of-14.

Date Inoculated:	
------------------	--

Final Identification:

LKOHT

Comments:

29 6 20 Gram Morph. Tubes KIA 48 KR Gram Test  $H_2S$ 26 VERY hardto Motility Wet Prep NCG-16 Nelo 2 Pseudo P Neu Motility Deep Pseudo F POS Oxidase ADS STROVG Catalase NO<sub>3</sub> reduced Gas from NO<sub>3</sub> New PLATES 7 day 48 h NO<sub>2</sub> reduced Nec Odor NONE Gas from NO<sub>2</sub> New NeG FLESh Pigment on swab í OF Fructose Blue BLUR GRET Pigment on BAP **OF** Dextrose Morphology on BAP Soraoth OF Lactose OF Maltose Beta hemolysis NeG LAVENDEROF Mannitol 105 POS Growth on Mac OF Xylose NeG Neco **OF** Sucrose DNase hydrolysis NEG Starch hydrolysis NCG Arginine Nec NeG Nele New Lecithinase Lysine Ornithine Lipase Neb New **Base Control** Nec Rapid PYR Pos Rapid LAP Acetamide NEG Esculin Nela Nela Rapid ESC 106 Gelatin NEG Sensitivity to: Indole W+ Penicillin (10 U) Malonate NEG PAD Vancomycin (30 ug) Urea Net 2 h Velo 98 Colistin (10 mcg) 6.5% NaCL 0 10% Lactose NRG 5 Polymyxin B (300 U) ONPG Nec Growth 42<sup>°</sup>

ALCALIGENES

PEACL ON STARCH

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 10: Achromobacter piechaudii isolate 2-of-14.

PS. / 7/1/4

Plechaudii

### 3.3 Achromobacter spanius

Over the course of ASHEX clinical-isolate collection, one individual isolate of Achromobacter spanius was analyzed. The associated biochemical result form is presented here.

Test	+	_	Raw%	<b>W95</b> %	Test	+	_	Raw%	W95%
Motility	1	0	100.00	60.33	$H_2S$	0	1	0.00	39.67
Oxidase	1	0	100.00	60.33	Pseudo P	0	1	0.00	39.67
Catalase	1	0	100.00	60.33	Pseudo F	0	1	0.00	39.67
Yellow Pigment	0	1	0.00	39.67	NO <sub>3</sub> Reduced	0	1	0.00	39.67
Pink Pigment	0	1	0.00	39.67	Gas from $NO_3$	0	1	0.00	39.67
Beta Hemolysis	0	1	0.00	39.67	NO <sub>2</sub> Reduced	0	1	0.00	39.67
Growth on Mac	1	0	100.00	60.33	Gas from $NO_2$	0	1	0.00	39.67
DNase	0	1	0.00	39.67	OF Fructose	0	1	0.00	39.67
Starch	0	1	0.00	39.67	OF Dextrose	0	1	0.00	39.67
Lecithinase	0	1	0.00	39.67	OF Lactose	0	1	0.00	39.67
Lipase	0	1	0.00	39.67	OF Maltose	0	1	0.00	39.67
PYR	1	0	100.00	60.33	OF Mannitol	0	1	0.00	39.67
LAP	1	0	100.00	60.33	OF Xylose	0	1	0.00	39.67
ESC Spot Test	0	1	0.00	39.67	OF Sucrose	0	1	0.00	39.67
Penicillin (10U)	0	1	0.00	39.67	Arginine	0	1	0.00	39.67
Vancomycin $(30\mu g)$	0	1	0.00	39.67	Lysine	0	1	0.00	39.67
Colistin $(10\mu g)$	1	0	100.00	60.33	Ornithine	0	1	0.00	39.67
Polymyxin B (300U)	1	0	100.00	60.33	Acetamide	0	1	0.00	39.67
					Esculin	0	1	0.00	39.67
					Gelatin	0	1	0.00	39.67
					Indole	0	1	0.00	39.67
					Malonate	1	0	100.00	60.33
					PAD	0	1	0.00	39.67
					Urea 2 hrs.	0	1	0.00	39.67
					Urea 48 hrs.	0	1	0.00	39.67
					6.5% NaCl	1	0	100.00	60.33
					10% Lactose	0	1	0.00	39.67
					ONPG	0	1	0.00	39.67
					Growth 42°C	0	1	0.00	39.67

Table 3: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as  $n_+/(n_+ + n_-)$ , where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which shifts raw percentages towards 50% with a strength dependent on the total number of test occurrences. The four antibiotic tests at the bottom of Column 1 are sensitivity tests where a positive result indicates sensitivity to the drug. Date Inoculated:

F 8/12/14

Final Identification:

Comments:

ion: AchRomebacter SPANIUS P.S. 8/26/16 predui Advonobactor Spanius 1.784, pertoutes Achromobactor Sp.

	Gram Morph. Gram Test Motility Wet Prep	,		<u>Tubes</u> KIA <i>Maray</i> - H <sub>2</sub> S	72° <u>48 h</u> MpeatNNNNN	7 day K/K - Neg- V	126/16
	Motility Deep Oxidase	Pos 1 Pos		Pseudo P Pseudo F	NN	Neg	
$\frown$	Catalase <u>PLATES</u> Odor Pigment on swab	<u>fos</u> " <u>48h</u> <u>slight</u> build	7 day fitosneel	<ul> <li>NO<sub>3</sub> reduced</li> <li>Gas from NO<sub>3</sub></li> <li>NO<sub>2</sub> reduced</li> <li>Gas from NO<sub>2</sub></li> </ul>	X try bubble try bubble	Redegter Zn - 1 - they buddle to Red - Neg- - Neg-tim budd	reg ee Neg
	Pigment on SWab Pigment on BAP Morphology on BAP Beta hemolysis Growth on Mac DNase hydrolysis	buff white sm, wit Neg Pos-Gray Neg	 wh gray      	OF Fructose OF Dextrose OF Lactose OF Maltose eq OF Mannitol OF Xylose OF Sucrose		Be Gr Neg 1	zue L
	Starch hydrolysis Lecithinase Lipase Rapid PYR	Neg- Neg- Pos	Neg Neg Neg	Arginine Lysine Ornithine Base Control		Neg-	
beta zove surninding Here of	Rapid LAP Rapid ESC <u>Sensitivity to:</u> Penicillin (10 U) Vancomycin (30 ug) Colistin (10 mcg) Polymyxin B (300 U)	Pos Neg (e R (e R (e R (e R (a S (a S)) (4 S)	122 - 145 -	Acetamide Esculin Gelatin Indole Malonate PAD Urea <u>J</u> 2 h 6.5% NaCL 10% Lactose ONPG Growth 42°	N N Pos N N N N N N N N N N N N N N N N N N N	Neg Neg Pos X Pos Veg Veg Veg	

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 11: Achromobacter spanius isolate 1-of-1.

### 3.4 Achromobacter xylosoxidans

Over the course of ASHEX clinical-isolate collection, 64 individual isolates of Achromobacter xylosoxidans were analyzed. 39 of the 64 recorded results are pictured in this subsection.

Test	+	_	Raw%	W95%	Test	+	_	Raw%	<b>W95</b> %
Motility	56	8	87.50	85.38	$H_2S$	0	64	0.00	2.83
Oxidase	64	0	100.00	97.17	Pseudo P	0	64	0.00	2.83
Catalase	64	0	100.00	97.17	Pseudo F	0	64	0.00	2.83
Yellow Pigment	0	64	0.00	2.83	NO <sub>3</sub> Reduced	58	6	90.63	88.32
Pink Pigment	0	64	0.00	2.83	Gas from $NO_3$	45	13	77.59	75.87
Beta Hemolysis	1	63	1.56	4.31	$NO_2$ Reduced	56	8	87.50	85.38
Growth on Mac	64	0	100.00	97.17	Gas from $NO_2$	49	9	84.48	82.34
DNase	0	64	0.00	2.83	OF Fructose	6	58	9.38	11.68
Starch	0	64	0.00	2.83	OF Dextrose	64	0	100.00	97.17
Lecithinase	0	64	0.00	2.83	OF Lactose	0	64	0.00	2.83
Lipase	0	64	0.00	2.83	OF Maltose	2	62	3.13	5.78
PYR	37	10	78.72	76.55	OF Mannitol	1	63	1.56	4.31
LAP	47	0	100.00	96.22	OF Xylose	64	0	100.00	97.17
ESC Spot Test	0	47	0.00	3.78	OF Sucrose	2	55	3.51	6.44
Penicillin (10U)	0	64	0.00	2.83	Arginine	0	64	0.00	2.83
Vancomycin $(30\mu g)$	0	64	0.00	2.83	Lysine	0	64	0.00	2.83
Colistin $(10\mu g)$	55	9	85.94	83.90	Ornithine	0	64	0.00	2.83
Polymyxin B (300U)	57	1	98.28	95.28	Acetamide	47	17	73.44	72.11
					Esculin	1	63	1.56	4.31
					Gelatin	0	64	0.00	2.83
					Indole	0	64	0.00	2.83
					Malonate	17	43	28.33	29.64
					PAD	0	64	0.00	2.83
					Urea 2 hrs.	0	64	0.00	2.83
					Urea 48 hrs.	3	61	4.69	7.25
					6.5% NaCl	48	16	75.00	73.58
					10% Lactose	0	64	0.00	2.83
					ONPG	0	64	0.00	2.83
					Growth 42°C	56	8	87.50	85.38

Table 4: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as  $n_+/(n_+ + n_-)$ , where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which shifts raw percentages towards 50% with a strength dependent on the total number of test occurrences. The four antibiotic tests at the bottom of Column 1 are sensitivity tests where a positive result indicates sensitivity to the drug.

Date Inoculated:	W8/20/14				עויידי
Final Identification:	Achromobas	ter xyloso	XIdANS	/ P.S. 9	122/14
Comments: Labre	et : Achvontbieder y ylose	oxidans Pt.	has cystica	fibross f	5./
Miccos	Kan: Bapacia 99.	99%	×		9-19-14
				2013-	14 #38
Gram Morph.		Tubes	1	7 day	
Gram Test		KIA \H <sub>2</sub> S	KINC	K/K_	zblkaren
Motility Wet Prep		1125	Nug	1	buttleast in the
2/L Motility Deep	POS 87.30	Pseudo P	Nog	Noz P	ikk pigset
2/L Oxidase	Pos	oc Pseudo F	Norg	C .	in terface
2/2 Catalase	POS	NO3 reduced	$\times$	clea gin +	190.48
PLATES	48 h 7 day	Gas from NO <sub>3</sub>	tim bubble	Pos +	[77.19]
Odor	Neg	$NO_2$ reduced 2/2 Gas from $NO_2$	Sm. bubble	Pes tos	84.21
Pigment on swab	yellow buff		Sitt. Greet		19.52
YO/2 Pigment on BAP	gray gray	OF Fructose	Berer	<u>B2-6-</u> -K	(1.52) t
Po/ L Morphology on BAP	wet land someodyed	A OF Lactose	Be-Gr	Be-Cr-K	
o/2 Beta hemolysis	Neg Neg-I	.59 OK OF Maltose	Be-G-	Be-Gr -	3.17
2 / 2 Growth on Mac	Pos-sucrea pos	0/2 OF Mannitol	Be-Gr Ueitop	Be-6-	1.59
DNase hydrolysis	Neg Non-	012 OF Sucrose	Be-6-	Be-6-	3.57
Starch hydrolysis	Neg- Neg-		1.100	1/2	
Lecithinase	Neg Neg	Arginine Lysine	Neg-	_Not_	
0/2 Lipase	Noor Near	Ornithine	Neg	Neg	
2/4 Rapid PYR	WL+ 160, 43	o K Base Control	Nog	Nerg	
2/2 Rapid LAP	Pos	21/Acetamide	Pos sent	+ Post	+ ~ [73,02
0/2 Rapid ESC	Neg	oll Esculin	Neg	Neg	1.59
Sensitivity to:		0/2 Gelatin	Neg	Neg-	-
o 亿 Penicillin (10 U)	GR R	012 Indole UL Malonate	Pos :	- Neg-	+ 127.12
0/L Vancomycin (30 ug)		- O/L PAD	Neg	X	
		5.71 1/2 5% NaCI		Nug	X 4.76
(/2 Colistin (10 mcg)		5.7) 2126.5% NaCL 8.25 02 10% Lactos		- POS	74.60
2/2Polymyxin B (300 U		0/20NPG	Neg	Noz	
		J2Growth 42°	TSH POS	Pos	187.30)

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}C$  and read after 48 hrs. incubation and again at 7 days.

Figure 12: Achromobacter xylosoxidans isolate 1-of-64.

	Date Inoculated:	W 7/1/15		17×+B
	Final Identification:	Achromobacter	LyLosoxidA	NS 7/8/15 P.S.
	Comments: Mal	di : Advonuchade-yylosoxid	en 1.959 MS:	B. cepacia 687
				2015-11
朝	Gram Morph. Gram Test Motility Wet Prep Motility Deep Oxidase	Pas VV	$\begin{array}{ccc} & & & & & \\ \hline Tubes & & & & \\ \hline KIA & & & & \\ \hline H_2S & & & \\ \hline H_2S & & & \\ \hline Hindk law e & \\ \hline Pseudo P & & & \\ \hline Pseudo F & & & \\ \hline Neg \\ \hline \end{array}$	
	Catalase <u>PLATES</u> Odor Pigment on swab	POS 48 h 7 day Neg- 200 Neg- buff ak buff	+ NO <sub>3</sub> reduced $$ + Gas from NO <sub>3</sub> $$ + NO <sub>2</sub> reduced $$ + Gas from NO <sub>2</sub> $$   	<u>Clumpty</u> 2n Rus + <u>Ris</u> <u>(lon - Rus</u> + <u>Pus -</u> +
Repeat	DNase hydrolysis	white wh	OF Fructose <u>Pl</u> - + OF Dextrose <u>G</u> - OF Lactose <u>R</u> - OF Maltose <u>Pl</u> - OF Mannitol <u>Pl</u> - + OF Xylose <u>POS</u> OF Sucrose <u>R</u>	- Be Neg -
Ho Neg- Neg-	Lecithinase 5	TB <u>Neg</u> <u>Neg</u> TB <u>Neg</u> <u>Neg</u> TD <u>Neg</u> <u>Neg</u> <u>Pos</u>	Arginine <u>Ne</u> Lysine <u>Ne</u> Ornithine <u>Ne</u> Base Control <u>Ne</u>	
Double zove	Rapid LAP Rapid ESC <u>Sensitivity to:</u> Penicillin (10 U) Vancomycin (30 u Colistin (10 mcg) Polymyxin B (300	$\frac{12}{50} \frac{10}{16} \frac{6R}{6} \frac{6R}{6R}$ $\frac{50}{16} \frac{16}{16} \frac{6R}{6R} \frac{6R}{6R}$ $\frac{10}{50} \frac{10}{12} \frac{50}{12} \frac{10}{50} \frac{10}{12} \frac{10}{50} \frac{10}{50} \frac{10}{10} \frac{10}{10} \frac{10}{50} \frac{10}{10} \frac$	Esculin N Gelatin N Indole Pa Malonate Pa PAD Urea N 2 h 6.5% NaCL	$\begin{array}{cccccccccccccccccccccccccccccccccccc$

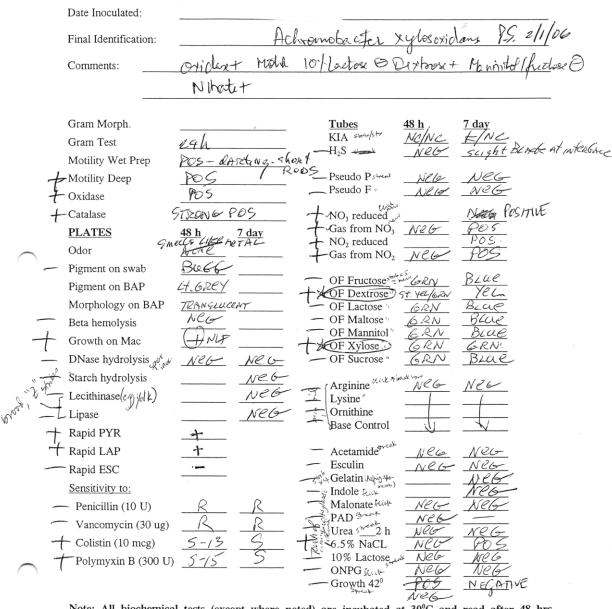
Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 13: Achromobacter xylosoxidans isolate 2-of-64.

	Einel Identification	W 3/22	,			1 0 0 1 7 1
	Final Identification:			Soxidans 99.9232	> Nodal	: 9.054
	Comments:	ID: A	dwww.obac	der xylosoxidans	Mai	di: 2.07
				ŀ		2017-24
	Gram Morph.			<u>Tubes</u> KIA	<u>48 h</u> K/r/C	$\frac{7 \text{ day}}{4}$
	Gram Test			H <sub>2</sub> S	N	Neg - think
0.5	Motility Wet Prep					inte
8+1	Motility Deep	Pas?	Pos	Pseudo P Pseudo F	_ <u>N</u>	Neg-
	Oxidase	Pos		r seudo r	N	_ North
	Catalase	POS		90. 63 NO3 reduced	_X	Clean after Zn D
	PLATES	<u>48 h</u>	7 day	$3^{a}$ , 59 Gas from NO <sub>3</sub> 82 $5^{c}$ NO <sub>2</sub> reduced	_ <u>N_</u>	5m bubsee
	Odor	BOS None	- plist bla	sed y ug Gas from NO2	Pos	clean (+) pos
	Pigment on swab	buff	pubb			0.0
	Pigment on BAP	ah	up	6.36 OF Fructose OF Dextrose	<u>Gr</u>	Be-
	Morphology on BAP	round wet	rd, wh	OF Lactose	yetop +	yet to t
1.50	Beta hemolysis	Neg	Neg	3. 13 OF Maltose	(v	Be -
	Growth on Mac	Pos-der	pos	6 OF Mannitol OF Xylose	Gr	$\frac{12}{1001}$
	DNase hydrolysis	New	Near	3,51 OF Sucrose	_ ye try	Be -
	Starch hydrolysis	Nea	Neg			.1.
	Lecithinase	Nor	Nea	Arginine Lysine	<u>N</u>	Nea
	Lipase	Nea	New	Ornithine		Nor
287	Rapid PYR	Neg		Base Control		Neg
2. of	Rapid LAP	Pas		73.44 Acetamide	N	POS-blue scon
	Rapid ESC	Neg		1,56 Esculin	N,	Neg
	Sensitivity to:			Gelatin	N	New
		4 R	6 R	Indole	005	Pos
5,94 double	Penicillin (10 U)	4L	Le L	PAD	Ner	X
	Vancomycin (30 ug)	-	And and the state of the state	4.6 Urea $1/2$ h	N	Neg
	Colistin (10 mcg)	85/		- 75 6.5% NaCL 10% Lactose	Pos N	- PO> Net
3 30000	Polymyxin B (300 U)	14/22=	5 145	ONPG	N	Neg
				87,5 Growth 42°	Pos	Pos

incubation and again at 7 days.

Figure 14: Achromobacter xylosoxidans isolate 3-of-64.



Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}C$  and read after 48 hrs. incubation and again at 7 days.

Figure 15: Achromobacter xylosoxidans isolate 4-of-64.

Date Inoculated:

PINK to flesh

Final Identification:

Comments:

	Gram Morph.			Tubes	$\frac{2}{9}$ <u>48 h</u>	7 day
	Gram Test	486		KIA	EINC	KIK
	Motility Wet Prep	Ads-U	CRY ACTIVE	- H <sub>2</sub> S	SLight Bitch	R@ InterGACE
+	Motility Deep	204	POS	Pseudo P	NeG	Nea
+	Oxidase	POS		- Pseudo F	NEG	NeG
Ť	Catalase	STRONE	POS	+ NO <sub>3</sub> reduced		Pos
`	PLATES	48 h	7 day	- Gas from NO <sub>3</sub>	Pog	pos!
	Odor	NONE		+ NO <sub>2</sub> reduced + Gas from NO <sub>2</sub>	209	POS /
	Pigment on swab	Baff	,			1071
	Pigment on BAP	6t.6224		OF Fructose	BLUE YEL	<u>BLUE</u> Yel/GRN
	Morphology on BAP	Siterth		- OF Lactose	GRN	BLUE
-	Beta hemolysis	Nee		- OF Maltose	GRN	BLUE
+	Growth on Mac	GRiwit-	BRIGHT PURPL	OF Mannitol	BLUE	Her !
	DNase hydrolysis	NEG	NEG	OF Sucrose	GRN	BLUE
-	Starch hydrolysis	NEG	Nec-	Arginine		NEG
	Lecithinase	NEG	Nel	- Lysine		
	Lipase	NEG	NEG	<ul> <li>Ornithine</li> <li>Base Control</li> </ul>		
+	Rapid PYR	+		base control		¥
+	Rapid LAP	+		+ Acetamide	W+	Pos!
	Rapid ESC			Esculin Gelatin	NRG	NEG
	Sensitivity to:			- Indole	1100	New
_	Penicillin (10 U)	<u>R56</u>	SAME	-Malonate PAD	NEG	Ne6-
	Vancomycin (30 ug)	<u>K56</u>		Urea <u>Nee</u> 2 h	NeG	NEG
+	(8)	548		+6.5% NaCL	Nel	POS
1	Polymyxin B (300 U)	5 910		10% Lactose	Neg	Neb
				- Growth 42 <sup>0</sup>	Nelos	Pos

2-7 Achronobacter XyLosoxIdANS P.5.2/17/06 Alesh colored on Starch@7D

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 16: Achromobacter xylosoxidans isolate 5-of-64.

	Reference No./Name: 4pm Date Inoculated: 37-0		CF P	+-	I-resp	bench -	Vitele-87 NLF, OX	la NF ⊕
	Final Identification:	Achre	mobacte	er	xyLoso	exiden	is P.S	5. 3/16/06
	Comments:				,			
						(2) (		
	Gram Morph.	48h	zyh		Tubes	<u>  {   0 6</u> <u>48 h</u>	3/16 7 day	24
	Gram Test Motility Wet Prep	Neb to	NKOT NEG	-	KIA H <sub>2</sub> S	K/NC Nele	NEG	
	Motility Deep(w/TC)	Ner	w?	_	Pseudo P Pseudo F	New	Nele -	PINK INOCULA
T+	Oxidase Catalase	STRONG	Post	+	NO <sub>3</sub> reduced		Pos	
	<u>PLATES</u> Odor	<u>48 h</u> None	<u>7 day</u>		Gas from $NO_3$ - $NO_2$ reduced	New	Pos Pos	
	Pigment on swab	Plesh		4	- Gas from NO <sub>2</sub>	Pos	POS	
,	Pigment on BAP Morphology on BAP	GRET SMODTA	GREY STOOTH	+	OF Fructose OF Dextrose OF Lactose	<u>BLUE</u> GRN BLUE	BLUE GRN BLUE	
	Beta hemolysis	NEG	NEG	-	OF Maltose OF Mannitol	BLUE GRN	BLUE BLUE	
+	Growth on Mac DNase hydrolysis	Nes	POS-VIOCO	4	OF Xylose OF Sucrose	GRN Blue	Yec. Blue	
-1-2-2-2-2-2-2-2-2-2-2-2-2-2-2-2-2-2-2-	Starch hydrolysis	NEG	NEG	_	Arginine	NeG	Nela	
_	Lecithinase Lipase	NEG Nelg	Nec-		Lysine Ornithine	WEAK?. MEG		
t	Rapid PYR	+		-	Base Control	NEG	_¥	
t	Rapid LAP Rapid ESC			+	Acetamide Esculin	POS NCG	pos! NeG	
	Sensitivity to:			_	Gelatin Indole	NEG	NeG	
	Penicillin (10 U)	6 R		-	Malonate PAD	NEG	NEG	
+	<ul><li>Vancomycin (30 ug)</li><li>Colistin (10 mcg)</li></ul>	14 5	·	-t	Urea <u>№6</u> 2 h -6.5% NaCL	NEG NEG	POS	
t	- Polymyxin B (300 U)	18 3		=+	- 10% Lactose - ONPG - Growth 42 <sup>0</sup>	NEG NEG SPAZSE	Neb	

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 17: Achromobacter xylosoxidans isolate 6-of-64.

Final Identification:

tion: Achromobacter xylos oxidANS P.S. 4/18/06 CREAM COLORED ON STARCH & Egg Yollo

Comments:

Gram Morph.Tubes48 h $7 day$ Gram Test $2!/h$ KIA $k/nc$ $k/nc$ Motility Wet Prep $vert Metrice$ $H_5S$ $Nec$ $54ght$ $+$ Motility Deep $pos$ $pos$ $Pseudo P$ $Nec$ $+$ Oxidase $pos$ $Pos$ $Nec$ $Nec$ $+$ Catalase $pos$ $Pos$ $Neve$ $Neve$ $+$ Catalase $pos$ $Pos$ $Pos$ $PLATES$ 48 h $7 day$ $No_3$ reduced $Pos$ <	
-Rapid ESC <u>Neb</u> - Esculin <u>Neb</u> <u>Neb</u> Sensitivity to: -Indole <u>Neb</u>	. 11
$ \begin{array}{c c} \underline{\text{Sensitivity to:}} \\ \hline \\ \hline \\ \end{array} \\ \hline \\ \end{array} \\ \begin{array}{c c} \\ \end{array} \\ \hline \\ \end{array} \\ \hline \\ \end{array} \\ \begin{array}{c c} \\ \end{array} \\ \hline \\ \end{array} \\ \hline \\ \end{array} \\ \begin{array}{c c} \\ \\ \end{array} \\ \hline \\ \end{array} \\ \hline \\ \end{array} \\ \begin{array}{c c} \\ \\ \end{array} \\ \hline \\ \end{array} \\ \hline \\ \end{array} \\ \begin{array}{c c} \\ \\ \end{array} \\ \hline \\ \end{array} \\ \hline \\ \end{array} \\ \begin{array}{c c} \\ \\ \end{array} \\ \hline \\ \end{array} \\ \begin{array}{c c} \\ \\ \end{array} \\ \hline \\ \end{array} \\ \begin{array}{c c} \\ \\ \\ \end{array} \\ \hline \\ \end{array} \\ \begin{array}{c c} \\ \\ \\ \end{array} \\ \hline \\ \end{array} \\ \begin{array}{c c} \\ \\ \\ \end{array} \\ \hline \\ \end{array} \\ \begin{array}{c c} \\ \\ \end{array} \\ \hline \\ \end{array} \\ \begin{array}{c c} \\ \\ \\ \end{array} \\ \hline \\ \end{array} \\ \begin{array}{c c} \\ \\ \\ \end{array} \\ \begin{array}{c c} \\ \\ \\ \end{array} \\ \hline \\ \end{array} \\ \begin{array}{c c} \\ \\ \\ \end{array} \\ \hline \\ \end{array} \\ \begin{array}{c c} \\ \\ \\ \end{array} \\ \\ \end{array} \\ \begin{array}{c c} \\ \\ \\ \end{array} \\ \begin{array}{c c} \\ \\ \\ \end{array} \\ \begin{array}{c c} \\ \\ \end{array} \\ \end{array} \\ \begin{array}{c c} \\ \\ \end{array} \\ \begin{array}{c c} \\ \\ \end{array} \\ \begin{array}{c c} \\ \\ \end{array} \\ \end{array} \\ \begin{array}{c c} \\ \\ \end{array} \\ \begin{array}{c c} \\ \\ \end{array} \\ \begin{array}{c c} \\ \\ \end{array} \\ \end{array} \\ \begin{array}{c c} \\ \\ \end{array} \\ \end{array} \\ \begin{array}{c c} \\ \\ \end{array} \\ \begin{array}{c c} \\ \\ \end{array} \\ \end{array} \\ \begin{array}{c c} \\ \\ \end{array} \\ \end{array} \\ \begin{array}{c c} \\ \\ \end{array} \\ \end{array} \\ \begin{array}{c c} \\ \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c c} \\ \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c c} \\ \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c c} \\ \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c c} \\ \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c c} \\ \end{array} \\ $	ю УМ Едоют

Note: All biochemical tests (except where noted) are incubated at 30°C and read after 48 hrs. incubation and again at 7 days.

Figure 18: Achromobacter xylosoxidans isolate 7-of-64.

Date Inoculated:

Final Identification:

Comments:

: <u>5-2-06</u> ion: <u>Ackrome Bacter Xylosexidents</u> P.S. 5/1/06 DULL-PAGTY LOOKING ON BAP@48h

5-2-06

Gram Morph. Gram Test	24hr	Tubes KIA	48 h K/NC NEW	5-9-06 <u>7 day</u> <u>FC/NC</u> <u>NEG</u>
Motility Wet Prep + Motility Deep + Oxidase	<u>Very motice-tiny</u> <u>POS</u> <u>POS-7</u> POS		Nela	NEG
Catalase <u>PLATES</u> Odor	STZENG POS 48h 7 day NONE NONE	+ NO <sub>3</sub> reduced + Gas from NO <sub>3</sub> + NO <sub>2</sub> reduced + Gas from NO <sub>2</sub>	POS	- 905 - 905 - 905 - 905
<ul> <li>Pigment on swab</li> <li>Pigment on BAP</li> <li>Morphology on BAP</li> <li>Beta hemolysis</li> <li>Growth on Mac</li> <li>DNase hydrolysis</li> </ul>	<u>flesh</u> Light Grey Duil-sitziney <u>Nel-</u> - <u>Nel-48h</u> . <u>POS</u> <u>POS</u> <u>Nel-</u> NeG	- OF Fructose - OF Dextrose - OF Lactose - OF Maltose - OF Mannitol - OF Xylose - OF Sucrose	BLUC Yel/bRN BLUC BLUC BLUC YEL BLUC	BLUE BLUE BLUE BLUE YEL BLUE
Starch hydrolysis Lecithinase Lipase Rapid PYR	Neb Neb Neb Neb Neb Neb Pos	<ul> <li>Arginine</li> <li>Lysine</li> <li>Ornithine</li> <li>Base Control</li> </ul>	Nea	<u>Neb-</u>
<ul> <li>Rapid LAP</li> <li>Rapid ESC</li> <li>Sensitivity to:</li> <li>Penicillin (10 U)</li> <li>Vancomycin (30 ug)</li> <li>Colistin (10 mcg)</li> <li>Polymyxin B (300 U</li> </ul>	5-11 5	<ul> <li>Accetamide</li> <li>Esculin</li> <li>Gelatin</li> <li>Indole</li> <li>Malonate</li> <li>PAD</li> <li>Urea <u>Nee2</u> h</li> <li>6.5% NaCL</li> <li>10% Lactose</li> <li>ONPG</li> <li>Growth 42°</li> </ul>	BLUE NEG NEG NEG NEG NEG NEG NEG NEG NEG NE	BLUE NEG NEG NEG NEG NEG NEG NEG NEG NEG NE

Note: All biochemical tests (except where noted) are incubated at 30°C and read after 48 hrs. incubation and again at 7 days.

Figure 19: Achromobacter xylosoxidans isolate 8-of-64.

Date Inoculated: Final Identification:

6-28-06 Achromobacter xylosoxidans B. 7/2/06

Comments:

				Λ
			6/30 7/14	12
Gram Morph.		Tubes	<u>48 h</u> (4 <u>-7 day</u>	
Gram Test	486	KIA	ENC EL	leaface
Motility Wet Prep	SM ROBS - VERY HOTI	$-H_2S$	NEG HIST @ INT	EDEFACE
+ Motility Deep	POS! POS	- Pseudo P	NEG NEG > PIN	ke culury
+ Oxidase	POS	– Pseudo F	Neb NEG INOC	alary
+ Catalase	STRONG DOS	$+NO_3$ reduced	Pos	
PLATES	48 h 14 day 7/14	+ Gas from NO <sub>3</sub>	POS POS	
Odor	NONE	+ NO <sub>2</sub> reduced + Gas from NO <sub>2</sub>	POS POS	
Pigment on swab	Buff			
Pigment on BAP	Lt GRET	<ul> <li>OF Fructose</li> <li>OF Dextrose</li> </ul>	BLUE BLUE TEL/6R GRN	
Morphology on BAP	Smooth Geisten . wy	- OF Lactose	BLUE BLUE	
- Beta hemolysis	Neb	- OF Maltose	BLUE BLUE	
+ Growth on Mac 105.	- GROWIL- COLORLESS	<ul> <li>OF Mannitol</li> <li>OF Xylose</li> </ul>	BILLE BILLE	
- DNase hydrolysis	New New	- OF Sucrose	PLUE BLUE	
<ul> <li>Starch hydrolysis</li> </ul>	NEG NEG	- Arginine	NeG Mea-	
- Lecithinase	NEG Nece	- Lysine		
- Lipase	New New	- Ornithine		
+ Rapid PYR WEA	t pos	- Base Control		
+ Rapid LAP	pos	+ Acetamide	Blue Pos!	
- Rapid ESC	NEG	Esculin Gelatin	NEG NEG RE	PCAT-1
Sensitivity to:		- Indole	TOS NO	o Tho
- Penicillin (10 U)	$\underline{R}$ $\underline{R}$	- Malonate	Nec- Nec	
<ul> <li>Vancomycin (30 ug)</li> </ul>	R R	- PAD - Urea $-2h$	Nel- New	
+ Colistin (10 mcg)	5-9 5	- 6.5% NaCL	Nel- Nel	
Polymyxin B (300 U	) 5-12 5	<ul> <li>— 10% Lactose</li> <li>— ONPG</li> </ul>	NEG NEG	
		- Growth 42°	POS POS	
		(		

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 20: Achromobacter xylosoxidans isolate 9-of-64.

8/0106 24h Read 8/8/06 7 day Read 8/13/06 Date Inoculated: Achromobacter XyLosoxidans P.S. 8/14/06 Final Identification: Light Appricate on Starch 8 D, VERY LIGHT Buttescotch Comments: on Egg Yolk at 8 D. \$/14/06 8 D Gram Morph. Tubes 7 day INC E/NC KIA Gram Test - H<sub>2</sub>S Slight H2S Scient H2S Motility Wet Prep POS NºG-+ Motility Deep POS - Pseudo P Nele - Pseudo F New Neb + Oxidase + POS + Catalase + +NO3 reduced 7 day 8 DAY DOC Gas from NO3 POS PLATES <u>48 h</u> +NO<sub>2</sub> reduced Odor NONE Gas from NO2 Pos Pigment on swab flez BLUC - OF Fructose Blue Pigment on BAP GREY + OF Dextrose GRN YEL Morphology on BAP Snooth - OF Lactose BLUE BLUC - OF Maltose - Beta hemolysis New BLUE Blue OF Mannitol Black BLUCE 104 Set 8/8/04 Growth on Mac 105 + OF Xylose YEL Yec DNase hydrolysis Nec OF Sucrose Buce BLUE New -NEG Starch hydrolysis NEG - Arginine NEG NeG Lecithinase NeG New -Lysine - Ornithine NeG - Lipase NeG Base Control + Rapid PYR + Pos + Rapid LAP NEG Nela + Pas Acetamide Esculin NEG Nelo - Rapid ESC Neg - Gelatin Neg Sensitivity to: - Indole - Malonate Ne - Penicillin (10 U) 2H'J - PAD R Vancomycin (30 ug) 8/8/06 - Urea NeG2 h 5-9 +Colistin (10 mcg) - 6.5% NaCL - 10% Lactose Nê Polymyxin B (300 U) 125-14 5. -ONPG Beta metica hemolytic zone Araesis Growth 42° PC Cha PB diges

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 21: Achromobacter xylosoxidans isolate 10-of-64.

Date Inoculated:	12-1-06				_
Final Identification:	12-8-06 Ach	Romobacter	xylos of	NdANS 12/8/	loe
Comments:				P.S.	
			12/5 (40)	1	-
Gram Morph.	,	Tubes	<u>48 h</u>	7 day	
Gram Test	246.	KIA	K/NC	KINC	
Motility Wet Prep	POS- VERT DIOTILE MED RODS	$-H_2S$	NCG	Nec	
+ Motility Deep	POS POS	- Pseudo P	Nea	Neco	
+ Oxidase	POS	- Pseudo F	Neg	NEG	
- Catalase	STRANG POS	+ NO <sub>3</sub> reduced		Pos	
PLATES	<u>48 h</u> <u>7 day</u>	+ Gas from NO <sub>3</sub>	POS	POS	
Odor	None	+ NO <sub>2</sub> reduced + Gas from NO <sub>2</sub>	POS	POS	
Pigment on swab	flesh			Brue	
Pigment on BAP	GREY	- OF Fructose - OF Dextrose	Blue	YEL/GRN	
Morphology on BAP	Smears-PickupINT	Ac Lee OF Lactose	BLUE	BLUE	
- Beta hemolysis	New POS	- OF Maltose - OF Mannitol	BLUE	BLUC	
+ Growth on Mac	POS POS	+ OF Xylose	yec !	Yer	
<ul> <li>DNase hydrolysis</li> </ul>	Ne6 Ne6	OF Sucrose	BLUE	BLUC	
Starch hydrolysis	NeG NeG	- Arginine	NeG-	Nea	
Lecithinase	NEG NEG	- Lysine			
- Lipase	Nels Nels	<ul> <li>Ornithine</li> <li>Base Control</li> </ul>			
+ Rapid PYR	Pos	- Base Control			
+ Rapid LAP	POS	+ Acetamide	POS!	POS	
- Rapid ESC	Nel	Esculin Gelatin	NEG	NEG	
Sensitivity to:		- Indole	10-5	Nelo	
- Penicillin (10 U)	R $R$	Malonate	NEG	Nela	
- Vancomycin (30 ug)	R R	– PAD – Urea <i>Ml</i> 62 h	New	Nea	
+ Colistin (10 mcg)	<u>S-14</u> 9	- 246.5% NaCL	TRG	0 2000	
+ Polymyxin B (300 U)	5-18 5	- 10% Lactose - ONPG	NEG	Nela	
		Growth 42°	NEG	NEG	

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 22: Achromobacter xylosoxidans isolate 11-of-64.

Final Identification:

Comments:

1: 1-16-07 tion: 1-24-07 Achromobreter Xylosexidans 1/25/07 Light pink on Starch @ 7 D. White on Egg Yokk P.S.

Gram Morph.			Tubes	<u>48 h</u>	$\frac{7 \text{ day}}{1 \text{ day}}$	
Gram Test			KIA H <sub>2</sub> S	ALK/NC NELO	KIR	Inc
Motility Wet Prep	POS- CAT	OTIME	n <sub>2</sub> 3	New	SLIGHT H25@INT	all top
Motility Deep	P09	PES	Pseudo P	New	Nel Mocuch	
Oxidase	Pos		Pseudo F	NEG	Nel At inter	GACE
Catalase	STRONG	P05	NO3 reduced		Pos	
<b>PLATES</b>	<u>48 h</u>	7 day	Gas from NO <sub>3</sub>	POS	pos!	
Odor	None		$NO_2$ reduced Gas from $NO_2$	105	POS !	
Pigment on swab	flesh					
Pigment on BAP	Grey		OF Fructose	Blue	Blue	
Morphology on BAP	wet-shy	NRY-RUNNY	OF Dextrose OF Lactose	RLUE	BLUE	
Beta hemolysis	NEG	NPL	OF Maltose	Blue	GRN	
Growth on Mac	Dos	Per LAVENDER	OF Mannitol	BLE	Blue,	
	105	105 COLOMES	01 11/1000	Yel	Yel!	
DNase hydrolysis	NEG	NEG	OF Sucrose	Buce	BLUE	
Starch hydrolysis	Neg	Neb	Arginine	W+	NeG	
Lecithinase	Neg	NEG	Lysine	NEG-		
Lipase	Neg	Nela	Ornithine Base Control	Nele		
Rapid PYR	POS		Dase Control	Nelg		
Rapid LAP	POS		Acetamide	Pos.	POS	
Rapid ESC	NeG		Esculin Gelatin	NEG	NeG	
Sensitivity to:			Indole	Neb		
Penicillin (10 U)	R		Malonate	NEG	LIGHTBLUE	
Vancomycin (30 ug)	R	R	PAD Urea <u>NG62</u> h	NEG		
Colistin (10 mcg)	5-9	5	6.5% NaCL	NEG	POS	
Polymyxin B (300 U	5-12	5	10% Lactose	Nea	Nea	
			ONPG	NEG	NCG	
			Growth 42°	POS	107	

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 23: Achromobacter xylosoxidans isolate 12-of-64.

2-5-07 Date Inoculated: 2-14-07 AchRomobacter XyLosox/DANS 2/14/07 P.S. Final Identification: A. Comments:

Course Manual	<b>T</b>	40.1	7
Gram Morph.	<u>Tubes</u> KIA	48 h	7 day
Gram Test 48 L	H <sub>2</sub> S	Nels	glight H2S
Motility Wet Prep POS - Very HOTILE	20	NC09	
Motility Deep 205 POS	Pseudo P Pseudo F	Nec	New
Oxidase ADS	Pseudo F	Neb	
Catalase STRONG POS	NO3 reduced		pas
PLATES 48 h 7 day	Gas from NO <sub>3</sub> NO <sub>2</sub> reduced	POS	Pos -
Odor Now e	$Gas from NO_2$	POS	POS
Pigment on swab <u>flesh</u>			Ding
Pigment on BAP hight GRee	OF Fructose OF Dextrose	Bene Yel	Blue Yel
Morphology on BAP Street	OF Lactose	BLUE	Bille
Beta hemolysis	OF Maltose	Blue	Bue
Growth on Mac POS Pos	OF Mannitol	Bral	BLUE
DNase hydrolysis Neb Neb	OF Xylose OF Sucrose	GRN BLUE	Yel ! Butte
	OI Sucrose	Vane	Dem
Starch hydrolysis <u>Nec</u> <u>Neb</u>	Arginine	Nec	Nela
Lecithinase <u>Neb</u> <u>Neb</u>	Lysine		
Lipase <u>Neb</u> Neb	Ornithine Base Control	-1	
Rapid PYR POS	Dase Control		
Rapid LAP	Acetamide	Nea	Neb
Rapid ESC Ne6	Esculin Gelatin	NEG	NEG
Sensitivity to:	Indole	Ne	Nele
Penicillin (10 U) <u> </u>	Malonate	Neg	Neb
Vancomycin (30 ug)	PAD Ureand 2 h	NEG	Neb
Colistin (10 mcg) $S - 12$ $\hat{S}$	6.5% NaCL	New	POS
Polymyxin B (300 U) <u>5-15</u> <u>5</u>	10% Lactose	NEG	Nea
	ONPG Growth 42 <sup>0</sup>	POS	PDS
	010wul 42	101	100

Note: All biochemical tests (except where noted) are incubated at 30°C and read after 48 hrs. incubation and again at 7 days.

Figure 24: Achromobacter xylosoxidans isolate 13-of-64.

Final Identification:

Achromobacter xyLosoxidans 3/29/07 P.S. \_\_\_\_\_

Comments:

				3/29	
Gram Morph.	Tube		8 h	7 day	
Gram Test <u>486</u>	KIA	1	K/NC	FK	14.5
Motility Wet Prep Very & Crive	MOTILE H2S	5	Light 127	Scight	120
Motility Deep 205	25 Pseu	-	NEG	Nele	
Oxidase Pos	Pseu	ido F	Neb	Nele	
Catalase STRONG	NO3 NO3	reduced			
<u>PLATES 48 h 7 d</u>		from NO <sub>3</sub> _	Pos	POS	
Odor <u>NoNe</u>			POS	POS	
Pigment on swab <u>flesh</u>				01110	
Pigment on BAP GREY		Fructose Dextrose	GRN YellGRN	BLUE	
Morphology on BAP Smooth		Lactose	Blue	Bive	
Beta hemolysis New		Maltose	Blue	BLUE	
Growth on Mac POS		Mannitol Xylose	PLUE YeL	Yel!	
DNase hydrolysis <u>NC6</u>		Sucrose	BLUE	Bue	
Starch hydrolysis <u>New </u>	Je6 Ara	inine	NeG	Neb	
Lecithinase Neb A	<u>lee</u> Lysi		// • •	1	
Lipase Nelo P	000	ithine			
Rapid PYR POS	Base	e Control			
Rapid LAP		etamide	Blue !	Baue	
Rapid ESC NeG	Escu Gela		NEG	Nele	
Sensitivity to:	Inde		NO	1100	
Penicillin (10 U)		lonate	New	Neb	ON GLANT
Vancomycin (30 ug)	R PAI	D aNe62 h	Neb-	NEG	ON YLMIVI
Colistin (10 mcg) $5 - 10$	S 6.5	% NaCL	POS	POS	
Polymyxin B (300 U) <u>5-14</u>	5 10% ON	% Lactose	NEG	NEG	
		bowth $42^{\circ}$	POS	PAS	

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 25: Achromobacter xylosoxidans isolate 14-of-64.

Final Identification:

4-30-07 Achromobacter XyLosoxidans P.S. 5/7/07

Comments:

Course Manual			Trahas	40 L	7 der
Gram Morph.	0.1		<u>Tubes</u> KIA	48 h KNC	<u>7 day</u>
Gram Test	24h	Lost Roos	H <sub>2</sub> S	SLIGHT BLA	et slight Hy S
Motility Wet Prep	105-	ENTREMELY MOTIL		7	
Motility Deep	POS	POS	Pseudo P	NCG	Nele
Oxidase	Pos		Pseudo F	NEC	Nec
Catalase	STROW	6 205	NO3 reduced	POS	POS GAS+@ 72 K.
PLATES	<u>48 h</u>	7 day	Gas from $NO_3$ $NO_2$ reduced	NEG	POS GASTE IZA.
Odor	NONE		$Gas from NO_2$		POS
Pigment on swab	flesh			BLUE	BLUE
Pigment on BAP	GREY		OF Fructose OF Dextrose	GRN	Yel/GRN
Morphology on BAP	Smooth	- Show-	OF Lactose	BLUE	Blue
Beta hemolysis	New	/	OF Maltose	BLUE	Baue
Growth on Mac	Pos	Pos	OF Mannitol OF Xylose	BLUE GRN	<u>BLUE</u> Yel /GRN
DNase hydrolysis	Nela	Nec	OF Sucrose	BLac	BLUE
Starch hydrolysis	New	Nee	Arginine	Nele	NEG
Lecithinase	Neb	Nela	Lysine		
Lipase	Nelo	- Nela	Ornithine		
Rapid PYR	posi	weak)	Base Control		
Rapid LAP	P05 (	STRONG)	Acetamide	Pos!	Pos!
Rapid ESC	Neb		Esculin Gelatin	NEG	NEG
Sensitivity to:	~		Indole	1000	NEG 2
Penicillin (10 U)	R	R	Malonate	NCG	Lt. BLUE - Nelos
Vancomycin (30 ug)	R	R	PAD Urea New 2 h	NEG	INDEalury turns slighty NEG
Colistin (10 mcg)	5-11	5	6.5% NaCL	NEG	POS!
Polymyxin B (300 U	5-13	9	10% Lactose	NEG	NRG NRG
			ONPG Growth 42°	NeG	POS

Note: All biochemical tests (except where noted) are incubated at 30°C and read after 48 hrs. incubation and again at 7 days.

Figure 26: Achromobacter xylosoxidans isolate 15-of-64.

Gram Morph. Gram Test	24h		<u>Tubes</u> KIA	125 48h E/NC	<u>7 day</u>	
Motility Wet Prep	Pos- med. Ros	stile	H <sub>2</sub> S 5	Light H2>		
Motility Deep	Pos		Pseudo P	Nec		
Oxidase	Pas		Pseudo F	New		
Catalase	STRONG POS		NO3 reduced			
PLATES	<u>48 h</u> <u>7 day</u>		Gas from NO <sub>3</sub>	POS		
Odor	None		$NO_2$ reduced Gas from $NO_2$	AOS		
Pigment on swab	flesh					
Pigment on BAP	CREAM		OF Fructose OF Dextrose	GRN		
Morphology on BAP	Smooth - Smeases		OF Lactose	BLUE		
Beta hemolysis	New		OF Maltose	Bue		
Growth on Mac	POS		OF Mannitol OF Xylose	Bive Yel!		
DNase hydrolysis	Nec		OF Sucrose	Brue		
Starch hydrolysis	Nea		Arginine	Neb		
Lecithinase	Neu		Lysine	- NCC-		
Lipase	Nec		Ornithine			
Rapid PYR	POS		Base Control			
Rapid LAP	Pos		Acetamide	POS		
Rapid ESC	NeG		Esculin Gelatin	Neu		
Sensitivity to:			Indole			
Penicillin (10 U)	_ <u>R</u>		Malonate	New		•
Vancomycin (30 ug)	<u>R</u>		PAD Urea New 2 h	NEG	PINE COLOR IN AGA Adding	/
Colistin (10 mcg)	5-10		6.5% NaCL	POS	· /	
Polymyxin B (300 U)	5-13		10% Lactose	Nec		
			ONPG Growth 42°	POS		

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 27: Achromobacter xylosoxidans isolate 16-of-64.

Date Inoculated: Final Identification:

d: <u>1-3-08</u> ation: <u>Achronobactor xylosoxidans i/io/os</u> <u>Light peach on Starch@ 70.</u> P.S.

Comments:

Gram Morph.	Tubes	24 48 h	7 day
Gram Test 24h	KIA	RINC	<u>ER</u>
Motility Wet Prep Pos son Roos	$H_2S$	NEG	Nea
Motility Deep Pos Pos	Pseudo P	New	NEG pink growth
Oxidase Pos	Pseudo F	Neb	New At batton
			AOS OC SLANT
Catalase <u>STRONG POS</u>	$NO_3$ reduced Gas from $NO_3$	Neg	POS!
PLATES 24-48h 7 day	$NO_2$ reduced	NCG	POS
Odor Nore	Gas from NO <sub>2</sub>	NCG	Pos!
Pigment on swab $fcesk$		<b>R</b>	Duna
Pigment on BAP Light Geex	OF Fructose OF Dextrose	BLUE	BLUE Lt.GRN
Morphology on BAP Smooth-Smudges	OF Lactose	BLUE	BLUE
Beta hemolysis Ne6	OF Maltose	Bine	Blue
	OF Mannitol	Blue	Buc
Growth on Mac SCANT GROUT GOOD & Row	OF Mannitol OF Xylose OF Sucrose	<u>GRN</u> Blue	YeL Burn
DNase hydrolysis <u>New Meb</u>	OF Sucrose	plue	Blue
Starch hydrolysis <u>Nec</u>	Arginine	New	New
Lecithinase New New	Lysine		
Lipase Neb Neb	Ornithine Base Control		
Rapid PYR $\mathcal{W} \leftarrow$	Base Control		
Rapid LAP PoS	Acetamide	Bue	BLUE!
Rapid ESC NCG	Esculin	Nele	Neb
Sensitivity to:	Gelatin Indole		NEG
Penicillin (10 U) $\mathcal{R}$	Malonate	Nele	Nela
	PAD	NEG	
Vancomycin (30 ug) $\frac{1}{2}$ $\frac{1}{2}$	Urea Mel2-h	New	Neb
Colistin (10 mcg) $\frac{5-13}{5}$	6.5% NaCL	NEG	POS NEG-
Polymyxin B (300 U) $5 - 14$ 5	10% Lactose ONPG	NEG	Nela_
	Growth 42 <sup>°</sup>	Pos	POS

Note: All biochemical tests (except where noted) are incubated at 30°C and read after 48 hrs. incubation and again at 7 days.

Figure 28: Achromobacter xylosoxidans isolate 17-of-64.

Date Inoculated: Final Identification: Comments:	Achromobaci	ter tyles	2-8- 	S RF.	
Gram Morph. Gram Test Motility Wet Prep Motility Deep Oxidase Catalase PLATES Odor Pigment on swab Pigment on BAP Morphology on BAP Beta hemolysis Growth on Mac DNase hydrolysis Starch hydrolysis Lecithinase	POG-SNIROARS POG POG POS STRONG POS 48 h 7 day NONE GLEGK GREY Smooth NEG POS POG NEG NEG NEG NEG NEG NEG NEG NE	TubesKIAH2SPseudo PPseudo FNO3 reducedGas from NO3NO2 reducedGas from NO2OF FructoseOF DextroseOF LactoseOF MaltoseOF MannitolOF XyloseOF SucroseArginineLysineOrnithine	AST 7 K/NC K New A New A N	2/21/08 121 13 DAYS Hay UCC 180 180 180 180 180 180 180 180	
Lipase Rapid PYR Rapid LAP Rapid ESC <u>Sensitivity to:</u> Penicillin (10 U) Vancomycin (30 ug) Colistin (10 mcg) Polymyxin B (300 U)	Nelo Nelo Nelo Relo Relo R R R R R R R R R R S-10 9 S-13 S	Acetamide Esculin Gelatin Indole Malonate PAD Urea <u>Nee</u> 2 h 6.5% NaCL 10% Lactose ONPG Growth 42 <sup>0</sup>	New M New M New M New M New M New M New M	VEG VEG VEG VEG VEG VEG ALONG EDGE VEG VEG VEG VEG	

Note: All biochemical tests (except where noted) are incubated at 30°C and read after 48 hrs. incubation and again at 7 days.

Figure 29: Achromobacter xylosoxidans isolate 18-of-64.

Comments:

#5-0x+-non-Beta hemolytic colonier

Gram Morph. 24 Gram Test med Rous Motility Wet Prep Pos EXTREMELY MOTILE POS Motility Deep Oxidase POG Catalase GTRONG 205 PLATES <u>48 h</u> 7 day NONC Odor NONE Pigment on swab Gesh GREY Pigment on BAP GREY Smears Morphology on BAP GREENNY Beta hemolysis Neb Growth on Mac 205 NeG DNase hydrolysis Starch hydrolysis NCG Lecithinase New Lipase Neb Rapid PYR 205 Pos Rapid LAP Rapid ESC NEG Sensitivity to: Penicillin (10 U) Vancomycin (30 ug) Colistin (10 mcg) Polymyxin B (300 U)

hRomobacter XyLosoxidANS <u>48 h</u> Tubes KIA mod Aret  $H_2S$ At INterGACE Pseudo P New PINK NOCali Nela Pseudo F PINE (NOCULA NO3 reduced Gas from NO<sub>3</sub>  $\mathcal{L}$ NO<sub>2</sub> reduced Gas from NO<sub>2</sub> GRN **OF** Fructose \* OF Dextrose Ve1 OF Lactose BLUP OF Maltose sup **OF** Mannitol SULP OF Xylose 55 Yel **OF** Sucrose BLUE Nea Arginine Lysine Ornithine Base Control Acetamide 126 Esculin KIEL Gelatin Indole Malonate PAD UreaNCC2 h ₽ 6.5% NaCL 10% Lactose Ple ONPG Nele ∉ Growth 42<sup>0</sup>

Note: All biochemical tests (except where noted) are incubated at 30°C and read after 48 hrs. incubation and again at 7 days.

Figure 30: Achromobacter xylosoxidans isolate 19-of-64.

108

Final Identification:

5-22-09 Acheonobreter xylosoxidans P.S. 6/2/09

Comments:

		्र सन्दर्भ करने क		5/29	5/29
Gram Morph.		-	Tubes	<u>48 h</u>	7 day
Gram Test	24h		KIA		ER IIC
Motility Wet Prep		edium Roals	H <sub>2</sub> S		SLight HZS
Motility Deep	P09 -	7 D. nermont	ng GaPseudo P		Nea
Oxidase	POS		Pseudo F		Nele
Catalase	STRON	ig pos	NO <sub>3</sub> reduced		POS
PLATES	<u>48 h</u>	7 day	Gas from $NO_3$ $NO_2$ reduced		Pos
Odor	NONE		$Gas from NO_2$		Pos
Pigment on swab	Flegh		07.7		Ring
Pigment on BAP	GREY		OF Fructose		Green
Morphology on BAP	Smooth -	SMEARS	OF Lactose		BLUE
Beta hemolysis	Neb	Nel	OF Maltose		BLUE
Growth on Mac		POS	OF Mannitol		BLUC YEL
DNase hydrolysis		Neg	OF Sucrose		Buc
Starch hydrolysis		1 17 18	L RITER		11.07
Lecithinase		NeG	Arginine Lysine		Nea
Lipase		Nel	Ornithine		
Rapid PYR	Pes		Base Control		
Rapid LAP	Pos	(STRONG)	Acetamide		Nela
Rapid ESC	Neb		Esculin		Nel
Sensitivity to:			Gelatin Indole		NEG
Penicillin (10 U)		R	Malonate		NEC
		R	PAD		Neb
Vancomycin (30 ug)			Urea <u>A eQ</u> h	NCG	Neb
Colistin (10 mcg)		5-10	6.5% NaCL 10% Lactose		POS NEG
Polymyxin B (300 U)		5-14	ONPG		Nea
			Growth 42°		Pos

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 31: Achromobacter xylosoxidans isolate 20-of-64.

Date Inoculated:	3-23-09
Final Identification:	Achromobacter XyLos 0x1dANS 3/26/09
Comments: <u>Light</u>	ht peach color on Starch @ 72h. P.S.
PRON	IN ENT PINE RING ON SLANT OF PAD AGTER Adding Felle
Gram Morph. Gram Test Motility Wet Prep Motility Deep Oxidase Catalase <b>PLATES</b> Odor Pigment on swab Pigment on BAP Morphology on BAP Beta hemolysis Growth on Mac DNase hydrolysis Starch hydrolysis Starch hydrolysis Lecithinase Lipase Rapid PYR Rapid LAP Rapid ESC <u>Sensitivity to:</u> Penicillin (10 U) Vancomycin (30 ug) Colistin (10 mcg)	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$
2 organiji za (200 O)	$\frac{5-19}{600} = \frac{5}{1000} \frac{100}{1000} \frac{100}{1000} \frac{100}{1000} \frac{1000}{1000} 100$

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 32: Achromobacter xylosoxidans isolate 21-of-64.

					14
Reference No./Name:				P.	and has complete set of papers
Date Inoculated:	4-16-0	09			14 ufut
Final Identification:	Acha	o mobre	ten xylos	OXIDAN	5 P.S. 5/15/09
Comments: Ligh	+ SALM	N COLOR	ON STARCE	60.70	AKS
1					
					4/25/09 70
Gram Morph.			Tubes	<u>48 h</u>	$\frac{7 \text{ day}}{1}$
Gram Test	48h		KIA	E/NC	K/K
Motility Wet Prep	POS SMA	VERY HOTT	H <sub>2</sub> S	NEG	NEG
+ Motility Deep	Neb	Pasimer	GaPseudo P	Nec	NEG > PINKE
+ Oxidase	Pos	<ul> <li>In the first has been ad as which has been an end of the second se</li></ul>	Pseudo F	NeG	New INOCULA @7DA45
-{ Catalase	STRONG	Pos	+NO <sub>3</sub> reduced		DOF
PLATES	<u>48 h</u>	7 day	+Gas from NO <sub>3</sub>	Neu-	pos
Odor	NONCY	sh 50	$AY \neq NO_2$ reduced +Gas from NO <sub>2</sub>	NeG	POS
Pigment on swab	Glesh= R	ose-PINK	-		Bine
Pigment on BAP	GREY-W	hite	• OF Fructose + OF Dextrose	BLUE GRN	Yel
Morphology on BAP	Smooth-1	reaped	-OF Lactose	BLUE	Baue
Beta hemolysis	Neb	7	A OF Maltose	BLUE	Blue
+ Growth on Mac	P05 - 5	PARSE PE	OF Mannitol	GRN	Blue !
DNase hydrolysis	Neu	NEG	_OF Sucrose	BLUE	Blue
Starch hydrolysis	Neb	Nel	Arginine	NeG-	NEG
Lecithinase	Nel	NEG	Lysine		
Lipase	Neb	Neb	Ornithine Base Control	12	
Rapid PYR	POS	5 5.1. M.S	base Control		-V O.C
Rapid LAP	POG	a a maker of the	+ Acetamide	NeG	BLUE SLANT POS
Rapid ESC	Neb		Esculin Gelatin	New	Nela
Sensitivity to:	0	~	-Indole		Neb
- Penicillin (10 U)	K	K	Malonate PAD	New	VERY LIGHT BLUE
Vancomycin (30 ug)	R	R	Urea Neb 2 h	NEG	NEL
+ Colistin (10 mcg)	9-10	K	- 6.5% NaCL	Neb	Net
Polymyxin B (300 U)	5-12	5	-10% Lactose - ONPG	New	NeG
			- Growth 42°	POS	POS

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 33: Achromobacter xylosoxidans isolate 22-of-64.

Date Inoculated: Final Identification:

5-22-09 Acheomobreter xylosoxidans P.S. 6/2/09

Comments:

	1 114 - 1149 - 114		5/29	5/29
Gram Morph.		Tubes	<u>48 h</u>	7 day
Gram Test	24h	KIA		K/K IIC
Motility Wet Prep	Pos- medium Roals	H <sub>2</sub> S tile		SLIGHT HZS
Motility Deep	P09 - 7 D. Hermont	Reseudo P		Nea
Oxidase	Pos	Pseudo F		Nelo
Catalase	STRONG POS	NO <sub>3</sub> reduced		POS
<b>PLATES</b>	48 h 7 day	Gas from NO <sub>3</sub>		Pos
Odor	NONE	$NO_2$ reduced Gas from $NO_2$		Pos
Pigment on swab	Flegh			0
Pigment on BAP	GREY	OF Fructose		BLUE GREEN
Morphology on BAP	Smooth - Smerres	OF Lactose		BLUE
Beta hemolysis	NEG NEG	OF Maltose		BLUE
Growth on Mac	POS	OF Mannitol		BLUE
DNase hydrolysis	NEG	OF Xylose OF Sucrose		Yel Blue
		in the second		proce
Starch hydrolysis		Arginine		NEG
Lecithinase	NeG	Lysine		
Lipase	Ne6	Ornithine Base Control		
Rapid PYR	Pos	Dase Control		
Rapid LAP	POS (STRONG)	Acetamide		Nea
Rapid ESC	NeG	Esculin Gelatin		Ne6-
Sensitivity to:		Indole		NEG
Penicillin (10 U)	R	Malonate		NEG
Vancomycin (30 ug)	R	PAD Urea ∧ <i>e</i> @ h	NCG	NEG
Colistin (10 mcg)	5-10	6.5% NaCL		Pos
Polymyxin B (300 U)	5-14	10% Lactose		Nec-
	×	ONPG Growth 42 <sup>0</sup>		Pos

Note: All biochemical tests (except where noted) are incubated at 30°C and read after 48 hrs. incubation and again at 7 days.

Figure 34: Achromobacter xylosoxidans isolate 23-of-64.

Comments:

Final Identification:

10-16-09 Achromobicter XyLosoxidans P.S. 10/29/09

				Her	10/21
Gram Morph.			Tubes	<u>48 h</u>	7 day
Gram Test			KIA H2S		_ NC/NC _ SUGHT H25
Motility Wet Prep	205-0	Sm RODS	1125		
Motility Deep	POS		Pseudo P		Neb
Oxidase	Pos		Pseudo F		<u>Nela</u>
Catalase	STRONG	e pos	NO <sub>3</sub> reduced		Pos
PLATES	48_h	7 day	Gas from NO <sub>3</sub>		Pes
Odor	NONC		NO <sup>2</sup> reduced Gas from NO <sup>2</sup>		- 405
Pigment on swab	BUEG			-	
Pigment on BAP	GREY		NeGOF Fructose		- BLUE YEL/GRN
Morphology on BAP	ShINNY 1	Net	OF Dextrose		- tel/oki
Beta hemolysis	Nel		OF Maltose		BLUE/GRN
Growth on Mac	1.0	POS	OF Mannitol		Yel/GRN
DNase hydrolysis		NEG	OF Xylose		- <u>Jel!</u> Blue
		NEG	,		
Starch hydrolysis		1.00	Arginine		Nea
Lecithinase		Nec	Lysine Ornithine		
Lipase	0.0	New	Base Control		
Rapid PYR	POS				
Rapid LAP	Pos		Acetamide Esculin		Nela
Rapid ESC	NeG		Gelatin		ALGE N
Sensitivity to:		•	Indole		VEG VERY SLIGHT
Penicillin (10 U)		R	Malonate		New
Vancomycin (30 ug)		R	PAD Urea2 h		ALPIN SIA
Colistin (10 mcg)		5-9	6.5% NaCL		POS ADI
Polymyxin B (300 U)		5-13.5	10% Lactose		New
			ONPG Growth 42 <sup>°</sup>		- <u>NEO</u> DOS

Note: All biochemical tests (except where noted) are incubated at 30°C and read after 48 hrs. incubation and again at 7 days.

Figure 35: Achromobacter xylosoxidans isolate 24-of-64.

Date Inoculated:	2-8-10		
Final Identification:		tArch @ 4	DAXY GIREY AND ROUGH
	• 17		
Comments:	ON Egg Yolle	1	
	Achko MobActe	R XYLOFE	x1dANS P.S. 2/15/10
			2/12 8 48 h 7 day
Gram Morph.	48h	<b>Tubes</b> KIA	48 h Iday KNC KH
Gram Test	Δ.	H <sub>2</sub> S	New New
Motility Wet Prep	Pos	D. I. D.	
Motility Deep	pos pos	Pseudo P Pseudo F	Neb Neb
Oxidase	Pos		
Catalase	STRONG POS	NO <sub>3</sub> reduced	And ADS
PLATES	<u>48 h</u> .7 day	Gas from NO <sub>3</sub> NO <sup>2</sup> reduced	AOS POS
Odor	NONE	Gas from NO <sub>2</sub>	Pag Pos
Pigment on swab	flesh		Bive Blue
Pigment on BAP	GRET	OF Fructose OF Dextrose	GREEN GREEN P
Morphology on BAP	Smooth	OF Lactose	Blue Dive
Beta hemolysis	Nela-	OF Maltose	Blac Blue
Growth on Mac	pes pos Lavender	OF Mannitol OF Xylose	Jei Pel ()
DNase hydrolysis	NEG NEG	OF Sucrose	Bive Bive
Starch hydrolysis	NEG NEG	Arginine	Nec- NCG-
Lecithinase	Ne6 Ne6	Lysine	
Lipase	Neb Neb	Ornithine	
Rapid PYR	Pos	Base Control	
Rapid LAP	POS	Acetamide	w + iw +
Rapid ESC	New	Esculin	New New
Sensitivity to:		Gelatin Indole	Nelo- Nelo-
Penicillin (10 U)	RR	Malonate	Nelo Wt
Vancomycin (30 ug)	RR	PAD	NCG - PINE BUTLINE
Colistin (10 mcg)	5-10 5	Urea∕ <u>///</u> 2 h 6.5% NaCL	Rece New and Pos
Polymyxin B (300 U)		10% Lactose	Nec- Nev-
2 019 119 111 2 (000 0)		ONPG Growth 42 <sup>0</sup>	NEG NEG POS POS

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 36: Achromobacter xylosoxidans isolate 25-of-64.

Final Identification:

8-30-10 hromobiter XYLOSOXIDANS 3/10 9

Comments:

				11 .1.	
Gram Morph.		Tubes	48 h	4 9 4 4 5 7 day	9/7/10
Gram Test		KIA	NC/NC	EINC	ENC
	very motile	$H_2S$	ney	Nela	New
Motility Wet Prep				Acad	Nea
Motility Deep	positive pos pos	Pseudo P Pseudo F	neg	Nelo	NEG
Oxidase	politive	I seduo I	Neg		IVC @
Catalase	strong positive	NO <sub>3</sub> reduced		POS	
PLATES	48 h Zetay 4 DAY	Gas from NO <sub>3</sub>	pes	POS	
Odor	nere	$NO_2$ reduced Gas from $NO_2$	bos	POS	
Pigment on swab	flesh		12-	10)	D
Pigment on BAP	grey, smooth	OF Fructose	green	BLUE	Blue
Morphology on BAP	Smooth t	OF Dextrose OF Lactose	yellow	YELGEN	GRN BLUE
Beta hemolysis	have NEG	OF Maltose	green	BLUE	BILLE
Growth on Mac	Could Could be	OF Mannitol	green	BLUE	BLER
		OF Xylose	Jellow	Yer	YEL
DNase hydrolysis	heg Neu-	OF Sucrose	green	BLUE	Blue
Starch hydrolysis	reg Neb	Arginine	neg	Ne6	NeG
Lecithinase	reg Nele Nele	Lysine	Neg	NeG-	1
Lipase	neg New Nel	- Ornithine	rey	Nec-	
Rapid PYR	log	Base Control	<u>Jug</u>	Nelo	$\bigvee$
Rapid LAP	1005	Acetamide	Neg	Neb	NEG
Rapid ESC	reg	Esculin	-reg_	Neb	Neb
Sensitivity to:		Gelatin Indole	_reg	Neg	New
Penicillin (10 U)	RR	Malonate	neg	NEG	Neo
Vancomycin (30 ug)	KR	PAD	Neg		Nea
Colistin (10 mcg)	THS S	Urea <u>⊖</u> 2 h 6.5% NaCL	Ney WK bos	1.6	POS
	1.0 0	10% Lactose	WK POS	NEG	Nea
Polymyxin B (300 U)	122	ONPG	Neg	Nela	Nea
		Growth 42 <sup>0</sup>	growth	POS	POS
			0		

Note: All biochemical tests (except where noted) are incubated at 30°C and read after 48 hrs. incubation and again at 7 days.

Figure 37: Achromobacter xylosoxidans isolate 26-of-64.

Final Identification:

9/13/10 (Monday) - SAJE AS #2 Achromobacter XyLosoxidans P.S. 9/20/10

Comments:

Gram Morph.		<u>Tubes</u> KIA	<u>48 h</u> K/NC	<u>7 day</u> E/F
Gram Test		H <sub>2</sub> S	neg	SLIGHT HES
Motility Wet Prep				l -
Motility Deep	pos? pos	Pseudo P	neg	Nela
Oxidase	pos	Pseudo F	neg	Neg
Catalase	pas	NO <sub>3</sub> reduced		pos
PLATES	<u>48 h 7 day</u>	Gas from $NO_3$	tiny bubble	POS
Odor	none	NO <sub>2</sub> reduced Gas from NO <sub>2</sub>	HM bubble	Pos
Pigment on swab	flesh			Pine
Pigment on BAP	grey	OF Fructose OF Dextrose	blue Green	BLUC Green
Morphology on BAP	pinporret/mulcoid	OF Lactose	blue	BLUP
Beta hemolysis	no	OF Maltose	blue	BLUE
Growth on Mac	yes POS	OF Mannitol OF Xylose	green	Blue Yer!
DNase hydrolysis	New	OF Sucrose	blue	BLUE
Starch hydrolysis	Nea	Arginine	nea	NEG
Lecithinase	Nea	Lysine	P	Neo
Lipase	New	Ornithine		
Rapid PYR	pos	Base Control		V
Rapid LAP	los	Acetamide	heg	New
Rapid ESC	neg	Esculin	_nég_	NCG
Sensitivity to:		Gelatin Indole		NEC-
Penicillin (10 U)	k R	Malonate	neg	Nec
Vancomycin (30 ug)	n P	PAD	)	NEG PINKE COLOR
• • • •	513 5	Urea $-2h$	neg	NEG AGTER Fells
Colistin (10 mcg)		6.5% NaCL 10% Lactose	pink slant	NRG-
Polymyxin B (300 U	) <u> 38 &gt; </u>	ONPG	nea	Nec-
		Growth 42 <sup>°</sup>	?growth	POS
			1	

Note: All biochemical tests (except where noted) are incubated at 30°C and read after 48 hrs. incubation and again at 7 days.

Figure 38: Achromobacter xylosoxidans isolate 27-of-64.

Date Inoculated: 11-22-10 Final Identification: Achromobacter xylosoxidors P.S./ (11/28/10

Comments:

			### .	11/29
Gram Morph.		Tubes	<u>48 h</u>	$\frac{7 \text{ day}}{7 \text{ day}}$
Gram Test	24 48	KIA		KK
Motility Wet Prep	NEG NEG RODS	$H_2S$		New
Motility Deep	POS	Pseudo P		Nel-
Oxidase	POS	Pseudo F		Nec
Catalase	STRONG POS.	NO <sub>3</sub> reduced		POS
		Gas from NO <sub>3</sub>		Pos
<u>PLATES</u>		NO <sub>2</sub> reduced		POS
Odor	None	Gas from NO <sub>2</sub>		Pos
Pigment on swab	flegh			0
Pigment on BAP	white	OF Fructose		BLUE
Morphology on BAP	entire	OF Dextrose OF Lactose		<u>YeL</u> € Bine
Beta hemolysis	NCG	OF Maltose		BLUE
-	No S	OF Mannitol		BLUE
Growth on Mac	<u>P0 7</u>	OF Xylose		Yel D
DNase hydrolysis	NEG	OF Sucrose		BLUE
Starch hydrolysis	Nel			New
Lecithinase	Nela	Arginine Lysine		NCC
Lipase	NeG	Ornithine		
Rapid PYR	POS	Base Control		
	Pos			Open (
Rapid LAP		Acetamide Esculin		POS!
Rapid ESC	Nelo	Gelatin		NEG
Sensitivity to:	A	Indole		NEG
Penicillin (10 U)		Malonate		W+
Vancomycin (30 ug)	R	PAD		New
Colistin (10 mcg)	R	Urea <u>∦</u> 2 h 6.5% NaCL	Nele	Nea
Polymyxin B (300 U)	5-18	10% Lactose		KIEG
1 Olymyxiii B (500 U)		ONPG		Nele
		Growth 42 <sup>°</sup>		HOS

Note: All biochemical tests (except where noted) are incubated at 30°C and read after 48 hrs. incubation and again at 7 days.

Figure 39: Achromobacter xylosoxidans isolate 28-of-64.

Date Inoculated:	12-28-10	
Final Identification:	Achromobacter	XYLOSOXIDANS P.S. 12/30/10
		Stanch & Egg Yolke at 10 DAYS

				1-7-11	10 DAYS
Gram Morph.		Tubes	$\frac{48 \text{ h}}{1000 \text{ h}}$	$\frac{7 \text{ day}}{1}$	
Gram Test	48h	KIA H <sub>2</sub> S	K/NC	Nela	
Motility Wet Prep	Nele - TINY Rod S	1125	hear		
Motility Deep	New Neb	Pseudo P	Nea	Nec	
Oxidase	Pos	Pseudo F	Nelo	Neb	
Catalase	STRONG POS	NO <sub>3</sub> reduced		Pos	
<b>PLATES</b>	<u>48 h</u> <u>7 day</u>	Gas from NO <sub>3</sub>	pos	Pos	
Odor	Slight odor	NO <sub>2</sub> reduced Gas from NO <sub>2</sub>	Pos	POS	
Pigment on swab	flesh				
Pigment on BAP	GREY	OF Fructose OF Dextrose	Blue	Buce	
Morphology on BAP	Smooth	OF Lactose	Yel Blue	GRN BLUE	
Beta hemolysis	Neb	OF Maltose	Blue	Blue	
Growth on Mac	POS POS	OF Mannitol OF Xylose	<u>Blue</u> YeL	Bue Yel	
DNase hydrolysis	NEG-NEG	OF Sucrose	Bue	Bue	1/7/11 Repeat 12/50
Starch hydrolysis	New New	A	NeG		Repeat 1450
Lecithinase	New New	Arginine Lysine	Nea	contror	
Lipase	NEG NEG	Ornithine	$ \rightarrow $	<u> </u>	
Rapid PYR	Wt	Base Control			
Rapid LAP	_ <u>+</u>	Acetamide	Neb	NeG	
Rapid ESC	NCG	Esculin	NEG	Neb	
Sensitivity to:	0	Gelatin Indole	New	NEG	
Penicillin (10 U)	R R	Malonate	NEG	Pos	
Vancomycin (30 ug)	RR	PAD	Nele	Neg	PINE OUTLINE ON SLANT AGTER
Colistin (10 mcg)	5-8 R	Urea∦ <u>ℓ</u> <sup></sup> 2 h 6.5% NaCL	Ne6-	POS	Fell3
Polymyxin B (300 U)	9-16 S	10% Lactose	NEG	NeG	
		ONPG Growth 42 <sup>0</sup>	Ne6- Pos	Pos	-
		010wiii 42	10)	100	

Note: All biochemical tests (except where noted) are incubated at 30°C and read after 48 hrs. incubation and again at 7 days.

Figure 40: Achromobacter xylosoxidans isolate 29-of-64.

Date Inoculated: 2-23-11 Final Identification: Achromobacter ×ylosoxidans 1.5. Comments:

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			2/2-	3/3 8 DAYS
Gram Morph.		Tubes	2/25 48 h	73 $8$ $0$ $175$
Gram Test	24L	KIA	EINC	KIK
Motility Wet Prep	1057 DINTRODS &	$H_2S$	NEG	slight H2S
	Nela POS	Pseudo P	Nec	Neu
Motility Deep	Pos	Pseudo F	NeG	Kille
Oxidase				POS
Catalase	STRONG POS	NO <sub>3</sub> reduced Gas from NO <sub>3</sub>	POS	Pas
<u>PLATES</u>	<u>48 h</u> <u>7 day</u>	NO <sub>2</sub> reduced	105	-103 POS
Odor	NONE	Gas from $NO_2$	New	103
Pigment on swab	flesh		<b>D</b>	PILVA
Pigment on BAP	GREY	OF Fructose OF Dextrose	BLUE LEL/GRN	BLUE GRN
Morphology on BAP	Smoo.th	OF Lactose	BLUP	Blae
Beta hemolysis	Nec-	OF Maltose	Blue	BLUE
Growth on Mac	POS POS	OF Mannitol	BLUC	BLUE
DNase hydrolysis	Neo Neo	OF Xylose OF Sucrose	Blue	Jel- BLUP
Starch hydrolysis	NEG NEG			
Lecithinase	Nelo Nelo	Arginine Lysine	Nec	NeG
Lipase	NEG NEG	Ornithine		
Rapid PYR	W+	Base Control	$-\sqrt{-}$	$\overline{\mathbf{V}}$
Rapid LAP	Pos	Acetamide	Nec-	wt
Rapid ESC	Neb	Esculin	NEG	Nela
Sensitivity to:		Gelatin Indole	New	NeG
Penicillin (10 U)	R R	Malonate	Wt	WF
Vancomycin (30 ug)	RR	PAD	NeG	
Colistin (10 mcg)	5-10 9	Urea//26-2 h	POS	NEG
	5-11 5	6.5% NaCL 10% Lactose	New	POS NEG
Polymyxin B (300 U)	5 14	ONPG	NEG	NEG
		Growth 42 <sup>0</sup>	POS	POS

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 41: Achromobacter xylosoxidans isolate 30-of-64.

Date Inoculated: 2 - 23 - 1/Final Identification: Ach

-23-11 AchRomobacter Xylosoxidans P.S. 2/25/11

Comments:

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			2/25	
Gram Morph.		Tubes	<u>48 h</u>	$\frac{7 \text{ day}}{100000000000000000000000000000000000$
Gram Test	24/4	KIA	EINC	F/K
Motility Wet Prep	Pos? DIPLOBACILL, Pos? VERY juttery	$H_2S$	NEG	- WCC
Motility Deep	NEG NEG	Pseudo P	Nele	Nela
Oxidase	pos	Pseudo F	NEG	Nel
Catalase	STRONG DOS	NO <sub>3</sub> reduced		Pos
<b>PLATES</b>	<u>48 h</u> <u>7 day</u>	Gas from NO <sub>3</sub>	POS	POS
Odor	Nowe	NO <sub>2</sub> reduced Gas from NO <sub>2</sub>	TINY BUAR	
Pigment on swab	CREA07			
Pigment on BAP	GREY	OF Fructose OF Dextrose	BLUE GRN	BLUE GRN
Morphology on BAP	Smooth	OF Lactose	BLUE	RLue
Beta hemolysis	Ned	OF Maltose	Blue	Blee
Growth on Mac	Pos Pos	OF Mannitol OF Xylose	BLUR YEL	BLUE YEL
DNase hydrolysis	NEG- Nela	OF Sucrose	Blue	Brue
Starch hydrolysis	NEL NEG		Ar.21	ALDI
Lecithinase	NEG NCG	Arginine Lysine	Nec	Nele
Lipase	NEG NEG	Ornithine		
Rapid PYR	Wt	Base Control	_⊻	
Rapid LAP	Pos	Acetamide	Neg	Wt (
Rapid ESC	NEG	Esculin	NeG	Pos!
Sensitivity to:		Gelatin Indole	NEG	NeG
Penicillin (10 U)	R_R	Malonate	wt	Wit
Vancomycin (30 ug)	RR	PAD Urea Nな2 h	NEG	NEG
Colistin (10 mcg)	5-10 5	6.5% NaCL	POS	Pos
Polymyxin B (300 U)	5-15 5	10% Lactose	New	NeG
		ONPG Growth 42 <sup>0</sup>	Neb- Pos	New
		0.000		

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 42: Achromobacter xylosoxidans isolate 31-of-64.

Date Inoculated: 2-25-1/	
	Ler XyLosoxidaus P.S. 3/4/11
	CAGE. Slightly Yellow ON BAP 6 DAS
Good Growth OK BAP,	STARCH, EGGYOLK. GROWTH PUT SMALL COLONIES
	5/110
Gram Morph. Gram Test 4 DAYS	$\frac{\text{Tubes}}{\text{KIA}} \qquad \frac{48 \text{ h}}{\text{K/NC}} \qquad \frac{7 \text{ day}}{\text{K/K}}$
A CMALL PODE	
Motility Wet Prep <u>105</u>	
Motility Deep POS POS	Pseudo P <u>Nec</u> Pseudo F <del>Keler</del>
Oxidase <u>POS</u>	
Catalase POS	NO <sub>3</sub> reduced $\frac{POS}{POS}$
PLATES <u>48 h</u> <u>7 day</u>	Gas from NO <sub>3</sub> <u>Nec</u> <u>Nec</u> NO <sub>2</sub> reduced <u>POS</u>
Odor House cAGe	Gas from NO <sub>2</sub> $\frac{1}{\sqrt{\ell}}$ $\frac{1}{\sqrt{\ell}}$
Pigment on swab <u>fleck</u>	OF Fructose Val / kby GRN
Pigment on BAP <u>GRey</u>	OF Fructose $\frac{\sqrt{eL/6RV}}{\sqrt{CL/6RV}} = \frac{\sqrt{eL/6RV}}{\sqrt{CL/6RV}}$
Morphology on BAP Smooth entire	OF Lactose Blue Blue
Beta hemolysis Nels sn	OF Maltose Bue Bue
Growth on Mac Pos Pos-c	CONVES OF Mannitol BLUE BLUE BLUE BLUE DEAP OF Xylose YeL YEL
DNase hydrolysis <u>New</u> <u>Nee</u>	OF Sucrose <u>Blue</u> <u>Blue</u>
Starch hydrolysis Neb Neb	
Lecithinase Nela Nela	Arginine <u>Nec Nec</u> Lysine (
Lipase Nels Nels	Ornithine
Rapid PYR W+	Base Control
Rapid LAP PoS	Acetamide Nec POS
Rapid ESC New	Esculin New New
Sensitivity to:	Gelatin <u>Neb Neb</u> Indole <u>Neb</u>
Penicillin (10 U) $R$	Malonate $POS$ $POS$
Vancomycin (30 ug) $\mathcal{R}$	PAD Neb
Colistin (10 mcg) $R$ $R$	Urea <u>New</u> h <u>New</u> <u>New</u>
Polymyxin B (300 U) $S = 10.5$ S	$\begin{array}{cccccccccccccccccccccccccccccccccccc$
1 Olymyxin B (500 O) /~. /	ONPG New New
	Growth 42° <u>GROWTL 6G-SCONY</u>
	PARTIALY INDibited

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 43: Achromobacter xylosoxidans isolate 32-of-64.

Final Identification:

ion: Achromobacter XyLosoxidans P.S./6-21-1) Light Reach on Starch

Comments:

			6/20	
Gram Morph.	ual	<u>Tubes</u> KIA	48 h ENC	7 day
Gram Test	<u>48h</u>	$H_2S$	Sught Has	S Slight H2 S
Motility Wet Prep	POS- TINY Rods		agu cer	
Motility Deep	pos 105	Pseudo P Pseudo F	NEG-	Nele-
Oxidase	POS	Fseudo F	New	_Necs
Catalase	STRONG POS	NO <sub>3</sub> reduced		pos
PLATES	<u>48 h</u> <u>7 day</u>	Gas from NO <sub>3</sub> NO <sub>2</sub> reduced	Pos	POS Ros
Odor	NORE	$Gas from NO_2$	POS	POS
Pigment on swab	Flegh		~	<u>^</u>
Pigment on BAP	GREY	OF Fructose OF Dextrose	Hue Yel	BLUE GRN
Morphology on BAP	Smeeth	OF Lactose	Real	Beur
Beta hemolysis	Nela	OF Maltose	Blue	<u>Blue</u>
Growth on Mac	POS POS LAVENING	OF Mannitol OF Xylose	<u>Blae</u> YeL	Yel
DNase hydrolysis	NRC NEW	OF Sucrose	Blue	Blue
Starch hydrolysis	NEG NEG	Arginine	NeG	Nec
Lecithinase	NEG NEG	Lysine		
Lipase	NEG NEG	Ornithine		
Rapid PYR	Nea	Base Control		
Rapid LAP	P05	Acetamide	Pos!	pos !
Rapid ESC	NeG	Esculin Gelatin	NEG	Nelo
Sensitivity to:	0	Indole	Nel	NEG
Penicillin (10 U)	<u>R</u> R	Malonate	New	Nelo
Vancomycin (30 ug)	$\underline{R}$ $\underline{R}$	PAD Urea <i>Ml6-</i> 2 h	NEG	NEC- NCG
Colistin (10 mcg)	8-9.2 5	6.5% NaCL	Pos	A2G
Polymyxin B (300 U)	5.13.2 5	10% Lactose	Ne6-	KIC6
		ONPG Growth 42 <sup>0</sup>	Nec	NEW
		51011111		

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 44: Achromobacter xylosoxidans isolate 33-of-64.

Date Inoculated: <u>3-29-1/</u> Final Identification: <u>Achronolyten tylosoxidans 4/8/11 p.5</u> Comments:

Course Manuel		Tuber	3 DAY	4/8	10 dAys
Gram Morph.		<u>Tubes</u> KIA	40m	Telle	
Gram Test	3-0AY	$H_2S$	Sucht Ha	5 SLIGH	t tz S
Motility Wet Prep	POS- SM. RODS		7000		
Motility Deep	P05 P05	Pseudo P	Neb-	NEG	-
Oxidase	POS	Pseudo F	NeG	NCO	
Catalase	STRONG POS	NO <sub>3</sub> reduced		POS	
PLATES	<u>48 h</u> <u>7 day</u>	Gas from NO <sub>3</sub>	POS	POS	
Odor	NONE	NO <sub>2</sub> reduced Gas from NO <sub>2</sub>	POS	POS	
Pigment on swab	Flesh		^		
Pigment on BAP	GREY	OF Fructose OF Dextrose	Bell Yel	BLUE GRN	
Morphology on BAP	ENTIPE	OF Lactose	Rue	BLUE	
Beta hemolysis	NEG	OF Maltose	Buce	Buce	
Growth on Mac	Ros P07	OF Mannitol	Blue	Blue	
DNase hydrolysis	NEG NEG	OF Xylose OF Sucrose	Buch	Yel Blue	
Starch hydrolysis	NEO- NEL				
Lecithinase	NEG- NEG	Arginine	Neb	Neb	
		Lysine Ornithine			
Lipase		Base Control	$\overline{\mathbf{v}}$		
Rapid PYR	Ne6-		0.01	Dar	
Rapid LAP	POS	Acetamide	Pos!	105	
Rapid ESC	NeG	Esculin Gelatin	New	Nel	-
Sensitivity to:	0 0	Indole	1000	Nel	-
Penicillin (10 U)	$\underline{R}$ $\underline{R}$	Malonate	New	POS	
Vancomycin (30 ug)	R_R_	PAD Urea N&2 h	New	NEG	
Colistin (10 mcg)	5-7 9	6.5% NaCL	POS	POS	
Polymyxin B (300 U)	S-12 5	10% Lactose	Neo	New	
		ONPG Growth 42 <sup>0</sup>	NEG	ALC:	
		Growin 42	POS	10/	

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 45: Achromobacter xylosoxidans isolate 34-of-64.

Final Identification:

Achronobacter xy los oxidans

Comments:

POOR GROWTH ON BAP + HAC @ 486

		12/22		
Gram Morph.	48h	Tubes	<u>48 h</u>	<u>7 day</u>
Gram Test	AS	KIA	E/NC	
Motility Wet Prep	POS - RAPIN Spinning		NEG	
Motility Deep	POS	Pseudo P	Neb	
Oxidase	Pos	Pseudo F	Neg	
Catalase	STRONG POS	NO <sub>3</sub> reduced		
<b>PLATES</b>	<u>48 h 7 day</u>	Gas from NO <sub>3</sub>	Neb	
Odor	NONE	NO <sub>2</sub> reduced Gas from NO <sub>2</sub>	NEG	
Pigment on swab	Buff			
Pigment on BAP	GRET	OF Fructose	Blue	
Morphology on BAP	TRANSLUCENT	OF Dextrose OF Lactose	BLUE	0
Beta hemolysis	NEG	OF Maltose	BLue	
Growth on Mac	POOR GROWTL	OF Mannitol	GRN	
DNase hydrolysis	Nela	OF Xylose OF Sucrose	Blue	@
Starch hydrolysis	Neb			
Lecithinase	New	Arginine Lysine	NeG	
Lipase	NEG	Ornithine		
Rapid PYR	NIEG	Base Control	$\sim$	
Rapid LAP	POG	Acetamide	NeG	
Rapid ESC	NEG	Esculin	Neb	
Sensitivity to:		Gelatin	New	
Penicillin (10 U)	R	Indole Malonate	NeG	
Vancomycin (30 ug)	R	PAD	NEG	
Colistin (10 mcg)	S- 11	Urea <u>N</u> <u>&amp;</u> 2 h 6.5% NaCL	Neb	·
Polymyxin B (300 U	2	10% Lactose	NeG	
i olymyxii D (500 0		ONPG	NRG	
		Growth 42 <sup>°</sup>	Pos	pos

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 46: Achromobacter xylosoxidans isolate 35-of-64.

Final Identification:

Comments:

			10	2/24
Gram Morph.		Tubes	<u>48 h</u>	7 day
Gram Test	24h	KIA	K/NC	K/K
Motility Wet Prep	POS- SM ROAS POS- Very motile	$H_2S$	NEG	SLight AZ >
Motility Deep	Neb POS	Pseudo P	Nele	NEC
Oxidase	Pos	Pseudo F	Nec	Nel
Catalase	STRONG DOS	NO <sub>3</sub> reduced		ROS
PLATES	48 h 7 day	Gas from NO <sub>3</sub>	Sm. bubbl	e Sm Babble
Odor	None	NO <sub>2</sub> reduced Gas from NO <sub>2</sub>	Nela	DOG
Pigment on swab	Bu66			Diat
Pigment on BAP	GREY	<ul> <li>OF Fructose</li> <li>OF Dextrose</li> </ul>	BLUC YEL	BLUE
Morphology on BAP	TRANSLOCENT	$\sim$ OF Lactose	Beal	BLUEP
Beta hemolysis	Nela	- OF Maltose	Blue	Bice
Growth on Mac	P05 P05	<ul> <li>OF Mannitol</li> <li>OF Xylose</li> </ul>	GRN	Due Vel
DNase hydrolysis	NEL NEG	+OF Sucrose	GRN	GRN (SHOLE
Starch hydrolysis	Nele NEG	Austring	Nec	Nec
Lecithinase	NEG NEG	Arginine Lysine	Ive s	
Lipase	NEG NEG	Ornithine		
Rapid PYR	NEG (w+)	Base Control		
Rapid LAP	POS	Acetamide	Pos	POS!
Rapid ESC	NeG	Esculin	Neb	NOO
Sensitivity to:		Gelatin Indole	Nels	NEG
	RR	Malonate	Neb	P0 5
Penicillin (10 U)	RR	PAD	NEG	1.Pl
Vancomycin (30 ug)	5-8 5 (GWA ZON	$e$ ) Urea $\frac{\sqrt{\ell}\omega}{6.5\%}$ hack	Neo	POS
Colistin (10 mcg)	200	10% Lactose	Nea	NEG-
Polymyxin B (300 U		ONPG Growth 42 <sup>0</sup>	Pos	Pos
		Glowul 42	101	

2-16-12 Achromobacter Xylosoxidans 2/24/12 P.S.

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 47: Achromobacter xylosoxidans isolate 36-of-64.

Gram Morph.	<u> </u>	Tubes	<u>48 h</u>	<u>7 day</u>
Gram Test	24/ med - long Bods	KIA	E/NC NEG	KIK
Motility Wet Prep	POS- Very motile	$H_2S$	Nec	SCIEHT N2 S
Motility Deep	POG POS	Pseudo P	Nela	Nec-
Oxidase	Pos	Pseudo F	NEG	Neo
Catalase	STRONG POS	NO <sub>3</sub> reduced		POS
PLATES	<u>48 h 7 day</u>	Gas from NO <sub>3</sub>	Nele	POS
Odor	None	NO <sub>2</sub> reduced Gas from NO <sub>2</sub>	NEG	Post
Pigment on swab	Buff			
Pigment on BAP	GREY	OF Fructose OF Dextrose	G-RN Vel	GRN Yel-
Morphology on BAP	Shinny- WET Looking	OF Lactose	BLUE	BLUE
Beta hemolysis	Nela	OF Maltose	BLUE	BLUE
Growth on Mac	P05 P05	OF Mannitol OF Xylose	BULL GRN	<u>BLUE</u> YEL
DNase hydrolysis	Nel Nel	OF Sucrose	GRN	GRN
Starch hydrolysis	NEG NEG			Nr al
Lecithinase	NEG NEG	Arginine Lysine	NeG	Nec
Lipase	Nels NCG	Ornithine		
Rapid PYR	Wt	Base Control	i/	
Rapid LAP	POS	Acetamide	NEG	NEG
Rapid ESC	Neb	Esculin	Nela	Neb
Sensitivity to:		Gelatin Indole	_N 26	NEG
Penicillin (10 U)	RR	Malonate	Neb	Pos
Vancomycin (30 ug)	RR	PAD	Neb	
Colistin (10 mcg)	RR	Urea <i>l<u>v</u> <u>&amp;</u>2-</i> h 6.5% NaCL	Nel	New Pos
Polymyxin B (300 U)	RS-11 S	10% Lactose	Ne6	NEG-
(000 C)		ONPG	Nelo	Nec
		Growth 42 <sup>0</sup>	102	107

Note: All biochemical tests (except where noted) are incubated at 30°C and read after 48 hrs. incubation and again at 7 days.

Figure 48: Achromobacter xylosoxidans isolate 37-of-64.

Date Inoculated:	2-8-10	
Dute motulated		land line PC of
Final Identification:	HChROMODAC	TER XYLOSOXICLANS P.S. 2/15/10
Comments: <u>L19</u>	ht Appricott on 5%	ARCH @ 4 DAYS, GREY AND STreeth
ON	Egg Yolt	
	11	2/12 8
Gram Morph.	240	Tubes 48.h Z day
Gram Test	48h	KIA <u>E/NC E/K</u> H2S Shalt H2S Shaht H2S
Motility Wet Prep	POS SM Rod	series - per 22
Motility Deep	pos pos	Pseudo P <u>Nec</u> <u>Nec</u>
Oxidase	POS	Pseudo F <u>Neb</u> Neb
Catalase	STRONG POS	NO <sup>3</sup> reduced $POS_$
PLATES	48 h Zday	Gas from NO <sub>3</sub> <u>Pos</u> <u>Pos</u>
Odor	NONE	NO <sub>2</sub> reduced $Pos$ $Pos$ $Pos$ $Pos$
Pigment on swab	Elegh	
Pigment on BAP	GREY	OF Fructose $\frac{\beta Lue}{\alpha RN} = \frac{\beta Lue}{GR(N)}$
Morphology on BAP	SUNDOTH	OF Dextrose $\underline{GRN}$ $\underline{GRN}$ $\underline{GRN}$ OF Lactose $\underline{BLue}$ $\underline{BLue}$
Beta hemolysis	New	OF Maltose Blue Blue
Growth on Mac	POS POS LAVENDE	$\begin{array}{c c} \text{OF Mannitol} & \underline{\textbf{P}} \\ \hline \text{OF Xylose} & \underline{\textbf{Y}} \\ \hline \textbf{e} \\ \hline \end{array} \\ \begin{array}{c} \textbf{F} \\ \textbf{Y} \\ \textbf{e} \\ \hline \end{array} \\ \begin{array}{c} \textbf{F} \\ \textbf{Y} \\ \textbf{e} \\ \hline \end{array} \\ \begin{array}{c} \textbf{F} \\ $
DNase hydrolysis	NeG NeG	OF Sucrose <u>yel</u> <u>yel</u> OF Sucrose <u>Blue</u> <u>Blue</u>
Starch hydrolysis	Nec- Nec	
Lecithinase	NEG NEG	Arginine <u>Nec</u> Lysine i l
Lipase	NEG NEG	Ornithine
Rapid PYR	Pas	Base Control $\underline{\qquad} \underline{\qquad} \underline{\qquad} \underline{\qquad} \underline{\qquad} \underline{\qquad} \underline{\qquad} \underline{\qquad} $
Rapid LAP	Pos	Acetamide $\omega + \omega +$
Rapid ESC	Nela	Esculin New New
Sensitivity to:		Gelatin Nelo- Indele Nelo-
Penicillin (10 U)	RR	Malonate NEG NEG
Vancomycin (30 ug)	RR	PAD NEG - PINK OUTLINE Urea NG62 h NRG NRG ON SCANE
Colistin (10 mcg)	5-11 9	Urea $NC62$ h <u>NC6-</u> <u>NC6-</u> ON $SCANO$ 6.5% NaCL POS POS
Polymyxin B (300 U)		10% Lactose Nea Nea
2 0. j m j / m D (000 0)	·	ONPG NEG NEG
		Growth $42^{\circ}$ $\rho a s$ $\rho o s$

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 49: Achromobacter xylosoxidans isolate 38-of-64.

Final Identification:

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4-1-09 Achromobecter XyLosoxidans P.S. 4/15/09

Comments:

					11/2/2	
Gram Morph.		Х. <u>н</u>	Tubes	<u>48 h</u>	4  13/09 <u>7 day</u>	
Gram Test	24h	0 - 01 C	KIA	ENC	<u>_K/K</u>	_
Motility Wet Prep	pos - sh	ery metile	$H_2S$	SLight Hz.	5_ SCIENT Ite ?	>
Motility Deep	POS	Possin	Pseudo P	Neb	Nec	
Oxidase	Pos		Pseudo F	New	NEG	
Catalase	STRONG	- Pos	NO <sub>3</sub> reduced		POS	
PLATES	<u>48 h</u>	7 day	Gas from NO <sub>3</sub>	POS	POS	
Odor	NONC		$NO_2$ reduced Gas from $NO_2$	POG	Pos	
Pigment on swab	flesh	1 - 1 - 11 10 - 10 - 10 - 10 - 10		~		
Pigment on BAP	GRET		OF Fructose OF Dextrose	BLUE YEL	BLUE GRN	
Morphology on BAP	Smooth		OF Lactose	*	Ce ICIV	
Beta hemolysis	Neb		OF Maltose OF Mannitol	BLUE	Bue	
Growth on Mac	POS	POS	OF Wallinton OF Xylose	BLUE Xel	BLUE YEL	
DNase hydrolysis	Nel	NEG	OF Sucrose	Buce	Blue	
Starch hydrolysis	Neb	Nelo	Arginine	NeG	Nela	
Lecithinase	Nea	NeG	Lysine			
Lipase	Nel	Nele	Ornithine Base Control			
Rapid PYR		LIGHT PINK	Dase Control		¥	
Rapid LAP	POS	V	Acetamide	Pos!	POS	
Rapid ESC	Neb		Esculin Gelatin	Nec	Nelo	
Sensitivity to:	0	0	Indole		NEG	
Penicillin (10 U)	$R_{-}$	K	Malonate PAD	NeG	RED RING	AL
Vancomycin (30 ug)	R	<u> </u>	PAD Urea Nuc2 h	NeG-	- <u>RED RING</u> NEG AGI	
Colistin (10 mcg)	SAR	<u> </u>	6.5% NaCL	W-t	POS!	, -
Polymyxin B (300 U)	5-13	<u> </u>	10% Lactose ONPG	NEG	New	
			Growth 42 <sup>°</sup>	POS	Pos	

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 50: Achromobacter xylosoxidans isolate 39-of-64.

# 4 GENUS ACIDOVORAX4.1 Acidovorax delafieldii

Over the course of ASHEX clinical-isolate collection, one individual isolate of Acidovorax delafieldii was analyzed. The associated biochemical result form is NOT presented here.

Test	+	_	Raw%	<b>W95</b> %	Test	+	_	Raw%	W95%
Motility	1	0	100.00	60.33	$H_2S$	0	1	0.00	39.67
Oxidase	1	0	100.00	60.33	Pseudo P	0	1	0.00	39.67
Catalase	0	1	0.00	39.67	Pseudo F	0	1	0.00	39.67
Yellow Pigment	1	0	100.00	60.33	NO <sub>3</sub> Reduced	1	0	100.00	60.33
Pink Pigment	0	1	0.00	39.67	Gas from NO <sub>3</sub>	0	1	0.00	39.67
Beta Hemolysis	0	1	0.00	39.67	NO <sub>2</sub> Reduced	0	1	0.00	39.67
Growth on Mac	0	1	0.00	39.67	Gas from $NO_2$	0	1	0.00	39.67
DNase	0	1	0.00	39.67	OF Fructose	1	0	100.00	60.33
Starch	0	1	0.00	39.67	OF Dextrose	1	0	100.00	60.33
Lecithinase	0	1	0.00	39.67	OF Lactose	0	1	0.00	39.67
Lipase	1	0	100.00	60.33	OF Maltose	0	1	0.00	39.67
PYR	1	0	100.00	60.33	OF Mannitol	1	0	100.00	60.33
LAP	1	0	100.00	60.33	OF Xylose	1	0	100.00	60.33
ESC Spot Test	0	1	0.00	39.67	OF Sucrose	0	1	0.00	39.67
Penicillin (10U)	0	1	0.00	39.67	Arginine	1	0	100.00	60.33
Vancomycin (30µg)	0	1	0.00	39.67	Lysine	0	1	0.00	39.67
Colistin $(10\mu g)$	1	0	100.00	60.33	Ornithine	0	1	0.00	39.67
Polymyxin B (300U)	1	0	100.00	60.33	Acetamide	0	1	0.00	39.67
					Esculin	0	1	0.00	39.67
					Gelatin	0	1	0.00	39.67
					Indole	0	1	0.00	39.67
					Malonate	1	0	100.00	60.33
					PAD	0	1	0.00	39.67
					Urea 2 hrs.	0	0	50.00	50.00
					Urea 48 hrs.	1	0	100.00	60.33
					6.5% NaCl	0	1	0.00	39.67
					10% Lactose	0	1	0.00	39.67
					ONPG	0	1	0.00	39.67
					Growth 42°C	0	1	0.00	39.67

Table 5: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as  $n_+/(n_+ + n_-)$ , where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which shifts raw percentages towards 50% with a strength dependent on the total number of test occurrences. The four antibiotic tests at the bottom of Column 1 are sensitivity tests where a positive result indicates sensitivity to the drug.

#### 4.2 Acidovorax oryzae

Over the course of ASHEX clinical-isolate collection, one individual isolate of Acidovorax oryzae was analyzed. The associated biochemical result form is presented here.

Test	+	_	Raw%	<b>W95</b> %	Test	+	_	Raw%	<b>W95</b> %
Motility	0	1	0.00	39.67	$H_2S$	0	1	0.00	39.67
Oxidase	1	0	100.00	60.33	Pseudo P	0	1	0.00	39.67
Catalase	1	0	100.00	60.33	Pseudo F	0	1	0.00	39.67
Yellow Pigment	1	0	100.00	60.33	NO <sub>3</sub> Reduced	1	0	100.00	60.33
Pink Pigment	0	1	0.00	39.67	Gas from $NO_3$	0	1	0.00	39.67
Beta Hemolysis	0	1	0.00	39.67	$NO_2$ Reduced	0	1	0.00	39.67
Growth on Mac	1	0	100.00	60.33	Gas from $NO_2$	0	1	0.00	39.67
DNase	0	1	0.00	39.67	OF Fructose	1	0	100.00	60.33
Starch	0	1	0.00	39.67	OF Dextrose	0	1	0.00	39.67
Lecithinase	0	1	0.00	39.67	OF Lactose	0	1	0.00	39.67
Lipase	0	1	0.00	39.67	OF Maltose	0	1	0.00	39.67
PYR	1	0	100.00	60.33	OF Mannitol	1	0	100.00	60.33
LAP	1	0	100.00	60.33	OF Xylose	1	0	100.00	60.33
ESC Spot Test	0	1	0.00	39.67	OF Sucrose	0	1	0.00	39.67
Penicillin (10U)	0	1	0.00	39.67	Arginine	0	1	0.00	39.67
Vancomycin $(30\mu g)$	0	1	0.00	39.67	Lysine	0	1	0.00	39.67
Colistin $(10\mu g)$	0	1	0.00	39.67	Ornithine	0	1	0.00	39.67
Polymyxin B (300U)	1	0	100.00	60.33	Acetamide	0	1	0.00	39.67
					Esculin	0	1	0.00	39.67
					Gelatin	0	1	0.00	39.67
					Indole	0	1	0.00	39.67
					Malonate	1	0	100.00	60.33
					PAD	0	1	0.00	39.67
					Urea 2 hrs.	0	0	50.00	50.00
					Urea 48 hrs.	1	0	100.00	60.33
					6.5% NaCl	0	1	0.00	39.67
					10% Lactose	0	1	0.00	39.67
					ONPG	0	1	0.00	39.67
					Growth 42°C	1	0	100.00	60.33

Table 6: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as  $n_+/(n_+ + n_-)$ , where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which shifts raw percentages towards 50% with a strength dependent on the total number of test occurrences. The four antibiotic tests at the bottom of Column 1 are sensitivity tests where a positive result indicates sensitivity to the drug.

Final Identification:

Fulsolis Acidovorax oryzae

	Comments: Conve	armed by Quest	163 8/3/15 P.E.
	Maldi-	Acido Voray 1.6	Minosca: 993 A. Inoffic
	Gram Morph. Gram Test Motility Wet Prep		$\begin{array}{cccc}  & 7 & 7 \\ \hline \underline{\text{Tubes}} & \underline{48 \text{ h}} & \underline{7/ \text{ day}} \\ \hline KIA & \underline{K/kc} & \underline{k/k} \\ \hline H_2S & \underline{Ng} & \underline{Ng} \\ \end{array}$
	Motility Deep Oxidase	Neg / Son Pos	Pseudo P <u>N</u> <u>Neg</u> r Pseudo F <u>N</u> <u>Neg</u> r
	Catalase <u>PLATES</u> Odor Pigment on swab	<u>Pos</u> <u>48 h</u> 10 <u>7 dav</u> <u>Pos Slight</u>	NO <sub>3</sub> reduced $X$ fed $Pos$ $V$ Gas from NO <sub>3</sub> $Neq$ $Neq$ $V$ NO <sub>2</sub> reduced $X$ fud $Neq$ $V$ Gas from NO <sub>2</sub> $Neq$ $Neq$
	Pigment on SWAB Pigment on BAP Morphology on BAP Beta hemolysis Growth on Mac DNase hydrolysis	<u>yellow</u> <u>akgold</u> <u>yel-gray</u> <u>yel-gray</u> <u>rdwet</u> <u>rundwet</u> <u>Neg</u> <u>Neg</u> <u>fos</u> <u>fos</u> <u>Neg</u> <u>Neg</u>	OF Fructose $\frac{ye}{Gv} + \frac{ye}{Gv} + \frac{ge}{Gv} + ge$
	Starch hydrolysis Lecithinase Lipase Rapid PYR	Neg Neg w+2 Neg Neg Neg ? Neg Neg ? Neg Neg ?	Arginine $N$ $N eq_{-}$ Lysine $N$ $N eq_{-}$ Ornithine $N$ $N eq_{-}$ Base Control $N$ $N eq_{-}$
	Rapid LAP Rapid ESC <u>Sensitivity to:</u>	Pos growth st	Acetamide <u>N Neg</u> Esculin <u>N Neg</u> Gelatin <u>N Neg</u> Indole <u>X Neg</u>
8.8 zvekt growiy reside zve	Penicillin (10 U) Vancomycin (30 ug) Colistin (10 mcg) Polymyxin B (300 U)		Malonate <u>Perc</u> + <u>POS</u> PAD <u>New</u> X Urea <u>Na</u> 2 h <u>POS slave</u> <u>POS</u> 6.5% NaCL <u>New</u> <u>New</u> V 10% Lactose <u>New</u> <u>New</u> V ONPG <u>New</u> <u>New</u> V + Growth 42° TSA <u>POS</u> <u>POS</u>

\_\_\_\_\_

Note: All biochemical tests (except where noted) are incubated at 30°C and read after 48 hrs. incubation and again at 7 days.

Figure 51: Acidovorax oryzae isolate 1-of-1.

#### 4.3 Acidovorax temperans

Over the course of ASHEX clinical-isolate collection, one individual isolate of Acidovorax temperans was analyzed. The associated biochemical result form is presented here.

Test	+	_	Raw%	<b>W95</b> %	Test	+	_	Raw%	W95%
Motility	1	0	100.00	60.33	$H_2S$	0	1	0.00	39.67
Oxidase	1	0	100.00	60.33	Pseudo P	0	1	0.00	39.67
Catalase	1	0	100.00	60.33	Pseudo F	0	1	0.00	39.67
Yellow Pigment	0	1	0.00	39.67	NO <sub>3</sub> Reduced	1	0	100.00	60.33
Pink Pigment	0	1	0.00	39.67	Gas from $NO_3$	0	1	0.00	39.67
Beta Hemolysis	0	1	0.00	39.67	NO <sub>2</sub> Reduced	1	0	100.00	60.33
Growth on Mac	0	1	0.00	39.67	Gas from $NO_2$	1	0	100.00	60.33
DNase	0	1	0.00	39.67	OF Fructose	1	0	100.00	60.33
Starch	0	1	0.00	39.67	OF Dextrose	1	0	100.00	60.33
Lecithinase	0	1	0.00	39.67	OF Lactose	0	1	0.00	39.67
Lipase	0	1	0.00	39.67	OF Maltose	0	1	0.00	39.67
PYR	1	0	100.00	60.33	OF Mannitol	0	1	0.00	39.67
LAP	1	0	100.00	60.33	OF Xylose	0	1	0.00	39.67
ESC Spot Test	0	1	0.00	39.67	OF Sucrose	0	1	0.00	39.67
Penicillin (10U)	1	0	100.00	60.33	Arginine	0	1	0.00	39.67
Vancomycin $(30\mu g)$	0	1	0.00	39.67	Lysine	0	1	0.00	39.67
Colistin $(10\mu g)$	1	0	100.00	60.33	Ornithine	0	1	0.00	39.67
Polymyxin B (300U)	1	0	100.00	60.33	Acetamide	0	1	0.00	39.67
					Esculin	0	1	0.00	39.67
					Gelatin	0	1	0.00	39.67
					Indole	0	1	0.00	39.67
					Malonate	0	1	0.00	39.67
					PAD	0	1	0.00	39.67
					Urea 2 hrs.	0	1	0.00	39.67
					Urea 48 hrs.	1	0	100.00	60.33
					6.5% NaCl	0	1	0.00	39.67
					10% Lactose	0	1	0.00	39.67
					ONPG	0	1	0.00	39.67
					Growth 42°C	1	0	100.00	60.33

Table 7: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as  $n_+/(n_+ + n_-)$ , where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which shifts raw percentages towards 50% with a strength dependent on the total number of test occurrences. The four antibiotic tests at the bottom of Column 1 are sensitivity tests where a positive result indicates sensitivity to the drug.

$\frown$	Reference Bacterial	Identification - 1	Nonfermenting	Gram-Negative R	lods	# Z	2
	Reference No./Name	: H	NES	Acidova	RANS	temped	2AAS
	Date Inoculated:	- erf	10/06	2-17-06	Reset	/	<u></u>
	Final Identification:	Best fi	+ Pseud	to MONAS	Pseud	OALCAL	tyenes
	Comments:	tests A	AAINST:	MAC GROW	ith (93)	Per sen	<u>s (14)</u>
	Cor	FIRMED	BY CDC	AS Acido		P.S. 31	
	Gram Morph.	GNLG	concerne)	Temper. Tubes	72 48 h	<b>2</b> -24-0 7 day,	6
	Gram Test	0	4h //	KIA	EINC	KIK	
	Motility Wet Prep	NCG ve	by motile	$-H_2S$	New	Neo	
+	Motility Deep	P05-72h	Pez	<ul> <li>Pseudo P</li> <li>Pseudo F</li> </ul>	Neb	NEG	Repeat
+	Oxidase –Catalase	POSV		- ¥ NO₃ reduced		POS	POS (ZINE)
24h	PLATES		day 7	- Gas from NO <sub>3</sub>	New	NEG	New
Nowe		Stinky-GU	723AGe +	$- \neq NO_2$ reduced $- \neq Gas$ from $NO_2$	pos!	pos	POS REPEAT
-166	Pigment on swab Pigment on BAP	GRE-1		✤ OF Fructose	Yel	Yea/Gan	yer yerlown
Smooth	Morphology on BAF		+	$\star$ OF Dextrose — OF Lactose	YeL BLUE	BLUE	YEL YEL/BAN BLUE BLUE
SMEARS	Beta hemolysis	Neo		-OF Maltose OF Mannitol	BLUE	Yedraw	BLUE BLUE
_	Growth on Mac	1Nhibited	INh.b.ted	OF Xylose	YEEBU	Bille	Blue Blue Blue Blue
_	DNase hydrolysis Starch hydrolysis	NR6	INh.b.tool	-OF Sucrose	-telbuu	Brue	
_	Lecithinase	Neb	NEG	-Arginine Lysine	Nelo-	Nec	termented
_		Velopes	Neb	- Ornithine Base Control		$\overline{A}$	
+	Rapid PYR		weak				
7	–Rapid LAP –Rapid ESC	V POS VNEG		<ul> <li>Acetamide</li> <li>Esculin</li> </ul>	New	New	
	Sensitivity to:	V IVCO		-Gelatin -Indole	New	NeG-	, rec
+	Penicillin (10 U)	5 # 18	$\rightarrow 5$	- Malonate - PAD	NEG	New	
+	) Vancomycin (30 ug Colistin (10 mcg)	s) <u>R</u> SE-13	C-telent	$-$ Urea $N^{\ell}62$ h	NEG	P05-50	
-+	Polymyxin B (300		-55		Nº6	Nea	
	MT420 Popues			ONPG 	V POS	Neg	

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}C$  and read after 48 hrs. incubation and again at 7 days.

Figure 52: Acidovorax temperans isolate 1-of-1.

## 5 GENUS ACINETOBACTER

### 5.1 Acinetobacter baumannii complex

Over the course of ASHEX clinical-isolate collection, 24 individual isolates of Acinetobacter baumannii complex were analyzed. Eight of the 24 recorded results are pictured in this subsection.

Test	+	_	Raw%	<b>W95</b> %	Test	+	_	Raw%	<b>W95</b> %
Motility	0	24	0.00	6.90	H <sub>2</sub> S	0	24	0.00	6.90
Oxidase	0	24	0.00	6.90	Pseudo P	0	24	0.00	6.90
Catalase	24	0	100.00	93.10	Pseudo F	0	24	0.00	6.90
Yellow Pigment	0	24	0.00	6.90	NO <sub>3</sub> Reduced	1	23	4.17	10.49
Pink Pigment	0	24	0.00	6.90	Gas from $NO_3$	0	11	0.00	12.94
Beta Hemolysis	0	9	0.00	14.96	NO <sub>2</sub> Reduced	0	24	0.00	6.90
Growth on Mac	24	0	100.00	93.10	Gas from $NO_2$	0	11	0.00	12.94
DNase	0	24	0.00	6.90	OF Fructose	0	24	0.00	6.90
Starch	0	24	0.00	6.90	OF Dextrose	23	1	95.83	89.51
Lecithinase	0	8	0.00	16.22	OF Lactose	23	1	95.83	89.51
Lipase	3	8	27.27	33.16	OF Maltose	9	15	37.50	39.22
PYR	1	9	10.00	21.10	OF Mannitol	2	22	8.33	14.08
LAP	10	0	100.00	86.12	OF Xylose	22	1	95.65	89.12
ESC Spot Test	0	10	0.00	13.88	OF Sucrose	0	11	0.00	12.94
Penicillin (10U)	1	23	4.17	10.49	Arginine	0	24	0.00	6.90
Vancomycin $(30\mu g)$	1	23	4.17	10.49	Lysine	0	24	0.00	6.90
Colistin $(10\mu g)$	24	0	100.00	93.10	Ornithine	0	24	0.00	6.90
Polymyxin B (300U)	11	0	100.00	87.06	Acetamide	4	20	16.67	21.27
					Esculin	0	24	0.00	6.90
					Gelatin	0	24	0.00	6.90
					Indole	0	24	0.00	6.90
					Malonate	11	11	50.00	50.00
					PAD	3	21	12.50	17.67
					Urea 2 hrs.	0	24	0.00	6.90
					Urea 48 hrs.	5	19	20.83	24.86
					6.5% NaCl	4	20	16.67	21.27
					10% Lactose	18	1	94.74	87.21
					ONPG	0	11	0.00	12.94
					Growth $42^{\circ}C$	22	2	91.67	85.92

Table 8: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as  $n_+/(n_+ + n_-)$ , where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which shifts raw percentages towards 50% with a strength dependent on the total number of test occurrences. The four antibiotic tests at the bottom of Column 1 are sensitivity tests where a positive result indicates sensitivity to the drug.

Final Identification:

1-16-08 1-16-08 Acinetobacter baumannii 1/24/08 P.S.

Comments:

					1/24/08
Gram Morph.			Tubes	<u>48 h</u>	<u>7 day</u>
Gram Test	24h		KIA H <sub>2</sub> S	NEW	<u>K/NC</u> NEG
Motility Wet Prep	NCG C	occi-clusters	1125	Net	
Motility Deep	NeG	New	Pseudo P	NeG	NEG
Oxidase	New		Pseudo F	Nel	NCO
Catalase	STRONG	Pos!	NO <sub>3</sub> reduced		Nea
PLATES	48 h	7 day	Gas from NO <sub>3</sub>	Nel	Nela
Odor	NONE		$NO_2$ reduced Gas from $NO_2$	NEG	NEG
Pigment on swab	white			NEG	NUC
Pigment on BAP	Light GR	e/	OF Fructose	BLUE	BLUE
Morphology on BAP	Dall GRO	END GLAES	OF Dextrose OF Lactose	<u>Yel</u> Yel	Yel Yel
Beta hemolysis	APDEARANCE	- CAKES UP	OF Maltose	BLUE	Yec/GRN
Growth on Mac	-	ht Parpe e	OF Mannitol	Brue	Biae
DNase hydrolysis	NEG	Nels	OF Xylose OF Sucrose	YEL BLUC	Yel Blue
Starch hydrolysis	NeG	New			
Lecithinase		NeG	Arginine	Nela	Nea
		Nela	Lysine Ornithine		
Lipase		Nelo	Base Control		V
Rapid PYR	Neb		A	1000	
Rapid LAP	Pos		Acetamide Esculin	NEG	Neb-
Rapid ESC	NEG		Gelatin	Nele	NEG
Sensitivity to:	P	Ø	Indole	Dec	Neco
Penicillin (10 U)	<u></u>	<u> </u>	Malonate PAD	POS	POS
Vancomycin (30 ug)	K	<u></u>	UreaNlan2 h	New	NEG
Colistin (10 mcg)	5'-11	<u></u>	6.5% NaCL	Neg	NeG
Polymyxin B (300 U	D <u>5-12</u>	5	10% Lactose ONPG	POS	POS
			Growth 42 <sup>°</sup>	POS	POS

Note: All biochemical tests (except where noted) are incubated at 30°C and read after 48 hrs. incubation and again at 7 days.

Figure 53: Acinetobacter baumannii complex isolate 1-of-24.

Final Identification:

H-16-08 Acinetobreter baemannii P.S. 5/4/08

Comments:

					5/9/08	
Gram Morph.	GRAM NEG	DIPLOCOCCU	Tubes	$\frac{48 \text{ h}}{44 \text{ h}}$	7 day	
Gram Test	48h		KIA H2S SA	NCINC	KIR	
Motility Wet Prep	Nela -	Cocc i	II <sub>2</sub> 5 54	1907 1722	<u>Slight Has</u>	
Motility Deep	? ?	Ne6	Pseudo P	NEG	Nec	
Oxidase	Neb		Pseudo F	NEG	NEG	
Catalase	STRONG	Pos	NO <sub>3</sub> reduced		Neb	
<b>PLATES</b>	<u>48 h</u>	<u>7 day</u>	Gas from NO <sub>3</sub>	Nela	NEG	
Odor	None		$NO_2$ reduced Gas from $NO_2$	Nela	Nela	
Pigment on swab	white				New	
Pigment on BAP	white		OF Fructose OF Dextrose	BLUE	Yel	
Morphology on BAP	Smooth-C	READY	OF Lactose	Yel	Yel	
Beta hemolysis	NEG		OF Maltose	BLUE	Yel/GRN	
Growth on Mac	POS-Lig	ant PINK - Pos	ØF Mannitol ØF Xylose	BLUE Yel	Yel	
DNase hydrolysis	Neb	NEG	OF Sucrose	BLUE	BLUE	
Starch hydrolysis	NEG	Neo		1601		
Lecithinase	Nela	NEG	Arginine Lysine	New	NeG	
Lipase	NEG	NeG	Ornithine			
Rapid PYR	Nela		Base Control	$\checkmark$		
Rapid LAP	POS!		Acetamide	NRG	NEG-	
Rapid ESC	Nela		Esculin	New	NeG	
Sensitivity to:			Gelatin Indole	Nelo	NEG	
Penicillin (10 U)	R	R	Malonate	POS	POS	
Vancomycin (30 ug)	R	R	PAD	NEG		
Colistin (10 mcg)	5-11	S	Urea <i>Vl@</i> _2 h 6.5% NaCL	Neg	Neg	
Polymyxin B (300 U)	- 0	Ś	10% Lactose	POS	Pos	
,,			ONPG	Nela	NEG	
			Growth 42 <sup>°</sup>	10)	107	

Note: All biochemical tests (except where noted) are incubated at 30°C and read after 48 hrs. incubation and again at 7 days.

Figure 54: Acinetobacter baumannii complex isolate 2-of-24.

Date Inoculated:

Final Identification: Acimetobacter baumANNII

8-31-09

Comments:

CREAM COLOR ON STARCH & EGG @ 11 DAYS

P.5 9/10/09

		5 · · ·		9/2	9/10
Gram Morph.			Tubes	<u>48 h</u>	<u>7 day</u>
Gram Test	24h		KIA H <sub>2</sub> S	Yel/NC	KINC SLIGHT H2S
Motility Wet Prep	NEG Ce	cci, single OAIRS clusters		_ n c le	scight 12-
Motility Deep	Nel	NeG	Pseudo P	NEG	NeG
Oxidase	NeG	1. ALC	Pseudo F	Nela	Nel
Catalase	STRONG	POS	NO <sub>3</sub> reduced		Nea
<b>PLATES</b>	<u>48 h</u>	7 day	Gas from NO <sub>3</sub>	NeG	Nel
Odor	NONE		$NO_2$ reduced Gas from $NO_2$	NeG	New
Pigment on swab	CREAM		-	0	
Pigment on BAP	GRE-1		OF Fructose OF Dextrose	Blac	BLUR YEL AD
Morphology on BAP	Smooth El	STIRE STICKY	OF Lactose	YEL	Yel D
Beta hemolysis	Neb	DARK	OF Maltose	Acue	6RN/YEL E
Growth on Mac	Pas	POS PURPLE DARK	OF Mannitol OF Xylose	Beal YeL	yel P
DNase hydrolysis	Nela	Nel Blue	OF Sucrose	BLUE	Blue
Starch hydrolysis	Nele	Ne6		0/01-	Neb
Lecithinase	NEG	Nele	Arginine Lysine	New	Nea
Lipase	NEG	NEG	Ornithine		
Rapid PYR	NeG		Base Control		
Rapid LAP	Pos !!		Acetamide	Nela	Nela
Rapid ESC	NeG		Esculin Gelatin	New	Neg
Sensitivity to:			Indole	WEG	NEG
Penicillin (10 U)	R	$R_{-}$	Malonate	Nelo	POS
Vancomycin (30 ug)	R	R	PAD Urea <i>Nele</i> 2 h	Nela	Nela
Colistin (10 mcg)	5	5-11	6.5% NaCL	NEG	NEG
Polymyxin B (300 U)	9	5-11	10% Lactose	Pos	POS
			ONPG Growth 42 <sup>0</sup>	Nelo	POS

Note: All biochemical tests (except where noted) are incubated at 30°C and read after 48 hrs. incubation and again at 7 days.

Figure 55: Acinetobacter baumannii complex isolate 3-of-24.

Date Inoculated:

Final Identification:

9-22-09 Acinetobacter bare MANNii 10/6/08 P.S.

Comments:

				24	10/6
Gram Morph.			Tubes	48 h	7 day
Gram Test	24h		KIA H2S	Y/NC NEG	Y/NC New
Motility Wet Prep	Nele C	occobacilli'	H25	1186	
Motility Deep	Nelo	Neb	Pseudo P	Nele	Nele
Oxidase	NeG-		Pseudo F	New	Nel
Catalase	STRONG	Pos	NO <sub>3</sub> reduced		Nec
PLATES 24	<u>48 h</u>	7 day	Gas from NO <sub>3</sub>	NEG	Nela
Odor	URINE od	OR	NO <sub>2</sub> reduced Gas from NO <sub>2</sub>	Nela	Nela
Pigment on swab	Buff				
Pigment on BAP	LIGHT GRE	7	OF Fructose OF Dextrose	BLUR Yel	<u>Blal</u> Yel @
Morphology on BAP	Smoeth To	RANGLUCEN K	OF Lactose	Yel	Yer B
Beta hemolysis	Neb	BRIGHT	OF Maltose	BLUE	yel &
Growth on Mac	POS	POS PURPLE	OF Mannitol OF Xylose	<u>BLUC</u> YEL	yer to
DNase hydrolysis	Nel	Neb	OF Sucrose	Bue	Blue
Starch hydrolysis	Neb	NEG	Arginine	NEG	NICG
Lecithinase	NEG	NEL	Lysine	New	
Lipase	POS	POS	Ornithine		
Rapid PYR	Nelo	·	Base Control		
Rapid LAP	pos!		Acetamide	POS!	Pos!
Rapid ESC	Nela		Esculin Gelatin	NEG	Nelo
Sensitivity to:		~	Indole	1100	Nelo
Penicillin (10 U)			Malonate PAD	NEG	Nea
Vancomycin (30 ug)	R	$\underline{R}$	Urea <u>N</u> <sup>ll</sup> <sup>2</sup> h	NCG Nelo	Pos
Colistin (10 mcg)	9-10	5-10	6.5% NaCL	Nela	NEG
Polymyxin B (300 U)	5-11	5-11	10% Lactose ONPG	POS	POS NEG
			Growth 42 <sup>°</sup>	SLight & Row	the second of
				/ /	

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 56: Acinetobacter baumannii complex isolate 4-of-24.

Date Inoculated: Final Identification:

12-11-09 Acinetobactes baurinarii 12/17/09 P.S.

Comments:

Gram Morph.			Tubes	$\frac{12}{14}$	$\frac{12}{2}$ 2 7 day
Gram Test	24 h		KIA	NC/NC	Elle
Motility Wet Prep	Nele-C	an and	H2S	NEL	Slight #25
	Nela	NEU	Pseudo P	Nec	NEQ
Motility Deep Oxidase		NW	Pseudo F	NEG	Nela
	Nela				
Catalase	Pos		NO <sub>3</sub> reduced Gas from NO	3 NeG	Nela
PLATES	48 h	7_day	NO <sub>2</sub> reduced	,	NEG
Odor	urive		Gas from NO	2 New	NeG
Pigment on swab	CREAM		- OF Fructose	Buce	Buce
Pigment on BAP	whitish		+ OF Dextrose	Yel	Yel
Morphology on BAP	Grooth		+ OF Lactose	Yel	Yel
Beta hemolysis	NEG		+ OF Maltose — OF Mannitol	BLOC	Bine
Growth on Mac	263	pos	+ OF Xylose	Yel	Yel
DNase hydrolysis	Nele	NCG	-OF Sucrose	BLUE	Buce
Starch hydrolysis	NEG	Nelo	Arginine	NEG	NCG
Lecithinase	NCL	NEG	Lysine		
Lipase	Nele	NCG	Ornithine Base Control		
Rapid PYR	Nela		Base Control		<del>\</del>
Rapid LAP	Pos		Acetamide	NeG	Nec
Rapid ESC	NEG		Esculin Gelatin	Neu	New
Sensitivity to:			Indole	Neo	NCG .
Penicillin (10 U)	$R_{-}$	R	+ Malonate	BLUE	BLUE
Vancomycin (30 ug)	R	R	PAD Urea <u>№C6</u> 2 h	NEG	POS SCANT &
Colistin (10 mcg)	5-11	9	6.5% NaCL	NCG	P05
Polymyxin B (300 U)	5-12	S	10% Lactose	Pos	Pos
			ONPG Growth 42 <sup>°</sup>	NeG Pog	Ne6 Pos
			Growul +2		

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 57: Acinetobacter baumannii complex isolate 5-of-24.

Date Inoculated:	7-19-10	
Final Identification:	Acinete bacter bAUMANNI!	
	trevely Sticky	

Gram Morph.		Tubes	48 h	<u>7 day</u>
Gram Test	24h	KIA	NCINC	
Motility Wet Prep	Neg-cb	$H_2S$	NEG	
Motility Deep	NEG	Pseudo P	NCG	
Oxidase	Nelo	Pseudo F	Nela	
Catalase	STRONG POS	NO <sub>3</sub> reduced		
PLATES	<u>48 h 7 day</u>	Gas from NO3	TINY BURG	le
Odor	NONE	NO <sub>2</sub> reduced		/
		Gas from NO <sub>2</sub>	Neb	
Pigment on swab	<u>CREAT</u>	OF Fructose	GRN	NEG.
Pigment on BAP	GREY	OF Dextrose	YEL	Ð
Morphology on BAPS	TICKY-FORMS STRING	OF Lactose	Yel	G
Beta hemolysis	Nea	OF Maltose	Buel	
Growth on Mac	Pos	OF Mannitol	Bue	
	NEG	OF Xylose OF Sucrose	Yel Rouge	Đ
DNase hydrolysis		OF Sucrose	Blue	
Starch hydrolysis	NEG	Arginine	Nea	
Lecithinase	Neb	Lysine	1	
Lipase	NCG	Ornithine		
Rapid PYR	NeG	Base Control		
Rapid LAP	POS!	Acetamide	New	
Rapid ESC	NEG	Esculin	NCG	
Sensitivity to:		Gelatin Indole	NEG	
•	R	Malonate	POS	
Penicillin (10 U)		PAD	Nela	
Vancomycin (30 ug)		Urea NG62 h	NCG	
Colistin (10 mcg)	5-10	6.5% NaCL	NEG	
Polymyxin B (300 U)	5-12	10% Lactose	POS	
	-	ONPG Growth 42 <sup>0</sup>	POS	
		Growth 42	105	

Figure 58: Acinetobacter baumannii complex isolate 6-of-24.

Date Inoculated:

Final Identification:

10-18-08 Acinetobader baumannii P.S. 10/31/08

Comments:

		******	10/20	10/31 23 DAXS
Gram Morph.		Tubes	<u>48 h</u>	<u>7 day</u>
Gram Test	4 DAYS 2 DAYS	KIA	ANC	EK
Motility Wet Prep	Nel Nel-Cour	H <sub>2</sub> S	NEG	Nela
Motility Deep	NCG	Pseudo P	Nea	Neca
Oxidase	Ne6 Ne6	Pseudo F	New	Neb
Catalase	StRONG DOS	NO <sub>3</sub> reduced		NCG
PLATES	<u>48 h</u> <u>7 day</u>	Gas from NO <sub>3</sub>	New	NEG
Odor Al	MALCAGE	$NO_2$ reduced Gas from $NO_2$	NEG	NEG
Pigment on swab	BUFF	-		Runa
Pigment on BAP	Light GRey	OF Fructose OF Dextrose	BLUE YEL	<u>BLUE</u> YEL
Morphology on BAP	Smooth ShiNNY	OF Lactose	Brue	Yel
Beta hemolysis	Neb	OF Maltose	BLUE	Bue
Growth on Mac	Pos Pos	OF Mannitol OF Xylose	BLUE Yel	<u>BLUE</u> YEL
DNase hydrolysis	Nele Nel	OF Sucrose	BLUE	Brue
Starch hydrolysis	New Neb-	Arginine	NeG	NEG
Lecithinase	Ne6 Ne6	Lysine		
Lipase	Neb Neb	Ornithine Base Control	-	
Rapid PYR	NeG	Base Control	<u></u>	<del>y</del>
Rapid LAP	POS!	Acetamide	Nec	Neb
Rapid ESC	NEG	Esculin Gelatin	NEG	NEG
Sensitivity to:		Indole		Neb
Penicillin (10 U)	<u>R</u> <u>R</u>	Malonate	BLUC-TO. NECO	P <u>Bue</u> -Dos
Vancomycin (30 ug)	RR	PAD Urea <i>M</i> 6-2 h	NEG	Nels
Colistin (10 mcg)	5-10 5	6.5% NaCL	Ne 6-	NEG
Polymyxin B (300 U	<u><u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u></u></u>	10% Lactose ONPG	Pos!	Nels
		Growth 42 <sup>°</sup>	Pos	POS

Note: All biochemical tests (except where noted) are incubated at 30<sup>o</sup>C and read after 48 hrs. incubation and again at 7 days.

Figure 59: Acinetobacter baumannii complex isolate 7-of-24.

Date Inoculated: 3-30-11 Final Identification: ACINETOBACTEL BACEMANNII 1/8/11 P.S.

Comments:

١

					4/1	4/8 9 BAYS
Gram Morph.				Tubes	<u>48 h</u>	$\frac{7 \text{ day}}{100000000000000000000000000000000000$
Gram Test	48 h			KIA H2S	Yel/NC	<u>Yel/NC</u> NEG
Motility Wet Prep	NEO-	- eb		1125	1000	
Motility Deep	NEG	NEG		Pseudo P	NºCa-	Nece
Oxidase	New			Pseudo F	Nela	Nela
Catalase	STRON	6 POS		NO <sub>3</sub> reduced		Nela
PLATES	<u>48 h</u>	<u>7 day</u>		Gas from NO <sub>3</sub>	Nele	NEG
Odor	Stinkes			NO <sub>2</sub> reduced Gas from NO <sub>2</sub>	Nec	Nelo
Pigment on swab	Bubb					~
Pigment on BAP	6Rey			OF Fructose OF Dextrose	BLUE YEL	BLUE &
Morphology on BAP	dull e	NTIRE ,	per pu	• OF Lactose	YEL	YEL D
Beta hemolysis	New		9 DAY	GOF Maltose	GRN/B	
Growth on Mac	Pos-	Light pint		OF Mannitol OF Xylose	Biue Yel	Bue Vel (
DNase hydrolysis	NeG	Neb		OF Sucrose	Bluel	BLUE
Starch hydrolysis New	when !!	NCG		A	Nea	A. 11.
Lecithinase	Neco	Nela		Arginine Lysine	1000	Nea
Lipase	POS	Pos		Ornithine		
Rapid PYR	Nele			Base Control		<del>/</del>
Rapid LAP	POS	(Strong)		Acetamide	Pos !	POG!
Rapid ESC	Nel			Esculin	New	New
Sensitivity to:				Gelatin Indole	Nec-	Nel
Penicillin (10 U)	R	R		Malonate	NEC	Wt
Vancomycin (30 ug)	R	R		PAD Urea∧l@2h	New	
Colistin (10 mcg)	5-11	5		6.5% NaCL	NEG	NeG-
Polymyxin B (300 U)	5-12	Ś		10% Lactose	Pos!	POS
				ONPG Growth 42 <sup>0</sup>	NEG	NEG
				G10wul 42	1000	NEO

Note: All biochemical tests (except where noted) are incubated at 30°C and read after 48 hrs. incubation and again at 7 days.

Figure 60: Acinetobacter baumannii complex isolate 8-of-24.

#### 5.2 Acinetobacter haemolyticus

Over the course of ASHEX clinical-isolate collection, three individual isolates of Acinetobacter haemolyticus were analyzed. One of the three recorded results is pictured in this subsection.

Test	+	_	Raw%	W95%	Test	+	_	Raw%	W95%
Motility	0	3	0.00	28.08	$H_2S$	0	3	0.00	28.08
Oxidase	0	3	0.00	28.08	Pseudo P	0	3	0.00	28.08
Catalase	3	0	100.00	71.92	Pseudo F	0	3	0.00	28.08
Yellow Pigment	0	3	0.00	28.08	NO <sub>3</sub> Reduced	0	3	0.00	28.08
Pink Pigment	0	3	0.00	28.08	Gas from $NO_3$	0	1	0.00	39.67
Beta Hemolysis	3	0	100.00	71.92	$NO_2$ Reduced	0	3	0.00	28.08
Growth on Mac	3	0	100.00	71.92	Gas from $NO_2$	0	1	0.00	39.67
DNase	0	3	0.00	28.08	OF Fructose	0	3	0.00	28.08
Starch	0	3	0.00	28.08	OF Dextrose	0	3	0.00	28.08
Lecithinase	0	2	0.00	32.88	OF Lactose	0	3	0.00	28.08
Lipase	2	0	100.00	67.12	OF Maltose	0	3	0.00	28.08
PYR	0	1	0.00	39.67	OF Mannitol	0	3	0.00	28.08
LAP	1	0	100.00	60.33	OF Xylose	0	3	0.00	28.08
ESC Spot Test	0	1	0.00	39.67	OF Sucrose	0	1	0.00	39.67
Penicillin (10U)	1	2	33.33	42.69	Arginine	0	3	0.00	28.08
Vancomycin $(30\mu g)$	0	3	0.00	28.08	Lysine	0	3	0.00	28.08
Colistin $(10\mu g)$	3	0	100.00	71.92	Ornithine	0	3	0.00	28.08
Polymyxin B (300U)	1	0	100.00	60.33	Acetamide	0	3	0.00	28.08
					Esculin	0	3	0.00	28.08
					Gelatin	1	2	33.33	42.69
					Indole	0	3	0.00	28.08
					Malonate	1	2	33.33	42.69
					PAD	2	1	66.67	57.31
					Urea 2 hrs.	0	3	0.00	28.08
					Urea 48 hrs.	1	2	33.33	42.69
					6.5% NaCl	0	3	0.00	28.08
					10% Lactose	0	3	0.00	28.08
					ONPG	0	3	0.00	28.08
					Growth 42°C	1	2	33.33	42.69

Table 9: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as  $n_+/(n_+ + n_-)$ , where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which shifts raw percentages towards 50% with a strength dependent on the total number of test occurrences. The four antibiotic tests at the bottom of Column 1 are sensitivity tests where a positive result indicates sensitivity to the drug. Date Inoculated:

Final Identification:

8-4-08 Acinetobacter haemolyticus P.S. 8/11/08

Comments:

		8	-8/08	
Gram Morph.		Tubes	48 h 96	7 day
Gram Test 96	, h	KIA H <sub>2</sub> S	E/NC Nec-	- KINE
Motility Wet Prep	26- 66	H <sub>2</sub> 5	Nec	NEO
Motility Deep <u>Ne</u>	e6 (96h) NCG	Pseudo P	Neg	Nec
Oxidase <u>N</u>	ela	Pseudo F	Nela	New
Catalase STA	RONG POS	NO <sub>3</sub> reduced		NeG
PLATES 48	<u>h 7 day</u>	Gas from $NO_3$	NeG	Nela
Odor	JONE	$NO_2$ reduced Gas from $NO_2$	NeG	NEG
Pigment on swab	266	-		
Pigment on BAP	sht GREV	OF Fructose OF Dextrose	Blue	Blue
Morphology on BAP Sana	ath-entire	OF Lactose		
Beta hemolysis STRONG_PO	05	OF Maltose		
Growth on Mac	5- deep pepple Colonies	OF Mannitol OF Xylose		
DNase hydrolysis	IEG NEO	OF Sucrose		-V
Starch hydrolysis M	166 NEG	Arginine	Ne6-	NEG
Lecithinase <u>N</u>	el- Nela	Lysine	1000	
Lipase A	Pos Pos	Ornithine		
Rapid PYR M	26-	Base Control		V
Rapid LAP	05	Acetamide	New	New
Rapid ESC	196	Esculin Gelatin	NEG	Nelo
Sensitivity to:		Indole	10/00	New
Penicillin (10 U)	<u>R</u> R	Malonate	Neb	Neb
Vancomycin (30 ug)	RR	PAD Urea 2 h	POS/S/AN	AT POS SCANT C
Colistin (10 mcg)	-11 5	6.5% NaCL	NEG	NeG
Polymyxin B (300 U) 5	5-13 5	10% Lactose	New	Nea
		ONPG Growth 42 <sup>0</sup>	SLight ORawy	NEG the POS
			- proprietor	

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 61: Acinetobacter haemolyticus isolate 1-of-3.

#### 5.3 Acinetobacter johnsii

Over the course of ASHEX clinical-isolate collection, one individual isolate of Acinetobacter johnsii was analyzed. The associated biochemical result form is NOT presented here.

Test	+	_	Raw%	<b>W95</b> %	Test	+	_	Raw%	<b>W95</b> %
Motility	0	1	0.00	39.67	$H_2S$	0	1	0.00	39.67
Oxidase	0	1	0.00	39.67	Pseudo P	0	1	0.00	39.67
Catalase	1	0	100.00	60.33	Pseudo F	0	1	0.00	39.67
Yellow Pigment	0	1	0.00	39.67	NO <sub>3</sub> Reduced	0	1	0.00	39.67
Pink Pigment	0	1	0.00	39.67	Gas from $NO_3$	0	1	0.00	39.67
Beta Hemolysis	0	1	0.00	39.67	NO <sub>2</sub> Reduced	0	1	0.00	39.67
Growth on Mac	1	0	100.00	60.33	Gas from $NO_2$	0	1	0.00	39.67
DNase	0	1	0.00	39.67	OF Fructose	0	1	0.00	39.67
Starch	0	1	0.00	39.67	OF Dextrose	0	1	0.00	39.67
Lecithinase	0	1	0.00	39.67	OF Lactose	0	1	0.00	39.67
Lipase	1	0	100.00	60.33	OF Maltose	0	1	0.00	39.67
PYR	0	1	0.00	39.67	OF Mannitol	0	1	0.00	39.67
LAP	1	0	100.00	60.33	OF Xylose	0	1	0.00	39.67
ESC Spot Test	0	1	0.00	39.67	OF Sucrose	0	1	0.00	39.67
Penicillin (10U)	0	1	0.00	39.67	Arginine	0	1	0.00	39.67
Vancomycin $(30\mu g)$	0	1	0.00	39.67	Lysine	0	1	0.00	39.67
Colistin $(10\mu g)$	1	0	100.00	60.33	Ornithine	0	1	0.00	39.67
Polymyxin B (300U)	1	0	100.00	60.33	Acetamide	0	1	0.00	39.67
					Esculin	0	1	0.00	39.67
					Gelatin	0	1	0.00	39.67
					Indole	0	1	0.00	39.67
					Malonate	0	1	0.00	39.67
					PAD	0	1	0.00	39.67
					Urea 2 hrs.	0	1	0.00	39.67
					Urea 48 hrs.	0	1	0.00	39.67
					6.5% NaCl	0	1	0.00	39.67
					10% Lactose	0	1	0.00	39.67
					ONPG	0	1	0.00	39.67
					Growth 42°C	0	1	0.00	39.67

Table 10: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as  $n_+/(n_+ + n_-)$ , where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which shifts raw percentages towards 50% with a strength dependent on the total number of test occurrences. The four antibiotic tests at the bottom of Column 1 are sensitivity tests where a positive result indicates sensitivity to the drug.

#### 5.4 Acinetobacter lwoffii

Over the course of ASHEX clinical-isolate collection, 23 individual isolates of Acinetobacter lwoffii were analyzed. Seven of the 23 recorded results are pictured in this subsection.

Test	+	_	Raw%	W95%	Test	+	_	Raw%	W95%
Motility	0	23	0.00	7.16	H <sub>2</sub> S	0	23	0.00	7.16
Oxidase	0	23	0.00	7.16	Pseudo P	0	23	0.00	7.16
Catalase	23	0	100.00	92.84	Pseudo F	0	23	0.00	7.16
Yellow Pigment	0	23	0.00	7.16	NO <sub>3</sub> Reduced	0	23	0.00	7.16
Pink Pigment	0	23	0.00	7.16	Gas from $NO_3$	0	11	0.00	12.94
Beta Hemolysis	0	11	0.00	12.94	NO <sub>2</sub> Reduced	0	23	0.00	7.16
Growth on Mac	19	4	82.61	77.94	Gas from $NO_2$	0	11	0.00	12.94
DNase	0	23	0.00	7.16	OF Fructose	0	23	0.00	7.16
Starch	0	23	0.00	7.16	OF Dextrose	0	23	0.00	7.16
Lecithinase	0	11	0.00	12.94	OF Lactose	0	23	0.00	7.16
Lipase	0	11	0.00	12.94	OF Maltose	0	23	0.00	7.16
PYR	2	7	22.22	30.53	OF Mannitol	0	23	0.00	7.16
LAP	9	0	100.00	85.04	OF Xylose	0	23	0.00	7.16
ESC Spot Test	0	9	0.00	14.96	OF Sucrose	0	11	0.00	12.94
Penicillin (10U)	3	20	13.04	18.33	Arginine	0	23	0.00	7.16
Vancomycin $(30\mu g)$	2	21	8.70	14.61	Lysine	0	23	0.00	7.16
Colistin $(10\mu g)$	23	0	100.00	92.84	Ornithine	0	23	0.00	7.16
Polymyxin B (300U)	11	0	100.00	87.06	Acetamide	0	23	0.00	7.16
					Esculin	0	23	0.00	7.16
					Gelatin	0	23	0.00	7.16
					Indole	0	23	0.00	7.16
					Malonate	10	10	50.00	50.00
					PAD	5	17	22.73	26.78
					Urea 2 hrs.	0	23	0.00	7.16
					Urea 48 hrs.	2	21	8.70	14.61
					6.5% NaCl	6	17	26.09	29.51
					10% Lactose	0	20	0.00	8.06
					ONPG	1	13	7.14	16.37
					Growth 42°C	6	17	26.09	29.51

Table 11: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as  $n_+/(n_+ + n_-)$ , where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which shifts raw percentages towards 50% with a strength dependent on the total number of test occurrences. The four antibiotic tests at the bottom of Column 1 are sensitivity tests where a positive result indicates sensitivity to the drug. Date Inoculated: m 12/13 ograter Luobbir 12/231 Final Identification: 2010-13 Comments: Ortz lab priavidus campenensis Ursingi 99.997 Bruker: VD: 92.87 Acin tein. ursing Acinuisingi, 2.115 Gram Morph. Tubes 48 h 7 day KIA KII Gram Test  $H_2S$ Motility Wet Prep Pseudo P Motility Deep Pseudo F Oxidase Nea Catalase Aas -NO<sub>3</sub> reduced Neg red got zic Gas from NO<sub>3</sub> Neg PLATES tiny buibble tiny bubble 48 h 7 day NO2 reduced Red Odor New Neid -Gas from NO<sub>2</sub> Neh Pigment on swab Very etyellow none ALC BLOCK OF Fructose Pigment on BAP AT TOP up-lear clea pay \_OF Dextrose Or Morphology on BAP -OF Lactose In Spread . cleanwh Sarv G G 7d OF Maltose Beta hemolysis New -OF Mannitol Bl-Gr-BR Growth on Mac POS - Smrd Sn \_OF Xylose Cx 6 DNase hydrolysis OF Sucrose C Starch hydrolysis Arginine Lecithinase Lysine Ornithine Lipase Base Control Rapid PYR New Rapid LAP Acetamide Esculin Rapid ESC Gelatin Sensitivity to: Indole LIGHT BLUE Malonate X Penicillin (10 U) N PAD N Vancomycin (30 ug) 0R Urea No 2 h ٨ S Double Colistin (10 mcg) 14 5 6.5% NaCL A 10% Lactose N 110 Polymyxin B (300 U) ONPG RIG Growth 42º TSA New

Figure 62: Acinetobacter lwoffii isolate 1-of-23.

1-19-09 Date Inoculated: P.S. ACINE to bacter LWOFFI Final Identification: Comments: 1/26 7 DAY Gram Morph. Tubes 48 1 <u>7 day</u> KIA F/NC 24h Gram Test Nela- TINY LODS H<sub>2</sub>S NCG Motility Wet Prep Nec Neco-70 Pseudo P - Motility Deep Pseudo F New NEG - Oxidase STRONG Nea + Catalase Pos NO<sub>3</sub> reduced Gas from NO<sub>3</sub> 2 SM bubble 24 <u>48 h</u> PLATES S like NO2 reduced Nec Odor NITAL CAGE Gas from NO<sub>2</sub> Neb ub Pigment on swab **OF** Fructose ue GREY - SMEARS & CAKES Pigment on BAP OF Dextrose GREY TRANSLUCENT Morphology on BAP OF Lactose OF Maltose Neb Beta hemolysis **OF** Mannitol Growth on Mac TINY COLONIES - LAVENDER OF Xylose NEG - BLUE INDEQUUM OF Sucrose DNase hydrolysis Neb Starch hydrolysis NPG Arginine Lecithinase Nela Lysine Ornithine Lipase NEG Base Control Rapid PYR Rapid LAP Acetamide Nie/a Esculin Rapid ESC NEG Gelatin Sensitivity to: Indole Malonate Penicillin (10 U) PAD Vancomycin (30 ug) Ureaves 2 h DOUBLE Colistin (10 mcg) 6.5% NaCL ZONES 10% Lactose (01) Polymyxin B (300 U) ς ONPG Growth 42°

Note: All biochemical tests (except where noted) are incubated at 30<sup>o</sup>C and read after 48 hrs. incubation and again at 7 days.

Figure 63: Acinetobacter lwoffii isolate 2-of-23.

Date Inoculated: /	Acinetobacte	and Lusa	06611 2/3/11 P.S
Comments:		AS (60	umanii) may be in pile [2011-2] F163
Gram Morph. Gram Test Motility Wet Prea Motility Deep Oxidase Catalase	48h New New New New New New STRONG POS	Tubes KIA H <sub>2</sub> S Pseudo P Pseudo F NO <sub>3</sub> reduced	1/28 2/3/11 <u>48 h</u> 7 day <u>K/Ne</u> <u>N/K</u> <u>New</u> <u>New</u> <u>New</u> <u>New</u> <u>New</u> <u>New</u> <u>New</u> <u>New</u> <u>New</u> <u>New</u>
PLATES Odor Pigment on swab	<u>48 h</u> <u>7 day</u> <u>NeNe</u> buff	Gas from NO <sub>3</sub> NO <sub>2</sub> reduced Gas from NO <sub>2</sub> reduced Gas from NO <sub>2</sub>	TINY BUSSLE Nelo Nelo Nelo Nelo
Pigment on BAP Morphology on BAP Beta hemolysis Growth on Mac DNase hydrolysis	6Rey ENT.De-SMOOTH NeG POS POS-BLUE NeG NeG	OF Fructose OF Dextrose OF Lactose OF Maltose OF Mannitol OF Xylose OF Sucrose	<u>Brue</u> <u>95.83</u> <u>95.83</u> <u>95.83</u> <u>8.73</u> <u>8.73</u> <u>8.73</u> <u>8.75</u> <u>8.75</u> <u>8.75</u> <u>8.75</u>
Starch hydrolysis Lecithinase Lipase 27,27 Rapid PYR 10	Nelo Nelo Nelo Nelo Nelo Nelo Nelo	Arginine Lysine Ornithine Base Control	Nece were (might be w+) but Acineto can be Arg t
Rapid LAP Rapid ESC <u>Sensitivity to:</u> Penicillin (10 U)4,17 Vancomycin (30 ug) <sup>44</sup> Colistin (10 mcg) Polymyxin B (300 U)		Acetamide Esculin Gelatin Indole Malonate PAD Urea <u>Melo</u> 2 h 6.5% NaCL 10% Lactose	New New 16.67 New New New New New New New New New New 12.5 New New X 20.83 New New 16.67 New New 16.67 New New 16.67
· ••••••••••••••••••••••••••••••••••••		ONPG Growth 42 <sup>0</sup>	Nel Nel 11.67

Figure 64: Acinetobacter lwoffii isolate 3-of-23.

	(not using Wilson Binomize reative)
Date Inoculated: W 9/6/17	Prob 94.045% Ms = 9
Final Identification: 12107 Agnetoba	dedwoffin Prob 98.8459 MS 16.382 Lassy ailson Bronnial
Comments: (ab ID: Acinctobacter	(woffii notic)
Maedi: Acinetobacion Ius	offii 2.2
Gram Morph.	$\frac{\text{Tubes}}{\text{KIA}} \qquad \frac{48 \text{ h}}{2000 \text{ h}} \qquad \frac{7 \text{ day}}{2000 \text{ h}}$
Gram Test	H <sub>2</sub> S Nog
Motility Wet Prep	$-\frac{1}{2}$
Motility Deep <u>Alea</u>	Pseudo P Nog
Oxidase Neg	Pseudo F Nobr
Catalase Pos (P)	NO3 reduced _ K Redaffer In Neg
PLATES 48 h 7 day	Gas from NO <sub>3</sub>
Odor New	$NO_2$ reduced $NO_2$ $NO_2$ $NO_2$
Pigment on swab buff	
Pigment on BAP Cleon-wh	OF Fructose G
Morphology on BAP	OF Lactose Gr +_
Beta hemolysis Kleg	OF Maltose G
Growth on Mac $POS(\mathbf{P})$	OF Mannitol G + OF Xylose G
DNase hydrolysis Neg	OF Sucrose Gr =
Starch hydrolysis	
Lecithinase New	Arginine <u> </u>
Lipase	Ornithine
Rapid PYR New	Base Control
Rapid LAP Pos D	Acetamide
Rapid ESCN	Esculin Nag
Sensitivity to:	Gelatin <u>New</u> Indole X New
Penicillin (10 U) 6 P	Malonate
Vancomycin (30 ug) 4 R	PAD X Alegy
Colistin (10 mcg) 14 5(f	$\begin{array}{c c} Urea \_ 2 h \_ \_ \\ \hline 6.5\% \text{ NaCL} \\ \hline \end{array} \begin{array}{c} Nex \\ \hline Nex \\ \hline \end{array}$
Polymyxin B (300 U) 15 5(+	10% Lactose Ng
	ONPG $\underline{Ner}$ Growth 42° $\underline{Ner}$

Figure 65: Acinetobacter lwoffii isolate 4-of-23.

Final Identification:

Acinetobacter Laoffii P.5. 5-28-07

Comments:

Gram Morph.			Tubes	<u>48 h</u>	$\frac{7 \text{ day}}{\sqrt{2}}$	
Gram Test	48h		KIA H <sub>2</sub> S	EINE	EIK_	
Motility Wet Prep	Ne6-4	m. Rods	n <sub>2</sub> 3	NEW	NC	
Motility Deep	Nel	Nel	Pseudo P	Nela	Nec	
Oxidase	Neu		Pseudo F	NEG	New	
Catalase	STRANG	POS	NO3 reduced		Ne6	
PLATES	<u>48 h</u>	7 day	Gas from NO <sub>3</sub>	Sm. bubble		
Odor	NONE		$NO_2$ reduced Gas from $NO_2$	NEW	Nela	
Pigment on swab	CREAM		-			
Pigment on BAP	GREY		OF Fructose OF Dextrose	GRN	BLEE	
Morphology on BAP	TRANGLUI	ent	OF Lactose	GRN		
Beta hemolysis Ne			OF Maltose	Buce		
Growth on Mac	Pos	Pos	OF Mannitol OF Xylose	Bue		
DNase hydrolysis	Neb - Pup	Ple Colones@48	OF Sucrose	GRN	V	
Starch hydrolysis	NEG	Nela				
Lecithinase	Nel	Nela	Arginine Lysine	Nela	Neg	
Lipase	New	Nelo	Ornithine			
Rapid PYR	G		Base Control	_V	×	
Rapid LAP	a P		Acetamide	NEG	New	
Rapid ESC	Θ		Esculin	NEG	Nel	
Sensitivity to:			Gelatin Indole	NeG	Neg	,
Penicillin (10 U)	R	R	Malonate	NEG	Neb	
Vancomycin (30 ug)	R	R	PAD	POS		
Colistin (10 mcg)	5-12	5	Urea <sup>M2</sup> 2 h 6.5% NaCL	Nele	NeG NeG	
Polymyxin B (300 U)	0 0	3	10% Lactose	New	Neb	
.,			ONPG	Neb	New	
			Growth 42°	NEG	Nel	

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 66: Acinetobacter lwoffii isolate 5-of-23.

Final Identification:

5-29-07 Acinetabacter Luoffii P.S. 5-28-07

Comments:

Gram Morph. Gram Test Motility Wet Prep	48h Ne6-9m. Node 9	<u>Tubes</u> KIA H₂S	48 h K/NC NEG	7 day K/K New	
Motility Deep Oxidase	Nel Nel	Pseudo P Pseudo F	NeG NeG	Nele	
Catalase <u>PLATES</u> Odor	9772an6 p05 48h 7 day NONC	NO3 reduced Gas from NO3 NO2 reduced Gas from NO2		NEG NEG NEG TUNY Stabble	
Pigment on swab Pigment on BAP Morphology on BA Beta hemolysis Growth on Mac DNase hydrolysis	<u>CREANY</u> <u>GREY</u> AP <u>TRANSINCENT</u> <u>NEG-</u> <u>POS</u> <u>POS</u> <u>NEG-</u> <u>PURPLE</u> <u>COLONIE</u>	OF Fructose OF Dextrose OF Lactose OF Maltose OF Mannitol OF Xylose	GRN GRN Brue Brue Brue	Brae	
Starch hydrolysis Lecithinase Lipase Rapid PYR	New New New New New New Oes	Arginine Lysine Ornithine Base Control	Ne6	Nele-	
Rapid LAP Rapid ESC <u>Sensitivity to:</u> Penicillin (10 U) Vancomycin (30 Colistin (10 mcg Polymyxin B (30	$\frac{R}{S} = \frac{R}{S}$	Acetamide Esculin Gelatin Indole Malonate PAD Urea <u>Mac</u> 2 h 6.5% NaCL 10% Lactose ONPG Growth 42 <sup>0</sup>	Neb Neb Neb Neb Neb Neb Neb	NEG NEG NEG NEG NEG NEG NEG NEG NEG	

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 67: Acinetobacter lwoffii isolate 6-of-23.

Date Inoculated: Final Identification: Comments:	D- Chyseo. maologen		ustard yello	won all redia
Maldi	: Vitums IVD, RUD and	- Bruker :	Acinetoba	der Ursingii
Gram Morph. Gram Test Motility Wet Prep	gnr	<u>Tubes</u> KIA H <sub>2</sub> S	<u>48 h</u> <u>K/NC</u> <u>Neg</u>	<u>7 day</u> <u>K/K</u> <u>Neg</u>
Motility Deep Oxidase	Neg / Neg-	Pseudo P Pseudo F	Neg Neg	Neg
Catalase <u>PLATES</u> Odor	<u>Pos</u> <u>48 h 7 day</u> <u>Neg Neg</u>	$NO_3$ reduced Gas from $NO_3$ $NO_2$ reduced Gas from $NO_2$	X hnybubble X Ncg	Neg-pink ofter zine dust
Pigment on swab Pigment on BAP Morphology on BAP Beta hemolysis Growth on Mac DNase hydrolysis	<u>Alt. Yellow</u> <u>Alt. gotd</u> Veyet <u>Jean</u> <u>Jenney</u> <u>Smwet</u> <u>Smurt cein</u> <u>Neg</u> <u>Neg</u> <u>Neg</u> <u>Neg</u> <u>Neg</u> <u>Neg</u>	OF Fructose OF Dextrose OF Lactose OF Maltose OF Mannitol	BI-Gr BI-Gr BI-Gr BI-Gr BI-Gr BI-Gr BI-Gr	$\begin{array}{c c} BI-Gr &- & BLAR \\ \hline BI-Gr &- & \\ \hline BR-Gr &- & \\ \hline BR-Gr &- & \\ \hline GR &- & \\ \hline GR &- & \\ \hline BR-Gr &- & \\ \hline \end{array}$
Starch hydrolysis Lecithinase Lipase Rapid PYR	Neg Neg Neg Neg Neg Neg	Arginine Lysine Ornithine Base Control	Neg Neg Neg	Neg- Neg- Neg- Neg-
Rapid LAP Rapid ESC <u>Sensitivity to:</u>	Pos Neg	Acetamide Esculin Gelatin Indole	Neg Neg Neg X	Neg Neg Neg Neg
Penicillin (10 U) Vancomycin (30 ug) Colistin (10 mcg) Polymyxin B (300 U)	R R IV S dauble zone 14/20 IS S duuble zone 15/30	Malonate PAD Urea <u>1</u> 2 h 6.5% NaCL 10% Lactose ONPG Growth 42 <sup>0</sup> 3	Cr-Blue Neg- Neg- Neg- Neg- Neg- Neg- Col Neg-	Reve + (webk) X Wkt stort + (Ne6) Neg Neg Neg Neg

Figure 68: Acinetobacter lwoffii isolate 7-of-23.

#### 5.5 Acinetobacter species saccharolytic

Over the course of ASHEX clinical-isolate collection, two individual isolates of Acinetobacter species saccharolytic were analyzed. Zero of the two recorded results are pictured in this subsection.

Test	+	_	Raw%	W95%	Test	+	—	Raw%	<b>W95</b> %
Motility	1	1	50.00	50.00	$H_2S$	0	2	0.00	32.88
Oxidase	0	2	0.00	32.88	Pseudo P	0	2	0.00	32.88
Catalase	2	0	100.00	67.12	Pseudo F	0	2	0.00	32.88
Yellow Pigment	0	2	0.00	32.88	NO <sub>3</sub> Reduced	0	2	0.00	32.88
Pink Pigment	0	2	0.00	32.88	Gas from $NO_3$	0	1	0.00	39.67
Beta Hemolysis	1	0	100.00	60.33	NO <sub>2</sub> Reduced	0	2	0.00	32.88
Growth on Mac	2	0	100.00	67.12	Gas from $NO_2$	0	1	0.00	39.67
DNase	0	2	0.00	32.88	OF Fructose	0	2	0.00	32.88
Starch	0	2	0.00	32.88	OF Dextrose	2	0	100.00	67.12
Lecithinase	0	1	0.00	39.67	OF Lactose	2	0	100.00	67.12
Lipase	1	0	100.00	60.33	OF Maltose	0	2	0.00	32.88
PYR	0	0	50.00	50.00	OF Mannitol	0	2	0.00	32.88
LAP	0	0	50.00	50.00	OF Xylose	2	0	100.00	67.12
ESC Spot Test	0	0	50.00	50.00	OF Sucrose	0	1	0.00	39.67
Penicillin (10U)	0	2	0.00	32.88	Arginine	0	2	0.00	32.88
Vancomycin $(30\mu g)$	1	1	50.00	50.00	Lysine	0	2	0.00	32.88
Colistin $(10\mu g)$	2	0	100.00	67.12	Ornithine	0	2	0.00	32.88
Polymyxin B (300U)	1	0	100.00	60.33	Acetamide	1	1	50.00	50.00
					Esculin	0	2	0.00	32.88
					Gelatin	1	1	50.00	50.00
					Indole	0	2	0.00	32.88
					Malonate	0	2	0.00	32.88
					PAD	2	0	100.00	67.12
					Urea 2 hrs.	0	2	0.00	32.88
					Urea 48 hrs.	0	2	0.00	32.88
					6.5% NaCl	0	2	0.00	32.88
					10% Lactose	2	0	100.00	67.12
					ONPG	0	2	0.00	32.88
					Growth $42^{\circ}C$	0	2	0.00	32.88

Table 12: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as  $n_+/(n_+ + n_-)$ , where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which shifts raw percentages towards 50% with a strength dependent on the total number of test occurrences. The four antibiotic tests at the bottom of Column 1 are sensitivity tests where a positive result indicates sensitivity to the drug.

#### 5.6 Acinetobacter ursingii

Over the course of ASHEX clinical-isolate collection, four individual isolates of Acinetobacter ursingii were analyzed. Two of the four recorded results are pictured in this subsection.

Test	+	_	Raw%	<b>W95</b> %	Test	+	_	Raw%	W95%
Motility	0	4	0.00	24.50	$H_2S$	0	4	0.00	24.50
Oxidase	0	4	0.00	24.50	Pseudo P	0	4	0.00	24.50
Catalase	4	0	100.00	75.50	Pseudo F	0	4	0.00	24.50
Yellow Pigment	1	3	25.00	37.25	NO <sub>3</sub> Reduced	1	3	25.00	37.25
Pink Pigment	0	4	0.00	24.50	Gas from $NO_3$	0	4	0.00	24.50
Beta Hemolysis	0	4	0.00	24.50	NO <sub>2</sub> Reduced	0	4	0.00	24.50
Growth on Mac	4	0	100.00	75.50	Gas from $NO_2$	0	4	0.00	24.50
DNase	0	4	0.00	24.50	OF Fructose	0	4	0.00	24.50
Starch	0	4	0.00	24.50	OF Dextrose	0	4	0.00	24.50
Lecithinase	0	4	0.00	24.50	OF Lactose	0	4	0.00	24.50
Lipase	1	3	25.00	37.25	OF Maltose	0	4	0.00	24.50
PYR	0	4	0.00	24.50	OF Mannitol	0	4	0.00	24.50
LAP	4	0	100.00	75.50	OF Xylose	0	4	0.00	24.50
ESC Spot Test	0	4	0.00	24.50	OF Sucrose	0	4	0.00	24.50
Penicillin (10U)	0	4	0.00	24.50	Arginine	0	4	0.00	24.50
Vancomycin $(30\mu g)$	1	3	25.00	37.25	Lysine	0	4	0.00	24.50
Colistin $(10\mu g)$	4	0	100.00	75.50	Ornithine	0	4	0.00	24.50
Polymyxin B (300U)	4	0	100.00	75.50	Acetamide	0	4	0.00	24.50
					Esculin	0	4	0.00	24.50
					Gelatin	0	4	0.00	24.50
					Indole	0	4	0.00	24.50
					Malonate	3	1	75.00	62.75
					PAD	3	1	75.00	62.75
					Urea 2 hrs.	0	4	0.00	24.50
					Urea 48 hrs.	1	3	25.00	37.25
					6.5% NaCl	0	4	0.00	24.50
					10% Lactose	0	4	0.00	24.50
					ONPG	0	4	0.00	24.50
					Growth 42°C	0	4	0.00	24.50

Table 13: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as  $n_+/(n_+ + n_-)$ , where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which shifts raw percentages towards 50% with a strength dependent on the total number of test occurrences. The four antibiotic tests at the bottom of Column 1 are sensitivity tests where a positive result indicates sensitivity to the drug.

Date Inoculated: _//-	17-10		· · · · · · · · · · · · · · · · · · ·	
Final Identification:				
Comments: Po	or Growth on b	AP@2	4 h	
w-s_A	cineto breten un	RGINGi	64sed ON M	1ALDI
Gram Morph. Gram Test Motility Wet Prep <b>4-2.</b> Motility Deep <b>0-2.</b> Oxidase <b>2-0.</b> Catalase <b>PLATES</b> Odor <b>4-1</b> Odor <b>4-1</b> Pigment on Swab Pigment on BAP Morphology on BAP <b>0-2.</b> Beta hemolysis <b>2-0.</b> Growth on Mac <b>0-2.</b> DNase hydrolysis <b>0-2.</b> Starch hydrolysis <b>0-2.</b> Lecithinase <b>0-2.</b> Lipase 33-33 <b>0-2.</b> Rapid LAP <b>6-2.</b> Rapid ESC	CINE to BACTER UN COCCOID ATA 48 NEG- C D NEG NEG NEG STRONG DO S 48 h 7 day NONE LIGHT YERIOW COCORIESS - POOR GROWT, TRANSCIENT NEG POS COLONIES, NEG NEG NEG NEG	Tubes         KIA         H <sub>2</sub> S         Pseudo P         Pseudo F         NO <sub>3</sub> reduced         Gas from NO <sub>3</sub> NO <sub>2</sub> reduced         Gas from NO <sub>2</sub> OF Fructose         OF Dextrose         OF Lactose         OF Maltose         OF Maltose	48 h F/NC F/K NEG NEG NEG NEG NEG NEG NEG NEG	-2
<u>Sensitivity to:</u> • -2 Penicillin (10 U) • -2 Vancomycin (30 ug) 33:35 2-0 Colistin (10 mcg) 2-0 Polymyxin B (300 U)	R R R R S-13 S S-13 S	Indole Malonate PAD Ureal/ <u>2</u> h 6.5% NaCL 10% Lactose ONPG Growth 42 <sup>0</sup>	Neb Pos 1-1 Pos 2-0 Neb Pos - SLANT Neb Neb Neb Neb Neb Neb 0-2	ONLY 11-1 × 133. D

Figure 69: Acinetobacter ursingii isolate 1-of-4.

	Date Inoculated:	W4/5/17			1000	1	
	Final Identification:	Under	1) Acinete	bader lunthi ff	7.1590 #070 A	MS=1.01 15=0-101	
•	Comments:	) : Aanetoh VSB	Daoler uvsing	ii Naedi 2.4 FINA ID A	0	2617-37	
	Gram Morph. Gram Test Motility Wet Prep			<u>Tubes</u> KIA H <sub>2</sub> S	<u>48 h</u> <u>K/NC</u> <u>Ney</u>	7 day K/K NJS-	
	Motility Deep Oxidase	Nec 48. Neg	Neg Tilly-	Pseudo P Pseudo F	N	Neg-	
	Catalase <u>PLATES</u> Odor	<u>Pos</u> <u>48 h</u> <u>Neg-</u>	7 day	MO3 reduced Gas from NO3 NO2 reduced Gas from NO2		<u>Red-Pos</u> E <u>New</u> <u>Reagger</u> Neg ( <u>New</u>	
XP 25	Pigment on swab Pigment on BAP Morphology on BAP 5, Beta hemolysis	<u>Colorles</u> <u>Lot</u> n <u>clean-wh</u> <u>but</u>	Buff_ Wh-Grey- Som rol	OF Fructose OF Dextrose OF Lactose OF Maltose			
	Growth on Mac DNase hydrolysis Starch hydrolysis	Pos cen Neg	n <u>Pos</u> <u>Neg</u>	OF Mannitol OF Xylose OF Sucrose			
25	Lecithinase Lipase Rapid PYR	2 2 N	Pos? umit fil	Arginine Lysine Grnithine Base Control		N25 Nof Nof Nof	
	Rapid LAP Rapid ESC <u>Sensitivity to:</u>	Pos N		Acetamide Esculin Gelatin Indole	N N N	Nog- Nus- Nog-	
	Penicillin (10 U) Vancomycin (30 ug) Colistin (10 mcg) Polymyxin B (300 U)	4R 6R 95 95	<u>6</u> <u>6</u> <u>95/205</u> <u>9/25</u> 5	Malonate Malonate PAD Urea <u>N</u> 2 h 6.5% NaCL 10% Lactose ONPG Growth 42 <sup>0</sup>	Pas Neg N N N N	NES Pos Selarona per Nes Nes Nes Nes	+ [Nig-]

tauched film and af such - organism, not film therefore Neg

Figure 70: Acinetobacter ursingii isolate 2-of-4.

### 6 GENUS ALCALIGENES

#### 6.1 Alcaligenes faecalis

Over the course of ASHEX clinical-isolate collection, 15 individual isolates of Alcaligenes faecalis were analyzed. Eight of the 15 recorded results are pictured in this subsection.

Test	+	_	Raw%	W95%	Test	+	_	Raw%	W95%
Motility	15	0	100.00	89.81	H <sub>2</sub> S	0	15	0.00	10.19
Oxidase	15	0	100.00	89.81	Pseudo P	0	15	0.00	10.19
Catalase	15	0	100.00	89.81	Pseudo F	0	15	0.00	10.19
Yellow Pigment	0	14	0.00	10.77	NO <sub>3</sub> Reduced	2	13	13.33	20.81
Pink Pigment	0	15	0.00	10.19	Gas from $NO_3$	0	11	0.00	12.94
Beta Hemolysis	0	10	0.00	13.88	NO <sub>2</sub> Reduced	15	0	100.00	89.81
Growth on Mac	15	0	100.00	89.81	Gas from $NO_2$	10	1	90.91	80.32
DNase	0	15	0.00	10.19	OF Fructose	0	15	0.00	10.19
Starch	0	15	0.00	10.19	OF Dextrose	0	15	0.00	10.19
Lecithinase	0	11	0.00	12.94	OF Lactose	0	15	0.00	10.19
Lipase	0	11	0.00	12.94	OF Maltose	0	15	0.00	10.19
PYR	0	10	0.00	13.88	OF Mannitol	0	15	0.00	10.19
LAP	10	0	100.00	86.12	OF Xylose	0	15	0.00	10.19
ESC Spot Test	0	10	0.00	13.88	OF Sucrose	0	15	0.00	10.19
Penicillin (10U)	1	14	6.67	15.50	Arginine	0	15	0.00	10.19
Vancomycin $(30\mu g)$	0	15	0.00	10.19	Lysine	0	15	0.00	10.19
Colistin $(10\mu g)$	15	0	100.00	89.81	Ornithine	0	15	0.00	10.19
Polymyxin B (300U)	11	0	100.00	87.06	Acetamide	15	0	100.00	89.81
					Esculin	0	15	0.00	10.19
					Gelatin	1	14	6.67	15.50
					Indole	0	15	0.00	10.19
					Malonate	13	0	100.00	88.59
					PAD	0	15	0.00	10.19
					Urea 2 hrs.	0	15	0.00	10.19
					Urea 48 hrs.	1	14	6.67	15.50
					6.5% NaCl	15	0	100.00	89.81
					10% Lactose	0	15	0.00	10.19
					ONPG	0	13	0.00	11.41
					Growth 42°C	12	3	80.00	73.88

Table 14: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as  $n_+/(n_+ + n_-)$ , where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which shifts raw percentages towards 50% with a strength dependent on the total number of test occurrences. The four antibiotic tests at the bottom of Column 1 are sensitivity tests where a positive result indicates sensitivity to the drug.

Date Inoculated: $W^{3/2 + 1/7}$ [20]=	7-27]
Final Identification: Akalignes forcelis	99.9192 MS-100
· Final Identification: <u>Akalignes forcelis</u> Comments: <u>Lab ID</u> : <u>Alcalignes force</u>	elis Maldi 2.30
Gram Morph.	Tubes 48 h 7 day
Gram Test	$\frac{100es}{KIA} = \frac{48 \Pi}{K/\Lambda/C} = \frac{7 \text{ day}}{K/K}$
	H2S Smline yok Neg Neg - peyed at why one
Motility Wet Prep	provent & integace
Motility Deep Pos Pos	Pseudo P <u>N</u> <u>Near</u> Pseudo F <u>N</u> <u>Near</u>
Oxidase <u>Pos</u>	
Catalase POS	NO3 reduced X <u>pra affron</u>
<u>PLATES</u> $\left( \int \frac{48 \text{ h}}{3} \right)$ 7 day	Gas from NO <sub>3</sub> $N$ $Neq$ $\Theta$ NO <sub>2</sub> reduced $X$ $Cen - \beta x \Theta$
Odor (notruity Neg plicet	$\frac{1}{\text{Gas from NO}_2} = \frac{1}{\text{Pos}} = \frac{1}{\text{Pos}} = \frac{1}{\text{Pos}} = \frac{1}{\text{Pos}}$
Pigment on swab It peace et tan	
Pigment on BAP ul gray up gray	OF Fructose <u>Bl-Gr Bl-Gr</u> OF Dextrose
Morphology on BAP Smercy Spready	OF Lactose
Beta hemolysis New New	OF Maltose
Growth on Mac spread PDS POS	OF Mannitol
DNase hydrolysis Neg Neg	OF Sucrose BL-Cr -
Starch hydrolysis Neg Neg	
Lecithinase New Mean	Arginine <u>P</u> <u>Neor</u> Lysine <u>I</u> <u>Neor</u>
Lipase Neg Neg	Ornithine New
Rapid PYR Noc	Base Control Naz
	Acetamide Pos Pos
	Esculin Neg Neg
Rapid ESC Neg	Gelatin Nor Nerr
Sensitivity to:	Indole $\underline{Nacy}$ Malonate $Pos_1 = Pos_2$
Penicillin (10 U) <u>lef lef</u>	PAD $N_{4}$
Vancomycin (30 ug) <u>lef lef</u>	Urea N2h Neg Neg
Colistin (10 mcg) [15 [15	6.5% NaCL <u>Pos</u> <u>Pos</u>
Polymyxin B (300 U) _155 _155	10% Lactose <u>N</u> <u>Ner</u>
	Growth $42^{\circ}$ $\rho_{OS}$ $\rho_{OS}$

.

Figure 71: Alcaligenes faecalis isolate 1-of-15.

Final Identification: <u>Alcalignes frecalis</u> 9	9.9192 M	NS = 100
Final Identification: <u>Alcalignes faecalis</u> 9 Comments: <u>LabID</u> <u>Alcalignes fae</u>	calis	Mald: 2.15
0		[2017-79] 3/23/17?
Gram Morph.Gram TestMotility Wet PrepMotility Deep $\int 0s$ Oxidase $\rho s$ Catalase $Pos$ PLATES48 h7 dayOdor $puttyPigment on swabPigment on BAPwh Sueywh Sueywh SueyMorphology on BAPrd_wetrowh delowiesBeta hemolysisNegNegDNase hydrolysis$	Tubes KIA H <sub>2</sub> S Pseudo P Pseudo F NO <sub>3</sub> reduced Gas from NO <sub>3</sub> NO <sub>2</sub> reduced Gas from NO <sub>2</sub> OF Fructose OF Dextrose OF Lactose OF Maltose OF Mannitol OF Xylose OF Sucrose	48 h 7 day KIK <u>KIK</u> <u>N</u> <u>KIK</u> <u>KIK</u> <u>KIK</u> <u>KIK</u> <u>KIK</u> <u>KIK</u> <u>KIK</u> <u>K</u>
Starch hydrolysis $Neg$ $Neg$ Lecithinase $Neg$ $Neg$ Lipase $Neg$ $Neg$ Rapid PYR $Neg$ Rapid LAP $Pos$ Rapid ESC $Neg$ Sensitivity to: $Neg$ Penicillin (10 U) $LP$ $LeP$ $LeP$ Colistin (10 mcg) $115$ $Polymyxin B (300 U)$ $145$	Arginine Lysine Ornithine Base Control Acetamide Esculin Gelatin Indole Malonate PAD Urea <u>N</u> 2 h 6.5% NaCL 10% Lactose ONPG Growth 42 <sup>0</sup>	$\begin{array}{c cccc} \rho_{05}  & \rho_{05} \\ \hline N & Neg \\ \hline N & Neg \\ \hline N & Neg \\ \hline Pos' & Pos \\ \hline N & X \\ \hline N & X \\ \hline Pos & Pos \\ \hline Pos & Pos \\ \hline Pos & Pos \\ \hline \end{array}$

Figure 72: Alcaligenes faecalis isolate 2-of-15.

Date Inoculated:	F 3/24/17	
Final Identification:	F 3/24/17 Alcalignes fances D' Alcalignes facca	99.9192 MS=1.01
Comments: Lab 1	D' Alcaliques facco	alis Maldi: 2.38
	0	* 2017-30
Gram Morph.		Tubes 48 h 7 day
Gram Test		KIA KINC KK
Motility Wet Prep		H2S - thy blk Neg Neg thin blk en
Motility Deep	Pos /	Pseudo P Neg Neg
Oxidase	P05	Pseudo F Ng Neg
Catalase	Pos	NO3 reduced X Red Altr-Zon Nag C
PLATES	48 h 7 day	Gas from NO3 No Neg
Odor	fruity fruity frito	$MO_2$ reduced $X^{\circ}$ ( $\mu r - hos \oplus$ Gas from $NO_2$ $hos$ $fos$
Pigment on swab	buff buff	
Pigment on BAP	in com W. Gan	OF Fructose <u>Bl.G.</u> <u>Bl.G.</u>
Morphology on BAP	Spready edge Spready edge	OF Dextrose =
Beta hemolysis	New New	OF Maltose
Growth on Mac	Pos-clea pas	OF Mannitol OF Xylose
DNase hydrolysis	Neg- Neg	OF Sucrose
Starch hydrolysis	New New	Amining
Lecithinase	Neg Neg	Arginine <u>N Nerr</u> Lysine <u>I Nerr</u>
Lipase	Ner Neg	Ornithine
Rapid PYR	Neg	Base Control
Rapid LAP	Pos	Acetamide <u>Pos</u> <u>Pos</u>
Rapid ESC	New	Esculin <u>Nar</u> <u>Nar</u> Gelatin N <u>Pos</u>
Sensitivity to:	0	Indole X Neg
Penicillin (10 U)	Let let	Malonate $hs$ $\rho_{03}$
Vancomycin (30 ug)	Ler Ler	PAD $N_{2} h N_{2} h$
Colistin (10 mcg)	115 115	6.5% NaCL <u>POS</u> <u>POS</u>
Polymyxin B (300 U	D 145 145	10% Lactose <u>N</u> <u>Nea</u>
		ONPG <u>N</u> <u>Na</u> Growth 42 <sup>0</sup> <u>bs</u> <u>for</u>

Figure 73: Alcaligenes faecalis isolate 3-of-15.

: F 3/Juito M 3/27/17 ion: <u>Alalianos Aucalis 99.693% MS-25</u> Lab 112: <u>Alcalianos Fuecalis Maedi 2.36</u> Date Inoculated: Final Identification: Comments: 2017-32

4	Gram Morph.				Tuber	49 h	7 dox	
	-				<u>Tubes</u> KIA	<u>48 h</u> klac	<u>7 day</u> Kik	
	Gram Test				H2S think In	Ne	Nes - this bla	ch live
	Motility Wet Prep				Contuface		ein	expace
	Motility Deep	Pos 1			Pseudo P Pseudo F	_ <u>N</u>	Neg	
	Oxidase	Pos			FSeudo F	/ <u>v</u>	_Nur_	
	Catalase	Rus		14.29	NO3 reduced	_X	Reachty In Noy O	
	PLATES	<u>48 h</u>	7 day		Gas from NO <sub>3</sub>	Ner	Neg O	
	Odor	All finity	bleactor	00	$NO_2$ reduced Gas from $NO_2$	-X- Pos	Pos @	,
	Pigment on swab	Buff	buff	1-				
	Pigment on BAP	Wh Cr	ist - Source	-	OF Fructose	Be-Gr	Be-a-	
	Morphology on BAP	Smerke odu	- Smean	+ dees	OF Dextrose OF Lactose			
	Beta hemolysis	Alog-	1200		OF Maltose			
	Growth on Mac Clien	rd Dox	POS		OF Mannitol			
	DNase hydrolysis		Ner		OF Xylose OF Sucrose			
		New	1014		OI Sucrose			
	Starch hydrolysis	Neg	Noz		Arginine	N	Neg	
	Lecithinase	Nes	Neg		Lysine		Neep	
	Lipase	Ner	Ney		Ornithine Base Control		Nor	
	Rapid PYR	Neg	· ·		Dase Control			
	Rapid LAP	Pos			Acetamide	Pos!	Pos	
	Rapid ESC	Neg			Esculin	Ner	Neg	1- 0.1.
	Sensitivity to:	ŋ	7,1	4 1-3	Gelatin Indole	Nery	Nex-	g- pride
7.1	Penicillin (10 U)	LeR	10 P-		Malonate	Pos	Pos	loge
11	Vancomycin (30 ug)	6R	Lef		PAD	Neg	X	
	Colistin (10 mcg)	115	11 5	7,0	Urea $\cancel{D}_2$ h 6.5% NaCL	- Ner Pos	- Nez-	
	Polymyxin B (300 U)		155		10% Lactose	N	Nag	
	i orymyxin D (500 0)	155			ONPG	Ň	Neg	
			78	58 3-	Growth 42 <sup>0</sup>	Neg	Neg_	

Figure 74: Alcaligenes faecalis isolate 4-of-15.

Date movements	<u> </u>		
Final Identification:	Alcalignes frecalis fial ID: Alcalignes	Prob:99,919%	5 MS = 100
Comments: Lab	fue 1D: Alcalignes	faecalis	
Mal	ldi: Alcalizenes forca	lis 2.07	
Gram Morph. Gram Test		Tubes         48 h           KIA	7 day KK Neg
Motility Wet Prep Motility Deep Oxidase	Pos D vayslow D	Pseudo P	Neg- Neg-
Catalase <u>PLATES</u> Odor	<u>PB</u> <u>B</u> <u>48 h</u> <u>7 day</u> <u>Slight</u>	NO <sub>3</sub> reduced $\square$ Gas from NO <sub>3</sub> $\square$ NO <sub>2</sub> reduced $\square$ Gas from NO <sub>2</sub>	<u>Neg</u> <u>Neg</u> <u>Leven-Pos</u> Pos D
Pigment on swab Pigment on BAP	ju-ff gr-wh	OF Fructose OF Dextrose	<u>Re-G</u> - Bl-G-
Morphology on BAP Beta hemolysis Growth on Mac		OF Lactose OF Maltose OF Mannitol OF Xylose	<u>Bl-Gr</u> <u>Bl-Gr</u> <u>Bl-Gr</u> 
DNase hydrolysis Starch hydrolysis		OF Aylose OF Sucrose Arginine	Be-G-
Lecithinase Lipase Rapid PYR	Neg-	Lysine Ornithine Base Control	Neg Neg
Rapid LAP Rapid ESC	AS O Neg	Acetamide Esculin Gelatin	Pos! D Negr
<u>Sensitivity to:</u> Penicillin (10 U) Vancomycin (30 ug) Colistin (10 mcg) Polymyxin B (300 U)	$ \begin{array}{c}                                     $	Indole $\square$ Malonate $\square$ PAD $\square$ Urea $\underline{N}^2$ h $\square$ 6.5% NaCL $\square$ 10% Lactose $\square$ ONPG $\square$ Growth 42° $\square$	X Nex Pos!@ X Ney Ney Pos@ Nex Nex Pos@

Figure 75: Alcaligenes faecalis isolate 5-of-15.

Date Inoculated:	3-23-09		
Final Identification:	ALCALEGENES	FARCALIS 3/26/08 A.S.	
Final Identification.			
Comments: <u>Lig</u>	ht pink-flesh or	N Starch @ 72h. shows	
d.6	bushle Light yells	w pignent on storeh	
GLIC	6HT Yellow diffusi		
Gram Morph.		<u>Tubes <math>48 \text{ h}</math> 7 day <math>4/2</math></u>	
Gram Test	72h	KIA <u>K/NC</u> <u>K/K</u>	
Motility Wet Prep	Pos	-H2S <u>Slight H2S</u> <u>Slight H2S</u>	
Motility Deep	POSMA POSIMUM	Pseudo P Nele Nele Yellow	
Oxidase	205	Pseudo F <u>NCLA Nela</u> dictous.ble	
Catalase	STRONG DOS	NO3 reduced NeG Not Fluodescent	-
<b>PLATES</b>	48 h 7 day	Gas from NO3 Sm. bubble Sm. bubble Neca	
Odor	NONC	NO <sub>2</sub> reduced <u>POS</u> Gas from NO <sub>2</sub> <u>POS</u> <u>LG BubBL</u> POS	
Pigment on swab	Plesh	BUBALE	
Pigment on BAP	GREY - Like A. FARCALI	S OF Fructose Blue Blue	
Morphology on BAP	Smooth-TURN ADAR GARE	OF Lactose Blue	
Beta hemolysis	Nec	OF Maltose <u>Blue</u>	
Growth on Mac	POS DOS	OF Mannitol <u>Blue</u> OF Xylose <u>Blue</u>	
DNase hydrolysis	NEG NEG	OF Sucrose Buce	
Starch hydrolysis	New New	Arginine Nee Neb-	
Lecithinase	NEG NEG	Lysine	
Lipase	NEG NEG	Ornithine	
Rapid PYR	Nele	Base Control	
Rapid LAP	POS	Acetamide Pos Pos	
Rapid ESC	NEG	Esculin <u>New New</u> Gelatin <u>Nelo</u>	
Sensitivity to:		Indole <i>Nels</i>	
Penicillin (10 U)	R R	Malonate <u>Nelo Blue</u>	
Vancomycin (30 ug)	<u>R</u>	PAD <u>NECE</u> Ureantlezh <u>NECE</u> <u>NEC</u>	
Colistin (10 mcg)	5-12 S BRUAK	6.5% NaCL POS A05	
Polymyxin B (300 U)	) <u>5-15</u> <u>51</u> colour	10% Lactose <u>Neb</u> <u>Neb</u>	
		Growth $42^{\circ}$ POS POS	

Figure 76: Alcaligenes faecalis isolate 6-of-15.

Date Inoculated:

Final Identification:

11-16-11 ALCALIGENES FACEALIS 12/1/11 P.S.

Comments:

Gram Test $24h$ KIA $KIA$ $K/K$ Motility Wet Prep $DCS$ Pseudo P $Subtleff$ $H_2S$ Motility Deep $DOS$ Pseudo P $NCG$ Oxidase $PoS$ Pseudo F $NCG$ Catalase $Sithork G_P OS$ NO3 reduced $NCG$ PLATES       48 h       7 day       NO3 reduced $NCG$ Odor $AppLe$ Gas from NO3 $NCG$ $NCG$ Pigment on swab $fLegA - AnAc$ OF Fructose $DAAbc$ $NCG$ Morphology on BAP $Splehdf - Tuew Agth Caese$ OF Dextrose $DAAbc$ $NCG$ Growth on Mac $PoS$ $OF$ Sucrose $DAAbc$ $DF$ DNase hydrolysis $NCG$ $NCG$ $OF$ Sucrose $VCG$ Starch hydrolysis $NCG$ $NCG$ $Or Sucrose$ $VCG$ Lecithinase $NCG$ $NCG$ $VCG$ $VCG$ Lipase $NCG$ $NCG$ $VCG$ $VCG$ Rapid LAP $POS$ $Acetamide$ $POS$ $VCG$ Rapid					12/1/11 15 DAYS
Oran Test $2 + 1 + 1 = 1 = 1 = 1 = 1 = 1 = 1 = 1 = 1$	Gram Morph.			<u>48 h</u>	$\frac{7 \text{ day}}{7 \text{ day}}$
Motility Wet Prep $HCG$ Motility Deep $\hat{POS}$ Pseudo P $Ndidiase$ $\hat{POS}$ Pseudo F $Oxidase$ $\hat{POS}$ $NO_3$ reduced $PLates$ $48h$ $7 day$ $Odor$ $Apple$ $Gas$ from NO_3 $NO_2$ reduced $NeG$ $Pigment on swab$ $fleek - hNK$ $Pigment on BAP$ $GReY$ $Odor$ $Splekdf$ $Negee$ $OF$ Fructose $Of$ Dextrose $DARke Baae$ $Morphology on BAP$ $Splekdf$ $Splekdf$ $Tuew Agak Geee$ $OF$ Maltose $Heffee$ $OF$ Maltose $Heffee$ $OF$ Maltose $Heffee$ $OF$ Maltose $Heffee$ $Dase hydrolysis$ $Neffee$ $Neffee$ $Neffee$ $Starch hydrolysis$ $Neffee$ $Neffee$ $Neffee$ $Lipase$ $Neffee$ <	Gram Test	24h			K/R Guiltellis
Andminy Deep $105$ Pseudo F $NellOxidase\overline{P05}NO_3 reducedNellCatalase5iRex \& Po SNO_3 reducedNellPLATES48 h7 dayGas from NO_3NellOdorAppleGas from NO_2NellOdorAppleGas from NO_2NellPigment on swabfleek - PixkeOF FructosePake blacePigment on BAPGReYOF FructoseDAke blaceMorphology on BAPSpekedy - Tuew Agek GeesOF LactoseIBeta hemolysisNellOF MaltoseIGrowth on MacPoSPoSOF SucroseVDNase hydrolysisNellNellVellLipaseNellNellVellVellRapid PYRNellNellVellVellRapid LAPPoSAcetamidePoS / NellRapid ESCNellSescuinMellPenicillin (10 U)RMalonatePoz / Nell$	Motility Wet Prep	POG	-n <sub>2</sub> 5		<u>9110191</u> H2/
Oxidase $PUS$ NO3 reduced $NCC$ Catalase $Sithesk horights horights horight $	Motility Deep	pos			
PLATES48 h7 dayGas from NO3 $Necc$ Odor $Apple$ Gas from NO2 $Necc$ Pigment on swab $flech - P.Nkc$ OF Fructose $Necc$ Pigment on BAP $GREY$ OF Dextrose $Necc$ Morphology on BAP $Splehdf$ $Tuew Aqter GreetOF LactoseBeta hemolysisNeccOF MaltoseGrowth on MacPoSPoSDNase hydrolysisNeccOF SucroseStarch hydrolysisNeccNeccLecithinaseNeccOr SucroseLipaseNeccOr MithineRapid PYRNeccOr MithineRapid LAPPoSAcetamideSensitivity to:NelcGelatinPenicillin (10 U)RMalonate$	Oxidase	Pos	Pseudo F		NCG
IDATESIOIIOIIOIIOIIOIIOIIOIOdor $Apple$ Gas from NO2 $NO2$ reduced $NO2$ $NeC$ Pigment on BAP $GReY$ OF Fructose $NAEE Baae$ Morphology on BAP $SpRehdf$ $Turn Agth GreenOF LactoseMorphology on BAPSpRehdfTurn Agth GreenOF LactoseBeta hemolysisNeCOF MaltoseGrowth on MacPoSNO2DNase hydrolysisNeCNeCStarch hydrolysisNeCNeCLipaseNeCNeCRapid PYRNeCNeCRapid LAPPoSAcetamideRapid ESCNeCSculinPenicillin (10 U)RMalonate$	Catalase	STROX6 POS	NO <sub>3</sub> reduced		
Odor $Apple$ Gas from NO2 $NetcorePigment on swabflech - PinheOF FructoseNetcorePigment on BAPGReYOF DextroseNetcoreMorphology on BAPSplechdf - Tuen Agdr GreetOF LactoseIBeta hemolysisNetcoreOF MaltoseIGrowth on MacPoSPoSOF SuroseIDNase hydrolysisNetcoreNetcoreOF SucroseIStarch hydrolysisNetcoreNetcoreNetcoreILecithinaseNetcoreNetcoreIILipaseNetcoreNetcoreIIRapid PYRNetcoreIIIRapid ESCNetcoreIINetcoreSensitivity to:IIINetcorePenicillin (10 U)RMalonateI$	<b>PLATES</b>	<u>48 h</u> <u>7 day</u>	5		A
Pigment on swab $fleqh - h \cdot h \cdot h$ OF FructoseDARE BlacePigment on BAP $GREY$ OF DextroseImage: Constraint of the state of the	Odor	Apple	-		
Pigment on BAP $(arecy)$ OF Dextrose         Morphology on BAP $Sprendy - Turn Ager Green OF Lactose       Image: Constraint of the second of $	Pigment on swab	Flesh - PINE			
Morphology on BAP $Splehdy - Turn Agth Green OF Lactose$ Beta hemolysis $Nelc$ OF MaltoseGrowth on Mac $PoS$ $PoS$ OF SurveseDNase hydrolysis $Nelc$ $Nelc$ OF SucroseStarch hydrolysis $Nelc$ $Nelc$ ArginineLecithinase $Nelc$ $Nelc$ OrnithineLipase $Nelc$ $Nelc$ OrnithineRapid PYR $Nelc$ $Nelc$ $Nelc$ Rapid ESC $Nelc$ Esculin $Nelc$ Sensitivity to: $nelc$ $Nelc$ Penicillin (10 U) $R$ Malonate	Pigment on BAP	GREY			Ditke Black
Deta henolysis $New$ OF MannitolGrowth on Mac $PoS$ $PoS$ $PoS$ DNase hydrolysis $New$ $New$ $OF$ SucroseStarch hydrolysis $New$ $New$ $OF$ SucroseLecithinase $New$ $New$ $Lysine$ Lipase $New$ $New$ $Drithine$ Rapid PYR $New$ $New$ Rapid LAP $PoS$ $Acetamide$ Rapid ESC $Nelw$ $Nelw$ Sensitivity to:Indole $New$ Penicillin (10 U) $R$ Malonate	Morphology on BAP	Sprendy - TURN Ager Green	OF Lactose		
Growth on Mac $POS$ $POZ$ OF XyloseDNase hydrolysis $NCC$ $NCC$ OF SucroseStarch hydrolysis $NCC$ $NCC$ $Arginine$ Lecithinase $NCC$ $NCC$ $Lysine$ Lipase $NCC$ $NCC$ $Ornithine$ Rapid PYR $NCC$ $NCC$ $Ornithine$ Rapid LAP $POS$ $Acetamide$ $POS$ Rapid ESC $NCC$ $Sensitivity to:$ $NCC$ Penicillin (10 U) $R$ $MCC$ $NCC$	Beta hemolysis				
DNase hydrolysis $NCC$ $NCC$ $OF$ Sucrose $V$ Starch hydrolysis $NCC$ $NCC$ $Arginine$ $NCC$ Lecithinase $NCC$ $NCC$ $VCC$ Lipase $NCC$ $NCC$ $Ornithine$ Rapid PYR $NCC$ $NCC$ $Ornithine$ Rapid LAP $POS$ $Acetamide$ $POS$ Rapid ESC $NCC$ $Esculin$ $NCC$ Sensitivity to: $Indole$ $NCC$ Penicillin (10 U) $R$ $Malonate$	Growth on Mac	Pos Pos			
Lecithinase $N \in \omega$ $N \in \omega$ $Arginine$ $N \in \omega$ Lipase $N \in \omega$ $N \in \omega$ Lysine1Rapid PYR $N \in \omega$ $N \in \omega$ Ornithine1Rapid LAP $PO \subseteq$ Acetamide $PO \subseteq !$ Rapid ESC $N \in \omega$ $Sensitivity to:$ Indole $N \in \omega$ Sensitivity to: $Indole$ $N \in \omega$ $N \in \omega$	DNase hydrolysis				$\checkmark$
Lecithinase $N \in \mathcal{C}$ $N \in \mathcal{C}$ LysineLipase $N \in \mathcal{C}$ $N \in \mathcal{C}$ OrnithineRapid PYR $N \in \mathcal{C}$ $N \in \mathcal{C}$ Rapid LAP $POS$ Acetamide $POS / \mathcal{C}$ Rapid ESC $N \in \mathcal{C}$ $Sensitivity$ to: $N \in \mathcal{C}$ Sensitivity to:Indole $N \in \mathcal{C}$ Penicillin (10 U) $\mathcal{R}$ Malonate	Starch hydrolysis	NEG NEG	Arginine		NPG
Rapid PYR $NeG$ Base ControlRapid LAP $POG$ Acetamide $POS$ Rapid ESC $NeG$ Esculin $NeG$ Sensitivity to:Indole $NeG$ Penicillin (10 U) $R$ Malonate	Lecithinase	New New	Lysine		
Rapid PYR $NeG$ Rapid LAP $POG$ Rapid ESC $NeG$ Sensitivity to:IndolePenicillin (10 U) $R$ Malonate $POG$	Lipase	NEG NEG			
Rapid ESC     Nels     Nels       Sensitivity to:     Indole     Nels       Penicillin (10 U)     R     Malonate	Rapid PYR		Base Control		·
Kapid ESC     Neth       Sensitivity to:     Indole       Penicillin (10 U)     R       Malonate     Neth	Rapid LAP	POS			Pos!
Sensitivity to:     Indole       Penicillin (10 U)     R	Rapid ESC	Nela			
	Sensitivity to:	~			
	Penicillin (10 U)	_ <u></u>			Neg-
Vancomycin (30 ug) <u>R</u> PAD <u>Neb</u> UreaNeb2 h <u>Neb</u>	Vancomycin (30 ug)			Nele	
Colistin (10 mcg) $S - ll$ 6.5% NaCL $Pos$	Colistin (10 mcg)	<u>S-11</u>	6.5% NaCL		POS!
Polymyxin B (300 U) $5-14$ 10% Lactose $Ne6$	Polymyxin B (300 U)	5-14			
$\begin{array}{cccccccccccccccccccccccccccccccccccc$		,			Pes

Figure 77: Alcaligenes faecalis isolate 7-of-15.

Pigment on swabPerchbuffPigment on BAPwhichOF FructoseOF DextroseMorphology on BAP $huzquedg. queuegenSourceOF DextroseBeta hemolysishuqhuqOFGrowth on MacPOSfosOF MaltoseOr MatoseOF SucroseOF SucroseDNase hydrolysisNeqNeqLecithinaseNeqNeqLipaseNeqNeqRapid ESCNeqNeqPenicillin (10 U)uffuffVancomycin (30 ug)leffuffColistin (10 mcg)HSHSPolymyxin B (300 U)HSHSNegNeqNeqNegNeqNeqNegNeqNeqNacomycin B (300 U)HSHSNegNeqNeqNegNeqNegNeqNegNeqNordNeqNordNeqNacomycin B (300 U)HSHSHSNegNeqNegNeqNegNeqNegNeqNegNeqNegNeqNegNeqNegNeqNegNeqNegNeqNegNeqNegNeqNegNeqNegNeqNegNeqNegNeqNeg$		
Comments:       Nulli: Alceliques facelis 2:134 $A \leq s$ Gram Morph. $g$ $d \leq s$ Gram Morph. $Gram Test$ $KIA$ $H_M \subset S$ Motility Wet Prep $H_S$ $N = \frac{1}{M}$ $Neq^{-1}$ Motility Wet Prep $H_S$ $N = \frac{1}{M}$ $Neq^{-1}$ Motility Wet Prep $Poseudo P$ $Neq^{-1}$ $Neq^{-1}$ Oxidase $Racc       Poseudo P N = \frac{1}{M} Neq^{-1}         Catalase       Racc       Poseudo P N = \frac{1}{M} Neq^{-1}         Odor       functer       functer       From No_2 N = \frac{1}{M} Neq^{-1}         Pigment on swab       Pesede = Datff OF Fructose       OF Neq^{-1} Neq^{-1}         Pigment on BAP       Mafe^{-1} Neq^{-1} OF Sucrose       OF Neq^{-1}         Growth on Mac       Pos_{2} Pos_{2} OF Sucrose       OF Neq^{-1}         DNase hydrolysis       Neq^{-1} Neq^{-1} Neq^{-1} Neq^{-1}         Lipase       Neq^{-1} Neq^{-1} Neq^{-1} Neq^{-1}         Rapid PYR $	Date Inoculated: <u>M 4/20</u>	
Interference of the second s	Final Identification: Alcalqq	reves Freealis 6/10/15
Gram Morph.       Tubes       4S h       Zday         Gram Test       KIA $E/N^{\circ}$ $M_{day}^{\circ}$ Motility Wet Prep       Motility Deep $P_{C}$ $N_{day}^{\circ}$ $N_{day}^{\circ}$ Motility Deep $P_{C}$ $N_{day}^{\circ}$ $N_{day}^{\circ}$ $N_{day}^{\circ}$ Catalase $P_{CS}$ $P_{seudo P}$ $N_{day}^{\circ}$ $N_{day}^{\circ}$ Quarter $P_{Catalase}$ $P_{CS}$ $N_{day}^{\circ}$ $N_{day}^{\circ}$ Odor $P_{uatref}$ $P_{GS}$ $P_{Seudo P}$ $N_{day}^{\circ}$ Pigment on swab $P_{uatref}$ $P_{GS}$ $P_{GS}$ $P_{GS}$ Morphology on BAP $M_{day}^{\circ}$ $M_{GP}^{\circ}$ $P_{Seudo}^{\circ}$ $P_{Seudo}^{\circ}$ Morphology on BAP $M_{day}^{\circ}$ $M_{GP}^{\circ}$ $OF$ Fructose $OF$ $P_{Manitol}^{\circ}$ Growth on Mac $P_{GS}^{\circ}$ $P_{GS}^{\circ}$ $OF$ Matrose $V$ $N_{day}^{\circ}$ DNase hydrolysis $M_{GP}^{\circ}$ $N_{GP}^{\circ}$ $N_{GP}^{\circ}$ $N_{GP}^{\circ}$ $N_{GQ}^{\circ}$ Rapid PYR $N_{GP}^{\circ}$ $N_{GP}^{\circ}$ $N_{GP}^{\circ}$ $N_{GP}^{\circ}$	Comments: Malii Alcalianes Journes	2.134 A.S.
Gram Morph.Tubes48 h $I dax$ Gram TestKIA $HacHacMotility Wet PrephcsNagNagMotility DeephcsNagNagOxidasehcshcsNagCatalasehcsnagNagPLATES48 hgT daxNagOdorfunctorfunctorNagPigment on swabfactorfunctorfactorPigment on BAPhadthddthddtMorphology on BAPhcaudegefactorfactorMorphology isNagNagOF FructoseOF ManitolOF ManitolOF SucroseDNase hydrolysisNagNagLipaseNagNagRapid PYRNagNagRapid ESCNagNagVancomycin (30 ug)laflafVancomycin (30 ug)laflafVancomycin (30 ug)laflafPolymyxin B (300 U)laflafNaglaflafPolymyxin B (300 U)laflafNaglaflafNaglaflafPolymyxin B (300 U)laflafNaglaflafNaglaflafNaglaflafNaglaflafNaglaflafNaglaflafNaglaf<$		
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Origin rest       H2S       Neg         Motility Wet Prep $PS$ $PS$ $Neg$ Motility Deep $PS$ $PS$ $PS$ $Neg$ Catalase $PS$ $PS$ $PS$ $Neg$ PLATES $4Sh$ $97$ day $PS$ $PS$ $PS$ $PS$ Odor $PLATES$ $4Sh$ $97$ day $PS$	Gram Morph.	
Motility Wet PrepPseudo PNegMotility Deep $pos$ $pos$ $pseudo P$ $Neg$ Oxidase $pos$ $pseudo F$ $Neg$ $Neg$ Catalase $pos$ $pos$ $non No_3$ reduced $X$ $Meg$ PLATES48 h $97 day$ $non No_3$ reduced $X$ $Meg$ Odor $functyfuntyfosrot Sir Sir Sir Sir Sir Sir Sir Sir Sir Sir$	Gram Test	
Ninky Deep $Los$ Pseudo F $Neq$ Oxidase $Pas$ $Pseudo F$ $Neq$ Catalase $Pas$ $Pas$ $Pseudo F$ $Neq$ PLATES48 h $97 day$ $Gas from NO_3$ $Neq$ Odor $Puinty$ $fruity$ $fruity$ $Fas from NO_2$ $Neq$ Pigment on swab $Peeed$ $batf$ $OF$ Fructose $Q$ $Neq$ Pigment on BAP $dak$ $dak$ $dak$ $OF$ Fructose $Q$ $Neq$ Morphology on BAP $fragge grand $	Motility Wet Prep	H <sub>2</sub> S <u>N</u> <u>Negr</u>
Oxidase $Hos$ $Nos$ $Hos$ $Nos$ Catalase $hos$ $Nos$ $Nos$ $Hos$ $Nos$ PLATES48 h $97 day$ $Nos$ $Nos$ $Nos$ Odor $functyfunctyfunctyfunctyHosPigment on swabPacceDuffGas from NosNosNosPigment on SwabPacceDuffGas from NosNosNosPigment on BAPubikubikOF FructoseOFHosPosMorphology on BAPhard edgequeegesSacOF BactoseOF MaltoseOF MaltoseDNase hydrolysisNagNagOF SucroseVNegNegDNase hydrolysisNegNegOF SucroseVLipaseNegNegNegNegNegRapid ESCNegNegNegNegPencillin (10 U)dfdfdfNegVancomycin (30 ug)lafdfMagNegVancomycin (30 ug)lafUfNegNegPolymyxin B (300 U)HSIUSIUSNegPolymyxin B (300 U)HSIUSNegNeg$	Motility Deep	
PLATES48 h $97 dav$ - Gas from NO3 $V$ $VarOdorfunctorfrunty+ Gas from NO2XVarVarPigment on swabferrerbuff- Gas from NO2NVarVarVarPigment on BAPuhikuhikOF FructoseOFNVarVarVarVarMorphology on BAPfurreruhikuhikOF FructoseOFVar$	Oxidase Pos	Pseudo F N Negr
Image: Solution of the second seco	Catalase Pos	
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Pigment on BAPWalkWalkOF DextroseMorphology on BAP $herryedg, guesserSeeOF DextroseBeta hemolysisNegNegOF MaltoseGrowth on MacPosfosOF MaltoseDNase hydrolysisNegNegOF SucroseStarch hydrolysisNegNegOF SucroseLecithinaseNegNegNegLipaseNegNegNegRapid PYRNegNegNegRapid ESCNegGelatinNegVancomycin (30 ug)leflefMegVancomycin (30 ug)leflefNegPolymyxin B (300 U)Il \leqIl \leqNegPolymyxin B (300 U)Il \leqIl \leqNeg$	Pigment on swab Perch buff	
Morphology on BAP $h_{122424dg}$ $q_{12424dg}$	Pigment on BAP white white	
Jeta helholysisNagNagGrowth on Mac $Pos$ $Pos$ $OF$ MannitolDNase hydrolysis $Neg$ $Neg$ $OF$ SucroseDNase hydrolysis $Neg$ $Neg$ $OF$ SucroseStarch hydrolysis $Neg$ $Neg$ $OF$ SucroseLecithinase $Neg$ $Neg$ $Neg$ Lipase $Neg$ $Neg$ $Ornithine$ Rapid PYR $Neg$ $Neg$ $Ornithine$ Rapid LAP $Aos$ Acetamide $Pos$ Rapid ESC $Neg$ $Gelatin$ $Neg$ Penicillin (10 U) $Gel$ $Gel$ $Neg$ Vancomycin (30 ug) $Ief$ $Gel$ $Neg$ Vancomycin (30 ug) $Ief$ $Ief$ $Neg$ Polymyxin B (300 U) $Ief$ $Ief$ $Neg$ Nog $Neg$ $Neg$ $Neg$ Naccomycin B (300 U) $Ief$ $Ief$ $Neg$ Nog $Neg$ $Neg$ $Neg$ Nog $Neg$ $Neg$ Nog $Neg$ $Neg$ Nog $Neg$ $Neg$ Nog $Neg$ $Neg$	Morphology on BAP fuzzyeda, grenager - S	OF Lactose
Growth on Mac $POS$ $POS$ $POS$ $OF$ $Sylose$ DNase hydrolysis $Neq$ $Neq$ $OF$ $OF$ $Sucrose$ $V$ Starch hydrolysis $Neq$ $Neq$ $Neq$ $OF$ $Sucrose$ $V$ Lecithinase $Neq$ $Neq$ $Lysine$ $N$ $Neq$ $Neq$ Lipase $Neq$ $Neq$ $Neq$ $Drithine$ $N$ $Neq$ Rapid PYR $Neq$ $Neq$ $Base$ $Onithine$ $N$ $Neq$ Rapid LAP $Pos$ $Acetamide$ $Pos$ $Pos$ $Pos$ Rapid ESC $Neq$ $Req$ $Base$ $Neq$ $Neq$ Sensitivity to: $Neq$ $Meq$ $Neq$ $Neq$ Penicillin (10 U) $GE$ $GE$ $Neq$ $Neq$ Vancomycin (30 ug) $Lef$ $Uef$ $Meq$ $Neq$ Vancomycin (30 ug) $IIS$ $IIS$ $6.5\%$ $NaCL$ Polymyxin B (300 U) $IIS$ $IIS$ $ONPG$ $N$ NPG $N$ $Neq$ $Neq$ $Neq$		
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LipaseNewNewNewRapid PYRNewBase ControlNNewRapid LAP $hos$ Acetamide $pos$ $pos$ Rapid ESCNewGelatinNNewSensitivity to:Indole $X$ NewPenicillin (10 U) $lel$ $lel$ Malonate $pos$ Vancomycin (30 ug) $lel$ $lel$ UreaNewColistin (10 mcg) $11.5$ $11.5$ $6.5\%$ NaCL $los$ Polymyxin B (300 U) $14.5$ $14.5$ $10\%$ LactoseNNewNewNewNew	Lecithinase NegNeg	Lysine N web
Rapid PYRNegRapid LAPPosAcetamide $pos$ Rapid ESCNegGelatinNSensitivity to:IndoleXPenicillin (10 U) $lef$ $lef$ Vancomycin (30 ug) $lef$ $lef$ Vancomycin (10 mcg)IISIISPolymyxin B (300 U)IISIISOpen StructureNegNegNegNone StructureNegNegNegNone StructureNegNone StructureNegNone StructureNegNegNeg	Lipase Neg Neg	
Rapid ESCNegNegRapid ESCNegEsculinNSensitivity to:IndoleNPenicillin (10 U) $lel$ $lel$ Vancomycin (30 ug) $lel$ $lel$ UreaNegNegColistin (10 mcg)IISIISPolymyxin B (300 U) $I4S$ I4SNowNegNowNegNowNegNowNegNowNegNowNegNowNegNowNegNowNeg	Rapid PYR	
Rapid ESC $Nlg$ Gelatin $Nlg$ Sensitivity to:Indole $X$ $Nlg$ Penicillin (10 U) $lel$ $lel$ Malonate $Pos$ Vancomycin (30 ug) $lel$ $lel$ $Mlg$ $Nlg$ Colistin (10 mcg) $11.5$ $11.5$ $6.5\%$ NaCL $los$ $Pls$ Polymyxin B (300 U) $14.5$ $14.5$ $10\%$ Lactose $N$ $Nleg$	Rapid LAP <u>Pos</u>	
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Colistin (10 mcg) $115$ $115$ $6.5\%$ NaCL $105$ $PDS$ Polymyxin B (300 U) $145$ $145$ $10\%$ Lactose $N$ $Neg$ ONPG $N$ $Neg$	Vancomycin (30 ug) Lef Lef	
$\frac{1}{193} = \frac{1}{193} = \frac{1}$	Colistin (10 mcg) // 5 // 5	6.5% NaCL los PDS
ONPG N New	Polymyxin B (300 U) 14 5 145	
Growth 42° ts4 VAS PDS		$\frac{-}{\text{Growth } 42^{\circ} - 78\%} = \frac{N}{\rho_{0.5}} = \frac{N}{\rho_{0.5}}$

Figure 78: Alcaligenes faecalis isolate 8-of-15.

# 7 GENUS AZOSPIRILLIUM7.1 Azospirillium species

Over the course of ASHEX clinical-isolate collection, one individual isolate of Azospirillium species was analyzed. The associated biochemical result form is presented here.

Test	+	_	Raw%	<b>W95</b> %	Test	+	_	Raw%	<b>W95</b> %
Motility	1	0	100.00	60.33	$H_2S$	0	1	0.00	39.67
Oxidase	1	0	100.00	60.33	Pseudo P	0	1	0.00	39.67
Catalase	0	1	0.00	39.67	Pseudo F	0	1	0.00	39.67
Yellow Pigment	0	1	0.00	39.67	NO <sub>3</sub> Reduced	1	0	100.00	60.33
Pink Pigment	1	0	100.00	60.33	Gas from $NO_3$	0	1	0.00	39.67
Beta Hemolysis	0	1	0.00	39.67	$NO_2$ Reduced	0	1	0.00	39.67
Growth on Mac	0	1	0.00	39.67	Gas from $NO_2$	0	1	0.00	39.67
DNase	0	1	0.00	39.67	OF Fructose	1	0	100.00	60.33
Starch	1	0	100.00	60.33	OF Dextrose	1	0	100.00	60.33
Lecithinase	0	1	0.00	39.67	OF Lactose	0	1	0.00	39.67
Lipase	0	1	0.00	39.67	OF Maltose	0	1	0.00	39.67
PYR	0	1	0.00	39.67	OF Mannitol	0	1	0.00	39.67
LAP	1	0	100.00	60.33	OF Xylose	0	1	0.00	39.67
ESC Spot Test	1	0	100.00	60.33	OF Sucrose	0	1	0.00	39.67
Penicillin (10U)	0	1	0.00	39.67	Arginine	0	1	0.00	39.67
Vancomycin $(30\mu g)$	0	1	0.00	39.67	Lysine	0	1	0.00	39.67
Colistin $(10\mu g)$	0	1	0.00	39.67	Ornithine	0	1	0.00	39.67
Polymyxin B (300U)	0	1	0.00	39.67	Acetamide	0	1	0.00	39.67
					Esculin	1	0	100.00	60.33
					Gelatin	0	1	0.00	39.67
					Indole	0	1	0.00	39.67
					Malonate	1	0	100.00	60.33
					PAD	0	1	0.00	39.67
					Urea 2 hrs.	0	1	0.00	39.67
					Urea 48 hrs.	1	0	100.00	60.33
					6.5% NaCl	0	1	0.00	39.67
					10% Lactose	0	1	0.00	39.67
					ONPG	1	0	100.00	60.33
					Growth 42°C	1	0	100.00	60.33

Table 15: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as  $n_+/(n_+ + n_-)$ , where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which shifts raw percentages towards 50% with a strength dependent on the total number of test occurrences. The four antibiotic tests at the bottom of Column 1 are sensitivity tests where a positive result indicates sensitivity to the drug.

	Date Inoculated:	m6/13/16			· · · · · · · · · · · · · · · · · · ·
	Final Identification:	Azospinillium sp. p.	r Sequercity -	OK per P.	25.
	Comments: Maldi	i no reliable 1D; sent for p	equencity		
	PINK	COLONIES ON PSEUDO F PINE ON BAP	4F, STARCH	EGG YOL	= The Choc 6/24/16
	Gram Morph.	-	Tubes	<u>48 h</u>	7 day PLLYellow
	Gram Test		KIA	KINC	K/ lt fel Neg - 5m blk line @ integace
	Motility Wet Prep		H <sub>2</sub> S	Nog	Neg - Sm blk line & myace
	Motility Deep	Pos V	Pseudo P	N	Nag winkled, perch
	Oxidase	Pos	Pseudo F	N	Neg / Couver group
	Catalase	Neg	NO3 reduced	$\sim$	red Pos ~
	PLATES	<u>48 h</u> <u>7 day</u>	Gas from NO <sub>3</sub>	N	try bubble Neg
	Odor	Slight POS-amprovia	$NO_2$ reduced Gas from $NO_2$	<u> </u>	red Neg-
$\frown$	Pigment on swab	buff buff		N	-Neg trig
Bap	Pigment on BAP	any many Pink	OF Fructose	Pos	_los:
on Edayplat	Morphology on BAP	Sound wet rd wonkled	OF Dextrose OF Lactose	- POS	Pos Be-Gr Ner
ang dry look	Beta hemolysis	New New	OF Maltose	N	Net
life little	Growth on Mac	0	OF Mannitol	N	Nes
Stars	DNase hydrolysis	Neg Neg-Veryinhibi	OF Xylose OF Sucrose	- <u>N</u>	Nog - GREEN
Che *	Starch hydrolysis	ult? ansare Pos			
dugt pink	Lecithinase	New Nes	Arginine Lysine	N	Neg V
Swab-rosey	Lipase	Near Near	Ornithine	N	Noa
pile	Rapid PYR	Neg	Base Control	N	_Neg ~
	Rapid LAP	Pos	Acetamide	N	Near
	Rapid ESC	Pos	Esculin	Pas	POS V
	Sensitivity to:		Gelatin Indole	-P	NOG V
	Penicillin (10 U)	IR IR	Malonate	- N	Pos V
	Vancomycin (30 ug)	LeR UP V	PAD	N	
	Colistin (10 mcg)	LER UP V	Urea <u>N</u> 2h 6.5% NaCL	Pos (Se	ent) pos
	Polymyxin B (300 U		10% Lactose	N	Ner
$\cap$	i orymyxin B (500 C		ONPG	Pos	<u> 103</u>
			Growth 42°	Pos	

Figure 79: Azospirillium species isolate 1-of-1.

## 8 GENUS BERGEYELLA

#### 8.1 Bergeyella zoohelcum

Over the course of ASHEX clinical-isolate collection, six individual isolates of Bergeyella zoohelcum were analyzed. Two of the six recorded results are pictured in this subsection.

Test	+	_	Raw%	W95%	Test	+	—	Raw%	W95%
Motility	0	6	0.00	19.52	$H_2S$	0	6	0.00	19.52
Oxidase	5	1	83.33	70.32	Pseudo P	0	6	0.00	19.52
Catalase	3	3	50.00	50.00	Pseudo F	0	6	0.00	19.52
Yellow Pigment	0	6	0.00	19.52	NO <sub>3</sub> Reduced	0	6	0.00	19.52
Pink Pigment	0	6	0.00	19.52	Gas from $NO_3$	0	4	0.00	24.50
Beta Hemolysis	0	4	0.00	24.50	NO <sub>2</sub> Reduced	0	6	0.00	19.52
Growth on Mac	0	6	0.00	19.52	Gas from $NO_2$	0	4	0.00	24.50
DNase	0	6	0.00	19.52	OF Fructose	0	6	0.00	19.52
Starch	0	6	0.00	19.52	OF Dextrose	0	6	0.00	19.52
Lecithinase	0	4	0.00	24.50	OF Lactose	0	6	0.00	19.52
Lipase	0	4	0.00	24.50	OF Maltose	0	6	0.00	19.52
PYR	0	3	0.00	28.08	OF Mannitol	0	6	0.00	19.52
LAP	3	0	100.00	71.92	OF Xylose	0	6	0.00	19.52
ESC Spot Test	0	3	0.00	28.08	OF Sucrose	0	4	0.00	24.50
Penicillin (10U)	5	0	100.00	78.28	Arginine	0	6	0.00	19.52
Vancomycin $(30\mu g)$	6	0	100.00	80.48	Lysine	0	6	0.00	19.52
Colistin $(10\mu g)$	0	6	0.00	19.52	Ornithine	0	6	0.00	19.52
Polymyxin B (300U)	0	4	0.00	24.50	Acetamide	0	6	0.00	19.52
					Esculin	0	6	0.00	19.52
					Gelatin	4	2	66.67	60.16
					Indole	5	1	83.33	70.32
					Malonate	0	6	0.00	19.52
					PAD	0	6	0.00	19.52
					Urea 2 hrs.	6	0	100.00	80.48
					Urea 48 hrs.	6	0	100.00	80.48
					6.5% NaCl	0	6	0.00	19.52
					10% Lactose	0	6	0.00	19.52
					ONPG	0	4	0.00	24.50
					Growth 42°C	2	4	33.33	39.84

Table 16: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as  $n_+/(n_+ + n_-)$ , where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which shifts raw percentages towards 50% with a strength dependent on the total number of test occurrences. The four antibiotic tests at the bottom of Column 1 are sensitivity tests where a positive result indicates sensitivity to the drug.

Date Inoculated:

W 11/14/16

Final Identification:

Comments:	Lub: Be	rgeyelle	zoohalcum	Maldi 20	2.07	7
	NO 4501	ead de	zoohelcum			2015-16#5
Gram Morph. Gram Test				<u>Tubes</u> KIA	<u>48 h</u>	<u>7 day</u> 
Motility Wet F				H <sub>2</sub> S	2213	Neg
Motility Deep	·	A los		Pseudo P		Nº61
Oxidase $\delta O$		Dox		Pseudo F		Neg
Catalase 60		Nac.		NO reduced	NR	ed alar
PLATES		B h	7 day	NO <sub>3</sub> reduced Gas from NO <sub>3</sub>	Xa	Ner
Odor	-+0	<u>5 II</u>		NO <sub>2</sub> reduced	$\times$	Red Neg
Pigment on sw			<u>Slight</u> , non den	of Gas from NO <sub>2</sub>		tere Neg
Pigment on BA			- goldin br	OF Fructose		<u>G-</u> -
Morphology o			- yuy	OF Dextrose OF Lactose		Gr -
Beta hemolysi			round, wet	OF Maltose		<u>Gr</u> -
Growth on Ma		N	Nea	OF Mannitol		Gr -
DNase hydrol			Nac	OF Xylose OF Sucrose		$\frac{Gr}{Gr}$
Starch hydroly			Neop	OI Sucrose		
Lecithinase	y 515		1008	Arginine		Nog
			Neg	Lysine Ornithine		Ner
Lipase Dapid DVD		Neg		Base Control		Neg
Rapid PYR	-			Acetamide		1/20-
Rapid LAP	-	POS		Esculin		Ner
Rapid ESC	-	Neg		Gelatin 60		Pos
Sensitivity to:		1.	. 1. 0	Indole <b>80</b> Malonate		<u>P05</u>
Penicillin (10		na	_n[a	PAD		- New New
Vancomycin		145	143	Urea 1/4 2 h		Pos
Colistin (10		UR	6R	6.5% NaCL		Nez
Polymyxin E	3 (300 U) _	6R	610	10% Lactose ONPG		Neg
				Growth 42° 40	>	Neg

·

Figure 80: Bergeyella zoohelcum isolate 1-of-6.

Date Inoculated:	M 6/22/15	
Final Identification:	Bengella Zooheleur 4/29/15 P.S.	
Comments: <u>Muld</u>	i 1.9. Bergevella zoohelcum; reported as such a fine report.	
Urea	turning Dufin 15 minutes 15-7	
Gram Morph. Gram Test Motility Wet Prep Motility Deep Nay	<u>Tubes</u> KIA <u>KIA</u> H <sub>2</sub> S <u>Neg</u> <u>KK</u> <u>Neg</u> <u>Neg</u> <u>Neg</u> <u>K</u>	
Oxidase	Pos -Nord Pseudo F Neg Neg	
Catalase <u>PLATES</u> Odor	<u>POS</u> - NO <sub>3</sub> reduced <u>X</u> <u>fidifiv2n</u> - Neg <u>48 h</u> <u>7 day</u> - Gas from NO <sub>3</sub> <u>Nig</u> <u>Neg</u> <u>NO<sub>2</sub> reduced</u> <u>X</u> <u>fidifiv2n</u> - Neg <u>NO<sub>2</sub> reduced</u> <u>X</u> <u>fidifiv2n</u> - Neg	
Pigment on swab Pigment on BAP Morphology on BAP :		
Beta hemolysis Growth on Mac DNase hydrolysis	Neg Neg OF Maltose Neg Neg Neg OF Xylose Neg Neg Neg NG OF Sucrose Neg Neg	
Starch hydrolysis Lecithinase Lipase Rapid PYR	Neg Neg Seiger growth Lysine Neg Neg Neg Neg Ornithine Neg Neg Neg Neg Neg	
Rapid LAP Rapid ESC Sensitivity to:	Posel     Acetamide     Neg     Neg       Neg     Esculin     Neg     Neg       Gelatin     Neg     Neg       + Indole     X     Pos	
Penicillin (10 U) Vancomycin (30 ug Colistin (10 mcg) Polymyxin B (300	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	

Figure 81: Bergeyella zoohelcum isolate 2-of-6.

## 9 GENUS BLASTOMONAS

#### 9.1 Blastomonas natatoria

Over the course of ASHEX clinical-isolate collection, one individual isolate of Blastomonas natatoria was analyzed. The associated biochemical result form is NOT presented here.

Test	+	_	Raw%	<b>W95</b> %	Test	+	_	Raw%	<b>W95</b> %
Motility	0	1	0.00	39.67	$H_2S$	0	1	0.00	39.67
Oxidase	1	0	100.00	60.33	Pseudo P	0	1	0.00	39.67
Catalase	1	0	100.00	60.33	Pseudo F	0	1	0.00	39.67
Yellow Pigment	1	0	100.00	60.33	NO <sub>3</sub> Reduced	0	1	0.00	39.67
Pink Pigment	0	1	0.00	39.67	Gas from $NO_3$	0	1	0.00	39.67
Beta Hemolysis	0	1	0.00	39.67	NO <sub>2</sub> Reduced	0	1	0.00	39.67
Growth on Mac	0	1	0.00	39.67	Gas from $NO_2$	0	1	0.00	39.67
DNase	0	1	0.00	39.67	OF Fructose	0	1	0.00	39.67
Starch	0	1	0.00	39.67	OF Dextrose	0	1	0.00	39.67
Lecithinase	0	1	0.00	39.67	OF Lactose	0	1	0.00	39.67
Lipase	0	1	0.00	39.67	OF Maltose	0	1	0.00	39.67
PYR	0	1	0.00	39.67	OF Mannitol	0	1	0.00	39.67
LAP	1	0	100.00	60.33	OF Xylose	0	1	0.00	39.67
ESC Spot Test	0	1	0.00	39.67	OF Sucrose	1	0	100.00	60.33
Penicillin (10U)	1	0	100.00	60.33	Arginine	0	1	0.00	39.67
Vancomycin $(30\mu g)$	1	0	100.00	60.33	Lysine	0	1	0.00	39.67
Colistin $(10\mu g)$	0	1	0.00	39.67	Ornithine	0	1	0.00	39.67
Polymyxin B (300U)	1	0	100.00	60.33	Acetamide	0	1	0.00	39.67
					Esculin	0	1	0.00	39.67
					Gelatin	0	1	0.00	39.67
					Indole	0	1	0.00	39.67
					Malonate	0	1	0.00	39.67
					PAD	0	1	0.00	39.67
					Urea 2 hrs.	0	1	0.00	39.67
					Urea 48 hrs.	0	1	0.00	39.67
					6.5% NaCl	0	1	0.00	39.67
					10% Lactose	0	1	0.00	39.67
					ONPG	0	1	0.00	39.67
					Growth 42°C	0	1	0.00	39.67

Table 17: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as  $n_+/(n_+ + n_-)$ , where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which shifts raw percentages towards 50% with a strength dependent on the total number of test occurrences. The four antibiotic tests at the bottom of Column 1 are sensitivity tests where a positive result indicates sensitivity to the drug.

## 10 GENUS BORDETELLA10.1 Bordetella avium

Over the course of ASHEX clinical-isolate collection, one individual isolate of Bordetella avium was analyzed. The associated biochemical result form is presented here.

Test	+	_	Raw%	W95%	Test	+	_	Raw%	<b>W95</b> %
Motility	1	0	100.00	60.33	$H_2S$	0	1	0.00	39.67
Oxidase	1	0	100.00	60.33	Pseudo P	0	1	0.00	39.67
Catalase	1	0	100.00	60.33	Pseudo F	0	1	0.00	39.67
Yellow Pigment	0	1	0.00	39.67	NO <sub>3</sub> Reduced	1	0	100.00	60.33
Pink Pigment	0	1	0.00	39.67	Gas from $NO_3$	0	1	0.00	39.67
Beta Hemolysis	0	1	0.00	39.67	$NO_2$ Reduced	0	1	0.00	39.67
Growth on Mac	1	0	100.00	60.33	Gas from $NO_2$	0	1	0.00	39.67
DNase	0	1	0.00	39.67	OF Fructose	0	1	0.00	39.67
Starch	0	1	0.00	39.67	OF Dextrose	0	1	0.00	39.67
Lecithinase	0	1	0.00	39.67	OF Lactose	0	1	0.00	39.67
Lipase	0	1	0.00	39.67	OF Maltose	0	1	0.00	39.67
PYR	1	0	100.00	60.33	OF Mannitol	0	1	0.00	39.67
LAP	1	0	100.00	60.33	OF Xylose	0	1	0.00	39.67
ESC Spot Test	0	1	0.00	39.67	OF Sucrose	0	1	0.00	39.67
Penicillin (10U)	0	1	0.00	39.67	Arginine	0	1	0.00	39.67
Vancomycin $(30\mu g)$	0	1	0.00	39.67	Lysine	0	1	0.00	39.67
Colistin $(10\mu g)$	1	0	100.00	60.33	Ornithine	0	1	0.00	39.67
Polymyxin B (300U)	1	0	100.00	60.33	Acetamide	0	1	0.00	39.67
					Esculin	0	1	0.00	39.67
					Gelatin	0	1	0.00	39.67
					Indole	0	1	0.00	39.67
					Malonate	1	0	100.00	60.33
					PAD	0	1	0.00	39.67
					Urea 2 hrs.	0	1	0.00	39.67
					Urea 48 hrs.	0	1	0.00	39.67
					6.5% NaCl	1	0	100.00	60.33
					10% Lactose	0	1	0.00	39.67
					ONPG	0	1	0.00	39.67
					Growth 42°C	1	0	100.00	60.33

Table 18: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as  $n_+/(n_+ + n_-)$ , where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which shifts raw percentages towards 50% with a strength dependent on the total number of test occurrences. The four antibiotic tests at the bottom of Column 1 are sensitivity tests where a positive result indicates sensitivity to the drug.

	Date Inoculated:	12-11-09				
	Final Identification:	<i>f</i> •				frozen 12/29/c
	Comments: Borg	detella anom by A	eup sequerai	F		
	Gram Morph.		Tubes 72	12/14 .48.h	7 day	
The state	Gram Test	24h	KIA 72	KINC	KIK	
			H <sub>2</sub> S	NEG	New	
	Motility Wet Prep Motility Deep	POS- VERY MOTILE POS POS	Pseudo P	liec	Nela	
	Oxidase	Pos	Pseudo F	New	New	
	Catalase	STRONG POS	NO <sub>3</sub> reduced		ROS	
	PLATES	48 h 7 day	Gas from NO <sub>3</sub>	Nece	New	
	Odor	None	NO <sub>2</sub> reduced		New	
	Pigment on swab	BUGG	Gas from NO <sub>2</sub>	Nele	Nel	
	Pigment on BAP	GREY	OF Fructose	BLER	sive	
	Morphology on BAP	TRANSLUCENT_ dull	OF Dextrose OF Lactose			
	Beta hemolysis	Nele	OF Maltose			
	Growth on Mac	POS POS	OF Mannitol OF Xylose			
	DNase hydrolysis	Nec- Nel	OF Sucrose			
	Starch hydrolysis	NEG NEG	Arginine	Dec	Pos	Nepeal arjenine
	Lecithinase	NEG- Nec-	Lysine	bec	New	NCL
	Lipase	Nel Nela	Ornithine	NeG	Nele	
	Rapid PYR	Pos	Base Control	Nele	Nele	
	Rapid LAP	POS	Acetamide	Nele	Nee	
	Rapid ESC	New	Esculin Gelatin	Nela	Neb	
	Sensitivity to:		Indole	NCG	<u>NEG</u> NCG	
	Penicillin (10 U)	RRH	- Malonate	NEG-	H. BLeet	2
	Vancomycin (30 ug)	R	PAD Urea <u>NCG</u> h	New	Nec	
	Colistin (10 mcg)	5-14 5	6.5% NaCL	POS	Pos	
	Polymyxin B (300 U)	5-16 5	10% Lactose	Nec	New	

Note: All biochemical tests (except where noted) are incubated at 30°C and read after 48 hrs. incubation and again at 7 days.

Figure 82: Bordetella avium isolate 1-of-1.

ONPG

Growth 42<sup>°</sup>

NPL

105

POS

#### 10.2 Bordetella bronchiseptica

Over the course of ASHEX clinical-isolate collection, 19 individual isolates of Bordetella bronchiseptica were analyzed. Six of the 19 recorded results are pictured in this subsection.

Test	+	_	Raw%	W95%	Test	+	_	Raw%	<b>W95</b> %
Motility	16	3	84.21	78.46	H <sub>2</sub> S	0	19	0.00	8.41
Oxidase	19	0	100.00	91.59	Pseudo P	0	19	0.00	8.41
Catalase	19	0	100.00	91.59	Pseudo F	0	19	0.00	8.41
Yellow Pigment	0	19	0.00	8.41	NO <sub>3</sub> Reduced	16	3	84.21	78.46
Pink Pigment	0	19	0.00	8.41	Gas from $NO_3$	1	12	7.69	17.34
Beta Hemolysis	0	13	0.00	11.41	NO <sub>2</sub> Reduced	0	19	0.00	8.41
Growth on Mac	19	0	100.00	91.59	Gas from $NO_2$	0	13	0.00	11.41
DNase	0	19	0.00	8.41	OF Fructose	0	19	0.00	8.41
Starch	0	19	0.00	8.41	OF Dextrose	0	19	0.00	8.41
Lecithinase	0	15	0.00	10.19	OF Lactose	0	19	0.00	8.41
Lipase	0	14	0.00	10.77	OF Maltose	0	19	0.00	8.41
PYR	2	7	22.22	30.53	OF Mannitol	0	19	0.00	8.41
LAP	9	0	100.00	85.04	OF Xylose	0	19	0.00	8.41
ESC Spot Test	0	9	0.00	14.96	OF Sucrose	0	13	0.00	11.41
Penicillin (10U)	0	19	0.00	8.41	Arginine	0	19	0.00	8.41
Vancomycin $(30\mu g)$	0	19	0.00	8.41	Lysine	0	19	0.00	8.41
Colistin $(10\mu g)$	18	1	94.74	87.21	Ornithine	0	19	0.00	8.41
Polymyxin B (300U)	12	1	92.31	82.66	Acetamide	0	19	0.00	8.41
					Esculin	0	19	0.00	8.41
					Gelatin	0	19	0.00	8.41
					Indole	0	19	0.00	8.41
					Malonate	11	8	57.89	56.57
					PAD	1	18	5.26	12.79
					Urea 2 hrs.	18	1	94.74	87.21
					Urea 48 hrs.	19	0	100.00	91.59
					6.5% NaCl	15	4	78.95	74.08
					10% Lactose	0	19	0.00	8.41
					ONPG	0	18	0.00	8.79
					Growth 42°C	17	2	89.47	82.83

Table 19: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as  $n_+/(n_+ + n_-)$ , where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which shifts raw percentages towards 50% with a strength dependent on the total number of test occurrences. The four antibiotic tests at the bottom of Column 1 are sensitivity tests where a positive result indicates sensitivity to the drug.

	Date Inoculated:	F 10/16/15	- C.	AP	UNENOU	N		
	Final Identification:	Bord	e tella	b	kovehisep	tica	P.S. 10/30/1	5
	Comments: Maldi	2.34 Bore	utille bron	chisep	otica			_
		e 7					2015-22	_
	Gram Morph.				Tubes KIA	5d 48 h	<sup>1°</sup> Z'day K/K	0/30
	Gram Test			1	H <sub>2</sub> S	N		gble pig.
4-0	Motility Wet Prep	Asty				. /		@ interfore
4-0	Motility Deep 105,58		Neglilay		Pseudo P Pseudo F	N	Neg	
-	Oxidase	Pos		0-4	11 50000 1			
4-0	Catalase	Pos		2-2	$-NO_3$ reduced	X	Red - Pos + -	83.33
	PLATES 50	<u>^</u>	day		Gas from $NO_3$ $NO_2$ reduced	<u>N</u>	Red -Neg	2-10
V0-4	Odor	Pos	Pas	0-4	-	Ň	Neg	
P 0 -5	Pigment on swab	dk flesh	buff		OF Fructose	Be	Be - B	ine
	Pigment on BAP	wh-gr	uh-sr		OF Pructose OF Dextrose	BL		(
	Morphology on BAP	Sm rd Wayy	Smrd wa	xy	OF Lactose	Be		
	Beta hemolysis	Neg	Nez		OF Maltose OF Mannitol	BE		
4-0	Growth on Mac	Pos	POS	-	OF Malinton OF Xylose	Bl		
	DNase hydrolysis	N	Nes		OF Sucrose	Be		V
	Starch hydrolysis	N	Noz "		Arginine	A.)	Near	
	Lecithinase	N	Negor		Lysine	N	Neg -	
0-4	Lipase	N	Non V	0-4	Ornithine	N	Neg	
	- Rapid PYR Z 5	N	0		Base Control	Ν	Neg	
4-0	• Rapid LAP	Pos			Acetamide	N	Neg- 1	
	1 Rapid ESC	N			Esculin	Ŋ	Neg	
	Sensitivity to:			6	Gelatin Indole	-N_	NIN	
0	-9 Penicillin (10 U)	6F	68 1	/ u	Malonate	- ADS	- pos - s	5.56
			Lef v	•	-9 PAD	Nezz	·	7.56
	Y Vancomycin (30 ug)		165 0		$\sim$ Urea $\frac{Ma}{2}$ h $\sim$ 6.5% NaCL	Pos	- <u>Pos</u> ~ k	epeat un
	Colistin (10 mcg) <b>94.</b>				-4 10% Lactose	<u>Pos</u>	Ner V	94.4
4.	o Polymyxin B (300 U ع- ۹۱، ر		185	0	-4 ONPG	N	Nor V	
	120	01		પ	-6 Growth 42 <sup>0</sup>	Wet?	POS V 8	8.89

Figure 83: Bordetella bronchiseptica isolate 1-of-19.

Date Inoculated:	mio/20/14	DX: ; LOWER GASTROINTESTINAL BLEED
Final Identification:		
Comments: 6	erdetella Grande	hiseptica P.S. 10/29/14
Nold	<u>Li B. brondisghier 2.154</u> B. brondisghier 2.154 B. brondisghier a 97.9190 <u>Pos</u> <u>As</u> <u>As</u> <u>As</u> <u>As</u> <u>As</u> <u>As</u> <u>As</u> <u>A</u>	$ \begin{array}{c c c c c c c c c c c c c c c c c c c $
DNase hydrolysis	Neg Neg-	OF Xylose <u>Gr</u> OF Sucrose <u>Bl-Gr</u>
Starch hydrolysis Lecithinase Lipase Rapid PYR	Neg Neg V Neg Neg V Neg Neg V	Arginine $N$ $Neg_{T}$ Lysine $Neg_{T}$ $Neg_{T}$ Ornithine $Neg_{T}$ $Neg_{T}$ Base Control $Neg_{T}$ $Neg_{T}$
Rapid LAP	105	Acetamide <u>N New</u>
Rapid ESC	Neg	Bsculin <u>Neg</u>
<u>Sensitivity to:</u> Penicillin (10 U) Vancomycin (30 u Colistin (10 mcg) Polymyxin B (300	135 135	Indole <u>X</u> <u>Na</u> <u>Malonate</u> <u>Pos</u> <u>Pos</u> <u>PAD</u> <u>Near</u> <u>X</u> Urea <u>Malonate</u> <u>Pos</u> <u>V</u> <u>Mister Wrea</u> <u>6.5% NaCL</u> <u>Pos</u> <u>Pos</u> <u>C</u> <u>Dot Malonate</u> <u>10% Lactose</u> <u>N</u> <u>Near</u> <u>Pos</u> <u>Pos</u> <u>Dot Malonate</u> <u>ONPG</u> <u>N</u> <u>Near</u> <u>V</u> <u>Growth</u> 42 <sup>0</sup> TSA <u>Pos</u> <u>Pos</u> <u>C</u>

~

Figure 84: Bordetella bronchiseptica isolate 2-of-19.

	Date Inoculated:	m 3/27/	7			,	1	
	Final Identification:	Bordefel	la punchise	ptica	99.4719	M5-10	O	
	Comments: Naed	Li: Bordek	ela bunchi	septi	ta 2.38			
				'	xed backeni	al flora	-	2017-31
	Gram Morph. Gram Test				<u>Tubes</u> KIA H <sub>2</sub> S	48 h K/nc Neg	<u>7 day</u> <u>K/K</u>	
89.21	Motility Wet Prep Motility Deep Oxidase	Pos / Pos	······		Pseudo P Pseudo F	N	New New	
	Catalase <u>PLATES</u> Odor	fos 48 h slight		7.61	NO <sub>3</sub> reduced Gas from NO <sub>3</sub> NO <sub>2</sub> reduced Gas from NO <sub>2</sub>	Ner Ner	Neg- ped-Neg	6000
	Pigment on swab Pigment on BAP Morphology on BAP Beta hemolysis	apricot wh sm.rd wet Neg-	tar wh sm. rd. web, wo Neg	чy	OF Fructose OF Dextrose OF Lactose OF Maltose		Gr	
	Growth on Mac DNase hydrolysis Starch hydrolysis Lecithinase Lipase	<u>fos-sp</u> ar <u>Nog</u> <u>Nog</u> <u>Nog</u> Nog	0		OF Mannitol OF Xylose OF Sucrose Arginine Lysine Ornithine		Bl Gr Bl Neg Neg Neg	
22.72	Rapid PYR Rapid LAP Rapid ESC <u>Sensitivity to:</u> Penicillin (10 U)	Neg- Neg- Neg-	Lee 5		Base Control Acetamide Esculin Gelatin Indole Malonate PAD	Ney Ney Pos Ney	Neg Neg Neg Neg Pos	
94,74 92,3	Vancomycin (30 ug) Colistin (10 mcg) Polymyxin B (300 U)	105 205		.29	Urea 22 h 6.5% NaCL 10% Lactose ONPG Growth 42 <sup>0</sup>	AOS Pos N N Pos	POS POS Norr Norr POS	

Figure 85: Bordetella bronchiseptica isolate 3-of-19.

Date Inoculated:

1-17-12 Boedetella bronchiseptica P.S. 1/26/12 P.S.

Final Identification:

Comments:

-				1/25
Gram Morph.		Tubes	<u>48 h</u>	$\frac{7 \text{ day}}{1}$
Gram Test	48	KIA H2S 52	K/NC	EIR AS
Motility Wet Prep	POS Rods	п <sub>2</sub> 5 52	14 <u>11 122</u>	<u></u>
Motility Deep	Pos Pos	Pseudo P	Nec	We co-
Oxidase	305	Pseudo F	Nelar	Nec
Catalase	STRONG POS	NO <sub>3</sub> reduced		Pos
PLATES	48 h 7 day	Gas from NO <sub>3</sub>	Tiny Bubble	Tiny Bubble
Odor	NONE	NO <sub>2</sub> reduced		NEG
Pigment on swab	Glacila	Gas from NO <sub>2</sub>	Nick	NeG
Pigment on BAP	1004	OF Fructose	BLUE	Blue
0	<u> </u>	OF Dextrose		i
Morphology on BAP	Smooth	OF Lactose		·
Beta hemolysis	NeG	OF Maltose		
Growth on Mac	P05 P05	OF Mannitol		
DNase hydrolysis	NPG NEG	OF Xylose OF Sucrose	-t	
Starch hydrolysis	NP (5 Nels			
Lecithinase		Arginine	Ne6-	Nele
Lipase		Lysine Ornithine		
	ACOL	Base Control		
Rapid PYR	Nela			
Rapid LAP	<u>205</u>	Acetamide	Nec	Neb
Rapid ESC	Neb	Esculin Gelatin	Net	NPC
Sensitivity to:		Indole	NCan	NEG
Penicillin (10 U)	$R_{R_{\rm R}}$	Malonate	Wt	POS
Vancomycin (30 ug)	R R	PAD Urea P2〜2 h	NEG	Date
Colistin (10 mcg)	5-13 5	0rea7 <u>8-7</u> 2 h 6.5% NaCL	POS NeG	<u></u> Do S
Polymyxin B (300 U)	5-15 5	10% Lactose	NºG.	WeG-
		ONPG	Nee	NeG
		Growth 42 <sup>°</sup>	POS	POS

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 86: Bordetella bronchiseptica isolate 4-of-19.

	Date Inoculated:	4-17-6			Paul tos	corplete at of papers "lidenthe
	Final Identification:	_Bo.	Rde tel	(A bRON	chise	Acta P.S.
	Comments:					5/15/09
						/
2.8 +	Gram Morph. Gram Test Motility Wet Prep Motility Deep Oxidase Catalase PLATES Odor SC Pigment on swab Pigment on BAP Morphology on BAP	48h Pos Pos STRON 48h Ightodor Bubb Grey Smoot		-Gas from NO <sub>3</sub> -NO <sub>2</sub> reduced -Gas from NO <sub>2</sub> -OF Fructose -OF Dextrose -OF Lactose	4/18 48 h K/NC Neb Neb Neb Neb Neb Neb Neb Neb	4/23 G DAXS 7 day E/K SLight H25 Neb PINK Neb INOCALA POS 90.91 Neb Neb Neb Solution Neb So
	Beta hemolysis Growth on Mac DNase hydrolysis Starch hydrolysis Lecithinase Lipase	<u>Neb</u> <u>Pos</u> <u>Neb</u> <u>Neb</u> <u>Neb</u> Neb	POS-LAN NEG NEG NEG NEG	- OF Maltose OF Mannitol OF Xylose - OF Sucrose Arginine Lysine Ornithine Base Control	Niec-	Nec
	Rapid PYR Rapid LAP Rapid ESC <u>Sensitivity to:</u> Penicillin (10 U) Vancomycin (30 ug) Colistin (10 mcg) Polymyxin B (300 U)	<u>Nec</u> <u>Pos</u> <u>Nec</u> <u>R</u> <u>S-12</u> <u>S-14</u>	RRS	Base Control — Acetamide — Esculin — Gelatin — Indole + Malonate — PAD + Urea [ <u>D52</u> h — 6.5% NaCL — 10% Lactose — ONPG + Growth 42°	Neb Neb Neb Neb Neb Neb Neb Neb Neb Neb	NeG NeG NeG Pos Pos Pos Pos Pos NeG NeG Pos SI182

Figure 87: Bordetella bronchiseptica isolate 5-of-19.

Date Inoculated:

Boadetella brouchiseptica P.S. 11/21/12 11-20-12

Final Identification:

Comments:

			24h	12/1 11 DAYS
Gram Morph.		Tubes	48-h	7 day
Gram Test	29/h Sim Roads	KIA H <sub>2</sub> S	K/NC Nela	R/IE SCP1
Motility Wet Prep	Pos. Very motile	1125		<u> </u>
Motility Deep	P05 P85	Pseudo P	NEG	
Oxidase	POS	Pseudo F	Nel	
Catalase	STRONG to S	NO3 reduced		Pos
PLATES	<u>48 h</u> <u>7 day</u>	Gas from NO <sub>3</sub>	NeG	NEG
Odor	New L	NO <sub>2</sub> reduced Gas from NO <sub>2</sub>	TINY Beb	Nel
Pigment on swab	fresh		1 (1 1 1 20)	1000
Pigment on BAP	Light Grey	OF Fructose	BLue	GREEN (LIGHT)
Morphology on BAP	Smooth	OF Dextrose OF Lactose		LIGHT BLEE DABLE BLEE
Beta hemolysis	Nel	OF Maltose		PARK BLOC
Growth on Mac	POS POS	OF Mannitol OF Xylose		DARK GLUE GREEN (LIGHT)
DNase hydrolysis	Neb Neb	OF Sucrose		LIGHT BLUCK
Starch hydrolysis	NEG- NEG	A		1001
Lecithinase	Nº6 Nº6	Arginine Lysine	Nea	_Nec-
Lipase	NEC NEG	Ornithine		
Rapid PYR	205 N26-	Base Control		
Rapid LAP	POS	Acetamide	NPE	NEG
Rapid ESC	NIG	Esculin Gelatin	NEC	Nel
Sensitivity to:		Indole	11000	Nela
Penicillin (10 U)	R R Po	5 Malonate	NRG	BLUE-POS
Vancomycin (30 ug)	RR	PAD Urea P552 h	POS	Pos
Colistin (10 mcg)	5 5	6.5% NaCL	NeG	Pos
Polymyxin B (300 U)	5 5	10% Lactose	NeG	Nel-
		ONPG Growth 42 <sup>0</sup>	POS	NeG-
		G10Wul 42	105	

Note: All biochemical tests (except where noted) are incubated at  $30^{0}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 88: Bordetella bronchiseptica isolate 6-of-19.

#### 10.3 Bordetella hinzii

Over the course of ASHEX clinical-isolate collection, two individual isolates of Bordetella hinzii were analyzed. Zero of the two recorded results are pictured in this subsection.

Test	+	_	Raw%	<b>W95</b> %	Test	+	—	Raw%	W95%
Motility	2	0	100.00	67.12	$H_2S$	0	2	0.00	32.88
Oxidase	2	0	100.00	67.12	Pseudo P	0	2	0.00	32.88
Catalase	1	1	50.00	50.00	Pseudo F	0	2	0.00	32.88
Yellow Pigment	1	1	50.00	50.00	NO <sub>3</sub> Reduced	0	2	0.00	32.88
Pink Pigment	0	2	0.00	32.88	Gas from NO <sub>3</sub>	0	2	0.00	32.88
Beta Hemolysis	0	2	0.00	32.88	NO <sub>2</sub> Reduced	0	2	0.00	32.88
Growth on Mac	2	0	100.00	67.12	Gas from $NO_2$	0	2	0.00	32.88
DNase	0	2	0.00	32.88	OF Fructose	0	2	0.00	32.88
Starch	0	2	0.00	32.88	OF Dextrose	0	2	0.00	32.88
Lecithinase	0	2	0.00	32.88	OF Lactose	0	2	0.00	32.88
Lipase	0	2	0.00	32.88	OF Maltose	0	2	0.00	32.88
PYR	0	1	0.00	39.67	OF Mannitol	0	2	0.00	32.88
LAP	1	0	100.00	60.33	OF Xylose	0	2	0.00	32.88
ESC Spot Test	0	1	0.00	39.67	OF Sucrose	0	2	0.00	32.88
Penicillin (10U)	1	1	50.00	50.00	Arginine	0	2	0.00	32.88
Vancomycin $(30\mu g)$	0	2	0.00	32.88	Lysine	0	2	0.00	32.88
Colistin $(10\mu g)$	2	0	100.00	67.12	Ornithine	0	2	0.00	32.88
Polymyxin B (300U)	2	0	100.00	67.12	Acetamide	0	2	0.00	32.88
					Esculin	0	2	0.00	32.88
					Gelatin	0	2	0.00	32.88
					Indole	0	2	0.00	32.88
					Malonate	1	1	50.00	50.00
					PAD	0	2	0.00	32.88
					Urea 2 hrs.	0	2	0.00	32.88
					Urea 48 hrs.	0	2	0.00	32.88
					6.5% NaCl	2	0	100.00	67.12
					10% Lactose	0	2	0.00	32.88
					ONPG	0	2	0.00	32.88
					Growth 42°C	2	0	100.00	67.12

Table 20: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as  $n_+/(n_+ + n_-)$ , where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which shifts raw percentages towards 50% with a strength dependent on the total number of test occurrences. The four antibiotic tests at the bottom of Column 1 are sensitivity tests where a positive result indicates sensitivity to the drug.

#### 10.4 Bordetella holmesii

Over the course of ASHEX clinical-isolate collection, eight individual isolates of Bordetella holmesii were analyzed. Two of the eight recorded results are pictured in this subsection.

Test	+	_	Raw%	<b>W95</b> %	Test	+	_	Raw%	W95%
Motility	0	8	0.00	16.22	$H_2S$	0	8	0.00	16.22
Oxidase	1	7	12.50	24.67	Pseudo P	0	8	0.00	16.22
Catalase	3	5	37.50	41.56	Pseudo F	0	8	0.00	16.22
Yellow Pigment	0	8	0.00	16.22	NO <sub>3</sub> Reduced	0	8	0.00	16.22
Pink Pigment	0	8	0.00	16.22	Gas from $NO_3$	0	8	0.00	16.22
Beta Hemolysis	0	8	0.00	16.22	NO <sub>2</sub> Reduced	0	8	0.00	16.22
Growth on Mac	0	8	0.00	16.22	Gas from $NO_2$	0	8	0.00	16.22
DNase	0	8	0.00	16.22	OF Fructose	0	8	0.00	16.22
Starch	0	8	0.00	16.22	OF Dextrose	0	8	0.00	16.22
Lecithinase	0	8	0.00	16.22	OF Lactose	0	8	0.00	16.22
Lipase	0	8	0.00	16.22	OF Maltose	0	8	0.00	16.22
PYR	0	8	0.00	16.22	OF Mannitol	0	8	0.00	16.22
LAP	7	1	87.50	75.33	OF Xylose	0	8	0.00	16.22
ESC Spot Test	0	8	0.00	16.22	OF Sucrose	0	8	0.00	16.22
Penicillin (10U)	0	8	0.00	16.22	Arginine	0	8	0.00	16.22
Vancomycin $(30\mu g)$	0	8	0.00	16.22	Lysine	0	8	0.00	16.22
Colistin $(10\mu g)$	8	0	100.00	83.78	Ornithine	0	8	0.00	16.22
Polymyxin B (300U)	8	0	100.00	83.78	Acetamide	0	8	0.00	16.22
					Esculin	0	8	0.00	16.22
					Gelatin	0	8	0.00	16.22
					Indole	0	8	0.00	16.22
					Malonate	3	5	37.50	41.56
					PAD	0	8	0.00	16.22
					Urea 2 hrs.	0	8	0.00	16.22
					Urea 48 hrs.	0	8	0.00	16.22
					6.5% NaCl	0	8	0.00	16.22
					10% Lactose	0	8	0.00	16.22
					ONPG	0	8	0.00	16.22
					Growth 42°C	0	8	0.00	16.22

Table 21: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as  $n_+/(n_+ + n_-)$ , where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which shifts raw percentages towards 50% with a strength dependent on the total number of test occurrences. The four antibiotic tests at the bottom of Column 1 are sensitivity tests where a positive result indicates sensitivity to the drug.

Date Inoculated:	m 14/16/13		
Final Identification:	Road to la h	Lupesii 12/	aplin DC
Final Identification:	Dergereura no	Lunesil 121	23/13 1.7
Comments: Ont 10	: Bord. bronchiseptice	Inhibited on DNA.	Egg Yolk Agair
Maldi .	Vittle RUD: Bordokela Sc	. 991 IVD: NO (D	Briker: Bardokellaholmezi.
1	DimDimConcep		2012-8 1.757
Gram Morph.	9V	Tubes 48 h	<u>7 day</u>
Gram Test	7	$\begin{array}{ccc} \text{KIA} & \underline{K_{NC}} \\ \text{H}_2\text{S} & \mathcal{N} \end{array}$	<u>K</u>
Motility Wet Prep		11 <sub>2</sub> 5 _/>	
Motility Deep	AT N Ng	Pseudo P N	N
Oxidase 14.29	New (very slow uk +)	Pseudo F N	_ρ
Catalase 42.16	Neg	NO <sub>3</sub> reduced $\chi$	Neg-pile gtr zive
PLATES	<u>48 h</u> <u>7 day</u>	Gas from NO <sub>3</sub> $\frac{hwy buildle}{X}$	fin bubble
Odor	Neg pet frity	Gas from NO2 hiv budde	tin bubble
Pigment on swab	Neg- buff.	OF Fructose - (~	Gr BLUE AT TOP
Pigment on BAP	Neg by Sugar	OF DextroseGr	a l
Morphology on BAP	Smillion Smigary	OF Lactose	a-ze
Beta hemolysis	Neg Neg	OF Maltose OF Mannitol	Gr-Bl
Growth on Mac No GA		edOF Xylose - Gr	Cr 20
DNase hydrolysis 61	werth Veg Neg	OF Sucrose - a	<u>c-oc</u>
Starch hydrolysis	New Ner	Arginine N	N
Lecithinase	Neg Ng	Lysine <u>N</u> Ornithine N	N.
Lipase	Neg_ Ng	Base Control	N
Rapid PYR	Nez		
Rapid LAP 85.7	Pos	Acetamide U Esculin N	N
Rapid ESC	Ner	Gelatin	$\mathcal{N}$
Sensitivity to:		Indole X. Malonate 21.57	Nos-bene - Light blue
Penicillin (10 U)	<u>LR</u>	PAD	X
Vancomycin (30 ug)	) 10 (no clear / 10 (hr zwe edge) (lean	edge Urea Nehr h	Ň
Colistin (10 mcg)	27 05 5	6.5% NaCL N 10% Lactose N	<u>N</u>
Polymyxin B (300 U	D 27 5 W	ONPG N	N
		Growth 42° TSA Neg	N

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 89: Bordetella holmesii isolate 1-of-8.

	Date Inoculated:	W 4/19/17		-	
	Final Identification:	Bordetella holmesii Pal	0 99.8292	Ms: 39	. 997
	Comments: Lab 11	): Boudetella holmesii	Maldi	1.98	
				2	017-42
	Gram Morph.		<u>Tubes</u> KIA	<u>48 h</u>	9 7 day KIK
	Gram Test		H <sub>2</sub> S	N	Neg
	Motility Wet Prep		···· · · · · · · · · · · · · · · · · ·		
	Motility Deep	Nef 45" Neg. 9d	Pseudo P Pseudo F	- <u>N</u>	Nieg
1.5	Oxidase	Neg	FSeudo F		Nery
37.5	Catalase	Neg	NO <sub>3</sub> reduced	_X	Red Red ofthe Nege
	<b>PLATES</b>	<u>48 h</u> 9 <u>7 day</u>	Gas from $NO_3$ $NO_2$ reduced	<u>N</u>	Neg In
	Odor	Neg Sttfrity	$Gas from NO_2$		Nig Red Jube
	Pigment on swab	Duff ltstraw			
	Pigment on BAP	aren - gren greni	OF Fructose OF Dextrose	Gr	<u><u> </u></u>
	Morphology on BAP	1 0) blickpoind ()	OF Lactose		Gr -
	Beta hemolysis	New these	OF Maltose		Gr -
	Growth on Mac	New New	OF Mannitol		<u> </u>
	DNase hydrolysis	Alace Alea-	OF Xylose OF Sucrose		Gr -
	Starch hydrolysis	Nar Mar	or succose		
		New New	Arginine	N	Neg
	Lecithinase	NIG Neg	Lysine Ornithine		Neg
	Lipase	Nez Nog	Base Control		Neg-
	Rapid PYR	Neg		1	
87,5	Rapid LAP	Pas (+)	Acetamide	N	Neg
	Rapid ESC	Ner	Esculin Gelatin	N	Neg
	Sensitivity to:		Indole	X	Neg
	Penicillin (10 U)	6R 6R 325	Malonate	N	A25 @
	Vancomycin (30 ug)	LER GR	PAD Urea <u>N</u> 2h		
	Colistin (10 mcg)	195 15	6.5% NaCL	N	Neg-
	Polymyxin B (300 U)	205 205	10% Lactose	Ň	Nez
			ONPG	N	Nez
			Growth 42 <sup>0</sup>	N	Neg

Figure 90: Bordetella holmesii isolate 2-of-8.

#### 10.5 Bordetella parapertusis

Over the course of ASHEX clinical-isolate collection, five individual isolates of Bordetella parapertusis were analyzed. Zero of the five recorded results are pictured in this subsection.

Test	+	_	Raw%	W95%	Test	+	_	Raw%	W95%
Motility	0	5	0.00	21.72	$H_2S$	0	5	0.00	21.72
Oxidase	0	5	0.00	21.72	Pseudo P	0	5	0.00	21.72
Catalase	5	0	100.00	78.28	Pseudo F	0	5	0.00	21.72
Yellow Pigment	0	5	0.00	21.72	NO <sub>3</sub> Reduced	0	5	0.00	21.72
Pink Pigment	0	5	0.00	21.72	Gas from $NO_3$	0	5	0.00	21.72
Beta Hemolysis	0	5	0.00	21.72	$NO_2$ Reduced	0	5	0.00	21.72
Growth on Mac	0	5	0.00	21.72	Gas from $NO_2$	0	5	0.00	21.72
DNase	0	5	0.00	21.72	OF Fructose	0	5	0.00	21.72
Starch	0	5	0.00	21.72	OF Dextrose	0	5	0.00	21.72
Lecithinase	0	5	0.00	21.72	OF Lactose	0	5	0.00	21.72
Lipase	0	5	0.00	21.72	OF Maltose	0	5	0.00	21.72
PYR	0	5	0.00	21.72	OF Mannitol	0	5	0.00	21.72
LAP	5	0	100.00	78.28	OF Xylose	0	5	0.00	21.72
ESC Spot Test	0	5	0.00	21.72	OF Sucrose	0	5	0.00	21.72
Penicillin (10U)	0	5	0.00	21.72	Arginine	0	5	0.00	21.72
Vancomycin $(30\mu g)$	0	5	0.00	21.72	Lysine	0	5	0.00	21.72
Colistin $(10\mu g)$	5	0	100.00	78.28	Ornithine	0	5	0.00	21.72
Polymyxin B (300U)	5	0	100.00	78.28	Acetamide	0	5	0.00	21.72
					Esculin	0	5	0.00	21.72
					Gelatin	0	5	0.00	21.72
					Indole	0	5	0.00	21.72
					Malonate	0	5	0.00	21.72
					PAD	0	5	0.00	21.72
					Urea 2 hrs.	4	1	80.00	66.97
					Urea 48 hrs.	5	0	100.00	78.28
					6.5% NaCl	0	5	0.00	21.72
					10% Lactose	0	5	0.00	21.72
					ONPG	0	5	0.00	21.72
					Growth 42°C	0	5	0.00	21.72

Table 22: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as  $n_+/(n_+ + n_-)$ , where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which shifts raw percentages towards 50% with a strength dependent on the total number of test occurrences. The four antibiotic tests at the bottom of Column 1 are sensitivity tests where a positive result indicates sensitivity to the drug.

#### 10.6 Bordetella trematum

Over the course of ASHEX clinical-isolate collection, five individual isolates of Bordetella trematum were analyzed. One of the five recorded results is pictured in this subsection.

Test	+	_	Raw%	W95%	Test	+	_	Raw%	W95%
Motility	5	0	100.00	78.28	$H_2S$	0	5	0.00	21.72
Oxidase	3	2	60.00	55.66	Pseudo P	0	5	0.00	21.72
Catalase	5	0	100.00	78.28	Pseudo F	0	5	0.00	21.72
Yellow Pigment	0	5	0.00	21.72	NO <sub>3</sub> Reduced	4	1	80.00	66.97
Pink Pigment	0	5	0.00	21.72	Gas from $NO_3$	1	4	20.00	33.03
Beta Hemolysis	0	5	0.00	21.72	NO <sub>2</sub> Reduced	1	4	20.00	33.03
Growth on Mac	5	0	100.00	78.28	Gas from $NO_2$	1	4	20.00	33.03
DNase	0	5	0.00	21.72	OF Fructose	0	5	0.00	21.72
Starch	0	5	0.00	21.72	OF Dextrose	0	5	0.00	21.72
Lecithinase	0	5	0.00	21.72	OF Lactose	0	5	0.00	21.72
Lipase	0	5	0.00	21.72	OF Maltose	0	5	0.00	21.72
PYR	1	4	20.00	33.03	OF Mannitol	0	5	0.00	21.72
LAP	5	0	100.00	78.28	OF Xylose	0	5	0.00	21.72
ESC Spot Test	0	5	0.00	21.72	OF Sucrose	0	5	0.00	21.72
Penicillin (10U)	0	5	0.00	21.72	Arginine	0	5	0.00	21.72
Vancomycin $(30\mu g)$	0	5	0.00	21.72	Lysine	0	5	0.00	21.72
Colistin $(10\mu g)$	5	0	100.00	78.28	Ornithine	0	5	0.00	21.72
Polymyxin B (300U)	5	0	100.00	78.28	Acetamide	1	4	20.00	33.03
					Esculin	0	5	0.00	21.72
					Gelatin	0	5	0.00	21.72
					Indole	0	5	0.00	21.72
					Malonate	5	0	100.00	78.28
					PAD	0	5	0.00	21.72
					Urea 2 hrs.	0	5	0.00	21.72
					Urea 48 hrs.	0	5	0.00	21.72
					6.5% NaCl	3	2	60.00	55.66
					10% Lactose	0	5	0.00	21.72
					ONPG	0	5	0.00	21.72
					Growth 42°C	3	2	60.00	55.66

Table 23: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as  $n_+/(n_+ + n_-)$ , where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which shifts raw percentages towards 50% with a strength dependent on the total number of test occurrences. The four antibiotic tests at the bottom of Column 1 are sensitivity tests where a positive result indicates sensitivity to the drug.

	Date Inoculated:	W 1/25/1	7.			
	Final Identification:	No clear	30-Jube	answer		
			ella trema	hon Maldi:	1.20	
		ASHEX Returns la	ous prob	dospite 100 mada	1 20	12-20
		0 1	natim	,		
	Gram Morph.			Tubes	<u>48 h</u>	7 day
	Gram Test			KIA	KINC	<u> </u>
	Motility Wet Prep			H <sub>2</sub> S	<u>N</u>	_Neg
•	Motility Deep	Pos		Pseudo P	N	Nag
60	Oxidase	Pos		Pseudo F	N	Neg
00	Catalase	Pos		80 NO3 reduced	Y	Red - POFF)
	PLATES		7 day	C Gas from NO <sub>3</sub>	N	Non
		ke samkrat	And	$\mathcal{L} \oslash \operatorname{NO}_2$ reduced	_X	Red-Neg -
	Pigment on swab	RU	D AI	10 Gas from NO <sub>2</sub>	<u>N</u>	- New
	Pigment on BAP	- Lipp	- Bugg	OF Fructose	Be-lo	BE-Gr Neg
		une-	why.	OF Dextrose		Neg
	Morphology on BAP	rand, wet	round, out	OF Lactose OF Maltose		Noa
	Beta hemolysis	Neg	Neg	OF Mannitol		Neg
	Growth on Mac	) Sm. clear	Som clea	OF Xylose		Neg
	DNase hydrolysis	Neg	Neg	OF Sucrose		Nog
	Starch hydrolysis	Neg	Neg	Arginine	N	Neg
	Lecithinase	Neg	Neg	Lysine	1	Neg
	Lipase	Neg	Nor	Ornithine		Neg
27	Rapid PYR	Near		Base Control	1	New
	Rapid LAP	Pos		20 Acetamide	N	Ner
	Rapid ESC	New		Esculin	N	Nog
	Sensitivity to:			Gelatin Indole	_N	_Ngg_
	Penicillin (10 U)	6R	6R	Malonate	Pos!	Pos!
	Vancomycin (30 ug)	1. P.	LOR	PAD	Ner	X
	Colistin (10 mcg)	12.5	125	Urea $\underline{N}_2$ h 6/26.5% NaCL	-NO	Neg Pos
		10	125	6.5% NaCL 10% Lactose	_Pos	New New
	Polymyxin B (300 U	) <u>14 3</u>	142	ONPG	N	Neg
				6 Growth 42°	Pas	Pos

Figure 91: Bordetella trematum isolate 1-of-5.

### 11 GENUS BREVUNDIMONAS11.1 Brevundimonas diminuta

Over the course of ASHEX clinical-isolate collection, 14 individual isolates of Brevundimonas diminuta were analyzed. Three of the 14 recorded results are pictured in this subsection.

Test	+	_	Raw%	<b>W95</b> %	Test	+	_	Raw%	<b>W95</b> %
Motility	14	0	100.00	89.23	H <sub>2</sub> S	0	14	0.00	10.77
Oxidase	14	0	100.00	89.23	Pseudo P	0	14	0.00	10.77
Catalase	13	1	92.86	83.63	Pseudo F	0	14	0.00	10.77
Yellow Pigment	0	14	0.00	10.77	NO <sub>3</sub> Reduced	0	14	0.00	10.77
Pink Pigment	0	14	0.00	10.77	Gas from $NO_3$	0	4	0.00	24.50
Beta Hemolysis	0	4	0.00	24.50	NO <sub>2</sub> Reduced	0	14	0.00	10.77
Growth on Mac	13	1	92.86	83.63	Gas from $NO_2$	0	4	0.00	24.50
DNase	0	14	0.00	10.77	OF Fructose	1	13	7.14	16.37
Starch	0	14	0.00	10.77	OF Dextrose	3	11	21.43	27.58
Lecithinase	0	4	0.00	24.50	OF Lactose	0	14	0.00	10.77
Lipase	0	4	0.00	24.50	OF Maltose	0	14	0.00	10.77
PYR	0	4	0.00	24.50	OF Mannitol	0	14	0.00	10.77
LAP	3	1	75.00	62.75	OF Xylose	1	13	7.14	16.37
ESC Spot Test	0	4	0.00	24.50	OF Sucrose	0	4	0.00	24.50
Penicillin (10U)	1	13	7.14	16.37	Arginine	1	13	7.14	16.37
Vancomycin $(30\mu g)$	4	10	28.57	33.19	Lysine	0	14	0.00	10.77
Colistin $(10\mu g)$	6	8	42.86	44.40	Ornithine	0	14	0.00	10.77
Polymyxin B (300U)	0	4	0.00	24.50	Acetamide	0	14	0.00	10.77
					Esculin	0	14	0.00	10.77
					Gelatin	7	7	50.00	50.00
					Indole	0	14	0.00	10.77
					Malonate	4	4	50.00	50.00
					PAD	0	12	0.00	12.13
					Urea 2 hrs.	0	14	0.00	10.77
					Urea 48 hrs.	4	10	28.57	33.19
					6.5% NaCl	5	9	35.71	38.79
					10% Lactose	0	8	0.00	16.22
					ONPG	0	12	0.00	12.13
					Growth 42°C	8	6	57.14	55.60

Table 24: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as  $n_+/(n_+ + n_-)$ , where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which shifts raw percentages towards 50% with a strength dependent on the total number of test occurrences. The four antibiotic tests at the bottom of Column 1 are sensitivity tests where a positive result indicates sensitivity to the drug.

Date Inoculated:	11-15-08 B	Reviewa	11 mon a	-s dimunita						
Final Identification:	NO MATCH SE		Equen er							
Comments:	Ret plate shows	Red pign	c	center 06-						
Z streak Line 11-25-08 11-25-08 AAXS										
Gram Morph. Gram Test	Pog - tiny Rodg	<u>Tubes</u> KIA H <sub>2</sub> S	<u>48 h</u> 	11-25-08 10 DAYS 2000 K/K SLIGHT H2S						
Motility Wet Prep Motility Deep Oxidase	P05 P05 P05	Pseudo P Pseudo F		Nel PINE						
Catalase <u>PLATES</u> 24k Odor	STRONG POS 4811 7 day 11-25-08 NONE	$NO_3$ reduced Gas from $NO_3$ $NO_2$ reduced Gas from $NO_2$		Nele- Nele- Nele- Tixy Eußble						
Pigment on swab Pigment on BAP Morphology on BAP Beta hemolysis Growth on Mac DNase hydrolysis	Buff Light Grey Smarth - Smears NEG POS NEG NEG	OF Fructose OF Dextrose OF Lactose OF Maltose OF Mannitol OF Xylose OF Sucrose		Bkue						
Starch hydrolysis Lecithinase Lipase Rapid PYR	NeG NeG NeG	Arginine Lysine Ornithine Base Control		Ne6						
Rapid LAP Rapid ESC <u>Sensitivity to:</u> Penicillin (10 U)	POS NEG	Acetamide Esculin Gelatin Indole Malonate		Neb Neb POS Neb Neb						
Vancomycin (30 ug) Colistin (10 mcg) Polymyxin B (300 U)	<u>S-12</u> <u>R</u> <u>R</u>	PAD Urea <u>Nel</u> 2 h 6.5% NaCL 10% Lactose ONPG Growth 42 <sup>0</sup>	<u>N</u> e 6	NEG NEG NEG NEG						

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 92: Brevundimonas diminuta isolate 1-of-14.

4

	•		- ~	A 21 WK
Date Inoculated:			1	Can Giamed by
Final Identification:	LEVUN dimon.	+s dim	Repent	Sequencing
Comments: <u>Rose colo</u>	pred on Stare	h DAY 11	Rose e.	olo red # Egg Yolk
GREY Whi	te on Starch	At 4861	R. IVORY	ON STARCH @ 9 DAYS
	NE ON EGG AT			2/8/08
Gram Morph. GAINT 9	STAINING	Tubes	<u>48 h</u>	Tday 11 DAYS
Gram Test	Z GNB	KIA H <sub>2</sub> S	KIK	K/K NPG
Motility Wet Prep		H <sub>2</sub> 5	1/10-1	NCC
Motility Deep Weak	() POS		growth-noed	lor Nec-
Oxidase (+)	pos	Pseudo F	u u	NEG
Catalase (+)	Strong DOS	NO <sub>3</sub> reduced		Nel
PLATES 48 h	7 day	Gas from NO <sub>3</sub>	none	Nela
Odor		$NO_2$ reduced Gas from $NO_2$	none	NEG
Pigment on swab Mme	/		set yellow to	ARCE
Pigment on BAP More		OF Fructose /	gneen	Yel
Morphology on BAP		OF Dextrose OF Lactose	blue or top	<u>GRN</u> BLUE
Beta hemolysis		OF Maltose	blue in top	BLUE
Growth on Mac grow	The POSLight puerte	OF Mannitol OF Xylose	blue on top	<u>Blue</u>
DNase hydrolysis		OF Sucrose	hight yrthowin t blue in top	Blue
Starch hydrolysis	els Nels Nels			1000
		Arginine Lysine	ng	Nea
Lipase Meg		- Ornithine	ng	
Rapid PYR	1	Base Control	hg	
Rapid LAP		Acetamide	green	New
Rapid ESC		Esculin	neg	Nela
Sensitivity to:		Gelatin Indole		Nelo
Penicillin (10 U) $(\vec{k})$	R Refer	Malonate	the green	PALE blue
Vancomycin (30 ug)	5-13 5-13	PAD	0	NC6
Colistin (10 mcg)	RR	Urea <u>№e</u> 2 h 6.5% NaCL	Macy	NeG
Polymyxin B (300 U)	BB	10% Lactose	KIK	Nec
SUBCULTURE TO SA	BS-GOOD	ONPG Growth 42 <sup>0</sup>	ng	NEG INh. bited growth
GROWTH White/GRE		G10wui <del>1</del> 2	1	In in one of the in

Figure 93: Brevundimonas diminuta isolate 2-of-14.

Date Inoculated: 5	-9-11 CONFI	armed on MALDI-TOF 4x's 99.9%	
Final Identification:	Brevundim	noNAS diminuta A23x: 99.94492	
		e PIGHENT ON TSA & PDA TUBES	
\$11	6HT SALMON COLOR	R. Elle Yolf @ 48h. Deep SALMON ON EGG	
MAL	Di BREVONDINON	al his in all is in the second	
Gram Morph.		$- \frac{\text{Tubes}}{48 \text{ h}} = \frac{7 \text{ day}}{37 \text{ Rec}}$	
Gram Test	246	KIA <u>ENC KN</u>	
Motility Wet Prep	POG-TINT CB	H2S ACL NEL	
Motility Deep	P05 P05	- Pseudo P Nele Wele > SUGHT	
Oxidase	POS	Pseudo F New New Pinke MocauA	-
Catalase	STRONG POS	NO3 reduced Ne6 [6/1/12 2 3DAYS)	
PLATES	48 h 7 day	Gas from NO <sub>3</sub> Tiwy Busdues Nele	
Odor		NO <sub>2</sub> reduced NCC	
	<u>Noncle</u>	Gas from NO <sub>2</sub> <u>webe</u> <u>Nebe</u>	
Pigment on swab	Buff_	OF Fructose GRN BLU/GRN	
Pigment on BAP	GREY	OF Dextrose <u>GRH</u> <u>BLu/GRN</u>	
Morphology on BAP	GRACE- SMOOTH	OF Lactose Bue Blue	
Beta hemolysis	New	OF Maltose <u>blace</u> <u>Blace</u> ZAVERDEF Mannitol <u>Blace</u> <u>Blace</u>	
Growth on Mac	pos pos-	OF Xylose BLOC BLUE	
DNase hydrolysis	NEG NEG	OF Sucrose GRN BK4/6RN	
Starch hydrolysis	NEG NEG	Arginine New Nela	
Lecithinase	NEG NEG	Arginine <u>Nec</u> <u>Nec</u> Lysine	
Lipase	Nels New	Ornithine	
Rapid PYR	NEG	Base Control	
Rapid LAP	Pos	Acetamide Nels Nels-	
Rapid ESC	ASC6	Esculin Nelo Nelo	
Sensitivity to:		$\begin{array}{ccc} \text{Gelatin} & \underline{NCO} & \underline{POS} & \underline{C} \\ \text{Indole} & \underline{NCC} & \underline{C} \\ \underline{NCC} & \underline{C} \\ \underline{C} \\ \underline{C} & \underline{C} \\ $	
Penicillin (10 U)	R R	Malonate NeG POS	
Vancomycin (30 ug)	5-12.6 S	PAD Mele	
Colistin (10 mcg)	RR	Urea Neber h with scan $r$ pos 6.5% NaCL $h e G$ $h e G$	
Polymyxin B (300 U	RR	$\frac{10\% \text{ Lactose}}{\text{ONPG}} \xrightarrow{Nec} \frac{Nec}{Nec}$	
		Growth $42^{\circ}$	

Figure 94: Brevundimonas diminuta isolate 3-of-14.

#### 11.2 Brevundimonas vesicularis

Over the course of ASHEX clinical-isolate collection, 15 individual isolates of Brevundimonas vesicularis were analyzed. Seven of the 15 recorded results are pictured in this subsection.

Test	+	_	Raw%	W95%	Test	+	_	Raw%	W95%
Motility	15	0	100.00	89.81	H <sub>2</sub> S	0	15	0.00	10.19
Oxidase	14	1	93.33	84.50	Pseudo P	0	15	0.00	10.19
Catalase	9	6	60.00	57.96	Pseudo F	0	15	0.00	10.19
Yellow Pigment	5	10	33.33	36.73	NO <sub>3</sub> Reduced	3	12	20.00	26.12
Pink Pigment	0	14	0.00	10.77	Gas from $NO_3$	1	9	10.00	21.10
Beta Hemolysis	1	11	8.33	18.44	NO <sub>2</sub> Reduced	2	13	13.33	20.81
Growth on Mac	7	8	46.67	47.35	Gas from $NO_2$	0	14	0.00	10.77
DNase	1	14	6.67	15.50	OF Fructose	0	15	0.00	10.19
Starch	10	5	66.67	63.27	OF Dextrose	8	7	53.33	52.65
Lecithinase	0	13	0.00	11.41	OF Lactose	1	14	6.67	15.50
Lipase	0	13	0.00	11.41	OF Maltose	5	10	33.33	36.73
PYR	2	5	28.57	36.16	OF Mannitol	0	15	0.00	10.19
LAP	6	1	85.71	73.06	OF Xylose	2	13	13.33	20.81
ESC Spot Test	3	4	42.86	45.39	OF Sucrose	0	10	0.00	13.88
Penicillin (10U)	4	11	26.67	31.42	Arginine	1	14	6.67	15.50
Vancomycin $(30\mu g)$	14	1	93.33	84.50	Lysine	0	15	0.00	10.19
Colistin $(10\mu g)$	2	13	13.33	20.81	Ornithine	0	15	0.00	10.19
Polymyxin B (300U)	8	4	66.67	62.62	Acetamide	0	15	0.00	10.19
					Esculin	13	2	86.67	79.19
					Gelatin	2	13	13.33	20.81
					Indole	0	15	0.00	10.19
					Malonate	1	14	6.67	15.50
					PAD	1	14	6.67	15.50
					Urea 2 hrs.	0	15	0.00	10.19
					Urea 48 hrs.	1	14	6.67	15.50
					6.5% NaCl	5	10	33.33	36.73
					10% Lactose	0	15	0.00	10.19
					ONPG	8	6	57.14	55.60
					Growth 42°C	1	14	6.67	15.50

Table 25: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as  $n_+/(n_+ + n_-)$ , where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which shifts raw percentages towards 50% with a strength dependent on the total number of test occurrences. The four antibiotic tests at the bottom of Column 1 are sensitivity tests where a positive result indicates sensitivity to the drug.

	Reference No./Name:		BREVUNA	IMONAS	VESICULARIS
	Date Inoculated:	8/8/01	1 D Co	vermed	8/18/04 PS
	Date moculated:		OR		
	Final Identification:	Genus BACIL	Lus of Unic	dentified ,	
	Comments: ORG	54 TURNS BAP	DARK LIKE	AL. FACCAS	4101 9/4/01
	POOR	GROWTH ON BAD AS	Her 24h		
	Gram Morph.	ONG THIN GNB			lay
	Gram Test 🖌	No HIN GAB QUEGET		/	UC V
	Motility Wet Prep	Neg? LONG thin ROD	5 H <sub>2</sub> S _		<u> 146-</u> 1
+	Motility Deep	Pos V	Pseudo P		NEG
+	Oxidase 97ROM	VEPOS.	Pseudo E		NEG REPEAT
	Catalase	stow pos !!	←NO <sub>3</sub> reduced		pint? Pos v Nelo
	PLATES	<u>48 h 7 day</u>	- Gas from NO <sub>3</sub> - NO <sub>2</sub> reduced		NFG V VFG V
	Odor	NONE MADONIA	Gas from NO <sub>2</sub>		NZE V
	Pigment on swab	Buff Buff	-OF Fructose	З	WE/GRN V
	Pigment on BAP	GREY GREY	-OF Dextrose	C	162N? ALC
	Morphology on BAP	Smooth Smooth	-OF Lactose OF Maltose		IGRN? V NEG
	Beta hemolysis	NEG NEG	OF Mannitol		Blue v
	Growth on Mac	genute pink gre	-OF Xylose -OF Sucrose		Luc GRNU
	DNase hydrolysis	NEG-970		<u> </u>	ue jorn
+*	Starch hydrolysis	strong pos	Arginine		NEG V
	Lecithinase	NC6 - inhibited	Lysine Ornithine		NEG_V
	Lipase	Neg- growth V	Base Control		NEG
	OBIS PYRase	0	Acetamide		NEG_V
	OBIS NPA		Esculin Gelatin		NEG V
	Sensitivity to:	RP	Indole		NEG-V
	Penicillin (10 U)	R R	Malonate		NEG
	Vancomycin (30 ug)	<u>SS_</u>	3 Urea $2h$		NEC V REPERT NEG
	Colistin (10 mcg)	R	+6.5% NaCL		POS
	Polymyxin B (300 U)	) <u> </u>	ONPG	A	POS
			Growth 42°C		NEG

Figure 95: Brevundimonas vesicularis isolate 1-of-15.

1/29 Repeat SugARS Pen, UAN, COL ( Brzindinones Reference Bacterial Identification - Nonfermenting Gram-Negative Rods M63 Reference No./Name: \_ 12/6/96 Date Inoculated: : Possibly BREVUNDIMONAS UNIDENTIFIED Final Identification: VESICULARIS 12/16 Gram morph. <u>6NR</u> 7 day BY ASHEX Gram test 0 V CASOAGE Repeat H-S Odor Pigment on BAP Colonial Morphology Neg Pseudo P NEG sieg Growth on MAC Pseudo F Growth at 42° with NO<sub>3</sub> reduced Oxidase Ney NO<sub>2</sub> reduced Neg e6 Catalase Repeat N<sub>2</sub> formed REPERY (2-7-97) 7 DAY Bille NOG POS Motility Deep OF Fructose pos Aren Motility Wet Prep OF Glucose BLUC Flagella Morph. OF Lactose BLUE NO QUEST 2/14/1 S R OF Maltose Blue 24 h. BAP FROM BLUE Penicillin **OF Mannitol** CON FIRMED Colistin **OF** Xylose BLue m Vancomycin 2/7/97 magne 8.5. Arginine Comments: Lysine Ornithine **Base** Control 1/29/ Set - BAP - MAC - NEG NEG - ESCULIN - NEG POS ONPG NEG POS - PO Acetamide DNase Esculin Gelatin NEG Indole Malonate Starch pos PAD Urea\_2 h pos 6.5% NaCl - MOTILITY 10% Lactose Ne6 Neb ONPG OXIDAGE Lecithinase 0 LIPASE Neb

Note: All biochemical tests (except where noted) are incubated at room temperature and read after 48 hr incubation and again after 7 days.

Figure 96: Brevundimonas vesicularis isolate 2-of-15.

	Date Inoculated:	10-18-0	7			-	
	Final Identification:		vd, HONAS	Ves/cu	CARIS	P.9	- id24/07
	Comments: No		ON ORIGINA				
	BRIG	47 Yello	w on ALL M				
•	Gram Morph. Gram Test Motility Wet Prep Motility Deep Oxidase Catalase <u>PLATES</u> Odor Pigment on swab Pigment on BAP	14h Pos - Vers Pos SLOW Pos Pos <b>481</b> None	1 шогісе — 12 тіна, 7 шонізан РО 9 5 > / мін <u>7 day</u> 2000 Уешац	Tubes KIA H <sub>2</sub> S	4 D ASTA NeG NeG NeG NeG NeG Blue Blue Blue Blue Blue Blue Blue	7 day K/NC Nele Nele Nele Nele Nele Blue Blue Blue Nele	II/12- Blue Blue/bev Blue
	Rapid LAP Rapid ESC <u>Sensitivity to:</u> Penicillin (10 U) Vancomycin (30 ug) Colistin (10 mcg) Polymyxin B (300 U)	POS NeG R S-16 R S-10	R S R- Double zone GROWTH UP TO DISK	Acetamide - Esculin - Gelatin Indole Malonate PAD Urea <u>New2</u> h 6.5% NaCL 10% Lactose ONPG Growth 42°	New Pos: New New New New New New New New New	Neb Pos Neb Neb Neb Neb Neb Neb Neb Neb Neb Neb	

Figure 97: Brevundimonas vesicularis isolate 3-of-15.

Date Inoculated: <u>11-21-05</u>	# 17
Final Identification: BREVUN dimonas VESICULARIS PS.	11/30/05
Comments: PALE YEL ON EGG YOLK @ 8 D. CREAT COLO RED	LIKE S. Aureus
ON BAP (80) TAN CENTER COL ON Choc (80)	
11/29	
Gram Morph. <u>Tubes</u> <u>48 h</u> <u>7 day</u>	
Gram Test $246$ 80 KIA $\frac{K/\kappa}{2}$	
Motility Wet Prep Ver Pos Nele Robs	
+ Motility Deep Neb Pos -Pseudo P Nele	
+ Oxidase ~ pos pos - Pseudo F <u>reg</u> Nec	
+ Catalase VOS POS + NO3 reduced WK POS	
PLATES 14/ 48 h 7 day + Gas from NO3 TINT BUBLE TINY	busse
Odor Nove Gas from NO <sub>2</sub> New New New	
( I Digment on swath Oliver In Oliver) TANI-ITYPI	,
Discount on DAD Contraction OF Fructose BL 105 00 BLUE	
Morphology on BAP wet glistening -OF Lactose 82 BLUE	
- Beta hemolysis New New Weate + OF Maltose YELP 05 Yel	
OF Mannitol BL BLUE	. Α)
+ DNase hydrolysis DOS POS -OF Sucrose BL Ner BLUE	EN
	and the second s
	epeat
Lecithinase <u>Nels</u> — Lysine <u>Nels</u> Linase <u>Nels</u> — Ornithine <u>Nels</u>	
Base Control J Arefor	
_ Rapid PYR <u>NEO</u>	
+ Rapid LAP $\frac{POS}{POS}$ - Acetamide $\frac{NeG}{POS}$ NeG	7
- Rapid ESC - 400 + Gelatin Web Pos	-
Sensitivity to: BREAKIndole NEG	-
+ Penicillin (10 U) <u>14 5 77 than the Malonate</u> <u>New the Malonate</u>	7
TVancomycin (30 ug) 14 5 Urea r42h rg Neb	
+ Colistin (10 mcg) $2159 - 6.5\%$ NaCL $\overline{\text{Web}}$	-
$-$ + Polymyxin B (300 U) 215 S $-$ 10% Lactose $\frac{10\%}{100}$ $\frac{10\%}{100}$ $\frac{10\%}{100}$ $\frac{10\%}{100}$ $\frac{10\%}{100}$	-
al estil 23	on 18 hrs
Note: All biochemical tests (except where noted) are incubated at 30°C and read aft	er 40 m 5.

Figure 98: Brevundimonas vesicularis isolate 4-of-15.

Date Inoculated:	8-10-12	
Final Identification:	BREVUNDIMONAS VESI	cultures 8/12/12 P.S.
Comments: SLIG-A	FT REDISH - BROWN DIFFUSIBL	e PIGMENT ON PAD
541611	T BROWN DIGGLESIBLE PIGNENT	ON GTARCH @ 8 DAYS
Gram Morph. Gram Test Motility Wet Prep Motility Deep Oxidase Grom Catalase Choc PLATES Odor	$\begin{array}{c c} \hline & & \\ \hline \hline & & \\ \hline \hline & & \\ \hline \hline \\ \hline & & \\ \hline \hline & & \\ \hline$	$\begin{array}{c} 48 \text{ h} \\ Fe/NC \\ Fe/NC \\ Fe/L \\ Nele \\ State \\ Stat$

Figure 99: Brevundimonas vesicularis isolate 5-of-15.

Date Inoculated:	F 9/30/16				
Final Identification:	BREVUND, MONA	s vesicul	ARIS	R.S. 11/21/1	6
Comments: Lab 1	D: Brevundimonos sp.	Maldi:	Brevendimon	as sp. 1.711	
BRON	onish discolourtion	ON Pseudo +	/	Y	2.4-DAY 5 10/24/16
Gram Morph.		Tubes	70- 48 h	<u>7 day</u>	19/21/16
Gram Test		KIA	KINC	KK	
Motility Wet Prep		$H_2S$	NY	Neg v	
Repert Motility Deep New 24 DAY	5 Neg 72° Neg 72 ~	Pseudo P Pseudo F	N	Neg V	
Repeat + Oxidase	Neg / very weak +				
90(+) 4 + Catalase	Weak t	<ul> <li>NO<sub>3</sub> reduced</li> <li>Gas from NO<sub>3</sub></li> </ul>		Ridafforzn-Neg	
specifi	<u>48 h</u> <u>7 day</u>	- NO <sub>2</sub> reduced	×	Red - Neg Shird	m typ 1" of tube
Odor Dispusst or such	Story	-Gas from NO <sub>2</sub>	N	Neg is de	ndor/bow-e
Pigment on swab	bright yellow dk gold	OF Fructose	Gr -	Gr	
Pigment on BAP	yellow yellow	OF Dextrose	yee typ +	ye-a + ~	
Morphology on BAP	Sh noundwet gon nundwet	OF Lactose OF Maltose	Be-Gr -	Blue -	
Beta hemolysis Growth on Mac		fed OF Mannitol	Be-Gr -	Be-Gr - r	
		WTLOF Xylose OF Sucrose	Be-Gr -	Be-Gr	
DNase hydrolysis	New Neg	OF Sucrose	Be-6	Be-Gr -	
$\langle Starch hydrolysis \rangle$	Pos Pos	Arginine	N	Neg	
anout /	N Neg 1	Lysine Ornithine		Neg	
0 (Lipase	New Neg	Base Control		Neg /	
Rapid PYR	Pas	Acetamide	.)	NIAG V	
Rapid LAP Rapid ESC	POB	Esculin	POST	Pos	
Sensitivity to:	YOP	Gelatin	Nez	Pos	
	le R le R V	Indole Malonate	X	Neg V	
Penicillin (10 U)	<u>4</u> F	PAD	Neg		gar tikd tar
Vancomycin (30 ug	) <u>1435 145 V</u>	Urea $N_2$ h		Neg	
Colistin (10 mcg)	D 85 85 V	6.5% NaCL 10% Lactose	<u>B6-54.</u>	Pos-set. doudy	Clendy
Polymyxin B (300 U	D <u>85</u> 85	ONPG	Pos	Pos	@ 24 DATS
		Growth 42 <sup>o</sup>	Neg	Neg_r	

Figure 100: Brevundimonas vesicularis isolate 6-of-15.

Date Inoculated: $\frac{m!}{5}$	1,5		
Final Identification: BREVU	IN dI MONAS		
Commonto:	Vesicle ARIS		-
Comments: Labrupat : Ba	evuratimonas sp. M	eldi: Brevendimonas sp.	
Micu Sean: P	5. Aux/pat 51.322 PS	. Stutyn 34.267	115#1
Gram Morph.		Tubes 48 h	<u>7 day</u>
Gram Test		KIA KINC	KIK
Motility Wet Prep	tot pop POS por P.S.	H <sub>2</sub> S	
Motility Deep Ner	1 48 North	Pseudo P	Neg V
Oxidase Pos	<i>y</i>	Pseudo F	Neg- 1/14/15
Catalase Pos		NO <sub>3</sub> reduced 🔀	Realling - reportess 7
PLATES 48 h	7 day	Gas from NO <sub>3</sub> <u>N</u>	Alter ZN .
Odor Slid	t slight	$NO_2$ reduced $\swarrow$ Gas from $NO_2$ $\swarrow$	- Red-New See below
Pigment on swab	HStraw.		Dear BLUR
Pigment on BAP	wh	OF Fructose <u>BL</u> OF Dextrose Itcr	- UKG GREEN +?
Morphology on BAP	of Smrdwet	OF Dextrose <u>Utgr</u> OF Lactose <u>BL</u>	Dr. Gr Blace
Beta hemolysis	N Neg	OF Maltose Utor	Ut Gr GREEN +?
Growth on Mac	etr Neg	OF Mannitol <u>PL</u> OF Xylose BL	Delo Blue
DNase hydrolysis	tea Near	OF Sucrose BL	Dele Brue
Starch hydrolysis	en Pos- Verysone !	4	New V
Lecithinase	eg Neg v	Arginine <u>N</u> Lysine N	Neg v
Lipase	the Num	Ornithine N	Ny
Rapid PYR N	eg	Base Control N	Nus_
Rapid LAP	5	Acetamide N	New
Rapid ESC M	2h	Esculin Pos	Pos-buttescent!
Sensitivity to:	.0	Gelatin <u>Me</u> Indole X	g NUS
R Penicillin (10 U)	UR GR V	Malonate New	
S Vancomycin (30 ug)	16 B Kes V	PAD Neg	× × ·
Colistin (10 mcg)	LeR LERV	Urea N 2 h N 6.5% NaCL Sted	Neg V
S Polymyxin B (300 U)	135 1351	6.5% NaCL <u>Sl+ d</u> 10% Lactose N	Neg V
	122 133	ONPG POS	POSV
		Growth 42° TSA N	Ner

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days. Repeat NO3. (indepted 2n) Neg-Ges fun NO3 Neg-NO2 (ne) Neg-Ges fun NO2 Neg-

Figure 101: Brevundimonas vesicularis isolate 7-of-15.

# 12 GENUS BURKHOLDERIA12.1 Burkholderia cenocepacia (III)

Over the course of ASHEX clinical-isolate collection, six individual isolates of Burkholderia cenocepacia were analyzed. Four of the six recorded results are pictured in this subsection.

Test	+	_	Raw%	W95%	Test	+	_	Raw%	W95%
Motility	6	0	100.00	80.48	$H_2S$	0	6	0.00	19.52
Oxidase	6	0	100.00	80.48	Pseudo P	0	6	0.00	19.52
Catalase	6	0	100.00	80.48	Pseudo F	0	6	0.00	19.52
Yellow Pigment	0	6	0.00	19.52	NO <sub>3</sub> Reduced	0	6	0.00	19.52
Pink Pigment	0	6	0.00	19.52	Gas from $NO_3$	0	6	0.00	19.52
Beta Hemolysis	0	6	0.00	19.52	$NO_2$ Reduced	0	6	0.00	19.52
Growth on Mac	3	3	50.00	50.00	Gas from $NO_2$	0	6	0.00	19.52
Dnase	0	6	0.00	19.52	OF Fructose	6	0	100.00	80.48
Starch	1	5	16.67	29.68	OF Dextrose	6	0	100.00	80.48
Lecithinase	0	6	0.00	19.52	OF Lactose	5	1	83.33	70.32
Lipase	5	1	83.33	70.32	OF Maltose	5	1	83.33	70.32
PYR	1	5	16.67	29.68	OF Mannitol	5	1	83.33	70.32
LAP	6	0	100.00	80.48	OF Xylose	6	0	100.00	80.48
ESC Spot Test	1	5	16.67	29.68	OF Sucrose	6	0	100.00	80.48
Penicillin (10U)	0	6	0.00	19.52	Arginine	0	6	0.00	19.52
Vancomycin $(30\mu g)$	0	6	0.00	19.52	Lysine	3	3	50.00	50.00
Colistin $(10\mu g)$	0	6	0.00	19.52	Ornithine	4	2	66.67	60.16
Polymyxin B (300U)	0	6	0.00	19.52	Acetamide	4	2	66.67	60.16
					Esculin	3	3	50.00	50.00
					Gelatin	4	2	66.67	60.16
					Indole	0	6	0.00	19.52
					Malonate	4	2	66.67	60.16
					PAD	0	6	0.00	19.52
					Urea 2 hrs.	0	6	0.00	19.52
					Urea 48 hrs.	4	2	66.67	60.16
					6.5% NaCl	0	6	0.00	19.52
		-			10% Lactose	5	1	83.33	70.32
					ONPG	2	4	33.33	39.84
					Growth 42°C	4	2	66.67	60.16

Table 26: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as  $n_+/(n_+ + n_-)$ , where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which shifts raw percentages towards 50% with a strength dependent on the total number of test occurrences. The four antibiotic tests at the bottom of Column 1 are sensitivity tests where a positive result indicates sensitivity to the drug. Date Inoculated: 6 - (-12)Final Identification: Burkh

Comments:

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			24	6/8
Gram Morph.		Tubes	48 h	$\frac{7 \text{ day}}{1 - 1}$
Gram Test	24h med szocks	KIA H <sub>2</sub> S	NEL	<u>FIR</u>
Motility Wet Prep	Pos very motile	1125		
Motility Deep	Pos Pos!	Pseudo P	Nele	NOG BROWN
Oxidase	P84- 10 Sec.	Pseudo F	pilla	NED- TIPOG
Catalase	Strong POS	NO <sub>3</sub> reduced		NºCo
<b>PLATES</b>	<u>48 h</u> <u>7 day</u>	Gas from NO <sub>3</sub>	tiny Bubble	NEG-TINY BUBBLE
Odor	Nose	NO <sub>2</sub> reduced Gas from NO <sub>2</sub>	Neb	Nec
Pigment on swab	flegh	040 110111 1102		1000
Pigment on BAP	GREY-CREAM	OF Fructose OF Dextrose	GRN YeL	GRN YEL
Morphology on BAP	OPAque Smooth	OF Lactose	Yel/GEN	Yel
Beta hemolysis	Nea	OF Maltose	GRN	Yel
Growth on Mac	pos pos	OF Mannitol OF Xylose	<u>HEL/GRN</u> GRN	<u>GRN</u> Yey/GRN
DNase hydrolysis	Nela Nela	OF Sucrose	YeL	Tel
Starch hydrolysis	New Neb			
Lecithinase	NEG- NEG	Arginine Lysine	Nela	NEG
Lipase	POS! POS!	Ornithine	Pos	POS
Rapid PYR	NEG	Base Control	Nela	Nele
Rapid LAP	POS	Acetamide	POS	Pos
Rapid ESC	NEler	Esculin	Neb	POS
Sensitivity to:		Gelatin Indole	WY	POS!
Penicillin (10 U)	RR	Malonate	NRG	NCO
Vancomycin (30 ug)	RR	PAD	New	
Colistin (10 mcg)	RR	Urea <i>№26-</i> 2 h 6.5% NaCL	POS SLANT NEG	<u>POS</u> NPC
Polymyxin B (300 U)	R R	10% Lactose	Pos	Pos
1 orying An D (000 O)		ONPG	New	Nel
		Growth 42 <sup>°</sup>	NCG	NEla

Buckholderia Cenocepacia (Genomospecies 3) P.S. 6/8/12

Note: All biochemical tests (except where noted) are incubated at 30°C and read after 48 hrs. incubation and again at 7 days.

Figure 102: Burkholderia cenocepacia isolate 1-of-6.

Date Inoculated: <u>6-17-10</u> Final Identification: <u>BUREhelderik CENDCEPACIA (68 III)</u> 6/29/10 Comments: <u>Yellow our KIA, Starch & Egg @ 8 Days (Light Yellow)</u>

				11 0	A
Gram Morph. Gram Test	24hz	<b>Tubes</b> KIA H2S	14 1811 NC/NC Nel-	6/25 8 7 day E/E NE/E	, Doys
Motility Wet Prep Motility Deep Oxidase	POS-VERY Motile POS POG POS	Pseudo P Pseudo F	NeG NeG	NEG NEG	
Catalase <b>PLATES</b> Odor	POG (Not gtzong) 48h Zday CAbbage	NO <sub>3</sub> reduced Gas from NO <sub>3</sub> NO <sub>2</sub> reduced Gas from NO <sub>2</sub>		NCG NCG NCG TINY Bask	¥e.
Pigment on swab Pigment on BAP Morphology on BAP Beta hemolysis Growth on Mac DNase hydrolysis	<u>GREH</u> <u>GREH</u> <u>Smooth Smears</u> <u>NEG</u> <u>NEG</u> <u>NEG</u> <u>NEG</u> <u>NEG</u> <u>NEG</u>	OF Fructose OF Dextrose OF Lactose OF Maltose OF Mannitol OF Xylose OF Sucrose	BLUE YEL GEN GEN GEN YEL	<u>Ye (6R</u> N <u>Ye C</u> <u>Ye L</u> <u>Ye L 6 R</u> N <u>Ye L 6 R</u> N <u>Ye L</u>	
Starch hydrolysis Lecithinase Lipase Rapid PYR	New New New New New Pos New	Arginine Lysine Ornithine Base Control	Nec- Pos Pos Nec-	New Pos Pos New	
Rapid LAP Rapid ESC Sensitivity to:	<u>Pos</u> <u>NCC</u>	Acetamide Esculin Gelatin Indole	NEG NEG NEG	NCG NCG NCG	BROWN PIGHENT)
Penicillin (10 U) Vancomycin (30 ug) Colistin (10 mcg) Polymyxin B (300 U)	$\begin{array}{c c} R & R \\ \hline \end{array}$	Malonate PAD UreaNlu-2 h 6.5% NaCL 10% Lactose ONPG Growth 42 <sup>0</sup>	NCG NCG NCG NCG Pos NCG Pos	POS POS Nec POS Nec Pos	BROWN dibtions, ble pignent@ 24 h.

Note: All biochemical tests (except where noted) are incubated at 30°C and read after 48 hrs. incubation and again at 7 days.

Figure 103: Burkholderia cenocepacia isolate 2-of-6.

Date Inoculated:	-12-28-10		
Final Identification:	Burkholdeen	A CENO	CEPACIA (GSIII)
Comments:			P.S. Chief
6 IM	finned by Dr. LiPum	a AS B. (	tenoreprenin III
			1-7-11
Gram Morph.		Tubes	$\frac{48 \text{ h}}{7 \text{ day}}$
Gram Test	486	KIA	KINC KK
Motility Wet Prep	New med kod S	$H_2S$	Nele Nele
Motility Deep	NEG DOS	Pseudo P	Nel Nel
Oxidase	Pos	Pseudo F	NEG NEG
Catalase	Strong 205	NO <sub>3</sub> reduced	NEG
<b>PLATES</b>	<u>48 h</u> <u>7 day</u>	Gas from NO <sub>3</sub>	NEU NEG
Odor	Skente	NO <sub>2</sub> reduced Gas from NO <sub>2</sub>	New New
Pigment on swab	flegh		
Pigment on BAP	GREY	OF Fructose OF Dextrose	GRN YEL YEL YEL
Morphology on BAP	Swaoth	OF Lactose	GRN YEL
Beta hemolysis	Nela	OF Maltose	GRN Yel
Growth on Mac	Neb Neb	OF Mannitol OF Xylose	Ver/GRN Ver
DNase hydrolysis	New New	OF Sucrose	Yel Yel
Starch hydrolysis	NEG POS	Arginine	NEG NEG
Lecithinase	Nela Nela	Lysine	
Lipase	Men Pos Pos	Ornithine	<u>P05</u>
Rapid PYR	Nele	Base Control	NeG
Rapid LAP	POS	Acetamide	W+ POS
Rapid ESC	Nela	Esculin Gelatin	New New New POS.
Sensitivity to:		Indole	
Penicillin (10 U)	$\underline{R}$ $\underline{R}$	Malonate	New POS New Pinks outline on
Vancomycin (30 ug)	R R	PAD Urea N <sup>el</sup> 2 h	Postsing) Pos edge of wor
Colistin (10 mcg)	$\underline{R}$ $\underline{R}$	6.5% NaCL	NEG NEG Hoter Felly
Polymyxin B (300 U)	RR	10% Lactose ONPG	POS DOS NEG POS
		Growth 42 <sup>°</sup>	FOS POS

Figure 104: Burkholderia cenocepacia isolate 3-of-6.

Date Inoculated: 1-4-11	CENOCEPACIA Corrected
Final Identification: Buckholderia	eephert (65) 12/4/13
Comments:	2/3/11 A.S.

			1 19 11	GANG
Gram Morph. Gram Test Motility Wet Prep	48h . Nelo - JAN RODS	<u>Tubes</u> KIA H <sub>2</sub> S	1-12-11 <u>48 h</u> <u>NGNC</u> <u>7 day</u> <u>F</u> <u>F</u> <u>F</u> <u>F</u>	8 DAYS
Motility Deep Oxidase	POS? POS POS	Pseudo P Pseudo F	Nele Nel- Nele Nele	
Catalase <u>PLATES</u> Odor	<u>Strong POS</u> <u>48h 7 day</u> Skunk Gleigh	NO <sub>3</sub> reduced Gas from NO <sub>3</sub> NO <sub>2</sub> reduced Gas from NO <sub>2</sub>	New New New New New New	
Pigment on swab Pigment on BAP Morphology on BAP Beta hemolysis Growth on Mac DNase hydrolysis	New New New New	<ul> <li>+ OF Fructose</li> <li>+ OF Dextrose</li> <li>+ OF Lactose</li> <li>+ OF Maltose</li> <li>- OF Mannitol</li> <li>+ OF Xylose</li> <li>+ OF Sucrose</li> </ul>	BLUE <u>GRN</u> Yel Yel GRN Yel BLUE BLUE Yel Yel Yel Yel	
Starch hydrolysis Lecithinase Lipase Rapid PYR	New New New New POS POS New New	Arginine Lysine Ornithine Base Control	Nece Neb- Ros Pos V Nece	
Rapid LAP Rapid ESC	<u>-705</u> Pos - <del>Nec-</del> Nec-	Acetamide Esculin Gelatin	POS POS NEG NEG NEG ROS	
<u>Sensitivity to:</u> Penicillin (10 U) Vancomycin (30 ug) Colistin (10 mcg) Polymyxin B (300 U)	$\begin{array}{c c} R & R \\ \end{array}$	Indole Malonate PAD Urea2 h 6.5% NaCL 10% Lactose ONPG Growth 42 <sup>0</sup>	W+ ROS W+ ROS W+ SLANT POSS NEG NEG NEG POS	GREEN LIGHT RING ALONG-SCANT CANE DIVLY LOOLS MIXED

Figure 105: Burkholderia cenocepacia isolate 4-of-6.

#### 12.2 Burkholderia cepacia (I)

Over the course of ASHEX clinical-isolate collection, 28 individual isolates of Burkholderia cepacia were analyzed. 18 of the 28 recorded results are pictured in this subsection.

Test	+	_	Raw%	W95%	Test	+	_	Raw%	W95%
Motility	28	0	100.00	93.97	$H_2S$	0	28	0.00	6.03
Oxidase	21	7	75.00	71.98	Pseudo P	0	28	0.00	6.03
Catalase	23	5	82.14	78.26	Pseudo F	0	28	0.00	6.03
Yellow Pigment	18	10	64.29	62.56	NO <sub>3</sub> Reduced	4	24	14.29	18.59
Pink Pigment	0	28	0.00	6.03	Gas from $NO_3$	0	28	0.00	6.03
Beta Hemolysis	13	15	46.43	46.86	NO <sub>2</sub> Reduced	2	26	7.14	12.31
Growth on Mac	27	1	96.43	90.83	Gas from $NO_2$	0	28	0.00	6.03
Dnase	0	28	0.00	6.03	OF Fructose	20	8	71.43	68.84
Starch	0	28	0.00	6.03	OF Dextrose	28	0	100.00	93.97
Lecithinase	1	27	3.57	9.17	OF Lactose	27	1	96.43	90.83
Lipase	28	0	100.00	93.97	OF Maltose	26	2	92.86	87.69
PYR	1	19	5.00	12.25	OF Mannitol	17	11	60.71	59.42
LAP	19	1	95.00	87.75	OF Xylose	24	4	85.71	81.41
ESC Spot Test	11	9	55.00	54.19	OF Sucrose	28	0	100.00	93.97
Penicillin (10U)	0	28	0.00	6.03	Arginine	0	28	0.00	6.03
Vancomycin $(30\mu g)$	0	28	0.00	6.03	Lysine	26	2	92.86	87.69
Colistin $(10\mu g)$	0	28	0.00	6.03	Ornithine	7	21	25.00	28.02
Polymyxin B (300U)	0	28	0.00	6.03	Acetamide	9	19	32.14	34.30
					Esculin	24	4	85.71	81.41
					Gelatin	26	2	92.86	87.69
					Indole	1	27	3.57	9.17
					Malonate	26	2	92.86	87.69
					PAD	8	20	28.57	31.16
					Urea 2 hrs.	0	28	0.00	6.03
					Urea 48 hrs.	27	1	96.43	90.83
					6.5% NaCl	2	26	7.14	12.31
					10% Lactose	28	0	100.00	93.97
					ONPG	27	1	96.43	90.83
					Growth 42°C	12	16	42.86	43.72

Table 27: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as  $n_+/(n_+ + n_-)$ , where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which shifts raw percentages towards 50% with a strength dependent on the total number of test occurrences. The four antibiotic tests at the bottom of Column 1 are sensitivity tests where a positive result indicates sensitivity to the drug.

		Ø Ø
	Date Inoculated:	Man 8/26/13 read 9/4/13 (9 days)
	Final Identification:	Buttholder copacito por PS Resolved -
	Comments: Orig :	Buck. Cepacite complex
	Colories y	RUO Burk Sp. 94% IND: Beepacia 99.99 Buka: Beenseepacia 2.194/ Byietramia m. 52.182
	Gram Morph.	$\frac{1}{2013} \frac{1}{3}$
	Gram Test	H2S Non-dk slowt.
	Motility Wet Prep	prob pipert
	Motility Deep	Pos - White tube cloudy Pseudo P N N
	Oxidase 75	Neg
1-0	Catalase 82.19	$\frac{Neg}{48 \text{ h}} = \frac{2^{-1} + \text{NO}_3 \text{ reduced}}{6^{-3} - \text{Gas from NO}_3} = \frac{N}{N} = \frac{14.29}{N}$
	PLATES	To h 7/ day 2-1 NO2 reduced X N-Aud 7,14
	Odor	Pos Pos Gas from NO2 N N
Y3-0	Pigment on swab	4 4 OF Fructose - Re-G Be 71.43
Po-3	Pigment on BAP	4 Mous gouter 3- OF Dextrose + 140, fost 4
	Morphology on BAP	STITUTE ALTA OF LAUSE J ALTA LA AND CONTRACTOR
	> Beta hemolysis 46.43 > Growth on Mac 96.43	$\sim$ OF Mannitol - Refer Re 60.71
		$\frac{ppt}{N} = \frac{pos}{sn} \frac{svel}{svel} \text{ OF Xylose} = \frac{Be-Gr}{Be-Gr} = \frac{Be-Gr}{Svel} \frac{Be-Gr}$
	DNase hydrolysis	$N$ $N$ $S^{-}$ $OF$ sucrose $F \rho S$ $F - q q$
0-3	Starch hydrolysis Lecithinase 3.77	$N D \sim 0^{-3} Arginine - N N + 1 Uning - 1 02 × 1 1 Uning - 1 0 02 × 1 0 0 0 00 00 00 000 000 000 000 000 $
	Lecitininase 5	Lysuie Vicio V
	Lipase Rapid PYR 5	$\sim 5 R^2$ $\sim P_{0} > 0^{-3}$ Ornithine $- N = 28 N$ $\sim V = 7 M$
	Rapid LAP 95	$P_{23}$ (-) Acetamide - () $32.14$
	<sup>2</sup> Rapid ESC 55	$\frac{1}{2-1}$ 2-1 Esculin - N N 85.7)
	-	$N_{-}$ 3-° Gelatin + $N_{-}$ $P_{-}$ 97.86
	Sensitivity to:	$R \qquad \begin{array}{c} \text{o-3 Indole} \\ \text{3-0 Malonate} \\ \text{+} \\ \end{array} \qquad \begin{array}{c} N \\ \text{Pos-blue} \\ \text{Pos-blue} \\ \text{97.86} \end{array}$
	Penicillin (10 U)	2-(PAD + Par - Oliver 1 2 8.57
	Vancomycin (30 ug)	K / 3- Urea X 2 h + 5/+ pinkedat Pos x / 96.43
	Colistin (10 mcg)	2- 210% I actore Doi wal shit Dox- whole tube
0-	Polymyxin B (300 t	)
		1-2-Growth 42° TSA POS Pos 42.86

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 106: Burkholderia cepacia isolate 1-of-28.

Reference No./Name:	Maldi Stady #16	anig c	Mp 2011-17
Date Inoculated:	Wea 7/10/13	0	0
Final Identification:	B. CEPACIA	GeNOMO	species I
Comments: Drev	1D - Burk. apraia	complex Yes	llow on Egg & STARCH
Add	i: Vithms Ruo: Bunk.	sp. IVD. B.up.	
Gram Morph.	2010	Tubes	2011 - 17 48 h 7 day
Gram Test	gnr	KIA	KINC NC/NC sent +butt warge
		$H_2S$	Neg Neg
Motility Wet Prep	10.4	Danuda D	Alas Alas
	eq, yellow attop of the / Pos 48	r Pseudo P Pseudo F	Neg Neg Neg Neg
Oxidase	Pos		
Catalase	Neg	$NO_3$ reduced	X Pos-clear after 3re dust
PLATES	<u>48 h</u> <u>7 day</u>	Gas from $NO_3$ $NO_2$ reduced	tiny bubble tiny bubble. X Pos-clear
Odor	Neg Pos-STINKS	Gas from NO <sub>2</sub>	Neg Neg
Pigment on swab	dkyellow gold	-OF Fructose	BLGE Gr -
Pigment on BAP	yellow etyellow	+OF Dextrose	Hellow Yellow, to
Morphology on BAP	round, wet round, wet small	-+OF Lactose	Gr yel-Gr +-
Beta hemolysis	Pos pos	+ OF Maltose OF Mannitol	B-Gr BI-Gr -
Growth on Mac	POS Sm. setyellow	+OF Xylose	BI-Gr BI-Gr - Gr Gr/Yeb
DNase hydrolysis	Neg-yellowcol. Neg-yellow		Yellow Yellow +
Starch hydrolysis	Neg yellowest. Neg	Arginine	Nea Neg
Lecithinase	Pos Neg Neg	Lysine	Neg Pos
Lipase	Pos Pos	Ornithine	Nez Nez
Rapid PYR	Neg .	Base Control	NegNeg
Rapid LAP	Pos	Acetamide	Neg Neg
Rapid ESC	Neg-digellow	Esculin Gelatin	RS-SIGHOK POS- blkskattbutt
Sensitivity to:	v	Indole	X
Penicillin (10 U)	RR	Malonate	Green Blue-Pos
Vancomycin (30 ug	) F F	PAD Urea nd 2 h	Pos slant Pos sent routh
Colistin (10 mcg)	R R	6.5% NaCL	New New
Polymyxin B (300	URRY	10% Lactose	Pos yellow shart Pos
		ONPG Growth 42 <sup>0</sup>	<u>Pos</u> <u>pos</u> Nac. Near
		Cronut 12	

Figure 107: Burkholderia cepacia isolate 2-of-28.

Date Inoculated:	Wighty	Coperation - Lichard
Final Identification:	DURKholderit	CEPACIA (GENEMOSPECIES I) lighter / 19
Comments: Fixel	45 1D: Burtcholdenia espacia	- complex micesia: Bapacia 99.992 F.S.
Mild.	Bark Cepecia 2.329 Coupley	Yellongaguest on DWARE Stand McChurg. PAD
Gram Morph. Gram Test Motility Wet Prep Motility Deep Oxidase	Pas Negr	Tubes48 h7 dayKIA $HNC$ $HL$ H2S $Neq$ $Neq$ Pseudo P $Neq$ $Neq$ Pseudo F $Neq$ $Neq$
Catalase <u>PLATES</u> Odor Pigment on swab Pigment on BAP	<u>Pos-wak</u> <u>48 h</u> <u>set.</u> <u>7 day</u> <u>simg.</u> ; fu; ty <u>Pos.</u> from ty <u>dk.gold</u> <u>Olive.gr</u> .	NO <sub>3</sub> reduced $X$ print $2\pi$ Neg Gas from NO <sub>3</sub> $Neg$ $Neg$ NO <sub>2</sub> reduced $X$ $Neg$ $Neg$ Gas from NO <sub>2</sub> $Neg$ $Neg$ $Ic/28/14$ OF Fructose $Gr$ $Gr$
Morphology on BAP Beta hemolysis Growth on Mac DNase hydrolysis	<u>yes</u> <u>pos</u> <u>yes</u> <u>pos</u> <u>pos</u> <u>pos</u> <u>Neg</u> <u>Neg</u>	OF Dextrose $44 trp + 4cc + 4$
Starch hydrolysis Lecithinase Lipase Rapid PYR	Neg- Neg- V Neg- Neg- V Pos Pos V Neg-	Arginine $Ng_{-}$ $Neg_{-}$ Lysine $wet?$ $weett$ 4Ornithine $wet?$ $Neg_{-}$ -Base Control $Neg_{-}$ $Neg_{-}$ -
Rapid LAP Rapid ESC Sensitivity to:	Pos We_Pos	Acetamide $Neg Neg-$ Esculin $Pos$ $Pos$ $V$ Gelatin $Neg Pos$ $V$ Indole $X$ $Neg V$
Penicillin (10 U) Vancomycin (30 u Colistin (10 mcg) Polymyxin B (300	UR UP V	Malonate $Pos$ $Pos$ $Pos$ $I$ $I$ PAD $Pos$ $X$ $V$ Urea $Nd/2$ h $wd r seart$ $Pos$ $V$ 6.5%NaCL $Nd_{V}$ $Nd_{V}$ $Nd_{V}$ 10%Lactose $Ver/P$ $Pos$ $V$ ONPG $Pos$ $Pos$ $Ver$ Growth 42° TSA $Neg$ $Neg$ $Ver$

Figure 108: Burkholderia cepacia isolate 3-of-28.

## Final Identification:

Comments:

ion: <u>Brencholderin cepacia genomospecies</u> I <u>Vel diffusible pigment on PAD</u> A.S. 5/29/07

Yel colonies on Egg Yolk, STARCH - Colonies very dry Appending DNASE, BAP - very Day Look with sheen

Gram Morph.		Tubes	<u>48 h</u>	7 day
Gram Test	48h	KIA H₂S ≱	K/NC	- BROWN GROWTH ON
Motility Wet Prep	Pos-med Rods	n <sub>2</sub> 3 6	ROWN SLANT	SCANT
Motility Deep	P05 P05	Pseudo P	Nec-	Nel
Oxidase	SLOW POS	Pseudo F	Nela	NEG Yellow dilbusible
Catalase	WEAK PO >	NO <sub>3</sub> reduced		NCO
PLATES	<u>48 h</u> <u>7 day</u>	Gas from NO <sub>3</sub>	New	Net
Odor	Skank	NO <sub>2</sub> reduced Gas from NO <sub>2</sub>	Nela	Nel-
Pigment on swab	YeL			
Pigment on BAP	Lt. Yel	OF Fructose OF Dextrose	Blue Yec	Biae Yel:
Morphology on BAP	DRY	OF Lactose	Blue	Nall pal
Beta hemolysis	NEG	OF Maltose	YEL/GRN	YellerN(MORE GREEN YellerN(THAN LACTOSE)
Growth on Mac	POS-metallic Skeen	OF Mannitol OF Xylose	BLUE GRN	BLUE
DNase hydrolysis	NEG NEG	OF Sucrose	YEL	Yel 1
Starch hydrolysis	Nelo Nela	A	Nec	AF Q / -
Lecithinase	NEG NEG	Arginine Lysine	Pos	NCG POG
Lipase	POS POS!	Ornithine	Nec	Nele
Rapid PYR	NEG	Base Control	NEG	Nel
Rapid LAP	DOS UN	Acetamide	POS	pos!
Rapid ESC	NEG	Esculin	Neo	NEG- BROWN GLANT
Sensitivity to:	· , · · · · · · · · · · · · · · · · · ·	Gelatin Indole	POS	POS! Nelan
Penicillin (10 U)	RR	Malonate	NEG	POS fella
Vancomycin (30 ug)	RR	PAD		WN after Yel diff. pight
Colistin (10 mcg)	R R	Urea <i>Me</i> 2 h 6.5% NaCL	Pos (slan) Ne6	T) POS(52 4 BUTT) Ne6
Polymyxin B (300 U		10% Lactose	POS	POS
i orymyxiii D (500 C		ONPG	FAMT YE	L PBS
		Growth 42°	NeG	NEG

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 109: Burkholderia cepacia isolate 4-of-28.

Reference No./Name:	-		+		
Date Inoculated:	-	6-4	8-07		
Final Identification:	BurkholdeerA	CEPACIA (	Genomoq.	peqes 1	6/20/07
Comments: <u>hera</u>	LUC Sheen on FIA &	048h			P.S.
Yello	w diffusible provent	EN PADe	48		
Lema	W- Yellow colonies	ON 9TARCO	h 9 E66	Your	
Gram Morph.		Tubes	<u>48 h</u>	7 day	
Gram Test	48h	KIA	K/NC	ER	
Motility Wet Prep	POS- med Roos	H <sub>2</sub> S	Nela	Nec	
Motility Deep	POS POS	Pseudo P	Nela	Neb-	
Oxidase	Nela (Pos 90 sec)	Pseudo F	Nel	Neb	
Catalase	Pos-scow	NO <sub>3</sub> reduced		Nelo	
PLATES	48 h 7 day	Gas from NO <sub>3</sub>	Ne.6	Nele	
Odor	NONE	$NO_2$ reduced Gas from $NO_2$	Nºela	NEL	
Pigment on swab	figh		NCO	1000	
Pigment on BAP	GREY	OF Fructose	GRN	Yeller	
Morphology on BAP	SMOOTH-SMEARS of the	OF Dextrose OF Lactose	HEL_ GRN	YEL	
Beta hemolysis	POS 16000	OF Maltose	GRN	YEL/GRN	
Growth on Mac	POS SLIGHTLY NHIBITED @ 48	OF Mannitol	GRN	Yeilbr N	
DNase hydrolysis	NEG NEW	OF Xylose OF Sucrose	GRN YEL	YEL	
Starch hydrolysis	NEG NEG				
Lecithinase	Nele Nele x	Arginine - Lysine	Nela	Nec- Pos	
Lipase	POG / Rog !!	Ornithine		Nec-	SLANT ENTIRELY
Rapid PYR	NEG	Base Control	$-\psi$	Nec	BROWN
Rapid LAP	POS	Acetamide	Nec	New	Weate
Rapid ESC	POST 1	Esculin BRow	N togFL	UARESCENT @ 4	18 670
Sensitivity to:	<i></i> .	Gelatin Indole	pos	POS	ANT TURNEL
Penicillin (10 U)	RR	Malonate	Nec	Pos B	ROWN AGter Feche
Vancomycin (30 ug)	RR	PAD	Nela		diffusi be
Colistin (10 mcg)	RR	Urea <i>N<u>&amp;</u>2</i> -h 6.5% NaCL	POS (SLAN NEG	T) PCS-SLANTER NEG	ut7 78.
Polymyxin B (300 U)	RR	10% Lactose	AOS	POS	
		ONPG	Pos	POS	
		Growth 42°	NeG (INh, b, tes		
			-	/	

Figure 110: Burkholderia cepacia isolate 5-of-28.

Date Inoculated:	6-11-07	
Final Identification:	6-18-07 Burth	PAD. YEL COLONIES ON DE
Comments: Yel	diffusible pignt on	PAD, Yel COLONIES ON PS
STAN	rch, Egg Yolk DNA	se
		6/14
Gram Morph.		$\frac{\text{Tubes}}{\text{KIA}} \qquad \frac{48 \text{ h}}{\text{k/NC}} \qquad \frac{7 \text{ day}}{\text{k/K}}$
Gram Test	72h	Has Nelo Nelo
Motility Wet Prep	Pog-med Rods	
Motility Deep	POS POS	Pseudo P <u>NCC NCC</u>
Oxidase	NCG (VERY Delayed)	Pseudo F <u>New</u> <u>New</u>
Catalase	Pos	NO3 reduced New
<b>PLATES</b>	<u>48 h 7 day</u>	Gas from NO <sub>3</sub> <u>Nete</u> <u>NCG</u> NO <sub>3</sub> reduced <u>NCG</u>
Odor	NONE	$NO_2 reduced$ $NC_2 - NC_2 -$
Pigment on swab	flesh	·
Pigment on BAP	GREY	OF Fructose <u>GRN</u> <u>Yer/GRN</u> OF Dextrose <u>Yer</u> Ver
Morphology on BAP	Stroot	OF Dextrose <u>Yel</u> <u>Yel</u> OF Lactose <u>Yel/GRN</u> <u>Yel/GRN</u>
Beta hemolysis	Pos	OF Maltose GRN Yei/GRN
Growth on Mac	Pos	OF Mannitol GRN YellerN
		OF Xylose <u>Yel/Gen</u> OF Sucrose <u>Yel</u> Yel
DNase hydrolysis	dimension and and and and and and and and and an	or success <u>PEL</u>
Starch hydrolysis	New Arelo	Arginine <u>New Neb-</u>
Lecithinase	Neo Neo	Lysine $w + \frac{Pos}{Pos}$ Ornithine Nes- $Pos$
Lipase	POS!! POS	Base Control Nets Nets
Rapid PYR	New	
Rapid LAP	Pos	Acetamide <u>New New</u>
Rapid ESC	+22	$\frac{1}{\text{Gelatin}} \qquad \frac{104}{705}$
Sensitivity to:		Indole <u>NCG</u>
Penicillin (10 U)	R R	Malonate <u>Lt Blue pos</u>
Vancomycin (30 ug)	R R	PAD UreaNels2 h Nel- Pos-4 Burr Blow ki Acte
Colistin (10 mcg)	RR	6.5% NaCL Neb Neb Felly
Polymyxin B (300 U	DRR	10% Lactose Pos Pos
		$\begin{array}{cccc} ONPG & \underline{Pos} & \underline{Pos} \\ Growth 42^0 & \underline{Pos} & \underline{Pos} \end{array}$

Note: All biochemical tests (except where noted) are incubated at 30°C and read after 48 hrs. incubation and again at 7 days.

Figure 111: Burkholderia cepacia isolate 6-of-28.

Comments:

Sheen on KIA BUR Holderia Cepacia 6.5. I 6/20/0 METALIC RS Ye diffusible pignt @ 48 h on PAD en Starch & EGG YOLKG 48 Letton-Yellow colonies Tubes Gram Morph. 7 day KIA 486R Gram Test H<sub>2</sub>S Motility Wet Prep POS-med RODS Nelo Pseudo P POS POG Motility Deep Pseudo F Nel NEG (DOS 90 th Oxidase POS - SLOW Catalase NO<sub>1</sub> reduced Gas from NO<sub>3</sub> <u>48 h</u> 1SEG **PLATES** 7 day NO<sub>2</sub> reduced NONE Odor Gas from NO<sub>2</sub> NCG Pigment on swab flesh YELLGRN **OF** Fructose GRN GREY Pigment on BAP **OF** Dextrose YP1 Yel Morphology on BAP Smooth SMEAR OF Lactose 16 <u>GR</u>N GRN OF Maltose GRN Beta hemolysis 109 **OF Mannitol** 16RN LIGHTLY 6RN Growth on Mac whip tedle 1 YeL **OF** Xylose GRN **OF** Sucrose Hel DNase hydrolysis New 101 NEG Nec Starch hydrolysis Neb Arginine Nele Nel Lecithinase ¥ Lysine YPANT reet Ornithine ADS Lipase Pas DROW Base Control kier Nec Rapid PYR WEAK NEG PDS Acetamide Rapid LAP -Esculin BRow ller a 7D Rapid ESC Gelatin Sensitivity to: Indole SLANT Malonate Penicillin (10 U) PAD Vancomycin (30 ug) Urea Allo 2 h Dos RANT 6.5% NaCL Nº6 Colistin (10 mcg) 10% Lactose Polymyxin B (300 U) ONPG Growth 42° NE6 (INhibited)

Note: All biochemical tests (except where noted) are incubated at 30°C and read after 48 hrs. incubation and again at 7 days.

Figure 112: Burkholderia cepacia isolate 7-of-28.

Date Inoculated:	7-5-07			
Final Identification:	BUREholderia cep	ACIA Gen	ono spe	cies L
Comments: <u>Yel</u>		DNA	° P.	5.
	17			13-07
			72	<b>7</b> 1
Gram Morph.	. /	<u>Tubes</u> KIA	48 h	<u>/ day</u>
Gram Test	48h	H <sub>2</sub> S	FINC	I-IE NEL
Motility Wet Prep	POS - Sull. Rody - Sp. WWING	1125	Nec	NCG
Motility Deep	Pog Pog	Pseudo P	NeG	NEG
Oxidase	WEAK POS (30 Sec)	Pseudo F	Yel de Ch pan	tscant-izuaz-New
Catalase	POS	NO <sub>3</sub> reduced		New
PLATES	48 h 7 day	Gas from NO <sub>3</sub>	Pos HNY	TINY
Odor	FRUITY	NO <sub>2</sub> reduced	/	New
	GRAPES	Gas from NO <sub>2</sub>	Pos TINY	TIONY
Pigment on swab	Butterscotch	OF Fructose	Ya/GRN	Yel/GRN
Pigment on BAP	Yel	OF Dextrose	Yel	Yel
Morphology on BAP	Smooth	OF Lactose	Ya/Gar	YEL/LAN
Beta hemolysis	Pos	OF Maltose	YeL/GRN	Yel/LAN
Growth on Mac	Pos	OF Mannitol	Yer/Ger	YEL / GRN
		OF Xylose OF Sucrose	Tel/GRN	<u>Yel</u>
DNase hydrolysis	Neb- Yel Neb	OF Sucrose	-YeL	Yel
Starch hydrolysis	New New	Arginine	NEG	Neg
Lecithinase	NEG- NEG	Lysine	Pos	POG (GTROANG)
Lipase	Pos! Pos	Ornithine	Dos	Pas (WPAK)
Rapid PYR	Nela	Base Control	NEG	Neu
Rapid LAP	POS	Acetamide	Nel	Neb
Rapid ESC	POS (WEAK)	Esculin Pog Gelatin	S- BROWN	POS (NO FLUEDescere) POS
Sensitivity to:		Indole"	pes	· NPG
Penicillin (10 U)	RR	Malonate	Q05	POS
Vancomycin (30 ug	R R			POL SLANT BROWN
Colistin (10 mcg)	PP	Urea2 h 6.5% NaCL	Nec-	Nel- Felling
		10% Lactose	Pos	Pos
Polymyxin B (300 )		ONPG	Pos	Pos
		Growth 42°	New	NEG

Note: All biochemical tests (except where noted) are incubated at 30°C and read after 48 hrs. incubation and again at 7 days.

Figure 113: Burkholderia cepacia isolate 8-of-28.

12-10-07 Date Inoculated: tion: 12-17-07 Buckholderia cepacia Genomospecies I Vellow on Starch & Egg Yalk P.S. 12/17/07 Yellow different for PAD Final Identification: Comments:

Gram Morph. Gram Test Motility Wet Prep	POS_ MEdium RODS	<u>Tubes</u> KIA H <sub>2</sub> S	<u>48 h</u> <u>FC/NC</u> <u>NEG</u>	<u>7 day</u> <u>k/ke</u> <u>NCC</u>
Motility Deep Oxidase	Pos Pog Delayed Pog Abter 2 min	Pseudo P Pseudo F	Nec- Nec-	<u>NCC-</u> <u>NCC-</u>
Catalase <u>PLATES</u> Odor Pigment on swab Pigment on BAP Morphology on BAP	Pos 48 h 7 day FRUCKY + Arawith APRILOT Gray Smooth - Shinny	NO <sub>3</sub> reduced Gas from NO <sub>3</sub> NO <sub>2</sub> reduced Gas from NO <sub>2</sub> OF Fructose OF Dextrose OF Lactose		Yellen Yell
Beta hemolysis Growth on Mac DNase hydrolysis	POS Pos-Subarting Nec Nel	OF Maltose OF Mannitol OF Xylose OF Sucrose	GRN GRN GRN YEL	Yeullan Yeullan Yei
Starch hydrolysis Lecithinase Lipase Rapid PYR	Nela Nela Nela Nela Pos! Pos!! Nela	Arginine Lysine Ornithine Base Control	NEG Pos NEG NEG	Nec- (Des con-Thrankes) POS Nec- Nec-
Rapid LAP Rapid ESC <u>Sensitivity to:</u> Penicillin (10 U) Vancomycin (30 ug) Colistin (10 mcg) Polymyxin B (300 U	Pos NeG R R R R R R	Acetamide Esculin Gelatin Indole Malonate PAD Urea <u>Mea</u> 2 h 6.5% NaCL 10% Lactose ONPG Growth 42°	New Pos Pos New New Pos Pos New Pos Pos We	NCG AGGER Add, from <u>POS</u> OF FECL3 <u>SCIENT</u> GROWTH
	R R	10% Lactose ONPG Growth 42 <sup>0</sup>	Pos	POS POS SCIENT GROWTH

Figure 114: Burkholderia cepacia isolate 9-of-28.

	Date Inoculated:	1-3-08			
	Final Identification:	Buckholder. A.	MADACIA	DeNAC	Norices t PS.
					1/10/00
	Comments: Yel/G	RN DIGGUSIBLE PIGHT	or Reudo	P&F P	AD
	BROWN	S GROWTH W/ METTALIC SH	een on ker	1@70	. GalDen Yellow
	en 9	Starch + Egg Yolk@ 7 L	. Yellow o	on DNASe	70
	Gram Morph.		Tubes	48 h	$\frac{7 \text{ day}}{1 \text{ (free})}$
	Gram Test	246	KIA H <sub>2</sub> S	NC/NC NEG	K/K
	Motility Wet Prep	POS SM. ROOLS	1125	- NVC Gar	_We&
	Motility Deep	P05 A05	Pseudo P	Neb	Nela
	Oxidase	SLow POS	Pseudo F	Nele	New Yacow Discousible
	Catalase	POS	NO <sub>3</sub> reduced		New
	PLATES	48 h 7 day	Gas from NO <sub>3</sub>	Nela	New Repear Non
	Odor	NONP-Skunk	$NO_2$ reduced Gas from $NO_2$	hill	Nela
How	Pigment on swab	Butterscotch	Gas from roo <sub>2</sub>	1000	
dece	Pigment on BAP	Butterseakh	OF Fructose	Breel	BLUE/GRN
	Morphology on BAP	smooth	OF Dextrose OF Lactose	GRN	Yel! Yel
	Beta hemolysis	New-24h. New-48	OF Maltose	GRN	Yer
	Growth on Mac	POS POS	OF Mannitol	Blue	Brue/GRN
		NEO NEO	OF Xylose OF Sucrose	Blue Yer	Yel !
	DNase hydrolysis Starch hydrolysis	NG NCG	OI Sucrose	100	10 L .
		New New	Arginine	New	NeG
	Lecithinase		Lysine Ornithine	POG	New-
	Lipase		Base Control	NEG	Nela
	Rapid PYR	Nec-			
	Rapid LAP	Pos	Acetamide Esculin	POS	Neo- Pos
	Rapid ESC	POS	Gelatin		POS
	Sensitivity to:	•	Indole		NEO
	Penicillin (10 U)	<u>RR</u>	Malonate PAD	Nelo	pes
	Vancomycin (30 ug)		Urea MC62 h	INT SLANT	POS SCANT & BUTT
	Colistin (10 mcg)	<u>R</u> R	6.5% NaCL	Nela	New
	Polymyxin B (300 U)	$R_R$	10% Lactose ONPG	Pos	POS
$\frown$			Growth 42 <sup>°</sup>	Pos	inh bited Charth

Figure 115: Burkholderia cepacia isolate 10-of-28.

Final Identification	on:		B cep	acia compley	NS
Comments:	Yellow ON KIA				
	BURKholdern	A CEPACIA GENI	mospec	105 (E) P.S.7/2/	1
Gram Morph.		Tubes	72 hR 48 h	$\frac{c}{23} - \frac{5}{30}$	18
Gram Test		KIA	E/NC	KINC -	
Motility Wet Pre	p POS-RODS	H <sub>2</sub> S	NEG	NEG	
+ Motility Deep	POS POS	Pseudo P	Nele	NEG V	
+ Oxidase	SLOW POS	Pseudo F	Nele	NEG	
	POS	- NO <sub>3</sub> reduced	· · · · · · · · · · · · · · · · · · ·	Net No goos	
PLATES	<u>48 h</u> <u>7 day</u> -	-5/30 — Gas from NO <sub>3</sub> — NO <sub>2</sub> reduced	NEG	Nea durhan	a tube
Odor	Stinkes	- Gas from NO <sub>2</sub>	NEG	Ner	
Pigment on swab	flesh			4/23 YELLOW ACC	
Pigment on BAP	GREY	- + OF Fructose + OF Dextrose	Yel_	Jellow Acc yellow	
Morphology on I	BAP Smooth	OF Lactose			
Beta hemolysis	Nela	$- \qquad + \text{ OF Maltose} \\ + \text{ OF Mannitol}$		GREEN	
- Growth on Mac	POS Lt. PINE	- + OF Xylose		yz Lion	
DNase hydrolysi		6 + OF Sucrose	-	V	
— Starch hydrolysis	NEG NE	Arginine	NEG	NEG -	
— Lecithinase	Nela Nel		Pos	POSV	
Lipase	Pos! Pos	S + Ornithine Base Control	Pos Ne6	POS V NEG-V	
- Rapid PYR	Nec		. /		
+ Rapid LAP	POS	- Acetamide - Esculin	105.	BLUE " BLACK	
+ Rapid ESC	Atto Weak		Nelo	POS = fliquid in	· COLIN
Sensitivity to:	0 0	Indole	Neb	NEG	2
— Penicillin (10 U	0 0	- $+$ Malonate - PAD	H.BLUE NEG	BIUS	
Vancomycin (3		-// Urea <u>Ne6</u> 2 h	NEG	POS-PINK SCAN	TXBUTT
Colistin (10 mc		+ <sup>#</sup> 6.5% NaCL + 10% Lactose	NeG- Pos!	YELLOW -	
Polymyxin B (3	00  U $R$ $R$	- + ONPG	Pos	yellow	
-		+Growth 42°	Pos	(FROW TH	

Note: All biochemical tests (except where noted) are incubated at 30°C and read after 48 hrs. incubation and again at 7 days. ATTACK RESULTS FROM Le Autra's LAB

Figure 116: Burkholderia cepacia isolate 11-of-28.

		nting Gram-Negative R	ods	Paul has a	plite set of
Reference No./Name:					ours "lata the
Date Inoculated:	1-22-09				
Date moculated.		e P	01	1	
Final Identification:	B. CEPACIA C	Complex - Best	Fit G	enomov,	AR I
Comments: 61614		Iscusible Peni		•	
At	4 DAYS. Ligh	t Yellow ON 5	FARCh &	Egg Yolk	
	/ /	4	-26	2/4/09	15 DAYS
Gram Morph.	*	<u>Tubes</u> KIA	48h 6/rc	7 day	3/10/09
Gram Test	24h	$ H_2S$	NEG	NEG	
Motility Wet Prep	Pos				P.5,
Motility Deep	Pos! Pos	Pseudo P	Nels	Nela	
- Oxidase	POS-SLOW	Pseudo F	New	Nec	
- Catalase	POS	NO <sub>3</sub> reduced		Neb	
PLATES 2	4 <u>48 h 7 day</u>	Gas from NO <sub>3</sub>	Nea	Nel	
Odor Str	NEG House cAge	- NO <sub>2</sub> reduced Gas from NO <sub>2</sub>	New	NEG	
Pigment on swab	Buttenscotch			<u> </u>	
Pigment on BAP	GREY	OF Fructose	AU Yel	Yel	
Morphology on BAP	STOOTL	<ul> <li>OF Dextrose</li> <li>OF Lactose</li> </ul>			
Beta hemolysis	Neg	OF Maltose			
Growth on Mac	POS	OF Mannitol			
DNase hydrolysis	NEG NEG	<ul> <li>OF Xylose</li> <li>OF Sucrose</li> </ul>		1	
Starch hydrolysis	NEG NEG		<b>v</b>		
Lecithinase	NEG NEG	- Arginine	NEC	Nea	
Lipase	Pos! Pos	Lysine Ornithine	pos Neg	POS Nea	
-		- Base Control	NCG	Nela	
Rapid PYR	NEG		11.0.1	1006	
Rapid LAP	<u>105</u>	Acetamide Esculin	NEG	Nel	
Rapid ESC	NEG	Gelatin	Neb	905	
Sensitivity to:	0 0	Indole	0.0	NEG	
Penicillin (10 U)	K K	– Malonate - PAD <b>NeG</b>	POS Vel KEN	PICCIPUD PM	HT- PIINE RI
Vancomycin (30 ug)	RR	$-$ Urea $\_2$ h	POS	POS	ALONG SCAN
Colistin (10 mcg)	<u>R</u> <u>R</u>	6.5% NaCL	Pas	POS (OLALE)	IN OCULUM TURNED BLA
Polymyxin B (300 U)	R R	- 10% Lactose ONPG	Pes	POS	fact both
		Growth 42 <sup>°</sup>	POS	Pos	

Figure 117: Burkholderia cepacia isolate 12-of-28.

Date Inoculated:

11-3-10

00

Starch

Yellow

Final Identification:

Comments:

11/9/10 11-9-10 I day Gram Morph. Tubes 48<u>h</u> KIA Gram Test  $H_2S$ Motility Wet Prep Pseudo P NeG Motility Deep POS Pseudo F Oxidase Catalase 200 Nel NO<sub>3</sub> reduced Gas from NO<sub>3</sub> neg Nel **PLATES** 7 day 48 h NO<sub>2</sub> reduced M Odor NONP Neg Gas from NO<sub>2</sub> NEG Yellow Pigment on swab **OF** Fructose ney 120 GREY- Yellow Pigment on BAP OF Dextrose pos Dull-mettablic sheen Morphology on BAP OF Lactose neg el OF Maltose reg HEL/GRN Beta hemolysis NPG OF Mannitol neg GRN Growth on Mac 805 POS OF Xylose NEC Yel/6RN DNase hydrolysis neg OF Sucrose NeG eL Starch hydrolysis NeG NEL Arginine Nec Lecithinase nen NeG Lysine PO Ornithine Ne Lipase **Base Control** NEG Rapid PYR kip ( Þ05 Rapid LAP Acetamide Esculin Rapid ESC Nele Gelatin Sensitivity to: Indole Penicillin (10 U) Malonate BROWN WITH PAD Vancomycin (30 ug) PINK QUILINE Urea 2 h After Fellz Colistin (10 mcg) 6.5% NaCL 10% Lactose Polymyxin B (300 U) nlo ONPG Growth 42°

Buckbolderin CEPACIA (GENONO Specie

4 Egg

Yolb-

DNASE

Note: All biochemical tests (except where noted) are incubated at 30°C and read after 48 hrs. incubation and again at 7 days. prelim: Ralstonia pickettil prelim matrix; Burkholderia

Figure 118: Burkholderia cepacia isolate 13-of-28.

Date Inoculated: 12-17-10						
Final Identification: Burtholderin cepacin genover species I ONA, MAC P.S.						
Comments: Yellow promented on Stareh & Egg Yolk - DRY COLONIES						
DRY Colonies All media 12/22	2					
Gram Morph. <u>Tubes</u> <u>48 h</u> <u>7 day</u>						
Gram Test KIA E/NC						
Motility Wet Prep $Nec_{27ha} \overline{30} Nec_{H_2S} = Nec_{6}$						
Motility Deep Pos Pseudo P Neco \ 0.66090ble						
Oxidase <u>SLow Pos (30 Sec</u> ) Pseudo F <u>Neb Pignent</u>						
Catalase $NeG$ NO <sub>3</sub> reduced $PO5$ FLUOR - NeG						
PLATES 48 h Zday 5 DAY Gas from NO <sub>3</sub> <u>Nec</u>						
Odor     Nove     NO2 reduced $NO_2$ reduced $NC_2$						
Pigment on swab $f(e_{i})$						
Pigment on BAP Yellow OF Fructose Yellow						
Morphology on BAP $\pi_{\alpha coll}$ OF Dextrose $\gamma_{ec}$ Morphology on BAP $\gamma_{ec}$ $\gamma_{ec}$						
Beta hemolysis P5-24/ Pp5 OF Maltose YeL						
Growth on Mac Dog Mined OF Mannitol Yel/GRN						
DNase hydrolysis NEG Summeth OF Sucrose YeL						
Starch hydrolysis AleG-						
Lecithinase Net Arginine Net Pos						
Lipase Pos Ornithine Web						
Rapid PYR Net						
Rapid LAP <u>POS</u> Acetamide NeG						
Rapid ESC Ne6 Esculin Pos						
Kapit Esc     Net       Sensitivity to:     Indole						
Penicillin (10 U) R Malonate P05						
Vancomycin (30 ug) R PAD <u>Neb</u>						
Value       Virea       Virea       New       Poss       Scawt       Collection         Collistin (10 mcg) $R$ 6.5% NaCL $R$						
Polymyzin B (300 L) $R = 10\%$ Lactose $POS$						
$\begin{array}{c} \text{ONPG} \\ \text{Growth } 42^{\circ} \end{array} \xrightarrow{\begin{array}{c} \hline \\ \hline $						

Figure 119: Burkholderia cepacia isolate 14-of-28.

Date Inoculated:	Date Inoculated: 12-17-10							
Final Identification:	Burteholder, A	CEPACIA	9enen	ospecies I				
Comments: Liq	t butter scotch on	Egg + St	bech -	Smouth Colonies				
Smo	smooth colonies ALC media RS							
				12/22 12/22/10				
Gram Morph.		Tubes	<u>48 h</u>	<u>7 day</u>				
Gram Test		KIA		E/NC				
Motility Wet Prep	Pos! very motile	$H_2S$						
Motility Deep	804	Pseudo P		New				
Oxidase	Slow Pos (30 sec)	Pseudo F		Nel				
Catalase	Nela	NO <sub>3</sub> reduced		New				
PLATES	48 h 7 day	Gas from NO <sub>3</sub>		Nea				
Odor	Nelo	NO <sub>2</sub> reduced		Nec				
Pigment on swab	Bubb	Gas from NO <sub>2</sub>		New				
Pigment on BAP	GRey	OF Fructose		Yel/6den				
-		OF Dextrose		yec_				
Morphology on BAP	Smooth	OF Lactose		Yel				
Beta hemolysis	Ne6 NeG	OF Maltose OF Mannitol		Yel/6RN				
Growth on Mac	<u>Pos</u>	OF Xylose		Yec_				
DNase hydrolysis	NeG	OF Sucrose		Yel				
Starch hydrolysis	Neg							
Lecithinase	Nea	Arginine Lysine		New- ADS				
Lipase	Pos	Ornithine		New				
Rapid PYR	NeG	Base Control		Nele				
Rapid LAP	Pos	Acetamide		Nec				
Rapid ESC	NEG	Esculin		Pos				
		Gelatin		pos				
Sensitivity to:	P	Indole		NEG				
Penicillin (10 U)	/(	Malonate PAD		POS NPC				
Vancomycin (30 ug)	<u></u>	Urea 2 h		POS- SLANT ONLY				
Colistin (10 mcg)		6.5% NaCL		Nele				
Polymyxin B (300 U)	R	10% Lactose		Pos				
		ONPG		Pos				
		Growth 42 <sup>0</sup>		INh, bited				

Figure 120: Burkholderia cepacia isolate 15-of-28.

	Date Inoculated: /-	- 4-11			
	Final Identification:	BURKholderia	CEPACI	4 (GS	Ţ)
Yellow	Comments: Ye	llow on Starch of	Egg Ydk=		475
1-			"		P.S. 1-14-11
			1-	-7-11 /	1-12-11 8 DAYS
	Gram Morph.		Tubes	77	7 day
	Gram Test	24h	KIA	E/NC -	KE
	Motility Wet Prep	N26 CM & redirent Rod.	5 5 1 2 5	NEG	Nels
	Motility Deep	A05 705	Pseudo P	Nele	Nec
	Oxidase	Pos	Pseudo F	Nela	Neb
	Catalase	slow Pos	NO <sub>3</sub> reduced		NEG
-	<b>PLATES</b>	<u>48 h</u> <u>7 day</u>	Gas from NO <sub>3</sub>	Nele	NeG
$\cap$	Odor	NONE 244	NO <sub>2</sub> reduced Gas from NO <sub>2</sub>	Nele	NEG
	Pigment on swab	Butterscotch - fleigh		- NCO	
	Pigment on BAP	GREY	OF Fructose	BLUE	GRN/YeL
	Morphology on BAP	STOSTH-TETALLE Sheen	OF Dextrose OF Lactose	<u>Yel</u> GRN	Yel Yel
	Beta hemolysis	POS	OF Maltose	BLUE	Yel
	Growth on Mac	POS POS	OF Mannitol	give _	BLER/GRN
	DNase hydrolysis	New Nela	OF Xylose OF Sucrose	<u>GRN</u> Yel	Yel
	Starch hydrolysis	New New			
	Lecithinase	Nela Nela	Arginine Lysine	Pos	Nec- Pos
	Lipase	POS POS!!	Ornithine	Neb	Nelo
	Rapid PYR	NPG	Base Control	Nele	Nelo
	Rapid LAP	POS	Acetamide	Nela	NEG
	Rapid ESC	POS	Esculin	POS	POS
	Sensitivity to:		Gelatin Indole	wt	VERY WERY WEAKE + NEC- PINE INVEACH
	Penicillin (10 U)	R R	Malonate	DOS	POS INDUICA TURNED
	Vancomycin (30 ug)	RR	PAD		SAFE - BLACK AGIER FELLS
	Colistin (10 mcg)	RR	Urea <u>א<i>2 66</i></u> 2 h 6.5% NaCL	POS SLAWT NEG	NEG SLANT & BRIT
$\cap$	Polymyxin B (300 U)	RR	10% Lactose	POS	POS
			ONPG Growth 42 <sup>0</sup>	w+ NeG	POS Nelo

Figure 121: Burkholderia cepacia isolate 16-of-28.

Date Inoculated:

Final Identification:

9-17-12 Burthotoles, A CEPACIE (GENOMOSPECIES I) Yellow ON KIA P.S. 9/26/12

Comments:

					9/26
Gram Morph.		\$	Tubes	<u>48 h</u>	7 day
Gram Test	48h		KIA		KIR
Motility Wet Prep	Pos-fe	a wothe cells	$H_2S$		New
Motility Deep	Pos		Pseudo P		NEG
Oxidase	P05 (	20 sec)	Pseudo F		New
Catalase	POS		NO3 reduced		11Pla
		7 dor	Gas from NO <sub>3</sub>		TINY BUBBLE
PLATES	<u>48 h</u>	<u>7 day</u>	NO <sub>2</sub> reduced		Nelo
Odor	Stinks		Gas from $NO_2$		Nel
Pigment on swab	1ght butte	recetel	OF Emistana		YEL/GRN
Pigment on BAP	GREY		OF Fructose OF Dextrose		Yel
Morphology on BAP	ENTIRE		OF Lactose		Yel
Beta hemolysis	Nele	Deep Deep	OF Maltose		yel_
Growth on Mac		POS- PERPLE	OF Mannitol		YU/GRN
DNase hydrolysis		NEG	OF Xylose OF Sucrose		Yer Yer
		NeG	OI Suciose		
Starch hydrolysis			Arginine		New
Lecithinase		Neb	Lysine		_P05
Lipase		P05 .!!	Ornithine Base Control		POSNec-
Rapid PYR	W+		Base Control		
Rapid LAP	Pos		Acetamide		Pos
Rapid ESC	Pos		Esculin Gelatin		POS
Sensitivity to:			⊢ Indole		Pos *
Penicillin (10 U)		$\underline{R}$	Malonate		Pos
Vancomycin (30 ug)		R	PAD Urea <b>Nel2</b> h	POS	POS
Colistin (10 mcg)		R	6.5% NaCL		Neb
Polymyxin B (300 U)		R	10% Lactose		POS
			ONPG		POS
			Growth 42 <sup>0</sup>		pos

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 122: Burkholderia cepacia isolate 17-of-28.

Date Inoculated: Final Identification:	Burkholderin Cepacia Complex (Best FIT)	
E	Eqs York + STADLL, DNASE PS. 2/17/04	'e's'
Gram Morph. Gram Test Motility Wet Prep Motility Deep Oxidase	How were reprised to the second to the se	
Catalase <u>PLATES</u> Odor Pigment on swab	AVECE     VEXY     WEAK     -NO3 reduced     NEW     45h       ABh     7 day     -Gas from NO3     71Ny Bubble     NEG       NONE     Chaps     -Gas from NO2     NEG       Yel-GRN     -Gas from NO2     NEG     NEG	
Yel + Pigment on BAP Morphology on BAP - Beta hemolysis + Growth on Mac - DNase hydrolysis	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	
<ul> <li>Starch hydrolysis</li> <li>Lecithinase</li> <li>Lipase</li> <li>Rapid PYR</li> </ul>	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	
<ul> <li>Rapid LAP</li> <li>Rapid ESC</li> <li>Sensitivity to:</li> <li>Penicillin (10 U)</li> <li>Vancomycin (30 ug)</li> <li>Colistin (10 mcg)</li> <li>Polymyxin B (300 U</li> </ul>	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	

Figure 123: Burkholderia cepacia isolate 18-of-28.

## 12.3 Burkholderia gladioli

Over the course of ASHEX clinical-isolate collection, 11 individual isolates of Burkholderia gladioli were analyzed. Six of the 11 recorded results are pictured in this subsection.

Test	+	_	Raw%	W95%	Test	+	_	Raw%	<b>W95</b> %
Motility	10	1	90.91	80.32	$H_2S$	0	11	0.00	12.94
Oxidase	3	8	27.27	33.16	Pseudo P	0	11	0.00	12.94
Catalase	10	1	90.91	80.32	Pseudo F	0	11	0.00	12.94
Yellow Pigment	0	11	0.00	12.94	NO <sub>3</sub> Reduced	5	6	45.45	46.63
Pink Pigment	0	11	0.00	12.94	Gas from $NO_3$	0	8	0.00	16.22
Beta Hemolysis	3	5	37.50	41.56	NO <sub>2</sub> Reduced	1	10	9.09	19.68
Growth on Mac	9	2	81.82	73.58	Gas from $NO_2$	0	8	0.00	16.22
Dnase	0	11	0.00	12.94	OF Fructose	11	0	100.00	87.06
Starch	1	10	9.09	19.68	OF Dextrose	11	0	100.00	87.06
Lecithinase	0	8	0.00	16.22	OF Lactose	1	10	9.09	19.68
Lipase	8	0	100.00	83.78	OF Maltose	0	11	0.00	12.94
PYR	0	6	0.00	19.52	OF Mannitol	11	0	100.00	87.06
LAP	6	0	100.00	80.48	OF Xylose	11	0	100.00	87.06
ESC Spot Test	0	6	0.00	19.52	OF Sucrose	0	7	0.00	17.72
Penicillin (10U)	4	7	36.36	39.89	Arginine	0	11	0.00	12.94
Vancomycin $(30\mu g)$	0	11	0.00	12.94	Lysine	0	11	0.00	12.94
Colistin $(10\mu g)$	0	11	0.00	12.94	Ornithine	0	11	0.00	12.94
Polymyxin B (300U)	0	8	0.00	16.22	Acetamide	0	11	0.00	12.94
					Esculin	2	9	18.18	26.42
					Gelatin	11	0	100.00	87.06
					Indole	0	11	0.00	12.94
					Malonate	5	4	55.56	53.89
					PAD	0	11	0.00	12.94
					Urea 2 hrs.	0	11	0.00	12.94
					Urea 48 hrs.	7	4	63.64	60.11
					6.5% NaCl	2	9	18.18	26.42
					10% Lactose	2	7	22.22	30.53
					ONPG	5	4	55.56	53.89
					Growth 42°C	0	11	0.00	12.94

Table 28: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as  $n_+/(n_+ + n_-)$ , where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which shifts raw percentages towards 50% with a strength dependent on the total number of test occurrences. The four antibiotic tests at the bottom of Column 1 are sensitivity tests where a positive result indicates sensitivity to the drug.

Date Inoculated: Final Identification: Comments: لمها	w 4/19/17 Burkholdenia gesærve D: Burkholdesia gladi	oli Maldi: 1.75/2	
Gram Morph. Gram Test Motility Wet Prep (10,9) Motility Deep (7,27 Oxidase	- Pos Nerr	Tubes48 hKIA $\mu/\nu^2$ H <sub>2</sub> S $\nu$ Pseudo P $\mu$ Pseudo F $\mu$ $\mu$ $\mu$	9 <u>A day</u> <u>k/K-</u> <u>Neg</u> <u>Neg</u> <u>bruin provento</u> <u>Neg</u>
<ul> <li>90.91 Catalase</li> <li><u>PLATES</u></li> <li>Odor</li> <li>Pigment on swab</li> <li>Pigment on BAP</li> <li>Morphology on BAP</li> <li>37.5 Beta hemolysis</li> <li>81.82 Growth on Mac</li> <li>DNase hydrolysis</li> </ul>	Neg Neg		<u>Re</u> <u>Neg</u> <u>Neg</u> <u>Neg</u> <u>Neg</u> <u>Neg</u> <u>Neg</u> <u>Neg</u> <u>Neg</u> <u>Neg</u> <u>Neg</u> <u>Neg</u> <u>Neg</u> <u>Neg</u> <u>Neg</u> <u>Neg</u> <u>Neg</u> <u>Neg</u> <u>Neg</u> <u>Neg</u> <u>Neg</u>
9,29 Starch hydrolysis Lecithinase Lipase Rapid PYR Rapid LAP Rapid ESC <u>Sensitivity to:</u>	Neg Neg Pos posE Neg PosE Neg Neg Neg	Gelatin N Indole X	Neg- Nog- Nog- Neg- Neg- Pix (1) Neg- pig- Neg- Neg-
<ul> <li>36-35</li> <li>Penicillin (10 U)</li> <li>Vancomycin (30 ug)</li> <li>Colistin (10 mcg)</li> <li>Polymyxin B (300 U)</li> </ul>	$\frac{LR}{LR} = \frac{LR}{LR} = \frac{1618}{224}$	MalonateNPADN $\mathcal{O}$ UreaN 2 h $\mathcal{O}$ 6.5% NaCLN $\mathcal{O}$ 10% LactoseN $\mathcal{O}$ 0NPG $\frac{?}{.51000000000000000000000000000000000000$	Neg Neg Neg Neg Neg Neg Neg Neg

Figure 124: Burkholderia gladioli isolate 1-of-11.

Final Identification:	Burkhol	deria gadiol	i Prob 100%	b Model	Sine 3.57	1
Comments: Lab (D	: Burkhda	deva Gladioli	Maldi 2.	/	17-22	
Gram Morph.			The last state of the last sta	72.		
Gram Test			<u>Tubes</u> KIA	48 h KINC	$\frac{7 \text{ day}}{4}$	
Motility Wet Prep			$H_2S$	N	N	
Motility Deep	74'0 11.	Pari 0~ 7	da Pseudo P 544	homa !	Aber	1
Oxidase	Neg.	Mire POST	Pseudo F set	bon N	Ner )pet	meant
Catalase	Der		NO advard	~ V	0	
	<u>- 705</u> <u>- 48 h</u>	7 day	NO <sub>3</sub> reduced Gas from NO <sub>3</sub>	Ner	Red ytr Zn He. New	8
Odor	<u>40 II</u>	<u>7 uay</u>	NO <sub>2</sub> reduced	X	Red-Neg	
Pigment on swab	Bul	Seiger	Gas from NO <sub>2</sub>	Ng	Nez	
Pigment on BAP	puff	an land	OF Fructose	yetop +	- yetas +	
Morphology on BAP 3	Wh your	- get ) a of	OF Dextrose OF Lactose	yet	the t	
Beta hemolysis	k)	New	OF Maltose	a-B-	Gibe -	
Growth on Mac Mhib	Led - they son	POS-Smiller	OF Mannitol	yel topt	ye +	
DNase hydrolysis	pine col	Nen	<ul> <li>OF Xylose</li> <li>OF Sucrose</li> </ul>	BE-BE-	G-Be-	
Starch hydrolysis	Nec	Nen			1/24-	
Lecithinase milisia	New	Nez	Arginine Lysine	<u> </u>	Ner	
Lipase	Pos	Pos	Ornithine		Nez	
Rapid PYR	Neg		Base Control		_Neg_	
Rapid LAP	Pas		Acetamide	N	Neg	
Rapid ESC	Nea		Esculin	B. couror,	Vert O Brinn alor	on slant prove
Sensitivity to:	0		Gelatin Indole	-N-	Nen	piozen
Penicillin (10 U)	Lop	6L	Malonate	Ņ	Pos	2/13/
Vancomycin (30 ug)	GR	Lef	PAD Urea $\sqrt{2}$ h	Ner	New	
Colistin (10 mcg)	6R	LeR	6.5% NaCL	Pos	Pos	
Polymyxin B (300 U)	LeR	LeR	10% Lactose	Nen	Neg	

Figure 125: Burkholderia gladioli isolate 2-of-11.

Reference No./Name:	CONT	Firmed by	, HALDÍ-FOF
Date Inoculated: 3-	28-12		
Final Identification:	Burkholderia	gladi.	oLi 4/5/12 P.S.
Comments:	AND WRINKLED ON	STARCH	, EGG YOLK, ANAS, BAP
Veor	Y PURPLE ON MACI		ook hactose Pos
Gram Morph. Gram Test Motility Wet Prep	48h Posmed reds	Tubes KIA H <sub>2</sub> S	$\frac{48 \text{ h}}{\frac{1}{2}\text{ e}4\text{ kc}} \frac{7 \text{ day}}{\text{Nc/Nc}}$ $\frac{1}{\text{NeG}} \frac{1}{\text{NeG}} \frac{1}{NeG$
Motility Deep Oxidase	5200 205 (15 sec)	Pseudo P Pseudo F	New New Alter Prevent on New New Prevent on Prevelo D
Catalase PLATES Odor  S Pigment on swab	<u>972046 205</u> <u>48h 7 day</u> Stinks-Chlbage Babb	$NO_3$ reduced Gas from $NO_3$ $NO_2$ reduced Gas from $NO_2$	POS TINY BUDGLE BUT NOT POS TINY BUDGLE PSEUDO F POS TINY BUDGLE
Pigment on Swab Pigment on BAP Morphology on BAP Beta hemolysis Growth on Mac DNase hydrolysis	<u>BRY-DUCC-91721NGY</u> <u>NEG</u> <u>POS-LACTOSE-</u> <u>NEG</u> <u>NEG</u> <u>NEG</u>	OF Fructose OF Dextrose OF Lactose OF Maltose OF Mannitol OF Xylose OF Sucrose	YeL YEL GRN YELGRN BLU/GRN BLUE YEL YEL JEL YEL GRN BLUE
Starch hydrolysis Lecithinase Lipase Rapid PYR	Nec wt Nec Nec Pos Pos Nec	Arginine Lysine Ornithine Base Control	New New
Rapid LAP Rapid ESC <u>Sensitivity to:</u> Penicillin (10 U) Vancomycin (30 ug) Colistin (10 mcg) Polymyxin B (300 U)	$\frac{R}{R} = \frac{R}{R}$	Acetamide Esculin Gelatin Indole Malonate PAD Urea <u>MdC</u> h 6.5% NaCL 10% Lactose ONPG	NEG-NEG POS NEG NEG POS NEG POS POS-SCANT NEG POS-SCANT REG POS POS NEG NEG NEG NEG

Figure 126: Burkholderia gladioli isolate 3-of-11.

	Date Inoculated:	F9/4				-	_
	Final Identification:	Burthoha	Leria g	LAdioLi	P.S	. 9/23/1	5-
	Di	1: 2.227 B		a gladioli	Confirme	d by 165 AT LIP	RRNA LAB
	Gram Morph. Gram Test Motility Wet Prep Motility Deep	 		TubesKIA $H_2S$ Pseudo PPseudo F	51 1811 - KK - N - N - N	o 9/2 <u>Vday</u> <u>KIF</u> <u>Neg</u> >sit.	BROWN DIGGUSHE Drown present
	Oxidase       Catalase       PLATES       Odor	Neg fos 48 h 107 day slight slig	pt 1	<ul> <li>NO<sub>3</sub> reduced</li> <li>Gas from NO<sub>3</sub></li> <li>NO<sub>2</sub> reduced</li> <li>Gas from NO<sub>2</sub></li> </ul>		ed after Zn -Ne Neg- ed -Neg nes Neg- ut	e globs, Lot the
	Pigment on swab Pigment on BAP Morphology on BAP Beta hemolysis Growth on Mac DNase hydrolysis	tan bon gran g Sm. Spready Sm Neg Ne POS PC Neg N	ang V <u>ell spread</u> r g S V	+ OF Fructose +OF Dextrose - OF Lactose - OF Maltose + OF Mannitol + OF Xylose - OF Sucrose	yl-gr + - yl + - <u>Bl -</u> <u>yl - gr +</u> <u>yl - gr +</u>	yet yet Be- yet Be- yet yet Be- yet	
Brown Colovily	Starch hydrolysis Lecithinase Lipase Rapid PYR	Neg N Neg N POS P Neg N	eg leg os	Arginine Lysine Ornithine Base Control		Neg Neg Neg Neg	FLUORSEUT FLUORSEUT
	Rapid LAP Rapid ESC <u>Sensitivity to:</u> Penicillin (10 U) Vancomycin (30 ug) Colistin (10 mcg) Polymyxin B (300 U)	Pos Noz 6 R. le le R. le le R. le	R	<ul> <li>Acetamide</li> <li>Esculin</li> <li>Gelatin</li> <li>Indole</li> <li>Malonate</li> <li>PAD</li> <li>Urea NL2 h</li> <li>6.5% NaCL</li> <li>10% Lactose ONPG</li> </ul>	New Poz New New Wet Seat Wet Seat Wet Seat Wet Seat	Neg DLBunsenta Pos Pos X Pos	Funder UV eg +? ar pignent?
				Growth 42°	N	Neg	

Figure 127: Burkholderia gladioli isolate 4-of-11.

Date Inoculated:

Final Identification:

Comments:

48° Small

(ab 1D: Burkholderia geodioli (Maldi 1.938

BROWN diffusible pignt Pseudo P&F ESculin STARED

Burkholderin gLAdioLi

W 5/18/16

<u>48 h</u> 7 day Gram Morph. Tubes KIA KK KI Gram Test  $H_2S$ Ner Motility Wet Prep BROWN dibbus. ble PIGNENT +? Pseudo P Motility Deep Iday Pseudo F Oxidase Slow(F) redapper Zo Pos Catalase NO3 reduced Gas from NO<sub>3</sub> 48 h PLATES 7 day NO2 reduced Odor Nea Slight - Dleach Gas from NO<sub>2</sub> Pigment on swab dk fan buff + OF Fructose tox Pigment on BAP gray up-gray +OF Dextrose 65 Morphology on BAP SM. Spredge SM. Sprendyedy -OF Lactose Gr-Be N-Be OF Maltose 4 pe Gy-Be Beta hemolysis Neg + OF Mannitol Yeltop + Sr wel Growth on Mac inhibited Pos + OF Xylose + Pas lla DNase hydrolysis -OF Sucrose Be-G Starch hydrolysis tan pignent (diffure) Arginine Lecithinase POS Neg Neg Lysine Ornithine Pos :01 Lipase Base Control Rapid PYR clean zone Rapid LAP Acetamide Esculin Rapid ESC dark sla weak Dos Gelatin Neg-POS Sensitivity to: Indole Penicillin (10 U) 6R Malonate LeR. PAD Vancomycin (30 ug) Le R-6 LR slight pink searct) Urea N2h (sery N Nea 6R Colistin (10 mcg) 64 6.5% NaCL NPG 5H. youdy ut-10% Lactose Polymyxin B (300 U) ٨ pl Slast ONPG Pos Hya Growth 42° Neg

Note: All biochemical tests (except where noted) incubation and again at 7 days.

are incubated at 30°C and read after 48 hrs. I Gelatin solid after removing from fridge but liquified @ lown temps after a few minutes

AS.

5/27/16

Figure 128: Burkholderia gladioli isolate 5-of-11.

Date Inoculated:	F10/4/15
Final Identification:	Bustcholder, A glad. di P.S. 10/30/15
Comments:	edi: Burkholdenia geadioli 2.308 Arionscan Bigudoli

			72	
	Gram Morph Gram Test	<u>Tubes</u> KIA H <sub>2</sub> S	<u>48 h</u> _ <u>K/K</u>	7 day K/K dark slart
_	Motility Wet Prep	1125	Nug	Neg
	Motility Deep <u>fos</u> fos	Pseudo P	yel	Ul Yellow dill pant - ELUDRESCONT
	Oxidase New	Pseudo F	yel	ye Neb
	Catalase <u>uk</u> E	NO <sub>3</sub> reduced	X	Red - Pos m
	PLATES 48 h 7 day	Gas from NO <sub>3</sub>	Neg	tinybulble - V
	Odor <u>Pos</u> Pos	$NO_2$ reduced Gas from $NO_2$	•N.04 -	tiny bubble - V
	Pigment on swab buff buff			Ind point a
	Pigment on BAP why an - gr	OF Fructose OF Dextrose	yel top	Ull top + 1
	Morphology on BAP <u>Smrd. dry</u> Smrd.dry	OF Lactose	Gr -	Gr - DARK GREEN
	Beta hemolysis Pos-undercolory Pos	OF Maltose OF Mannitol	GV -	Be-
	Growth on Mac Sm rd Pos Pos	OF Manimuor OF Xylose	yety t	yel top +
	DNase hydrolysis Neg Neg	OF Sucrose	Gr -	Pe -
	Starch hydrolysis Neg Neg	Arginine	1/100	Nac- K
	Lecithinase Neg Neg	Lysine	Nez	Neg
	Lipase Pos V	Ornithine Desc Control	Ner	Nog
	Rapid PYR New	Base Control	NY	Noc
	Rapid LAP $\rho_{05}$	Acetamide	New	Neg v
	Rapid ESC Neg	Esculin Gelatin	POS-Sea	t pos V
	Sensitivity to:	Indole	X	Neg V
	Penicillin (10 U) <u>La R. La L</u>	Malonate	pos	POS
	Vancomycin (30 ug) <u>LP</u> <u>V</u>	PAD Urea n/4 2 h	Set pirt topyten	+ It pinksent + V
	Colistin (10 mcg) <u><i>LP</i></u> <u><i>LP</i></u>	6.5% NaCL	Neg	Neg v
	Polymyxin B (300 U) <u>LeR</u> <u>LeR</u>	10% Lactose ONPG	Neg	Neg V
		Growth 42 <sup>0</sup>	POS Neg	Pas Ver
				0

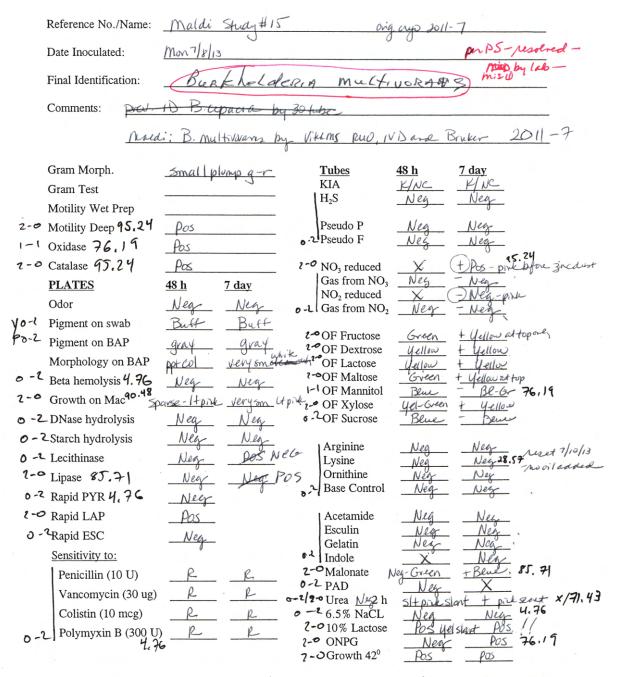
Figure 129: Burkholderia gladioli isolate 6-of-11.

## 12.4 Burkholderia multivorans (II)

Over the course of ASHEX clinical-isolate collection, 21 individual isolates of Burkholderia multivorans were analyzed. 13 of the 21 recorded results are pictured in this subsection.

Test	+	_	Raw%	W95%	Test	+	_	Raw%	<b>W95</b> %
Motility	20	1	95.24	88.24	$H_2S$	0	21	0.00	7.73
Oxidase	16	5	76.19	72.14	Pseudo P	0	21	0.00	7.73
Catalase	20	1	95.24	88.24	Pseudo F	0	21	0.00	7.73
Yellow Pigment	0	21	0.00	7.73	NO <sub>3</sub> Reduced	20	1	95.24	88.24
Pink Pigment	0	21	0.00	7.73	Gas from $NO_3$	0	21	0.00	7.73
Beta Hemolysis	1	20	4.76	11.76	NO <sub>2</sub> Reduced	0	21	0.00	7.73
Growth on Mac	19	2	90.48	84.22	Gas from $NO_2$	0	21	0.00	7.73
Dnase	0	21	0.00	7.73	OF Fructose	21	0	100.00	92.27
Starch	0	21	0.00	7.73	OF Dextrose	21	0	100.00	92.27
Lecithinase	0	21	0.00	7.73	OF Lactose	21	0	100.00	92.27
Lipase	18	3	85.71	80.19	OF Maltose	21	0	100.00	92.27
PYR	1	20	4.76	11.76	OF Mannitol	16	5	76.19	72.14
LAP	21	0	100.00	92.27	OF Xylose	21	0	100.00	92.27
ESC Spot Test	0	21	0.00	7.73	OF Sucrose	0	21	0.00	7.73
Penicillin (10U)	0	21	0.00	7.73	Arginine	0	21	0.00	7.73
Vancomycin $(30\mu g)$	0	21	0.00	7.73	Lysine	6	15	28.57	31.89
Colistin $(10\mu g)$	0	21	0.00	7.73	Ornithine	0	21	0.00	7.73
Polymyxin B (300U)	1	20	4.76	11.76	Acetamide	0	21	0.00	7.73
					Esculin	0	21	0.00	7.73
					Gelatin	0	21	0.00	7.73
					Indole	0	21	0.00	7.73
					Malonate	18	3	85.71	80.19
					PAD	0	21	0.00	7.73
					Urea 2 hrs.	0	21	0.00	7.73
					Urea 48 hrs.	15	6	71.43	68.11
					6.5% NaCl	1	20	4.76	11.76
					10% Lactose	21	0	100.00	92.27
					ONPG	16	5	76.19	72.14
					Growth $42^{\circ}C$	21	0	100.00	92.27

Table 29: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as  $n_+/(n_+ + n_-)$ , where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which shifts raw percentages towards 50% with a strength dependent on the total number of test occurrences. The four antibiotic tests at the bottom of Column 1 are sensitivity tests where a positive result indicates sensitivity to the drug.



Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 130: Burkholderia multivorans isolate 1-of-21.

Date Inoculated: $F \frac{9}{9}/\frac{6}{16}$			
Final Identification: Burk	holderia ma	L'tr VORAN.	S P.S.
Comments: Maldi Burkheldera-e	altivozanis adotanos 1.94 DX:;	WOUND DEHISCENC	E 10/29/16
			45 DAY
Lab fire report : Bu	ultildere cepacia cong	plep	10/24/16
Gram Morph.	Tubes	$\frac{7^2}{48 \text{ h}}$ 7 da	2015 11 +11
Gram Test	KIA	KINC K	K
Motility Wet Prep	H <sub>2</sub> S	Neg_ N	ly v
Motility Deep Pos!	Pseudo P	Neg- N	prove at prove At
Oxidase New (	Pseudo F	Neg_ N	in reach
Catalase Pos	+ NO <sub>3</sub> reduced	X Red	L Pas
PLATES 7248 h 7 day	- Gas from NO <sub>3</sub>		eg
Odor strat bleach ble	$-NO_2$ reduced $-Gas$ from $NO_2$	Non Kea	- Neg
Pigment on swab buff fan		<u> </u>	<u> </u>
Pigment on BAP wh	-+ OF Fructose	yetep yet	Ltop + yec
Morphology on BAP rawet wh run	1 TOI DEALIOSE	ul top	ll + yel
Beta hemolysis New N	+ OF Maltose	gil top (	l + xec
Growth on Mac Pos-etpul_ PC	-+ OF Mannitol + OF Xylose	Gr L	1. green - LT. Give
DNase hydrolysis Nor Ne	•	GrBe	Blue - BLUE
Starch hydrolysis Negr Ne	Arginine		an v
Lecithinase With 105 New No	Lysine	Neg	help
Lipase <u>New Pos</u> Po	S Ornithine	NegN	let
Rapid PYR Neg	Base Control	Neg I	Jer
Rapid LAP Pos	Acetamide	Neg	Jer v
Rapid ESC Neg	Esculin Gelatin	Nça	Ner
Sensitivity to:	Indole	X	Ner
Penicillin (10 U) <u>b P. 6 R</u>		hpere Pos	POST V
Vancomycin (30 ug) <u>le fe</u> <u>le fe</u>	PAD Urea $\int \frac{1}{4} 2 h$	Ner _	Dist
Colistin (10 mcg)	6.5% NaCL	Neg	Ner
Polymyxin B (300 U) 6 - La	∠ / 10% Lactose ONPG	Pos -	PB V
	Growth 42 <sup>o</sup>	Pos	POS U

Figure 131: Burkholderia multivorans isolate 2-of-21.

Date Inoculated:

Comments:

Final Identification:

6-18-07 -07 Cholderia Multivozennos Genomospecies II 6/25/07 P.S. BUR

Gram Morph. Gram Test <u>24</u> Motility Wet Prep <u>Po5-5m.RoOs</u> weey motile	$\begin{array}{c c} \underline{Tubes} & \underline{48 h} & \underline{7 day} \\ KIA & \underline{fc/Nc} & \underline{F/Nc} \\ H_2S & \underline{Nc} & \underline{\rhoc} \\ \end{array}$
Motility Deep $pos pos $ Oxidase $NeG (Decred Pos)$	Pseudo P <u>Nele</u> <u>Nele</u> Pseudo F <u>Nele</u> <del>Nele</del>
Catalase97710NG POSPLATES29-48 h7 dayOdorNove	NO3 reduced     Nels       Gas from NO3     Nels       NO2 reduced     Nels       Gas from NO2     Nels
Pigment on swabBuescherPigment on BAP $GRey$ Morphology on BAP $SHooTh$ Beta hemolysis $Nech$ Growth on Mac $Pog$ $Pog$ $Pog$	OF Fructose <u>GRN/Yel</u> <u>Yel</u> OF Dextrose <u>Yel</u> <u>Yel</u> OF Lactose <u>Yel</u> <u>Yel</u> OF Maltose <u>Yel</u> <u>Yel</u> OF Mannitol <u>GRN/Yel</u> <u>GRN/Yel</u> OF Xylose <u>GRN/Yel</u> <u>Yel</u>
DNase hydrolysisNebNebStarch hydrolysisNebNebLecithinaseNebNebLipasePo5Po5 !Rapid PYRNeb	OF Sucrose <u>Blue</u> <u>Blue</u> Arginine <u>Neb</u> Lysine <u>Pos</u> <u>Pos</u> Ornithine <u>Neb</u> Base Control <u>Neb</u>
Rapid LAP     Pos       Rapid ESC     Neb       Sensitivity to:     Penicillin (10 U)       Vancomycin (30 ug)     R	Acetamide <u>Neb</u> Esculin <u>Neb</u> Gelatin <u>Neb</u> Indole Malonate <u>Neb</u> PAD <u>Neb</u>
Colistin (10 mcg) $R$ $R$ $R$ Polymyxin B (300 U) $R$ $R$	UreaNeb2h $\log - s_{LAWT} p_{OS} - s_{LAWT} q butt 6.5% NaCL New Neb 10% Lactose p_{OS} = p_{OS}ONPG W + POSGrowth 42° POS POS$

Note: All biochemical tests (except where noted) are incubated at 30°C and read after 48 hrs. incubation and again at 7 days.

Figure 132: Burkholderia multivorans isolate 3-of-21.

	Reference No./Name:		Paul bas corplete sod of paper
	Date Inoculated:	3-3-09	"/u/u/# #m~
	Final Identification:	Burkcholderig MU	eltivoRANS (GVI)
	Comments: <u>SLIC</u>	HT YELLOW - GREEN DIGGUSI	BLE PGITT ON Ascudo F@ 7 DATS
		CONFIRMED BY DA.L.	PUTTA
			3/6 3/10
	Gram Morph.	<u> </u>	$\frac{48 \text{ h}}{E/NC} = \frac{7 \text{ day}}{E/NC}$
	Gram Test	24h WET PRED - NEG-KIA	Nep And Nep
	Motility Wet Prep	VERY JUTICRY - might be	
2 1		YS POSOR Names Arthung Co Pseudo I	Neb- Nea-
2 -1	$+ \text{Oxidase} \begin{array}{c} 92,84\\ 78,57 \end{array}$	Pos Pseudo I	
2 -	- Catalase	POS + NO <sub>3</sub> red	
	PLATES		NO3 SM. Bubble TINY BUBBLE O
$\bigcirc$	Odor	NO2 red	
	Pigment on swab	CLASH	
0 6	Pigment on BAP 24h.	<u>GREY</u> ————————————————————————————————————	tose $+ \frac{Blue}{V_{PL}} \frac{GRN}{Y_{EL}} $
0	Morphology on BAP	Smooth - Smears - STICK AOF Lact	ose + RULL YEL Z
0	Beta hemolysis	Ne6	ose + BLUP Yelm 2
2	Growth on Mac		$\frac{\text{nitol} - \underline{BLUC}}{\underline{BLUC}} = \frac{\underline{BLUC}}{\underline{FL}} = \frac{1}{2} + \frac{35.7}{\underline{FL}}$
0	DNase hydrolysis	TOT AN	ose - Blue Blue O
Ð	Starch hydrolysis	ALPIS NOG	
ð	Lecithinase	Nel Nel Lysine	NEG NEG 0 28.57
1	Lipase 85.7(	NEG NEG Ornithin	
0	Rapid PYR 7.14	NeG Base Co	ntrol
2	Rapid LAP	POS Acetami	de Neb Neb o
0	Rapid ESC	Ne6 Esculin	Nela Nela
0	Sensitivity to:	Gelatin	Nel Nel O
	Penicillin (10 U)	$\mathcal{R}$ $\mathcal{R}$ Malonat	e NEG NEG 1 85.77
2	- Vancomycin (30 ug)	R R PAD	New 7 0
0	Colistin (10 mcg)	R $R$ Urea $Na$	
$\frown$	Polymyxin B (300 U)	R $R$ + 10% La	ctose Pos Pos ! 2
. () 1	→ 10lyillyxiil D (500 0) → 14	——————————————————————————————————————	Nela Light Yellow 1 3/2, 86
		-t Growth	42° <u>P65 P05</u> 2

Figure 133: Burkholderia multivorans isolate 4-of-21.

L 10-15-09 Date Inoculated: BURK holderig multiverans **Final Identification:** Comments: aluli K 10/21/09 Gram Morph. Tubes <u>48 h</u> 7 day KIA Gram Test 49h H<sub>2</sub>S SMALL ROOL Nela Motility Wet Prep Nel Pseudo P POS + Motility Deep Pseudo F NPG 1miN -SLOW DOS Oxidase AEG POS + Catalase +NO3 reduced Gas from NO3 PLATES <u>48 h</u> 7 day NO2 reduced NONE Odor \_Gas from NO2 NCO Flesh Pigment on swab +OF Fructose Pigment on BAP GREY -OF Dextrose PP( Morphology on BAP TRANSLUCENT - SMEARS +OF Lactose YEL -OF Maltose Beta hemolysis el. NEG OF Mannitol + Growth on Mac 09 +OF Xylose \_\_OF Sucrose DNase hydrolysis Neb 14 - Starch hydrolysis NEG -Arginine Nec Lecithinase NeG -Lysine -Ornithine POS Lipase Base Control NEG - Rapid PYR POS -Acetamide Esculin NEG -Rapid ESC -Gelatin Sensitivity to: -Indole Malonate Penicillin (10 U) PAD - Vancomycin (30 ug) Urea*Ne*62 h Nelo Colistin (10 mcg) 6.5% NaCL

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days.

-

Polymyxin B (300 U)

Figure 134: Burkholderia multivorans isolate 5-of-21.

10% Lactose

-ONPG -Growth 42<sup>0</sup>

Date Inoculated: <u>7-14-10</u> Final Identification: <u>BurkhoLoleRIA MultivorANS (GSII)</u> Comments: <u>Con Europed Sy Di. LiPusta</u>

			10
			7/20/10
Gram Morph.		Tubes	48 h 7 day
Gram Test	48h	KIA	KINC KINC
Motility Wet Prep	Nec - TIMY RODG	$H_2S$	NEG NEG
Motility Deep	POG POS	Pseudo P	Nela Nela
Oxidase	SLOW POS	Pseudo F	Nelo Nelo
Catalase	STRONG POS	NO <sub>3</sub> reduced	pos
PLATES	<u>48 h 7 day</u>	Gas from NO <sub>3</sub>	Nelo New
Odor	Stinkes	NO <sub>2</sub> reduced Gas from NO <sub>2</sub>	TWY BUBBLE TANY BUBBLE
Pigment on swab	flesh		
Pigment on BAP	a Rey	OF Fructose	CRN YelGAN
Morphology on BAP	Smoeth	OF Dextrose OF Lactose	Yec Yec
Beta hemolysis	NEG	OF Maltose	Yel Yel
Growth on Mac	POS ROS	OF Mannitol	GRN YEL/GRN
	NEG NEG	OF Xylose OF Sucrose	<u>GRN Yei/GRN</u> Blue Blue
DNase hydrolysis	NEG NEG	OF Sucrose	
Starch hydrolysis		Arginine	New New
Lecithinase	NEG NEG	Lysine Ornithine	POS POS NEG NEG
Lipase	NEG NEG	Base Control	NEG NEG
Rapid PYR	Nel		
Rapid LAP	POS	Acetamide	New NeG-
Rapid ESC	NEG	Esculin Gelatin	Nele Nele-
Sensitivity to:		Indole	Neg
Penicillin (10 U)	$\underline{R}$	Malonate	Pos POS New POS
Vancomycin (30 ug)	R R	PAD Urea <u>/Veb</u> 2 h	POS SLANT POB SLANT & BUTT
Colistin (10 mcg)	$\underline{R}$ $\underline{R}$	6.5% NaCL	Nel Nelo
Polymyxin B (300 U)	$\underline{R}$ $\underline{R}$	10% Lactose ONPG	POS POS NEG POS
		Growth 42 <sup>0</sup>	Pos Pos

Note: All biochemical tests (except where noted) are incubated at 30°C and read after 48 hrs. incubation and again at 7 days.

Figure 135: Burkholderia multivorans isolate 6-of-21.

Date Inoculated:	69/13	/10 (Mar	rday)		
Final Identification:	Bu	richolderi	r cepacia	Comp	lex
Comments: <u>Ba</u>			LTIVORANS		<i>I</i> )
PRO	viously	+ CONGIN	emed by L.	AUMA	FRONT 5-5-10
Gram Morph. Gram Test Motility Wet Prep Motility Deep Oxidase		P05	$\frac{\text{Tubes}}{\text{KIA}}$ $H_2S$ Pseudo P $S \in S$	48 h IC/NC Neg Neg Neg	4/20 7 day E/NC N26 N26
Catalase PLATES Odor Pigment on swab Pigment on BAP Morphology on BAP Beta hemolysis Growth on Mac DNase hydrolysis Starch hydrolysis Lecithinase Lipase Rapid PYR Rapid LAP Rapid ESC <u>Sensitivity to:</u> Penicillin (10 U) Vancomycin (30 ug) Colistin (10 mcg) Polymyxin B (300 U	Aleg Aleg POS R R R R R	Rence Pos 7 day Flesh Pos Nec Nec Nec Rec R	<ul> <li>NO<sub>3</sub> reduced Gas from NO<sub>3</sub> NO<sub>2</sub> reduced Gas from NO<sub>2</sub></li> <li>OF Fructose + OF Dextrose + OF Lactose + OF Maltose</li> <li>OF Mannitol + OF Xylose</li> <li>OF Sucrose</li> <li>Arginine Lysine Ornithine Base Control</li> <li>Acetamide Esculin Gelatin Indole Malonate PAD Urea -2 h 6.5% NaCL 10% Lactose</li> </ul>	reg heg blu-grn blu-grn blu-grn blu-grn blu-grn hu-grn heg reg reg reg reg	

Figure 136: Burkholderia multivorans isolate 7-of-21.

Final Identification:	Burkholder	A multi	VORANS (GS_II)
Comments:			P.S. 12/6/10
Gram Morph.		Tubes	$\frac{i2/2}{48 \text{ h}}, \frac{7 \text{ day}}{2}$
Gram Test	24h	KIA	FINC FIK
Motility Wet Prep	Nel-cb	$H_2S$	Nel Nel
Motility Deep	pos? pos	Pseudo P	Nelo Nele Deffusible
Oxidase	POS ZDAYS	Pseudo F	kee New Yellow paper
Catalase	Nel DECAYED TWK	NO <sub>3</sub> reduced	Pos
PLATES	48 h 7 day	Gas from NO <sub>3</sub>	NEW NEG
Odor	NONE	NO <sub>2</sub> reduced Gas from NO <sub>2</sub>	NEG NEG
Pigment on swab	Bucc		
Pigment on BAP	GRET	OF Fructose	Yallan Yellen
Morphology on BAP	TRANSLUCENT DOOD	OF Dextrose	Yel Yel
Beta hemolysis	Neb 600	oF Maltose	YellGRN YEL
Growth on Mac	INhibited growth	OF Mannitol OF Xylose	Shue GRN/Bille Yei Yel
DNase hydrolysis	Neb Neb	OF Sucrose	<u>Yei</u> <u>Yei</u> Blue Blue
Starch hydrolysis	NEG NEG		
Lecithinase	New Nele	Arginine Lysine	Neb Nela
Lipase	POS POS	Ornithine	
Rapid PYR	Nela	Base Control	
Rapid LAP	POS	Acetamide	NEG- NEG
Rapid ESC	New	Esculin	New New
Sensitivity to:		Gelatin Indole	New New New
Penicillin (10 U)	RR	Malonate	New Pos
Vancomycin (30 ug)	RR	PAD Urea <i>Nece</i> h	WEG
Colistin (10 mcg)	RR	6.5% NaCL	Nels Nels
Polymyxin B (300 U)	$\circ$	10% Lactose	POS POS

Figure 137: Burkholderia multivorans isolate 8-of-21.

Date Inoculated: 5-	5-08		
Final Identification:		Paul pascoplets	at of propen 1/11/11 the
Comments:	urkholderia n	nultivorans gene	
Co	N FIRMeal by L.	Puora's Lab	PS. 7/2/08
Gram Morph. Gram Test Motility Wet Prep	· · · · · · · · · · · · · · · · · · ·	5/19           Tubes         48 h           KIA         K/NC           — H <sub>2</sub> S         Ne 6	
+ Motility Deep + Oxidase	ROW POS IMIN	- Pseudo P <u>Nec</u> - Pseudo F <u>Nec</u>	
+ Catalase <u>PLATES</u> Odor	<u>Sous Pos</u> <u>1min</u> <u>Pos</u> <u>48 h</u> <u>7 day</u> 5-20 <u>NeNC</u> <u>1</u>	+ NO <sub>3</sub> reduced Gas from NO <sub>3</sub> $\underline{Nc}$ Gas - NO <sub>2</sub> reduced - Gas from NO <sub>2</sub> $\underline{Nc}$ Gas	Nel durhum tube
Pigment on swab — Pigment on BAP Morphology on BAP	<u>flegh</u> <u>GRey</u> <u>GMooth</u>	+ OF Fructose <u>YeL</u> + OF Dextrose <u>YeL</u> + OF Lactose <u>YeL</u>	
<ul> <li>Beta hemolysis</li> <li>Growth on Mac</li> <li>DNase hydrolysis</li> </ul>	Neb NEG Neb NEG	+ OF Maltose <u>YeL</u> + OF Mannitol <u>YeL</u> + OF Xylose <u>YeL</u> - OF Sucrose <u>6 /k</u>	RN GREENV
<ul> <li>Starch hydrolysis</li> <li>Lecithinase</li> <li>Lipase</li> </ul>	Nec (58)(Ellow S Nec NEC Pos Pos	TREAT ( ( col ) Arginine <u>Nec</u> Lysine <u></u> Ornithine <u></u> (Arginate Control )	
- Rapid PYR + Rapid LAP - Rapid ESC	NEG POS! NEG	- Acetamide <u>Ne</u> - Esculin <u>Ne</u> - Gelatin <u>Al</u> e	5 NELT
Sensitivity to: Penicillin (10 U) Vancomycin (30 ug) Colistin (10 mcg) Polymyxin B (300 U	$\begin{array}{c c} R & R \\ \hline \end{array}$	- Indole + Malonate $10.5 \text{ MeV}$ - PAD $MeV$ - $10\% \text{ Lactose}$ $10\% \text{ Lactose}$ + $10\% \text{ Lactose}$ $10\% \text{ Lactose}$ - $10\% \text{ Growth } 42^{\circ}$ $10\% \text{ Comments}$	POS-PINK SCANT & BUTT VEG VEG VEG VELLON POS VELLON POS VELLON POS

Note: All biochemical tests (except where noted) are incubated at 30°C and read after 48 hrs. incubation and again at 7 days. ATTACH RESULTS FROM L, AUTOR'S LAB

Figure 138: Burkholderia multivorans isolate 9-of-21.

Date Inoculated:	11-16-06	-		)
Final Identification:	11-27-06	-	(\	$\sim$
Comments: (19	At TAN ON ST	ARCH & E	gg @ 11 DAYS	
l	Burkholder			
CONFIL	Rmed by L, PUMP		24 11, 11/27/01	
Gram Morph.		Tubes	48 h 7 day	f.
Gram Test	24h - cb	KIA	NCINC K/K	
Motility Wet Prep	RARE MOTILE CELLS	- H <sub>2</sub> S	New Web	
+ Motility Deep	POS ? POS!	- Pseudo P	New Neb	
- Oxidase	Nel very delayer	Pseudo F	Nel- Nel	
Catalase	POS >2M	NO <sub>3</sub> reduced	DOS	
PLATES 24	48h 7 day 1/	Gas from NO <sub>3</sub>	Nel Nel	
Odor	Stinks	$-NO_2$ reduced -Gas from NO <sub>2</sub>	Nela Nela	
Pigment on swab				
Pigment on BAP	GREY	+ OF Fructose	GRN Yel	
Morphology on BAP	SHOOT	+OF Dextrose +OF Lactose	Yel Yel	
Beta hemolysis	NEG	+ OF Maltose	Yel Yel	
+ Growth on Mac	GOOD GROW	OF Mannitol	<u>GRN YEL/GRN</u>	
DNase hydrolysis	Nel Nel	-OF Sucrose	<u>Yel</u> <u>Yel</u> <u>Rue</u> <u>Blue</u>	
Starch hydrolysis	NCG Nela			
Lecithinase	New Nels -	Arginine Lysine	New Pos	
Lipase	New fog !!	-Ornithine	New New	
- Rapid PYR	Nel	-Base Control	New Niels	
+ Rapid LAP	Pos	Acetamide	NEG NEG	
Rapid ESC	NeG	- Esculin	NEG NEG	
Sensitivity to:	41CO	- Gelatin	NEC NEL	
Penicillin (10 U)	PR	- Indole + Malonate	Nelan DOS	
Vancomycin (30 ug)		- PAD	New	-
	R $R$ $-$	$-+$ Urea $\bigcirc 2$ h	POS SLANT POS SLANT & DUTT NEW NEG	
Colistin (10 mcg)			NEW NEG POS POS	
Polymyxin B (300 U	, <u> </u>	+ ONPG	Nel Pos	
		Growth 42 <sup>o</sup>	POS POS	

Figure 139: Burkholderia multivorans isolate 10-of-21.

ed: 2-14-07 ation: 2-22-07 Burkholdering Multivorans (GSII) Light Battenscotch on Egg + Stapen P.S. 2-23-07 Date Inoculated: Final Identification: Comments:

Gram Test $4SL$ KIA $E/NC_{e}$ $E/NC_{e}$ $NC_{e}$ Motility Wet Prep $105 - 5m$ . Rods $H_2S$ $Nec_{e}$ $Ncc_{e}$ $Ncc_{e}$ Motility Deep $105 - 5m$ . RodsPseudo P $Nec_{e}$ $Ncc_{e}$ $Ncc_{e}$ $Ncc_{e}$ Oxidase $NCe_{e}$ $Nce_{e}$ $Ncc_{e}$ $Ncc_{e}$ $Ncc_{e}$ $Ncc_{e}$ $Ncc_{e}$ Oxidase $NCe_{e}$ $Nce_{e}$ $Ncc_{e}$ $Ncc_{e}$ $Ncc_{e}$ $Ncc_{e}$ $Ncc_{e}$ Catalase $StRawa Pess$ $No_3$ reduced $Rcc_{e}$ $Ncc_{e}$ $Ncc_{e}$ $Ncc_{e}$ PLATES48 h7 dayGas from NO3 $Nec_{e}$ $Ncc_{e}$ $Ncc_{e}$ Odor $Strawt_{e}$ $Gas$ from NO2 $Ncc_{e}$ $Ncc_{e}$ $Ncc_{e}$ Pigment on swab $flesh$ $OF$ $Gas$ from NO2 $Ncc_{e}$ $Ncc_{e}$ Morphology on BAP $Smorth$ $OF$ $OF$ $Sec_{e}$ $Yel_{e}$ Morphology on BAP $Smorth$ $OF$ $OF$ $Acc_{e}$ $Yel_{e}$ Beta hemolysis $Nce_{e}$ $Nce_{e}$ $Yel_{e}$ $Yel_{e}$ $Yel_{e}$ Growth on Mac $3cs_{e}$ $Sc_{e}$ $Nce_{e}$ $Yel_{e}$ $Yel_{e}$ DNase hydrolysis $Nec_{e}$ $Nec_{e}$ $Yel_{e}$ $Yel_{e}$ $Sin cose$ $Slew$ $Slew$ $Slew$ $Slew$
Motility Deep $Po = Po =$
Oxidase $NCC$ <
Catalase $StRawq$ $POS$ $NO_3$ reduced $POS$ PLATES48 h7 dayGas from NO_3 $Nelc$ Odor $Strunt$ Gas from NO_2 reduced $Nelc$ Pigment on swab $flesh$ $OF$ Fructose $Sec$ Pigment on BAP $GRey$ OF Fructose $GeRN$ $tel loan$ Morphology on BAPSmoothOF Lactose $yel$ $Yel$ Beta hemolysis $Aleb$ $OF$ OF Maltose $yel$ Growth on Mac $QOS - BRicht ParRile - PCC$ $OF$ Xylose $yel$
PLATES45 II7 dayNO2 reducedNebOdor $Skink$ Gas from NO2NebPigment on swab $Vec_k$ Gas from NO2NebPigment on BAP $Gec_k$ OF Fructose $Gek$ Morphology on BAP $Sweath$ OF Dextrose $Yec$ Morphology on BAP $Sweath$ OF Lactose $Yec$ Beta hemolysis $Neb$ OF Maltose $Yec$ Growth on Mac $gcs - BReht Parkele P$
OdorSkuktGas from $NO_2$ NewPigment on swab $flesh$ OF Fructose $kel lean$ Pigment on BAP $kel eq$ OF Dextrose $yel$ $yel$ Morphology on BAPSweethOF Lactose $yel$ $yel$ Beta hemolysis $Nele$ OF Maltose $yel$ $yel$ Growth on Mac $gcs - BReht Purche Perceperceyelyel$
Pigment on swab $f_{Le4L}$ OF Fructose $(GRN)$ $feL/6an$ Pigment on BAP $(GRe4)$ OF Dextrose $YeL$ $YeL$ Morphology on BAP $Sworth$ OF Lactose $YeL$ $YeL$ Beta hemolysis $AVeC$ OF Maltose $YeL$ $YeL$ Growth on Mac $gc5 - BReht Purele PartOF XyloseYeLYeL$
Pigment on BAP $(y_1 2 - y_2)$ OF Dextrose $y_2 c$ $Y_2 c$ Morphology on BAP $Sweath$ OF Lactose $y_2 c$ $IcL$ Beta hemolysis $h 2 c$ OF Maltose $y_2 c$ $IcL$ Growth on Mac $gcs - gReHT Purche PCC$ OF Mannitol $Yec$ $y_2 c$ OF Xylose $y_2 c$ $y_2 c$ $y_2 c$
Morphology on BAPSmooth SmoothOF LactoseYeLYeLBeta hemolysis $\underline{AUC}$ OF Maltose $\underline{YeL}$ YeLGrowth on Mac $\underline{AC}$ $\underline{Beta HT}$ $\underline{PuRPL}$ $\underline{PC}$ $\underline{YeL}$ $\underline{FC}$ $\underline{BReHT}$ $\underline{PuRPL}$ $\underline{PC}$ $\underline{YeL}$ $\underline{YeL}$
Growth on Mac $\frac{105 - 3R_{6}H_{7}}{1000}$ PURPLE ACC OF Mannitol $\frac{YeL}{YeL}$ $\frac{4eL}{YeL}$
Growth on Mac <u>PUS- BRIGHT PURPLE</u> MES OF Xylose <u>Yec</u> <u>Yec</u>
DNase hydrolysis <u>Nec-</u> Nec- OF Sucrose <u>BLU</u> <u>BLUC</u>
Starch hydrolysis New Arginine N26- New
Lecithinase <u>NEW NEW</u> Lysine
Lipase <u>POS</u> <u>POS</u> Ornithine <u>I</u> Base Control <u>V</u>
Rapid PYR <u>NCC</u> Base Control <u>V</u>
Rapid LAP <u>POS</u> Acetamide <u>Neb</u> <u>Neb</u>
Rapid ESC <u>Nels</u> Esculin <u>Nels</u> <u>Nels</u>
Sensitivity to: Indole Nela
Penicillin (10 U) <u>R</u> <u>R</u> Malonate <u>LF. Blue</u> <u>Blue</u>
Vancomycin (30 ug) R R PAD NeG- Urea 2h RS-SLANT CIVILY POS CLANT & BUTT
Colistin (10 mcg) <u>R</u> 6.5% NaCL <u>New New</u>
Polymyxin B (300 U) $R$ $R$ 10% Lactose $\frac{10\% S}{N^2 G}$
Growth $42^{\circ}$ $\frac{1}{205}$ $\frac{1}{205}$

Figure 140: Burkholderia multivorans isolate 11-of-21.

Date Inoculated:	10-4	-07 B	urkhela	beria	Multi VORANS
Final Identification:	Best Cit.	Burkholdes	IA CENDEE	PACIA 6	enomosp III
Comments: <u>BRoo</u>	UN DIGGUE	SIBLE PIGHT	on Pgeupo	FØII	P.S. 10/15/07
					10/15 11 DAY S
Gram Morph.			Tubes	48 h NC/NC	<u>7 day</u>
Gram Test	24h	A	KIA H2S	NER	NEG
Motility Wet Prep	P09-60	motile Form	-		
Motility Deep	Nela	POS	Pseudo P Pseudo F	NEG	NEC- NEC BROWN DIGGUEIDUC
Oxidase	Pos		Pseudo F	NCO	PIGNT 11 DAYS
Catalase	Pos		NO <sub>3</sub> reduced		POS
PLATES	<u>48 h</u>	Zetay 11 DAY	Gas from $NO_3$ $NO_2$ reduced	Neu	NEG
Odor	Skunk		$Gas from NO_2$	Nea	Nela
Pigment on swab	flesh		0.7.7		Var
Pigment on BAP	GREY		OF Fructose OF Dextrose	GRN Yel	Yel Yec
Morphology on BAP	Smooth		OF Lactose	Yes	Yel
Beta hemolysis	Nela	POS	OF Maltose	Yer	Yel
Growth on Mac	SPARSe	POS - LAVENDO	OF Mannitol	GRN	Yel/6BN Yel
DNase hydrolysis	Nev	Neb	OF Sucrose	BLUE	BLUE
Starch hydrolysis	NeG	NRG	Arginine	Ne6-	Nec
Lecithinase	NeG	Nelo	Lysine	1	NEG
Lipase	wt	P05 !	Ornithine		POS
Rapid PYR	Nel		Base Control		Nela
Rapid LAP	POS		Acetamide	NCCon	Neb
Rapid ESC	New		Esculin	NEG	Nela
Sensitivity to:			Gelatin Indole	NEG	Ne6 Ne6
Penicillin (10 U)	R	R	Malonate	New	POS
Vancomycin (30 ug)	R	R	PAD	New	POS
Colistin (10 mcg)	R	R	Urea <b>№ <u>lo</u>2</b> h 6.5% NaCL	NEG	Nel
Polymyxin B (300 U)	R	R	10% Lactose	POS	Pos
1 organijani 2 (000 og		_ <u>`</u>	ONPG Growth 42 <sup>0</sup>	POS	103
			010wtll 42	102	10/

Figure 141: Burkholderia multivorans isolate 12-of-21.

Comments:		gener	nospecies 2
Con Gir n	ed by LAb	P.5.	5/29/07
AS	4A'S'LAD BOMULTIDORANS		
Gram Morph.		Tubes	<u>48 h 7 day</u>
Gram Test	48h	KIA	KINC KINC
Motility Wet Prep	Pos sm Roals	H₂S	New New
Motility Deep	POS POS	Pseudo P	Nelo Nelo
Oxidase	SLOW POS	Pseudo F	New Nels
Catalase	Pos	NO <sub>3</sub> reduced	POS
PLATES	48 h 7 day	Gas from NO <sub>3</sub>	
Odor	NONE	NO <sub>2</sub> reduced	TINY bubble Timy Bubble
Pigment on swab	flesh	Gas from NO <sub>2</sub>	UNY bubble They source
Pigment on BAP	GREY	OF Fructose	Yel yel
Morphology on BAP	Smooth	OF Dextrose OF Lactose	{
Beta hemolysis	NEG	OF Maltose	
Growth on Mac	POS POS	OF Mannitol	
DNase hydrolysis		OF Xylose OF Sucrose	Bue Bue
Starch hydrolysis	NEG NEG	OI Sucrose	Drue vero
Lecithinase		Arginine	Nel- Nel-
	NEG NEG	Lysine Ornithine	Neg Neg
Lipase		Base Control	NEG NEG
Rapid PYR	DES	A antomida	Neb Nea
Rapid LAP	Pos LB	Acetamide Esculin	Neb Neb
Rapid ESC	NES	Gelatin	Nels Nels
Sensitivity to:	e D	Indole Malonate	New POS
Penicillin (10 U)		PAD	Nele
Vancomycin (30 ug)	<u>R</u> <u>R</u>	Urea Nac-2 h	POS(SLANT) POS (SLANT)
Colistin (10 mcg)	K K	6.5% NaCL 10% Lactose	Neg Nel- Pos Pos
Polymyxin B (300 U	RK	ONPG	NEG POS

Note: All biochemical tests (except where noted) are incubated at 30°C and read after 48 hrs. incubation and again at 7 days.

Figure 142: Burkholderia multivorans isolate 13-of-21.

## 12.5 Burkholderia pseudomallei

Over the course of ASHEX clinical-isolate collection, one individual isolate of Burkholderia pseudomallei was analyzed. The associated biochemical result form is NOT presented here.

Test	+	_	Raw%	W95%	Test	+	_	Raw%	<b>W95</b> %
Motility	1	0	100.00	60.33	H <sub>2</sub> S	0	1	0.00	39.67
Oxidase	1	0	100.00	60.33	Pseudo P	0	1	0.00	39.67
Catalase	1	0	100.00	60.33	Pseudo F	0	1	0.00	39.67
Yellow Pigment	0	1	0.00	39.67	NO <sub>3</sub> Reduced	1	0	100.00	60.33
Pink Pigment	0	1	0.00	39.67	Gas from $NO_3$	1	0	100.00	60.33
Beta Hemolysis	0	1	0.00	39.67	$NO_2$ Reduced	1	0	100.00	60.33
Growth on Mac	1	0	100.00	60.33	Gas from $NO_2$	1	0	100.00	60.33
Dnase	0	1	0.00	39.67	OF Fructose	1	0	100.00	60.33
Starch	1	0	100.00	60.33	OF Dextrose	1	0	100.00	60.33
Lecithinase	0	1	0.00	39.67	OF Lactose	1	0	100.00	60.33
Lipase	0	1	0.00	39.67	OF Maltose	1	0	100.00	60.33
PYR	0	1	0.00	39.67	OF Mannitol	1	0	100.00	60.33
LAP	1	0	100.00	60.33	OF Xylose	1	0	100.00	60.33
ESC Spot Test	0	1	0.00	39.67	OF Sucrose	0	1	0.00	39.67
Penicillin (10U)	0	1	0.00	39.67	Arginine	1	0	100.00	60.33
Vancomycin $(30\mu g)$	0	1	0.00	39.67	Lysine	0	1	0.00	39.67
Colistin $(10\mu g)$	0	1	0.00	39.67	Ornithine	0	1	0.00	39.67
Polymyxin B (300U)	0	1	0.00	39.67	Acetamide	0	1	0.00	39.67
					Esculin	1	0	100.00	60.33
					Gelatin	1	0	100.00	60.33
					Indole	0	1	0.00	39.67
					Malonate	1	0	100.00	60.33
					PAD	0	1	0.00	39.67
					Urea 2 hrs.	0	1	0.00	39.67
					Urea 48 hrs.	0	1	0.00	39.67
					6.5% NaCl	0	1	0.00	39.67
					10% Lactose	1	0	100.00	60.33
					ONPG	0	1	0.00	39.67
					Growth 42°C	1	0	100.00	60.33

Table 30: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as  $n_+/(n_+ + n_-)$ , where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which shifts raw percentages towards 50% with a strength dependent on the total number of test occurrences. The four antibiotic tests at the bottom of Column 1 are sensitivity tests where a positive result indicates sensitivity to the drug.

# 12.6 Burkholderia stabilis (IV)

Over the course of ASHEX clinical-isolate collection, two individual isolates of Burkholderia stabilis were analyzed. One of the two recorded results is pictured in this subsection.

Test	+	_	Raw%	<b>W95</b> %	Test	+	_	Raw%	W95%
Motility	2	0	100.00	67.12	$H_2S$	0	2	0.00	32.88
Oxidase	2	0	100.00	67.12	Pseudo P	0	2	0.00	32.88
Catalase	2	0	100.00	67.12	Pseudo F	0	2	0.00	32.88
Yellow Pigment	0	2	0.00	32.88	NO <sub>3</sub> Reduced	1	1	50.00	50.00
Pink Pigment	0	2	0.00	32.88	Gas from $NO_3$	0	2	0.00	32.88
Beta Hemolysis	0	2	0.00	32.88	$NO_2$ Reduced	0	2	0.00	32.88
Growth on Mac	2	0	100.00	67.12	Gas from $NO_2$	0	2	0.00	32.88
Dnase	0	2	0.00	32.88	OF Fructose	2	0	100.00	67.12
Starch	0	2	0.00	32.88	OF Dextrose	2	0	100.00	67.12
Lecithinase	0	2	0.00	32.88	OF Lactose	2	0	100.00	67.12
Lipase	1	1	50.00	50.00	OF Maltose	2	0	100.00	67.12
PYR	0	2	0.00	32.88	OF Mannitol	2	0	100.00	67.12
LAP	2	0	100.00	67.12	OF Xylose	2	0	100.00	67.12
ESC Spot Test	0	2	0.00	32.88	OF Sucrose	0	2	0.00	32.88
Penicillin (10U)	0	2	0.00	32.88	Arginine	0	2	0.00	32.88
Vancomycin $(30\mu g)$	0	2	0.00	32.88	Lysine	2	0	100.00	67.12
Colistin $(10\mu g)$	0	2	0.00	32.88	Ornithine	2	0	100.00	67.12
Polymyxin B (300U)	0	2	0.00	32.88	Acetamide	2	0	100.00	67.12
					Esculin	0	2	0.00	32.88
					Gelatin	1	1	50.00	50.00
					Indole	0	2	0.00	32.88
					Malonate	2	0	100.00	67.12
					PAD	0	2	0.00	32.88
					Urea 2 hrs.	0	2	0.00	32.88
					Urea 48 hrs.	2	0	100.00	67.12
					6.5% NaCl	0	2	0.00	32.88
					10% Lactose	2	0	100.00	67.12
					ONPG	0	2	0.00	32.88
					Growth 42°C	0	2	0.00	32.88

Table 31: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as  $n_+/(n_+ + n_-)$ , where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which shifts raw percentages towards 50% with a strength dependent on the total number of test occurrences. The four antibiotic tests at the bottom of Column 1 are sensitivity tests where a positive result indicates sensitivity to the drug. Date Inoculated:

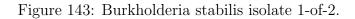
Final Identification:

Comments:

			12/29	
Gram Morph.		. <u>Tubes</u> KIA	<u>48 h</u> <u>K</u> /KC	7 day F
Gram Test	24h Pos-Rods	$-H_2S$	Neb	NeG
Motility Wet Prep			Mar	1000
+ Motility Deep	Pos Pos	Pseudo P Pseudo F	New	NEG
- Oxidase	POS (15 See)		_pree_	
+ Catalase	WEAK DOS	+ NO <sub>3</sub> reduced		<u>P05</u> -50
PLATES 24-	<u>48 h 7 day</u>	Gas from NO <sub>3</sub>	Nec	Nelo Nelo
Odor	Nore	Gas from NO <sub>2</sub>	NEG	Nela
Pigment on swab	Baff	+ OF Fructose	GRN	GRN/YEL
Pigment on BAP	GREY-	+ OF Dextrose	YEL	Yel
Morphology on BAP	Smooth OPAque	+ OF Lactose	Yel	YEL
Beta hemolysis	NCG	OF Maltose OF Mannitol	Rue	<u>Vel</u> GRIV
	Powth 24h	+ OF Xylose	Breel	Yel
<ul> <li>DNase hydrolysis</li> </ul>	New Neb	-OF Sucrose	BLue	BLUE
<ul> <li>Starch hydrolysis</li> </ul>	NEG NEG	-Arginine	NEG	New
- Lecithinase	NEG NEG	+Lysine	Pos	Pos
Lipase	Pos Pos	+Ornithine	Pos	POS
-Rapid PYR	NCG	Base Control	NEG	Nel-
+ Rapid LAP	Pos	+ Acetamide	Pes	POS -
Rapid ESC	NeG	- Esculin - Gelatin	Nele	Neb- POSISO
Sensitivity to:	0			NeG.
Penicillin (10 U)	$R_{K}$	Malonate	NEG	Pos:
Vancomycin (30 ug)	RR	- PAD - Urea <u>Neu</u> 2 h 7	Ne6	POS! ACTERFEC
Colistin (10 mcg)	<u>R</u>	- 6.5% NaCL	NEG	Niela
Polymyxin B (300 U)	R R	+10% Lactose	Pos	POG
		- ONPG - Growth 42 <sup>0</sup>	NEG	NEG XSEG

12-28-11 Stabilis Burkholderia copacia

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days.



12

spley

### 12.7 Burkholderia thailandensis

Over the course of ASHEX clinical-isolate collection, one individual isolate of Burkholderia thailandensis was analyzed. The associated biochemical result form is NOT presented here.

Test	+	_	Raw%	W95%	Test	+	_	Raw%	<b>W95</b> %
Motility	1	0	100.00	60.33	H <sub>2</sub> S	0	1	0.00	39.67
Oxidase	1	0	100.00	60.33	Pseudo P	0	1	0.00	39.67
Catalase	1	0	100.00	60.33	Pseudo F	0	1	0.00	39.67
Yellow Pigment	0	1	0.00	39.67	NO <sub>3</sub> Reduced	1	0	100.00	60.33
Pink Pigment	0	1	0.00	39.67	Gas from $NO_3$	1	0	100.00	60.33
Beta Hemolysis	0	1	0.00	39.67	$NO_2$ Reduced	1	0	100.00	60.33
Growth on Mac	1	0	100.00	60.33	Gas from $NO_2$	1	0	100.00	60.33
Dnase	0	1	0.00	39.67	OF Fructose	1	0	100.00	60.33
Starch	0	1	0.00	39.67	OF Dextrose	1	0	100.00	60.33
Lecithinase	0	1	0.00	39.67	OF Lactose	1	0	100.00	60.33
Lipase	1	0	100.00	60.33	OF Maltose	1	0	100.00	60.33
PYR	0	1	0.00	39.67	OF Mannitol	1	0	100.00	60.33
LAP	1	0	100.00	60.33	OF Xylose	1	0	100.00	60.33
ESC Spot Test	0	1	0.00	39.67	OF Sucrose	1	0	100.00	60.33
Penicillin (10U)	0	1	0.00	39.67	Arginine	1	0	100.00	60.33
Vancomycin $(30\mu g)$	0	1	0.00	39.67	Lysine	0	1	0.00	39.67
Colistin $(10\mu g)$	0	1	0.00	39.67	Ornithine	0	1	0.00	39.67
Polymyxin B (300U)	0	1	0.00	39.67	Acetamide	0	1	0.00	39.67
					Esculin	1	0	100.00	60.33
					Gelatin	1	0	100.00	60.33
					Indole	0	1	0.00	39.67
					Malonate	1	0	100.00	60.33
					PAD	0	1	0.00	39.67
					Urea 2 hrs.	0	1	0.00	39.67
					Urea 48 hrs.	0	1	0.00	39.67
					6.5% NaCl	0	1	0.00	39.67
					10% Lactose	1	0	100.00	60.33
					ONPG	0	1	0.00	39.67
					Growth 42°C	1	0	100.00	60.33

Table 32: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as  $n_+/(n_+ + n_-)$ , where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which shifts raw percentages towards 50% with a strength dependent on the total number of test occurrences. The four antibiotic tests at the bottom of Column 1 are sensitivity tests where a positive result indicates sensitivity to the drug.

# 13 ASSORTED CDC GROUPS13.1 CDC Group EO-2

Over the course of ASHEX clinical-isolate collection, five individual isolates of CDC Group EO-2 (Paracoccus yeeii) were analyzed. One of the five recorded results is pictured in this subsection.

Test	+	_	Raw%	<b>W95</b> %	Test	+	—	Raw%	W95%
Motility	0	5	0.00	21.72	H <sub>2</sub> S	0	5	0.00	21.72
Oxidase	5	0	100.00	78.28	Pseudo P	0	5	0.00	21.72
Catalase	5	0	100.00	78.28	Pseudo F	0	5	0.00	21.72
Yellow Pigment	5	0	100.00	78.28	NO <sub>3</sub> Reduced	5	0	100.00	78.28
Pink Pigment	0	5	0.00	21.72	Gas from $NO_3$	0	5	0.00	21.72
Beta Hemolysis	0	5	0.00	21.72	NO <sub>2</sub> Reduced	0	5	0.00	21.72
Growth on Mac	4	1	80.00	66.97	Gas from $NO_2$	0	5	0.00	21.72
Dnase	0	5	0.00	21.72	OF Fructose	4	1	80.00	66.97
Starch	0	5	0.00	21.72	OF Dextrose	5	0	100.00	78.28
Lecithinase	0	5	0.00	21.72	OF Lactose	4	1	80.00	66.97
Lipase	0	5	0.00	21.72	OF Maltose	0	5	0.00	21.72
PYR	0	2	0.00	32.88	OF Mannitol	1	4	20.00	33.03
LAP	2	0	100.00	67.12	OF Xylose	4	1	80.00	66.97
ESC Spot Test	0	2	0.00	32.88	OF Sucrose	0	2	0.00	32.88
Penicillin (10U)	4	1	80.00	66.97	Arginine	0	5	0.00	21.72
Vancomycin $(30\mu g)$	5	0	100.00	78.28	Lysine	0	5	0.00	21.72
Colistin $(10\mu g)$	5	0	100.00	78.28	Ornithine	0	5	0.00	21.72
Polymyxin B (300U)	5	0	100.00	78.28	Acetamide	0	5	0.00	21.72
					Esculin	0	5	0.00	21.72
					Gelatin	0	5	0.00	21.72
					Indole	0	5	0.00	21.72
					Malonate	2	3	40.00	44.34
					PAD	0	5	0.00	21.72
					Urea 2 hrs.	4	1	80.00	66.97
					Urea 48 hrs.	5	0	100.00	78.28
					6.5% NaCl	2	3	40.00	44.34
					10% Lactose	5	0	100.00	78.28
					ONPG	0	5	0.00	21.72
					Growth 42°C	2	3	40.00	44.34

Table 33: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as  $n_+/(n_+ + n_-)$ , where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which shifts raw percentages towards 50% with a strength dependent on the total number of test occurrences. The four antibiotic tests at the bottom of Column 1 are sensitivity tests where a positive result indicates sensitivity to the drug.

16/16 Date Inoculated: PE 1/27/16 Yee; (EO-2 Final Identification: RACOCCUS Comments: 2.201 Maldi MediA Yellow ALC ON <u>48 h</u> 7 day Gram Morph. Tubes KIA Gram Test  $H_2S$ Motility Wet Prep Pseudo P Motility Deep Ner Pseudo F Oxidase Pas 2 Pos Catalase NO3 reduced Gas from NO<sub>3</sub> <u>48 h</u> 7 day PLATES NO2 reduced 2 Odor Neg Slight Gas from NO<sub>2</sub> New Pigment on swab It. Straw et, stro **OF** Fructose Gr Pigment on BAP H. yel A. yello d OF Dextrose yel top Uel top Morphology on BAP ppt, dry OF Lactose yel top 7 OF Maltose Gr Beta hemolysis Nea Neg Sa OF Mannitol Gr a Ċ Growth on Mac Neg inhibited OF Xylose yetop el top + DARKE GREEN DNase hydrolysis à OF Sucrose X lon a Starch hydrolysis Neg Arginine Lecithinase Lysine Nea Ornithine Lipase Neg Net Now Base Control Neg Rapid PYR Neg Rapid LAP Pas Acetamide Esculin 110 er Rapid ESC Gelatin Nea Sensitivity to: Indole Malonate Penicillin (10 U) GR 50.8 Neg PAD 5 220102 19 Sparse Vancomycin (30 ug) Urea Vup p12 h Vis 135 Colistin (10 mcg) 35 6.5% NaCL Pns Pos 15 10% Lactose Pos sea Do Polymyxin B (300 U) 5 18 ONPG Neg Nog Growth 42° Neg Ne L

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 144: CDC Group EO-2 isolate 1-of-5.

colonies ppt +dry but Very nuccoid in heavy areas.

## 13.2 CDC Group EO-3

Over the course of ASHEX clinical-isolate collection, one individual isolate of CDC Group EO-3 was analyzed. The associated biochemical result form is NOT presented here.

Test	+	_	Raw%	W95%	Test	+	_	Raw%	<b>W95</b> %
Motility	0	1	0.00	39.67	$H_2S$	0	1	0.00	39.67
Oxidase	1	0	100.00	60.33	Pseudo P	0	1	0.00	39.67
Catalase	1	0	100.00	60.33	Pseudo F	0	1	0.00	39.67
Yellow Pigment	1	0	100.00	60.33	NO <sub>3</sub> Reduced	0	1	0.00	39.67
Pink Pigment	0	1	0.00	39.67	Gas from $NO_3$	0	0	50.00	50.00
Beta Hemolysis	0	1	0.00	39.67	NO <sub>2</sub> Reduced	0	1	0.00	39.67
Growth on Mac	1	0	100.00	60.33	Gas from $NO_2$	0	0	50.00	50.00
Dnase	0	1	0.00	39.67	OF Fructose	1	0	100.00	60.33
Starch	0	1	0.00	39.67	OF Dextrose	1	0	100.00	60.33
Lecithinase	0	1	0.00	39.67	OF Lactose	0	1	0.00	39.67
Lipase	0	1	0.00	39.67	OF Maltose	0	1	0.00	39.67
PYR	0	0	50.00	50.00	OF Mannitol	0	1	0.00	39.67
LAP	0	0	50.00	50.00	OF Xylose	1	0	100.00	60.33
ESC Spot Test	0	0	50.00	50.00	OF Sucrose	0	0	50.00	50.00
Penicillin (10U)	0	1	0.00	39.67	Arginine	0	1	0.00	39.67
Vancomycin $(30\mu g)$	0	1	0.00	39.67	Lysine	0	1	0.00	39.67
Colistin $(10\mu g)$	1	0	100.00	60.33	Ornithine	0	1	0.00	39.67
Polymyxin B (300U)	0	0	50.00	50.00	Acetamide	0	1	0.00	39.67
					Esculin	0	1	0.00	39.67
					Gelatin	0	1	0.00	39.67
					Indole	0	1	0.00	39.67
					Malonate	0	1	0.00	39.67
					PAD	0	1	0.00	39.67
					Urea 2 hrs.	0	1	0.00	39.67
					Urea 48 hrs.	1	0	100.00	60.33
					6.5% NaCl	1	0	100.00	60.33
					10% Lactose	1	0	100.00	60.33
					ONPG	0	1	0.00	39.67
					Growth 42°C	0	1	0.00	39.67

Table 34: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as  $n_+/(n_+ + n_-)$ , where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which shifts raw percentages towards 50% with a strength dependent on the total number of test occurrences. The four antibiotic tests at the bottom of Column 1 are sensitivity tests where a positive result indicates sensitivity to the drug.

# 13.3 CDC Group Ic

Over the course of ASHEX clinical-isolate collection, four individual isolates of CDC Group Ic were analyzed. Zero of the four recorded results are pictured in this subsection.

Test	+	_	Raw%	<b>W95</b> %	Test	+	—	Raw%	<b>W95</b> %
Motility	3	1	75.00	62.75	$H_2S$	0	4	0.00	24.50
Oxidase	4	0	100.00	75.50	Pseudo P	0	4	0.00	24.50
Catalase	4	0	100.00	75.50	Pseudo F	0	4	0.00	24.50
Yellow Pigment	0	4	0.00	24.50	NO <sub>3</sub> Reduced	4	0	100.00	75.50
Pink Pigment	0	4	0.00	24.50	Gas from $NO_3$	0	4	0.00	24.50
Beta Hemolysis	0	4	0.00	24.50	NO <sub>2</sub> Reduced	0	4	0.00	24.50
Growth on Mac	4	0	100.00	75.50	Gas from $NO_2$	0	4	0.00	24.50
Dnase	0	4	0.00	24.50	OF Fructose	4	0	100.00	75.50
Starch	4	0	100.00	75.50	OF Dextrose	4	0	100.00	75.50
Lecithinase	0	4	0.00	24.50	OF Lactose	0	4	0.00	24.50
Lipase	0	4	0.00	24.50	OF Maltose	4	0	100.00	75.50
PYR	0	4	0.00	24.50	OF Mannitol	0	4	0.00	24.50
LAP	4	0	100.00	75.50	OF Xylose	2	2	50.00	50.00
ESC Spot Test	0	4	0.00	24.50	OF Sucrose	1	3	25.00	37.25
Penicillin (10U)	0	4	0.00	24.50	Arginine	4	0	100.00	75.50
Vancomycin $(30\mu g)$	0	4	0.00	24.50	Lysine	0	4	0.00	24.50
Colistin $(10\mu g)$	4	0	100.00	75.50	Ornithine	0	4	0.00	24.50
Polymyxin B (300U)	4	0	100.00	75.50	Acetamide	0	4	0.00	24.50
					Esculin	0	4	0.00	24.50
					Gelatin	0	4	0.00	24.50
					Indole	0	4	0.00	24.50
					Malonate	0	4	0.00	24.50
					PAD	0	4	0.00	24.50
					Urea 2 hrs.	0	4	0.00	24.50
					Urea 48 hrs.	2	2	50.00	50.00
					6.5% NaCl	4	0	100.00	75.50
					10% Lactose	0	4	0.00	24.50
					ONPG	0	4	0.00	24.50
					Growth 42°C	4	0	100.00	75.50

Table 35: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as  $n_+/(n_+ + n_-)$ , where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which shifts raw percentages towards 50% with a strength dependent on the total number of test occurrences. The four antibiotic tests at the bottom of Column 1 are sensitivity tests where a positive result indicates sensitivity to the drug.

# 13.4 CDC Group IIc

Over the course of ASHEX clinical-isolate collection, six individual isolates of CDC Group IIc were analyzed. Zero of the six recorded results are pictured in this subsection.

Test	+	_	Raw%	W95%	Test	+	_	Raw%	W95%
Motility	0	6	0.00	19.52	$H_2S$	0	6	0.00	19.52
Oxidase	6	0	100.00	80.48	Pseudo P	0	6	0.00	19.52
Catalase	6	0	100.00	80.48	Pseudo F	0	6	0.00	19.52
Yellow Pigment	2	4	33.33	39.84	NO <sub>3</sub> Reduced	6	0	100.00	80.48
Pink Pigment	0	6	0.00	19.52	Gas from $NO_3$	1	5	16.67	29.68
Beta Hemolysis	2	4	33.33	39.84	NO <sub>2</sub> Reduced	5	1	83.33	70.32
Growth on Mac	0	6	0.00	19.52	Gas from $NO_2$	1	5	16.67	29.68
Dnase	0	6	0.00	19.52	OF Fructose	4	2	66.67	60.16
Starch	6	0	100.00	80.48	OF Dextrose	5	1	83.33	70.32
Lecithinase	0	6	0.00	19.52	OF Lactose	1	5	16.67	29.68
Lipase	0	6	0.00	19.52	OF Maltose	5	1	83.33	70.32
PYR	1	5	16.67	29.68	OF Mannitol	0	6	0.00	19.52
LAP	6	0	100.00	80.48	OF Xylose	1	5	16.67	29.68
ESC Spot Test	0	6	0.00	19.52	OF Sucrose	5	1	83.33	70.32
Penicillin (10U)	6	0	100.00	80.48	Arginine	0	6	0.00	19.52
Vancomycin $(30\mu g)$	6	0	100.00	80.48	Lysine	0	6	0.00	19.52
Colistin $(10\mu g)$	0	6	0.00	19.52	Ornithine	0	6	0.00	19.52
Polymyxin B (300U)	2	4	33.33	39.84	Acetamide	0	6	0.00	19.52
					Esculin	6	0	100.00	80.48
					Gelatin	4	2	66.67	60.16
					Indole	6	0	100.00	80.48
					Malonate	0	6	0.00	19.52
					PAD	3	3	50.00	50.00
					Urea 2 hrs.	0	6	0.00	19.52
					Urea 48 hrs.	0	6	0.00	19.52
					6.5% NaCl	0	6	0.00	19.52
					10% Lactose	0	6	0.00	19.52
					ONPG	1	5	16.67	29.68
					Growth 42°C	0	6	0.00	19.52

Table 36: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as  $n_+/(n_+ + n_-)$ , where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which shifts raw percentages towards 50% with a strength dependent on the total number of test occurrences. The four antibiotic tests at the bottom of Column 1 are sensitivity tests where a positive result indicates sensitivity to the drug.

# 13.5 CDC Group IIe

Over the course of ASHEX clinical-isolate collection, six individual isolates of CDC Group IIe were analyzed. Zero of the six recorded results are pictured in this subsection.

Test	+	_	Raw%	<b>W95</b> %	Test	+	_	Raw%	W95%
Motility	0	6	0.00	19.52	$H_2S$	0	6	0.00	19.52
Oxidase	6	0	100.00	80.48	Pseudo P	0	6	0.00	19.52
Catalase	6	0	100.00	80.48	Pseudo F	0	6	0.00	19.52
Yellow Pigment	2	4	33.33	39.84	NO <sub>3</sub> Reduced	0	6	0.00	19.52
Pink Pigment	0	6	0.00	19.52	Gas from $NO_3$	0	6	0.00	19.52
Beta Hemolysis	3	3	50.00	50.00	NO <sub>2</sub> Reduced	0	6	0.00	19.52
Growth on Mac	0	6	0.00	19.52	Gas from $NO_2$	0	6	0.00	19.52
Dnase	0	6	0.00	19.52	OF Fructose	0	6	0.00	19.52
Starch	5	1	83.33	70.32	OF Dextrose	4	2	66.67	60.16
Lecithinase	0	6	0.00	19.52	OF Lactose	0	6	0.00	19.52
Lipase	0	6	0.00	19.52	OF Maltose	4	2	66.67	60.16
PYR	0	6	0.00	19.52	OF Mannitol	0	6	0.00	19.52
LAP	6	0	100.00	80.48	OF Xylose	0	6	0.00	19.52
ESC Spot Test	0	6	0.00	19.52	OF Sucrose	0	6	0.00	19.52
Penicillin (10U)	5	1	83.33	70.32	Arginine	0	6	0.00	19.52
Vancomycin $(30\mu g)$	6	0	100.00	80.48	Lysine	0	6	0.00	19.52
Colistin $(10\mu g)$	0	6	0.00	19.52	Ornithine	0	6	0.00	19.52
Polymyxin B (300U)	3	3	50.00	50.00	Acetamide	0	6	0.00	19.52
					Esculin	0	6	0.00	19.52
					Gelatin	0	6	0.00	19.52
					Indole	6	0	100.00	80.48
					Malonate	0	6	0.00	19.52
					PAD	5	1	83.33	70.32
					Urea 2 hrs.	0	6	0.00	19.52
					Urea 48 hrs.	0	6	0.00	19.52
					6.5% NaCl	0	6	0.00	19.52
					10% Lactose	0	6	0.00	19.52
					ONPG	0	6	0.00	19.52
					Growth 42°C	1	5	16.67	29.68

Table 37: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as  $n_+/(n_+ + n_-)$ , where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which shifts raw percentages towards 50% with a strength dependent on the total number of test occurrences. The four antibiotic tests at the bottom of Column 1 are sensitivity tests where a positive result indicates sensitivity to the drug.

# 13.6 CDC Group IIg

Over the course of ASHEX clinical-isolate collection, five individual isolates of CDC Group IIg were analyzed. Zero of the five recorded results are pictured in this subsection.

Test	+	_	Raw%	<b>W95</b> %	Test	+	—	Raw%	<b>W95</b> %
Motility	0	5	0.00	21.72	$H_2S$	0	5	0.00	21.72
Oxidase	5	0	100.00	78.28	Pseudo P	0	5	0.00	21.72
Catalase	5	0	100.00	78.28	Pseudo F	0	5	0.00	21.72
Yellow Pigment	0	5	0.00	21.72	NO <sub>3</sub> Reduced	0	5	0.00	21.72
Pink Pigment	0	5	0.00	21.72	Gas from $NO_3$	0	5	0.00	21.72
Beta Hemolysis	1	4	20.00	33.03	NO <sub>2</sub> Reduced	5	0	100.00	78.28
Growth on Mac	2	3	40.00	44.34	Gas from $NO_2$	0	5	0.00	21.72
Dnase	0	5	0.00	21.72	OF Fructose	0	5	0.00	21.72
Starch	0	5	0.00	21.72	OF Dextrose	0	5	0.00	21.72
Lecithinase	0	5	0.00	21.72	OF Lactose	0	5	0.00	21.72
Lipase	0	5	0.00	21.72	OF Maltose	0	5	0.00	21.72
PYR	3	2	60.00	55.66	OF Mannitol	0	5	0.00	21.72
LAP	5	0	100.00	78.28	OF Xylose	0	5	0.00	21.72
ESC Spot Test	0	5	0.00	21.72	OF Sucrose	0	5	0.00	21.72
Penicillin (10U)	5	0	100.00	78.28	Arginine	0	5	0.00	21.72
Vancomycin $(30\mu g)$	0	5	0.00	21.72	Lysine	0	5	0.00	21.72
Colistin $(10\mu g)$	5	0	100.00	78.28	Ornithine	0	5	0.00	21.72
Polymyxin B (300U)	5	0	100.00	78.28	Acetamide	0	5	0.00	21.72
					Esculin	0	5	0.00	21.72
					Gelatin	0	5	0.00	21.72
					Indole	5	0	100.00	78.28
					Malonate	0	5	0.00	21.72
					PAD	5	0	100.00	78.28
					Urea 2 hrs.	0	5	0.00	21.72
					Urea 48 hrs.	0	5	0.00	21.72
					6.5% NaCl	0	5	0.00	21.72
					10% Lactose	0	5	0.00	21.72
					ONPG	0	5	0.00	21.72
					Growth 42°C	5	0	100.00	78.28

Table 38: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as  $n_+/(n_+ + n_-)$ , where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which shifts raw percentages towards 50% with a strength dependent on the total number of test occurrences. The four antibiotic tests at the bottom of Column 1 are sensitivity tests where a positive result indicates sensitivity to the drug.

# 13.7 CDC Group IIi

Over the course of ASHEX clinical-isolate collection, five individual isolates of CDC Group IIi were analyzed. Zero of the five recorded results are pictured in this subsection.

Test	+	_	Raw%	<b>W95</b> %	Test	+	_	Raw%	<b>W95</b> %
Motility	0	5	0.00	21.72	$H_2S$	0	5	0.00	21.72
Oxidase	5	0	100.00	78.28	Pseudo P	0	5	0.00	21.72
Catalase	5	0	100.00	78.28	Pseudo F	0	5	0.00	21.72
Yellow Pigment	0	5	0.00	21.72	NO <sub>3</sub> Reduced	0	5	0.00	21.72
Pink Pigment	0	5	0.00	21.72	Gas from NO <sub>3</sub>	0	5	0.00	21.72
Beta Hemolysis	0	5	0.00	21.72	$NO_2$ Reduced	5	0	100.00	78.28
Growth on Mac	0	5	0.00	21.72	Gas from $NO_2$	1	4	20.00	33.03
Dnase	0	5	0.00	21.72	OF Fructose	3	2	60.00	55.66
Starch	4	1	80.00	66.97	OF Dextrose	5	0	100.00	78.28
Lecithinase	0	5	0.00	21.72	OF Lactose	0	5	0.00	21.72
Lipase	0	5	0.00	21.72	OF Maltose	3	2	60.00	55.66
PYR	0	5	0.00	21.72	OF Mannitol	0	5	0.00	21.72
LAP	5	0	100.00	78.28	OF Xylose	0	5	0.00	21.72
ESC Spot Test	5	0	100.00	78.28	OF Sucrose	0	5	0.00	21.72
Penicillin (10U)	0	5	0.00	21.72	Arginine	0	5	0.00	21.72
Vancomycin $(30\mu g)$	5	0	100.00	78.28	Lysine	0	5	0.00	21.72
Colistin $(10\mu g)$	0	5	0.00	21.72	Ornithine	0	5	0.00	21.72
Polymyxin B (300U)	0	5	0.00	21.72	Acetamide	0	5	0.00	21.72
					Esculin	5	0	100.00	78.28
					Gelatin	0	5	0.00	21.72
					Indole	5	0	100.00	78.28
					Malonate	0	5	0.00	21.72
					PAD	5	0	100.00	78.28
					Urea 2 hrs.	1	4	20.00	33.03
					Urea 48 hrs.	1	4	20.00	33.03
					6.5% NaCl	1	4	20.00	33.03
					10% Lactose	1	4	20.00	33.03
					ONPG	5	0	100.00	78.28
					Growth 42°C	1	4	20.00	33.03

Table 39: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as  $n_+/(n_+ + n_-)$ , where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which shifts raw percentages towards 50% with a strength dependent on the total number of test occurrences. The four antibiotic tests at the bottom of Column 1 are sensitivity tests where a positive result indicates sensitivity to the drug.

## 13.8 CDC Group NO-1

Over the course of ASHEX clinical-isolate collection, one individual isolate of CDC Group NO-1 was analyzed. The associated biochemical result form is NOT presented here.

Test	+	_	Raw%	<b>W95</b> %	Test	+	_	Raw%	W95%
Motility	0	1	0.00	39.67	$H_2S$	0	1	0.00	39.67
Oxidase	0	1	0.00	39.67	Pseudo P	0	1	0.00	39.67
Catalase	1	0	100.00	60.33	Pseudo F	0	1	0.00	39.67
Yellow Pigment	1	0	100.00	60.33	NO <sub>3</sub> Reduced	1	0	100.00	60.33
Pink Pigment	0	1	0.00	39.67	Gas from $NO_3$	0	1	0.00	39.67
Beta Hemolysis	0	1	0.00	39.67	$NO_2$ Reduced	0	1	0.00	39.67
Growth on Mac	0	1	0.00	39.67	Gas from $NO_2$	0	1	0.00	39.67
Dnase	0	1	0.00	39.67	OF Fructose	0	1	0.00	39.67
Starch	0	1	0.00	39.67	OF Dextrose	0	1	0.00	39.67
Lecithinase	0	1	0.00	39.67	OF Lactose	0	1	0.00	39.67
Lipase	0	1	0.00	39.67	OF Maltose	0	1	0.00	39.67
PYR	0	0	50.00	50.00	OF Mannitol	0	1	0.00	39.67
LAP	0	0	50.00	50.00	OF Xylose	0	1	0.00	39.67
ESC Spot Test	0	0	50.00	50.00	OF Sucrose	0	0	50.00	50.00
Penicillin (10U)	1	0	100.00	60.33	Arginine	0	1	0.00	39.67
Vancomycin $(30\mu g)$	1	0	100.00	60.33	Lysine	0	1	0.00	39.67
Colistin $(10\mu g)$	1	0	100.00	60.33	Ornithine	0	1	0.00	39.67
Polymyxin B (300U)	1	0	100.00	60.33	Acetamide	0	1	0.00	39.67
					Esculin	0	1	0.00	39.67
					Gelatin	0	1	0.00	39.67
					Indole	0	1	0.00	39.67
					Malonate	0	1	0.00	39.67
					PAD	0	1	0.00	39.67
					Urea 2 hrs.	0	1	0.00	39.67
					Urea 48 hrs.	0	1	0.00	39.67
					6.5% NaCl	0	1	0.00	39.67
					10% Lactose	0	1	0.00	39.67
					ONPG	0	1	0.00	39.67
					Growth 42°C	0	1	0.00	39.67

Table 40: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as  $n_+/(n_+ + n_-)$ , where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which shifts raw percentages towards 50% with a strength dependent on the total number of test occurrences. The four antibiotic tests at the bottom of Column 1 are sensitivity tests where a positive result indicates sensitivity to the drug.

# 14 GENUS CHRYSEOBACTERIUM14.1 Chryseobacterium culicis

Over the course of ASHEX clinical-isolate collection, one individual isolate of Chryseobacterium culicis was analyzed. The associated biochemical result form is presented here.

Test	+	_	Raw%	W95%	Test	+	—	Raw%	<b>W95</b> %
Motility	0	1	0.00	39.67	$H_2S$	0	1	0.00	39.67
Oxidase	1	0	100.00	60.33	Pseudo P	0	1	0.00	39.67
Catalase	1	0	100.00	60.33	Pseudo F	0	1	0.00	39.67
Yellow Pigment	1	0	100.00	60.33	NO <sub>3</sub> Reduced	0	1	0.00	39.67
Pink Pigment	0	1	0.00	39.67	Gas from NO <sub>3</sub>	0	1	0.00	39.67
Beta Hemolysis	0	1	0.00	39.67	$NO_2$ Reduced	0	1	0.00	39.67
Growth on Mac	0	1	0.00	39.67	Gas from $NO_2$	0	1	0.00	39.67
Dnase	1	0	100.00	60.33	OF Fructose	0	1	0.00	39.67
Starch	1	0	100.00	60.33	OF Dextrose	0	1	0.00	39.67
Lecithinase	0	1	0.00	39.67	OF Lactose	0	1	0.00	39.67
Lipase	1	0	100.00	60.33	OF Maltose	0	1	0.00	39.67
PYR	0	1	0.00	39.67	OF Mannitol	0	1	0.00	39.67
LAP	1	0	100.00	60.33	OF Xylose	0	1	0.00	39.67
ESC Spot Test	0	1	0.00	39.67	OF Sucrose	0	1	0.00	39.67
Penicillin (10U)	0	1	0.00	39.67	Arginine	0	1	0.00	39.67
Vancomycin $(30\mu g)$	1	0	100.00	60.33	Lysine	0	1	0.00	39.67
Colistin $(10\mu g)$	0	1	0.00	39.67	Ornithine	0	1	0.00	39.67
Polymyxin B (300U)	0	1	0.00	39.67	Acetamide	0	1	0.00	39.67
					Esculin	1	0	100.00	60.33
					Gelatin	1	0	100.00	60.33
					Indole	1	0	100.00	60.33
					Malonate	1	0	100.00	60.33
					PAD	0	1	0.00	39.67
					Urea 2 hrs.	0	1	0.00	39.67
					Urea 48 hrs.	1	0	100.00	60.33
					6.5% NaCl	0	1	0.00	39.67
					10% Lactose	0	1	0.00	39.67
					ONPG	0	1	0.00	39.67
					Growth $42^{\circ}C$	0	1	0.00	39.67

Table 41: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as  $n_+/(n_+ + n_-)$ , where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which shifts raw percentages towards 50% with a strength dependent on the total number of test occurrences. The four antibiotic tests at the bottom of Column 1 are sensitivity tests where a positive result indicates sensitivity to the drug.

		JAK	2
Date Inoculated:	11-9-10		
Final Identification:	Chryseobacterium	INdologenes PS/	
Comments: ORA	When ON STARCH @ 9 DAYS	#30 11-17-10	2
=) (201 Ind	Frelp'el as _ CHRYS D Was always poor maple ASHOXIC	\$ LAD PED 11-18-10	
Gram Morph.	Tubes	$48 \text{ h}$ $\frac{7 \text{ day}}{7 \text{ day}}$	
Gram Test	72 h c KIA		
Motility Wet Prep	Nels H2S	Neb	
Motility Deep	Ne6 Pseudo P	Neb	
Oxidase	PO S Pseudo F	New	
Catalase	GTROAG POS NO3 reduced	New	
PLATES	48 h Zelay 3 DAY Gas from NO3		
Odor	Attanta Moth NO2 reduced Boxes Gas from NO2	Neg-	
Pigment on swab	TAN		
Pigment on BAP	<u>Yellow</u> OF Fructose OF Dextrose	<u>BLUE/6</u> NN BLUE/GNN	
Morphology on BAP	SM20th OF Lactose	Deer Blue	
Beta hemolysis	SCIGHT OF Maltose	BLUE/GRN	
Growth on Mac	OF Mannitol OF Xylose	<u>Blue/6</u> AN Blue/62N	
DNase hydrolysis	POS OF Sucrose	Bue/6RN	
Starch hydrolysis	<u>Pos</u> Arginine	Nela	
Lecithinase	<u>Net</u> Lysine		
Lipase	Pos Ornithine Base Control		
Rapid PYR	Nec	¥	
Rapid LAP	P09 Acetamide	Nec	
Rapid ESC	NEG (TAN IN OCUCA Esculin HARD TO READ) Gelatin	<u>Pes</u>	
Sensitivity to:	+ Indole	pos.	
Penicillin (10 U)	Malonate	POS (LIGAT BLUC)	
Vancomycin (30 ug)	$\underline{\qquad S-12} \qquad \begin{array}{c} PAD \\ Urea \qquad 2h \end{array}$	NCG DOS SIANT & BUTT	-
Colistin (10 mcg)	<u>R</u> 6.5% NaCL	Neb	
Polymyxin B (300 U)	<u>10% Lactose</u> ONPG	Nea Nea	
	Growth 42°	Neb-	

Note: All biochemical tests (except where noted) are incubated at 30°C and read after 48 hrs. incubation and again at 7 days.

Figure 145: Chryseobacterium culicis isolate 1-of-1.

# 14.2 Chryseobacterium gleum

Over the course of ASHEX clinical-isolate collection, four individual isolates of Chryseobacterium gleum were analyzed. Two of the four recorded results are pictured in this subsection.

Test	+	_	Raw%	<b>W95</b> %	Test	+	—	Raw%	W95%
Motility	0	4	0.00	24.50	$H_2S$	0	4	0.00	24.50
Oxidase	4	0	100.00	75.50	Pseudo P	0	4	0.00	24.50
Catalase	4	0	100.00	75.50	Pseudo F	0	4	0.00	24.50
Yellow Pigment	4	0	100.00	75.50	$NO_3$ Reduced	1	3	25.00	37.25
Pink Pigment	0	4	0.00	24.50	Gas from $NO_3$	0	4	0.00	24.50
Beta Hemolysis	0	4	0.00	24.50	$NO_2$ Reduced	2	2	50.00	50.00
Growth on Mac	0	4	0.00	24.50	Gas from $NO_2$	0	4	0.00	24.50
Dnase	3	1	75.00	62.75	OF Fructose	3	1	75.00	62.75
Starch	3	1	75.00	62.75	OF Dextrose	2	2	50.00	50.00
Lecithinase	0	4	0.00	24.50	OF Lactose	0	4	0.00	24.50
Lipase	4	0	100.00	75.50	OF Maltose	2	2	50.00	50.00
PYR	0	4	0.00	24.50	OF Mannitol	1	3	25.00	37.25
LAP	4	0	100.00	75.50	OF Xylose	1	3	25.00	37.25
ESC Spot Test	1	3	25.00	37.25	OF Sucrose	0	4	0.00	24.50
Penicillin (10U)	0	4	0.00	24.50	Arginine	0	4	0.00	24.50
Vancomycin $(30\mu g)$	2	2	50.00	50.00	Lysine	0	4	0.00	24.50
Colistin $(10\mu g)$	0	4	0.00	24.50	Ornithine	0	4	0.00	24.50
Polymyxin B (300U)	0	4	0.00	24.50	Acetamide	0	4	0.00	24.50
					Esculin	4	0	100.00	75.50
					Gelatin	4	0	100.00	75.50
					Indole	4	0	100.00	75.50
					Malonate	2	2	50.00	50.00
					PAD	0	4	0.00	24.50
					Urea 2 hrs.	0	2	0.00	32.88
					Urea 48 hrs.	2	2	50.00	50.00
					6.5% NaCl	0	4	0.00	24.50
					10% Lactose	0	4	0.00	24.50
					ONPG	3	1	75.00	62.75
					Growth 42°C	1	3	25.00	37.25

Table 42: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as  $n_+/(n_+ + n_-)$ , where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which shifts raw percentages towards 50% with a strength dependent on the total number of test occurrences. The four antibiotic tests at the bottom of Column 1 are sensitivity tests where a positive result indicates sensitivity to the drug.

Date Inoculated: <u>10-3-12</u> Final Identification: <u>Chryseobacterium gleum</u> Comments: <u>Construct by MALDI-TOF</u>

1

				10/14/12
Gram Morph.		Tubes	<u>48 h</u>	7 day
Gram Test	72L	KIA	*	ER
Motility Wet Prep	NEG RODS	$H_2S$		Nec
Motility Deep	Nec	Pseudo P		Nele
Oxidase	Pos	Pseudo F		Neb
Catalase	Pos	NO <sub>3</sub> reduced		NeG
PLATES	48 h 7 day	Gas from NO <sub>3</sub>		Ne6-
		NO <sub>2</sub> reduced		Nela
Odor	Stinks - AnoNIA	Gas from NO <sub>2</sub>		Nec
Pigment on swab	YeL			GRN
Pigment on BAP	Yel	<ul> <li>OF Fructose</li> <li>OF Dextrose</li> </ul>		GRN-DARKE
Morphology on BAP	Soracity-entire	- OF Lactose		DAREBLOE
	NEG	- OF Maltose		GRN-DARK
Beta hemolysis	NUG	+ OF Mannitol		Yel/GRN
Growth on Mac	Neb	- OF Xylose		616HT BLUE
DNase hydrolysis	POS	-OF Sucrose		LIGHT BLUE
Starch hydrolysis	POS	Arginine		Nele
Lecithinase	Neo	Lysine		IVEL
Lipase	POS	Ornithine		
Rapid PYR	Nec	Base Control		
Rapid LAP	Pos	Acetamide		NEG
Rapid ESC	NRG	Esculin		POS
Sensitivity to:		Gelatin		- <u>POS</u>
	R	Indole Malonate		NEO
Penicillin (10 U)		PAD		NEG
Vancomycin (30 ug)	R	Ureave 62 h		POS
Colistin (10 mcg)	<u></u>	6.5% NaCL		Nea
Polymyxin B (300 U)	<i>R</i>	10% Lactose		Nea
		ONPG		105
		Growth 42 <sup>°</sup>		NPG

Note: All biochemical tests (except where noted) are incubated at 30°C and read after 48 hrs. incubation and again at 7 days.

Figure 146: Chryseobacterium gleum isolate 1-of-4.

F 8/28 Date Inoculated: Chryseobacterium gleut P.S. 9/23/15 Final Identification: Maldi: Chryseobackvium Gleum 1.931 Comments: Yellow on Pseudo F&P Gram Morph. 7 day Tubes KIA Gram Test H<sub>2</sub>S pignent einterfa pig. at Motility Wet Prep Neg-Id Pseudo P yellow - Neg Motility Deep yellor - Neg Pseudo F Doxidase Slowf los wk+ Catalase Ankath Zn - Neg - NO3 reduced 59<u>48 h</u> Gas from NO3 Neg PLATES 7 day +NO2 reduced Clean Odor POS Pos trybubble -Neg Gas from NO<sub>2</sub> NJ Pigment on swab God dkgold GRN + OF Fructose Gr Uel top Pigment on BAP yel-gold Ulla YEL +OF Dextrose yel top Gr Morphology on BAP BLUE wet nucoid -OF Lactose Bl Be YEL +OF Maltose Gr + Beta hemolysis Jeg Yeltop Near BLUE OF Mannitol Be Near Growth on Mac Neg GRN **4**OF Xylose 6 ilel top Brue DNase hydrolysis Pas -OF Sucrose Bl B dear + Starch hydrolysis Very pos Pos Arginine Lecithinase Neg Lysine 5 yellow N Near Lipase Ornithine 1 Pas Base Control New Rapid PYR Neg Rapid LAP 105 Acetamide New Pos pos Esculin Rapid ESC Neg Gelatin )as PUS Sensitivity to: Indole 10 day (+) Neg Penicillin (10 U) Malonate GR Pos 6R PAD Vancomycin (30 ug) 125 125 Urea M2 h POS ltpink slant Colistin (10 mcg) loR. 6.5% NaCL Neg Neg 10% Lactose Polymyxin B (300 U) 6R 6R N Ne ONPG Pos Pos Growth 42º TSA Neg Neb

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 147: Chryseobacterium gleum isolate 2-of-4.

# 14.3 Chryseobacterium hominis

Over the course of ASHEX clinical-isolate collection, nine individual isolates of Chryseobacterium hominis were analyzed. Zero of the nine recorded results are pictured in this subsection.

Test	+	_	Raw%	W95%	Test	+	_	Raw%	W95%
Motility	1	8	11.11	22.74	$H_2S$	0	9	0.00	14.96
Oxidase	9	0	100.00	85.04	Pseudo P	0	9	0.00	14.96
Catalase	8	1	88.89	77.26	Pseudo F	0	9	0.00	14.96
Yellow Pigment	1	8	11.11	22.74	NO <sub>3</sub> Reduced	1	8	11.11	22.74
Pink Pigment	0	9	0.00	14.96	Gas from $NO_3$	1	6	14.29	26.94
Beta Hemolysis	2	5	28.57	36.16	NO <sub>2</sub> Reduced		9	0.00	14.96
Growth on Mac	2	7	22.22	30.53	Gas from $NO_2$	0	7	0.00	17.72
Dnase	2	7	22.22	30.53	OF Fructose	1	8	11.11	22.74
Starch	7	2	77.78	69.47	OF Dextrose	7	2	77.78	69.47
Lecithinase	0	7	0.00	17.72	OF Lactose	0	9	0.00	14.96
Lipase	0	7	0.00	17.72	OF Maltose	6	3	66.67	61.68
PYR	1	6	14.29	26.94	OF Mannitol	0	9	0.00	14.96
LAP	7	0	100.00	82.28	OF Xylose	0	9	0.00	14.96
ESC Spot Test	3	4	42.86	45.39	OF Sucrose	1	6	14.29	26.94
Penicillin (10U)	7	2	77.78	69.47	Arginine	0	9	0.00	14.96
Vancomycin $(30\mu g)$	9	0	100.00	85.04	Lysine	0	9	0.00	14.96
Colistin $(10\mu g)$	0	9	0.00	14.96	Ornithine	0	9	0.00	14.96
Polymyxin B (300U)	0	7	0.00	17.72	Acetamide	0	9	0.00	14.96
					Esculin	9	0	100.00	85.04
					Gelatin	4	5	44.44	46.11
					Indole	9	0	100.00	85.04
					Malonate	0	9	0.00	14.96
					PAD	4	5	44.44	46.11
					Urea 2 hrs.	1	8	11.11	22.74
					Urea 48 hrs.	2	7	22.22	30.53
					6.5% NaCl	3	6	33.33	38.32
					10% Lactose	0	9	0.00	14.96
					ONPG	0	9	0.00	14.96
					Growth 42°C	3	6	33.33	38.32

Table 43: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as  $n_+/(n_+ + n_-)$ , where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which shifts raw percentages towards 50% with a strength dependent on the total number of test occurrences. The four antibiotic tests at the bottom of Column 1 are sensitivity tests where a positive result indicates sensitivity to the drug.

### 14.4 Chryseobacterium indologenes

Over the course of ASHEX clinical-isolate collection, 35 individual isolates of Chryseobacterium indologenes were analyzed. Nine of the 35 recorded results are pictured in this subsection.

Test	+	_	Raw%	W95%	Test	+	_	Raw%	<b>W95</b> %
Motility	0	35	0.00	4.95	H <sub>2</sub> S	0	35	0.00	4.95
Oxidase	33	2	94.29	89.91	Pseudo P	0	35	0.00	4.95
Catalase	34	1	97.14	92.48	Pseudo F	0	35	0.00	4.95
Yellow Pigment	26	9	74.29	71.88	NO <sub>3</sub> Reduced	12	23	34.29	35.84
Pink Pigment	0	35	0.00	4.95	Gas from $NO_3$	0	25	0.00	6.66
Beta Hemolysis	3	20	13.04	18.33	NO <sub>2</sub> Reduced	13	22	37.14	38.41
Growth on Mac	3	32	8.57	12.67	Gas from $NO_2$	0	25	0.00	6.66
Dnase	18	17	51.43	51.29	OF Fructose	21	14	60.00	59.01
Starch	16	19	45.71	46.14	OF Dextrose	21	14	60.00	59.01
Lecithinase	0	27	0.00	6.23	OF Lactose	0	35	0.00	4.95
Lipase	26	1	96.30	90.53	OF Maltose	23	12	65.71	64.16
PYR	1	15	6.25	14.72	OF Mannitol	0	35	0.00	4.95
LAP	16	0	100.00	90.32	OF Xylose	5	30	14.29	17.82
ESC Spot Test	6	10	37.50	39.92	OF Sucrose	0	22	0.00	7.43
Penicillin (10U)	4	31	11.43	15.24	Arginine	0	35	0.00	4.95
Vancomycin $(30\mu g)$	31	4	88.57	84.76	Lysine	0	35	0.00	4.95
Colistin $(10\mu g)$	0	35	0.00	4.95	Ornithine	0	35	0.00	4.95
Polymyxin B (300U)	0	25	0.00	6.66	Acetamide	0	35	0.00	4.95
					Esculin	29	6	82.86	79.61
					Gelatin	35	0	100.00	95.05
					Indole	35	0	100.00	95.05
					Malonate	3	32	8.57	12.67
					PAD	6	27	18.18	21.50
					Urea 2 hrs.	0	35	0.00	4.95
					Urea 48 hrs.	8	27	22.86	25.54
					6.5% NaCl	2	33	5.71	10.09
					10% Lactose	0	27	0.00	6.23
					ONPG	7	19	26.92	29.89
					Growth 42°C	14	21	40.00	40.99

Table 44: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as  $n_+/(n_+ + n_-)$ , where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which shifts raw percentages towards 50% with a strength dependent on the total number of test occurrences. The four antibiotic tests at the bottom of Column 1 are sensitivity tests where a positive result indicates sensitivity to the drug.

	Final Identification: Comments: Deep Yellow on St Chryseobac	- 11 A D 11 [27]
Уес	Gram Morph. Gram Test 24h Motility Wet Prep New Sm Robs Motility Deep New Sm Robs Motility Deep New New Sm Robs New Sm Robs POS + Oxidase POS + Catalase POS PLATES 24 A8h 7-day "DAY Odor Moth BAUS Pigment on swab DARE ORANGE + Pigment on BAP RAMGE Morphology on BAP Smoth-Shimmy - Beta hemolysis New	$Z H$ $M D A H$ $M 2 T$ $M E G$ Tubes $48 h$ $T day$ $KIA$ $K/N c$ $-H_2S$ $NeG$ $-H_2S$ $NeG$ $-Pseudo P$ $NeG$ $-Pseudo F$ $NeG$ $-NO_3$ reduced $NeG$ $-NO_3$ reduced $NeG$ $-NO_2$ reduced $NeG$ $-Gas from NO_2$ $NeG$ $-NO_2$ reduced $NeG$ $-Gas from NO_2$ $NeG$ $-Gas from NO_2$ $NeG$ $-OF$ Fructose $GRN$ $-OF$ Eactose $BLUE$ $-OF$ Lactose $BLUE$ $-OF$ Maltose $GRN$ $-OF$ Mannitol $BLUE$ $-OF$ Sucrose $BLUE$
$\cap$	- Starch hydrolysis $Nele$ - Lecithinase $PeG$ / + Lipase $PeG$ / - Rapid PYR $Nele$ + Rapid LAP $PoG$ / - Rapid ESC $Nele$ - Rapid ESC $Nele$ - Rapid ESC $Nele$ - Penicillin (10 U) $R$ $R$ - Penicillin (10 U) $R$ $R$ - Colistin (10 mcg) $R$ $R$ - Polymyxin B (300 U) $R$ $R$	ArginineNecNecLysine $\neg$ Ornithine $\neg$ Base Control $\checkmark$ AcetamideNetMalonate $\neg$ PADNetNeteNetOurse $\neg$ NeteNetNeteNetNonateNetNeteNetNonateNetNeteNetNonateNetNeteNetNeteNetNeteNet

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 148: Chryseobacterium indologenes isolate 1-of-35.

	Date Inoculated:	4-8-08		Paul tos complete	pet of papers "huluk
	Final Identification:	ChryseobAc	terium INN	lologenes	P.S. 4/13/00
	Comments: ORA	INGE ON ALL,	TesiA	/	· / · / · b
+ + - + - + - +	Gram Morph. Gram Test Motility Wet Prep Motility Deep Oxidase Catalase PLATES Odor Pigment on swab	<u>486</u> <u>Nec</u> Short, med, Lor <u>Nec</u> Short, med, Lor <u>Nec</u> <u>Pos</u> <u>Pos</u> <u>Pos</u> <u>ABh</u> 7 day <u>Noth BAUC</u> <u>Apricot</u> <u>Thucerine yellowi</u> <u>RAISED Shinny orauge</u> <u>Nec</u> <u>Pos</u> <u>Nec</u> <u>Pos</u> <u>Nec</u> <u>Pos</u> <u>Nec</u> <u>Nec</u> <u>Nec</u> <u>R</u> <u>R</u> <u>R</u> <u>R</u> <u>S-14</u> <u>9</u> <u>R</u> <u>R</u>	Tubes KIA H <sub>2</sub> S 	4/13 5 Dity 4/17 48 h 7 day, K/NC K/K 5619ht H25 56 NEG NEG NEG NEG Tim, Battle NEG	e RN e (5-DAYS)
$\frown$			← ONPG ← Growth 42 <sup>0</sup>	New New New New	12. %

Note: All biochemical tests (except where noted) are incubated at 30°C and read after 48 hrs. incubation and again at 7 days.

Figure 149: Chryseobacterium indologenes isolate 2-of-35.

Dat	e Inoculated:	4-8-08		Paultosa	implite pit of pay	ens "hulu k
Fina	al Identification:	Chryseobac te	RILLY INK	1.		3/08
Cor	mments: ORA	NGE ON ALL ME	edi A	/		
				4/13 5DAY	4/17	M
	am Morph.		Tubes	<u>48 h</u> <u>7</u>	day.	
Gra	am Test	48h	KIA —H <sub>2</sub> S	K/NC	SLIGHT H20	
Mo	tility Wet Prep	Nell Short, med, Long Roos	1120	<u>&gt;ciqii 112</u>	52 0111 112	
- Mo	tility Deep	Nel	Pseudo P		Nea	
+ Oxi	idase	Pos	Pseudo F	New	New	
+ Cat	talase	Pos	NO <sub>3</sub> reduced		Nec-	
PL.	ATES	<u>48 h</u> <u>7 day</u>	Gas from NO <sub>3</sub> NO <sub>2</sub> reduced	Nec	NCG- KIEG	
Ode	or	MOTA BALLS	Gas from NO <sub>2</sub>	TINY Bubble	NEG	
CM 7	ment on swab	APRICOT		sue	BLUE	
yel-Pig	ment on BAP 7	TAGERINE Yellow	<ul> <li>OF Fructose</li> <li>OF Dextrose</li> </ul>		Hue/GRN	
,		RAISED ShNNY ORANGE Yell			BLac	
'	ta hemolysis	Nel Pos	<ul> <li>OF Maltose</li> <li>OF Mannitol</li> </ul>		BLUE/GRN =	1994 -
	owth on Mac	Nela Nela	- OF Xylose		BLUE	
- DN	Vase hydrolysis	No growth-Neb	<ul> <li>OF Sucrose</li> </ul>		BLUE	
	rch hydrolysis	NEG WT	- Arginine	New	Nela	
	cithinase	New New	Lysine			
+ Lip		Pos! pos	<ul> <li>Ornithine</li> <li>Base Control</li> </ul>			
	pid PYR	Nel	Duse control			
, .	pid LAP	Pos !!	- Acetamide	POS -	POS	
Ra	pid ESC	NEL	+ Esculin + Gelatin	Pos	POS	
	nsitivity to:	p p t	A Indole	POS	POS (5DAY	s)
	enicillin (10 U)	$-\frac{K}{2}$		Neb-	NEG	
	ancomycin (30 ug)	5-14 9 -	/ Urea/ <u>1/26</u> 2 h	New	NEW	لي الا
	Colistin (10 mcg)	$\underline{R}$ $\underline{R}$	- 6.5% NaCL	New	NeG	
P	olymyxin B (300 U)		-10% Lactose ONPG	New	NEG	
$\bigcirc$			Growth 42°		Neb- 12	100

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 150: Chryseobacterium indologenes isolate 3-of-35.

Date Inoculated:

Comments:

Final Identification:

-20-2/2/10 P.S. sedercterium indologenes ORTNER FRUITY

Tubes

KIA

H<sub>2</sub>S

2/1/0

7 day

INC

New

K

NPI

12 DAYS

Gram Morph. 24h Gram Test med. real S NeG Motility Wet Prep NeG Motility Deep POS Oxidase POS Catalase <u>48 h</u> PLATES Ereit Odor ORANG Pigment on swab Pigment on BAP ORANGE Smooth-Shinn Morphology on BAP Neb Beta hemolysis Neb Growth on Mac DNase hydrolysis Neb Starch hydrolysis NCO Lecithinase Neb PO S Lipase Nelo Rapid PYR POS Rapid LAP βĐ Rapid ESC Sensitivity to: Penicillin (10 U) 5 Vancomycin (30 ug)

NeG Pseudo P Nece NEG \_ New Pseudo F Neb POS (AFTER ZINC) + NO3 reduced NeG 2 day 12 DAY9 -Gas from NO3 Sa Bubble Pos +NO2 reduced ATEL Gas from NO2 Nele NEG Yel **OF** Fructose BLUE OF Dextrose eL BLUC OF Lactose OF Maltose Yel **OF** Mannitol Neb OF Xylose Blue Nel **OF** Sucrose Buce POS ALL Yellow Arginine Neb Nela Lysine P05 . Ornithine Base Control Acetamide NeG Vec Pos ! DO Esculin Gelatin POS +Indole 0 Malonate Nel POS PAD NeG SCANT & BUTT POG Urea Neloz h W+ SLAN R Colistin (10 mcg) 6.5% NaCL Wt POS 10% Lactose NeG R Nel Polymyxin B (300 U) ONPG Po Nel Growth 42<sup>°</sup> PO POS

Note: All biochemical tests (except where noted) are incubated at 30°C and read after 48 hrs. incubation and again at 7 days.

Figure 151: Chryseobacterium indologenes isolate 4-of-35.

Date Inoculated: 3				t
Final Identification:	CHRYSEOBAC	TERIUM	IND	JOGENES
Comments: <u>Yell</u>	ow ON ALC meding			
BRIG	HT ORANGE ON EGG YO	LK 95TAR	eh	
Gram Morph.		Tubes	5/14 48 h	7 day
Gram Test	48 h	KIA	EINC	<u>KIK</u>
Motility Wet Prep	New-son Rods	$H_2S$	Neo	<u>9116HT</u> H2S
Motility Deep	Neb Neb	Pseudo P	Nec	Nele
Oxidase	Pos	Pseudo F	NCG	NEC
Catalase	STRONG POS	NO <sub>3</sub> reduced		
PLATES	<u>48 h 7 day</u>	Gas from NO <sub>3</sub> NO <sub>2</sub> reduced	NeG	Nels
Odor	Moth BALLS DARK	Gas from NO <sub>2</sub>	New	Nelon
Pigment on swab	BROWN BROWN	OF Fructose	BLUE	GRN /BLUE
Pigment on BAP	Yellow YELLOW	OF Pructose OF Dextrose	GRN	GRN/BLUE
Morphology on BAP	Smooth SMOUTH	OF Lactose	BLUE	BLUC GRN/BLOC
Beta hemolysis	POS POS	OF Maltose OF Mannitol	<u>GRN</u> Baue	GRN/BLUE Bluel
Growth on Mac	No 620WTU	OF Xylose	Blue	Blue
DNase hydrolysis	pos pos	OF Sucrose	BLUC	Bucc
Starch hydrolysis	POS KOS	Arginine	NCG	NEG
Lecithinase	POS POG	Lysine Ornithine		_1
Lipase	POS POG NEG	Base Control		
Rapid PYR	Pos	Acatomida	NEG-	Neu-
Rapid LAP Rapid ESC	NEG (BROWN PIEMT)	Acetamide Esculin	Pes	Por !
Sensitivity to:		Gelatin	POS	705
Penicillin (10 U)	RR	Indole Malonate	Nel	Nela
Vancomycin (30 ug)	5-11 5-10mm	PAD	NCG	
Colistin (10 mcg)	RR	Urea <u>M</u> 2 h 6.5% NaCL	Nec	Shight PINE SLANT
Polymyxin B (300 U)	RR	10% Lactose	Neo	NEG
2 00 00		ONPG Growth 42 <sup>0</sup>	Pes	Peg Dog
		010wtll 42	100	1-1

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 152: Chryseobacterium indologenes isolate 5-of-35.

Date Inoculated: 5	-27-10					
Final Identification:	Ch	RY Seo bac	terium,	INdoL	ogenes	P.S.
Comments: <u>Yel</u>		RANGE ON				6/4/10
BRIG	SHT ORM	ANGE ON SI	threh & Es	se Yolle	@ 7 DAYS	
			/	244	6/4/10	
Gram Morph.			<u>Tubes</u>	48 h	7 day	
Gram Test	24h		KIA H <sub>2</sub> S	NEG	Nelo	
Motility Wet Prep	New . M	ed Roals	1120		1101	
Motility Deep	Nela	Neb	Pseudo P	Nela	NEG	
Oxidase	Pos		Pseudo F	Neco	New	
Catalase	STRONG-	205	NO <sub>3</sub> reduced		Nela	
PLATES	<u>48 h</u>	<u>7 day</u>	Gas from NO <sub>3</sub> NO <sub>2</sub> reduced	Neb	NCC- NCC	
Odor	Shight ocla	n <u>R</u>	Gas from NO <sub>2</sub>	Nelo	NEle	
Pigment on swab	COLANG E			Buce	GRN/BLAS	
Pigment on BAP	YEL-ORA	No.R	OF Fructose OF Dextrose	GRN	GRN/BLUC	
Morphology on BAP	Smooth		OF Lactose	BLUE	Deep Blue	,
Beta hemolysis	Nebr		OF Maltose OF Mannitol	BLUE	<u>bref</u> BLUC	
Growth on Mac	NEG - N	O GROWTH - NE	OF Xylose	BLUE	pep Bue	
DNase hydrolysis	NEG	NEG	OF Sucrose	Blue	DeepAure	
Starch hydrolysis	Wt	pos	Arginine	NEG	Nela	
Lecithinase	NEO	Nea	Lysine			
Lipase	305	POS!	Ornithine Base Control			
Rapid PYR	Neg	(w + ?)	Dase Control			
Rapid LAP	POS!		Acetamide	Neb	Nea	
Rapid ESC	Pos		Esculin Gelatin	805	103 ! Pos !	
Sensitivity to:	0		Indole		POS	
Penicillin (10 U)	<u></u>	K	Malonate PAD	NEG	NEG	
Vancomycin (30 ug)	5-11		Urea New h	Nele	POS QUANT	-
Colistin (10 mcg)	R	_ <u>_</u>	6.5% NaCL	Nela	NEG	
Polymyxin B (300 U)	R	K	10% Lactose ONPG	New	POS	
			Growth 42 <sup>°</sup>	Nel	Neb	

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Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 153: Chryseobacterium indologenes isolate 6-of-35.

Date Inoculated:

Final Identification:

Comments:

11-15-10 ion: <u>Chryseobacterium indologenes PS/</u> MUGTARD YELLOW ON ALL MEDIA

				30	11/23/10	
	Gram Morph.	-	Tubes	481	$\frac{7 \text{ day}}{1}$	
	Gram Test	72h	KIA H <sub>2</sub> S	KINC	FIR	w)
	Motility Wet Prep	Nelo - Med Robs	1120	1000		
	Motility Deep	NEG NEG	Pseudo P	Nelo	New	
	Oxidase	Pes	Pseudo F	Nela	Neo	
·	Catalase	STRONG POS	NO <sub>3</sub> reduced		Nec	
	PLATES 30	<u>48 h 7 day</u>	Gas from $NO_3$ $NO_2$ reduced	Neb	Nela	
	Odor	ATTON A MOST BALLS	$Gas from NO_2$	Nela	Nela	
	Pigment on swab	ORANGE	0.0.0.0	101	Val	
	Pigment on BAP	DREP Yellow	OF Fructose OF Dextrose	GRN	Yel	
	Morphology on BAP	Dea yellon beil yellow	OF Lactose	Buce	Buc	
	Beta hemolysis Nels		OF Maltose OF Mannitol	GRN BLUE	-Yel Blue	
	Growth on Mac	NEG NEG	OF Xylose	GRN	BLUE	
	DNase hydrolysis	POS POS	OF Sucrose	BLUE	BLEE	
	Starch hydrolysis	N+ POS	Arginine	Nela	Nec	
	Lecithinase	NEL NEG	Lysine			
	Lipase	Pos Pos	Ornithine Base Control	-1-		
	Rapid PYR	NeG	Dase Control	¥		
	Rapid LAP	POS	Acetamide Esculin	NRG	NeG- POS	
	Rapid ESC	POS	Gelatin	Pos	POS	4
	Sensitivity to:		Indole		105	
	Penicillin (10 U)	<u>K</u> <u>K</u>	Malonate PAD	POS	NEG	
	Vancomycin (30 ug)	<u>3-10.5</u>	Urea <u>Ve62</u> h	Nece	Nea	
	Colistin (10 mcg)	K	6.5% NaCL 10% Lactose	NEG	NEG	
	Polymyxin B (300 U)	K_R	ONPG	NEG	NºCG (LIGHT YELL	w6.
			Growth 42°	Nel	New	

Note: All biochemical tests (except where noted) are incubated at 30°C and read after 48 hrs. incubation and again at 7 days.

Figure 154: Chryseobacterium indologenes isolate 7-of-35.

Date Inoculated:	11-9-11			
Final Identification:	Chayseo bacterium	IN do La	genes	12/1/11 P.S.
Comments: YeL	/	- MediA		
AS	STRONG MODAL : L	0 w 190 €	~9190 W	BM Stonyly polls
				11/17/11 8 DAYS
Gram Morph.		Tubes	$\frac{48 \text{ h}}{(1000 \text{ m})^2}$	$\frac{7 \text{ day}}{100000000000000000000000000000000000$
Gram Test	24h	KIA H-S	FINE	KIPIO
Motility Wet Prep	New- Small to Medicy New- Rods	1125	Nec	
Motility Deep	Nele Nel	Pseudo P	Nec	NeG
Oxidase	Pos	Pseudo F	Nel-	Nec
Catalase	STRONG POS	NO3 reduced		DOS AGGE ZINC
PLATES	<u>48 h</u> <u>7 day</u>	Gas from NO <sub>3</sub>	New	NEG
Odor	NONE	$NO_2$ reduced Gas from $NO_2$	Nel	POS Nec-
Pigment on swab	ORANGE	245 11 5111 11 62		
Pigment on BAP	1el/ORANGe	OF Fructose	BLUR	Bue
Morphology on BAP	Riebberry - sticks to AgAR	OF Dextrose OF Lactose		BLUE/GRN BLUE
Beta hemolysis	Nela	OF Maltose		Bue/6 Reen
Growth on Mac	NEG NEG	OF Mannitol		Bille
DNase hydrolysis	805 POS	OF Xylose OF Sucrose		BLUE
Starch hydrolysis	Nels W+			
Lecithinase	NCG NeG	Arginine Lysine	Nele	Nela
Lipase	POS POS	Ornithine		
Rapid PYR	New	Base Control	\	
Rapid LAP	POS!	Acetamide	Nec-	Nela
Rapid ESC	Nel	Esculin	Pos	Pos
Sensitivity to:		Gelatin –Indole	105	
Penicillin (10 U)	RRT	Malonate	Nel	NEG
Vancomycin (30 ug)	5-12 5	PAD	Neo	
Colistin (10 mcg)	RR	Urea <i>N<u>((</u>2</i> h 6.5% NaCL	NEG NEG	NEG
Polymyxin B (300 U)	RR	10% Lactose	Nele	Nece
(500 C)		ONPG	Nille	Nele
		Growth 42 <sup>0</sup>	Nel	NEC

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 155: Chryseobacterium indologenes isolate 8-of-35.

Date Inoculated:	6-21-06				- 1)
Final Identification	: Chryseobac	terner ind	chegen	es P.S.	7/21/06
Comments:	ARTE YELLOW ON G	TARCH EGGYOLE			_
Gram Morph.		Tubes	<u>48 h</u>	6/28 <u>7 day</u>	
Gram Test	48h	$-H_2S$	R/NC NRG	NEI	
Motility Wet Prep	NEG- Shout-Role	5			
- Motility Deep	New Neb	- Pseudo P - Pseudo F	Nel-	Nec	7/20
+ Oxidase	Pos	-	NCE	<u>NCO</u>	Ans.
+ Catalase	STRONG POS	- + NO <sub>3</sub> reduced		POS-AFFER	ZINCIUS
PLATES	<u>48 h</u> <u>7 day</u>	$- Gas from NO_3$ $+ NO_2 reduced$	Neu	POS	POS
Odor	AMONIA	Gas from NO <sub>2</sub>	Neb	Sm Bubble	Nea
Pigment on swab	ORANGe	- OF Fructose	Brue	BLUE/6 PW	
YeL Pigment on BAP	Yel-DRANGE	- OF Dextrose		BLUC/GRN	
Morphology on B		- OF Lactose - OF Maltose		BLUE/GRN	
- Beta hemolysis	New Pos	- OF Mannitol		DARE BLUE	
Growth on Mac	<u>Nele</u> <u>Nele</u> Nele <u>But No hali</u>	- OF Xylose		DARTE BLUE	
<ul> <li>DNase hydrolysis</li> </ul>	A			DARE BLUE	
+ Starch hydrolysis - Lecithinase		Arginine	NRG	Nea	
+ Lipase	New New Pos Pos	Gut te-Lysine white-Ornithine			
-Rapid PYR	NEG	Base Control			
+ Rapid LAP	Pos	PINE Acetamide	NeG-	Nec-	
- Rapid ESC	New	+ Esculin	POS	POS	
Sensitivity to:	NCO	+ Gelatin	POS	Pos! POS	
Penicillin (10 U)	RR	H Indole Malonate	NEG	NEG	
Vancomycin (30		- PAD	Nela		T PINE)
Colistin (10 mcg		- Urea <u>Mer</u> 2 h - 6.5% NaCL	New	POS CSLA	
<ul> <li>Polymyxin B (30</li> </ul>		- 10% Lactose	NEG	NEL	
		- ONPG - Growth 42 <sup>0</sup>	NEG	POS	
		GIOWUI 42	Cinhibited	) NEC	
NT. to All Lines		materil and in anhateri	at 2000 and	used often 10 1	220

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 156: Chryseobacterium indologenes isolate 9-of-35.

#### 14.5 Chyrseobacterium oranimense

Over the course of ASHEX clinical-isolate collection, one individual isolate of Chryseobacterium oranimense was analyzed. The associated biochemical result form is presented here.

Test	+	_	Raw%	W95%	Test	+	_	Raw%	W95%
Motility	0	1	0.00	39.67	$H_2S$	0	1	0.00	39.67
Oxidase	1	0	100.00	60.33	Pseudo P	0	1	0.00	39.67
Catalase	0	1	0.00	39.67	Pseudo F	0	1	0.00	39.67
Yellow Pigment	1	0	100.00	60.33	NO <sub>3</sub> Reduced	0	1	0.00	39.67
Pink Pigment	0	1	0.00	39.67	Gas from $NO_3$	0	1	0.00	39.67
Beta Hemolysis	0	1	0.00	39.67	NO <sub>2</sub> Reduced	0	1	0.00	39.67
Growth on Mac	0	1	0.00	39.67	Gas from $NO_2$	0	1	0.00	39.67
Dnase	1	0	100.00	60.33	OF Fructose	0	1	0.00	39.67
Starch	1	0	100.00	60.33	OF Dextrose	0	1	0.00	39.67
Lecithinase	0	1	0.00	39.67	OF Lactose	0	1	0.00	39.67
Lipase	0	1	0.00	39.67	OF Maltose	0	1	0.00	39.67
PYR	0	1	0.00	39.67	OF Mannitol	0	1	0.00	39.67
LAP	1	0	100.00	60.33	OF Xylose	0	1	0.00	39.67
ESC Spot Test	0	1	0.00	39.67	OF Sucrose	0	1	0.00	39.67
Penicillin (10U)	0	1	0.00	39.67	Arginine	0	1	0.00	39.67
Vancomycin $(30\mu g)$	1	0	100.00	60.33	Lysine	0	1	0.00	39.67
Colistin $(10\mu g)$	0	1	0.00	39.67	Ornithine	0	1	0.00	39.67
Polymyxin B (300U)	0	1	0.00	39.67	Acetamide	0	1	0.00	39.67
					Esculin	1	0	100.00	60.33
					Gelatin	1	0	100.00	60.33
					Indole	1	0	100.00	60.33
					Malonate	1	0	100.00	60.33
					PAD	0	1	0.00	39.67
					Urea 2 hrs.	0	1	0.00	39.67
					Urea 48 hrs.	0	1	0.00	39.67
					6.5% NaCl	0	1	0.00	39.67
					10% Lactose	0	1	0.00	39.67
					ONPG	0	1	0.00	39.67
					Growth 42°C	0	1	0.00	39.67

Table 45: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as  $n_+/(n_+ + n_-)$ , where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which shifts raw percentages towards 50% with a strength dependent on the total number of test occurrences. The four antibiotic tests at the bottom of Column 1 are sensitivity tests where a positive result indicates sensitivity to the drug.

Date Inoculated:	Th 7/27/17			
Final Identification:	Chryseobacterium	orgnimen	se	
Comments: Lab 12:	Gram regetive red, non-lactose	Fernester - M	ost closely	oranimense.
Maldi: Chry	septaderiur oranimense 1.	85 1.84		
Gram Morph. Gram Test Motility Wet Prep Motility Deep Oxidase	N Hdays Neg Vern store Nec Pot with	Tubes KIA H <sub>2</sub> S Pseudo P Pseudo F	<u>48 h</u> 10 J <u>Neg</u> 2 ve @ Weya <u>N</u> N	<u>7 day</u> <u>K/K</u> <u>Neg</u> <u>Neg</u>
Catalase PLATES	<u>Alth</u> 4day 7 day	NO <sub>3</sub> reduced Gas from NO <sub>3</sub> NO <sub>2</sub> reduced Gas from NO <sub>2</sub>	X	Neg- Neg- Red-Neg- Neg-
Pigment on swab Pigment on BAP Morphology on BAP Beta hemolysis Growth on Mac DNase hydrolysis	averge purplemarange ovange golden ovange round, wet wond, wet Neg Neg Neg Neg wet? weak (P)	OF Fructose OF Dextrose OF Lactose OF Maltose OF Mannitol OF Xylose OF Sucrose	Gr - Gr-yei Beue - Gr - Blue - Gr - Ble -	Gr - Bene - Gr - Bene - Gr - Bene -
Starch hydrolysis Lecithinase Lipase	Set +? Pos (F) Neg- Neg- Neg- Neg-	Arginine Lysine Ornithine Base Control		Neg- Neg- Neg- Neg-
Rapid PYR Rapid LAP Rapid ESC Sensitivity to:	Pos (P) N	Acetamide Esculin Gelatin Indole	Pos é	AX D
Penicillin (10 U) Vancomycin (30 ug Colistin (10 mcg) Polymyxin B (300 U	6R 6R	Malonate PAD Urea <u>1</u> 2 h 6.5% NaCL 10% Lactose ONPG Growth 42°	Neg Neg N N N N N N	Pos (f) X und Neg very server color Neg Neg Neg Neg

Note: All biochemical tests (except where noted) are incubated at 30°C and read after 48 hrs. incubation and again at 7 days.

Figure 157: Chryseobacterium oranimense isolate 1-of-1.

## 15 GENUS COMAMONAS 15.1 Comamonas kerstersii

Over the course of ASHEX clinical-isolate collection, nine individual isolates of Comamonas kerstersii were analyzed. Three of the nine recorded results are pictured in this subsection.

Test	+	-	Raw%	<b>W95</b> %	Test	+	_	Raw%	<b>W95</b> %
Motility	9	0	100.00	85.04	$H_2S$	0	9	0.00	14.96
Oxidase	9	0	100.00	85.04	Pseudo P	0	9	0.00	14.96
Catalase	2	7	22.22	30.53	Pseudo F	0	9	0.00	14.96
Yellow Pigment	0	9	0.00	14.96	NO <sub>3</sub> Reduced	9	0	100.00	85.04
Pink Pigment	0	9	0.00	14.96	Gas from NO <sub>3</sub>	0	9	0.00	14.96
Beta Hemolysis	2	7	22.22	30.53	NO <sub>2</sub> Reduced	1	8	11.11	22.74
Growth on Mac	9	0	100.00	85.04	Gas from $NO_2$	0	9	0.00	14.96
Dnase	0	9	0.00	14.96	OF Fructose	0	9	0.00	14.96
Starch	0	9	0.00	14.96	OF Dextrose	0	9	0.00	14.96
Lecithinase	0	9	0.00	14.96	OF Lactose	0	9	0.00	14.96
Lipase	0	9	0.00	14.96	OF Maltose	0	9	0.00	14.96
PYR	0	9	0.00	14.96	OF Mannitol	0	9	0.00	14.96
LAP	9	0	100.00	85.04	OF Xylose	0	9	0.00	14.96
ESC Spot Test	0	9	0.00	14.96	OF Sucrose	0	9	0.00	14.96
Penicillin (10U)	1	8	11.11	22.74	Arginine	0	9	0.00	14.96
Vancomycin $(30\mu g)$	0	9	0.00	14.96	Lysine	0	9	0.00	14.96
Colistin $(10\mu g)$	7	2	77.78	69.47	Ornithine	0	9	0.00	14.96
Polymyxin B (300U)	9	0	100.00	85.04	Acetamide	0	9	0.00	14.96
					Esculin	1	8	11.11	22.74
					Gelatin	0	9	0.00	14.96
					Indole	0	9	0.00	14.96
					Malonate	2	7	22.22	30.53
					PAD	2	7	22.22	30.53
					Urea 2 hrs.	0	9	0.00	14.96
					Urea 48 hrs.	0	9	0.00	14.96
					6.5% NaCl	0	9	0.00	14.96
					10% Lactose	0	9	0.00	14.96
					ONPG	0	9	0.00	14.96
					Growth 42°C	9	0	100.00	85.04

Table 46: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as  $n_+/(n_+ + n_-)$ , where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which shifts raw percentages towards 50% with a strength dependent on the total number of test occurrences. The four antibiotic tests at the bottom of Column 1 are sensitivity tests where a positive result indicates sensitivity to the drug.

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Wiki pedia an	
Cod+ Not+	
Subgrof C. terriguna m: COMAMONAS LERSTERS	1 Inter DE
Comprising Received	7/8/16 P.S.
Kieman Mild: Comamares Karskysii 2.047	
430 C. ku - )	
C.kn + / T	7/8/16
Tubes	48 h 7 day
Gram Test KIA	KINC KIK V
Motility Wet Prep H <sub>2</sub> S	Neg_ Neg V
Motility Deep As Pseudo P	Near Near V
Oxidase Pos Pseudo F	Neg Neg V
Catalase New + NO3 reduces	d X and -Dos
PLATES 48 h 7 day — Gas from N	O3 Ner Ner -
Odor Pos-Corn Pos - Gas from N	
Pigment on swab U. peach buf peach	2 New mybubble Neg
Pigment on BAP whore who has OF Fructose	
Morphology on BAP rd wet rd wet OF Lactose	
Beta hemolysis Aleg New OF Maltose	
Growth on Mac Pos Ind gay rd gray OF Mannito	
DNase hydrolysis New New OF Sucrose	
Starch hydrolysis Neg Negr	
Lecithinase Neg Neg Lysine	Neg Nog
Lipase New Now Ornithine	Neg -
Rapid PYR Nes Base Contro	ol Nog_ ~
Rapid LAP <u>Pos</u> Acetamide	New New ~
	05- bilk bull, clean POS
Sensitivity to: Gelatin	Negstons Neg
Penicillin (10 U) 6 C 6 Malonate	Nuz POS (WEAK)
Vancomycin (30 ug) UZ UR PAD	New X -
Colistin (10 mcg) $q \leq q \leq q \leq 6.5\%$ NaCl	
Polymyxin B (300 U) 145 145 / 10% Lactor	CLE ARAC 110
ONPG	pbst Pos-oranger
Growth 42 <sup>6</sup>	IN FLORENT
Note: All biochemical tests (except where noted) are incubate incubation and again at 7 days.	ed at 30°C and read after 48 hrs. Interface
Ripert	10% lactose Neg CIdaup
	ONPG Nige I days

Figure 158: Comamonas kerstersii isolate 1-of-9.

Clini C. Kerste 2.14 Refer	Nonfermenting Gram-Negative Rods	W
Reference No./Name: Date Inoculated: Final Identification: Comments:	A1311 - CDC COLLECTION 10-26-05	
Gram Morph. Gram Test Motility Wet Prep 444 Motility Deep Oxidase Catalase PLATES Odor Pigment on swab Pigment on BAP Morphology on BAP Beta hemolysis Growth on Mac DNase hydrolysis Starch hydrolysis Starch hydrolysis Lecithinase Lipase Rapid PYR Rapid LAP Rapid ESC Sensitivity to: Penicillin (10 U) Vancomycin (30 ug) Colistin (10 mcg)	Image: Strate in the image: Strate in th	WTERS FACE

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}C$  and read after 48 hrs. incubation and again at 7 days.

Figure 159: Comamonas kerstersii isolate 2-of-9.

1	Date Inoculated:	M 11/21/14				_
	Final Identification:	No definite 30 tube (1	0.			
	Comments: Lab 1	D: Comomonas Kerstersi	Maldi 2	20 2.29	L .	
				2015-	6 #SG	
	6					
	Gram Morph.		<u>Tubes</u> KIA	$\frac{48 \text{ h}}{V}$	7 day	
	Gram Test		H <sub>2</sub> S	N/A-	NCG.	
	Motility Wet Prep			- Coope		
	Motility Deep	Neg-48 Neg- POS	Pseudo P Pseudo F	-Nj	Llog-	
	Oxidase	fas	Pseudo F		Neg	
	Catalase	Neg	NO3 reduced	X	Red - PUS (+)	
	PLATES	<u>48 h</u> <u>7 day</u>	Gas from NO <sub>3</sub>	N	Neg-	
	Odor	slight slight	$NO_2$ reduced Gas from $NO_2$	- <u>X</u>	Neg	
	Pigment on swab	buff ten				
	Pigment on BAP	white wh	OF Fructose	G- Nog-	Bl. G- Neg	
	Morphology on BAP	rand rand	OF Dextrose OF Lactose		Ner	
	Beta hemolysis	Nea Neg	OF Maltose		Neg	
	Growth on Mac	Pox-clean Pos(P)	OF Mannitol		Neg	
	DNase hydrolysis	New New	OF Xylose OF Sucrose		Neg	
	Starch hydrolysis	Neg Neg				
	Lecithinase	Neg Neg	Arginine	. N	_N265	
	Lipase	Nem Nem	Lysine Ornithine		Nec-	
	-	Nerr Nerr	Base Control		Neg	
	Rapid PYR	Non		. )	al.er	
	Rapid LAP	105(+)	Acetamide Esculin	N 1)	Nea	
	Rapid ESC	Nog	Gelatin	N	Ner	
10	Sensitivity to:		Indole	×	Netr	
t of Per	Penicillin (10 U)	165 (Ð	Malonate PAD	Pos_	POS (+)	
nee s/4	Vancomycin (30 ug)	UR	Urea $N_2$ h	Neg	Neg	
disco at	Colistin (10 mcg)	_95@	6.5% NaCL	Pos	Pos (+)	NE
re the.	Polymyxin B (300 U	1450	10% Lactose ONPG	-N	Neg	
			Growth 42 <sup>o</sup>	Pos	POS (F)	

Note: All biochemical tests (except where noted) are incubated at 30°C and read after 48 hrs. incubation and again at 7 days.

Figure 160: Comamonas kerstersii isolate 3-of-9.

#### 15.2 Comamonas testosteroni

Over the course of ASHEX clinical-isolate collection, three individual isolates of Comamonas testosteroni were analyzed. One of the three recorded results is pictured in this subsection.

Test	+	_	Raw%	<b>W95</b> %	Test	+	_	Raw%	<b>W95</b> %
Motility	3	0	100.00	71.92	$H_2S$	0	3	0.00	28.08
Oxidase	3	0	100.00	71.92	Pseudo P	0	3	0.00	28.08
Catalase	3	0	100.00	71.92	Pseudo F	0	3	0.00	28.08
Yellow Pigment	0	3	0.00	28.08	NO <sub>3</sub> Reduced	3	0	100.00	71.92
Pink Pigment	0	3	0.00	28.08	Gas from $NO_3$	0	3	0.00	28.08
Beta Hemolysis	2	1	66.67	57.31	NO <sub>2</sub> Reduced	0	3	0.00	28.08
Growth on Mac	3	0	100.00	71.92	Gas from $NO_2$	0	3	0.00	28.08
Dnase	0	3	0.00	28.08	OF Fructose	0	3	0.00	28.08
Starch	0	3	0.00	28.08	OF Dextrose	0	3	0.00	28.08
Lecithinase	0	3	0.00	28.08	OF Lactose	0	3	0.00	28.08
Lipase	0	3	0.00	28.08	OF Maltose	0	3	0.00	28.08
PYR	3	0	100.00	71.92	OF Mannitol	0	3	0.00	28.08
LAP	3	0	100.00	71.92	OF Xylose	0	3	0.00	28.08
ESC Spot Test	0	3	0.00	28.08	OF Sucrose	0	3	0.00	28.08
Penicillin (10U)	0	3	0.00	28.08	Arginine	0	3	0.00	28.08
Vancomycin $(30\mu g)$	0	3	0.00	28.08	Lysine	0	3	0.00	28.08
Colistin $(10\mu g)$	3	0	100.00	71.92	Ornithine	0	3	0.00	28.08
Polymyxin B (300U)	3	0	100.00	71.92	Acetamide	0	3	0.00	28.08
					Esculin	0	3	0.00	28.08
					Gelatin	0	3	0.00	28.08
					Indole	0	3	0.00	28.08
					Malonate	1	2	33.33	42.69
					PAD	0	3	0.00	28.08
					Urea 2 hrs.	0	3	0.00	28.08
					Urea 48 hrs.	0	3	0.00	28.08
					6.5% NaCl	0	3	0.00	28.08
					10% Lactose	0	3	0.00	28.08
					ONPG	0	3	0.00	28.08
					Growth 42°C	0	3	0.00	28.08

Table 47: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as  $n_+/(n_+ + n_-)$ , where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which shifts raw percentages towards 50% with a strength dependent on the total number of test occurrences. The four antibiotic tests at the bottom of Column 1 are sensitivity tests where a positive result indicates sensitivity to the drug.

9-11-09 Date Inoculated: Final Identification: Comments: ARUP LABS 10/12/09 estostermi-DNA omomonac 9/14 9/23 Gram Morph. Tubes 48 h 7 KIA NC 24h Gram Test H<sub>2</sub>S POS SM Roods Notile JCG Motility Wet Prep Neg NE POS Pseudo P NEG Motility Deep Pseudo F Nel 105 Oxidase POS POS Catalase NO3 reduced Gas from NO3 New 7\_day 9/23 Nel PLATES <u>48 h</u> NO2 reduced Ne None Odor Gas from NO<sub>2</sub> New Nel Buff Pigment on swab Blue Rial **OF** Fructose Pigment on BAP GREI OF Dextrose SoldeTH-SMEARS Morphology on BAP **OF** Lactose OF Maltose NeG Beta hemolysis LAVENDE. OF Mannitol 105 Growth on Mac OF Xylose OF Sucrose Nel DNase hydrolysis NRG NCG Neb Starch hydrolysis Arginine Neco Nel Nele Nelo Lecithinase Lysine Ornithine Nel Nela Lipase Base Control POG Rapid PYR Pos Rapid LAP Acetamide Nea NeG Esculin New NPI NCG Rapid ESC Gelatin Neb Sensitivity to: Indole Malonate Neb Penicillin (10 U) PAD NEG Vancomycin (30 ug) Urea Alla h Nelo Neco Colistin (10 mcg) -12 6.5% NaCL NUG Nela 10% Lactose 2 NeG Polymyxin B (300 U) ONPG Nea Growth 42° WE6 Nele

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 161: Comamonas testosteroni isolate 1-of-3.

# 16 GENUS CUPRIAVIDUS16.1 Cupriavidus campinensis

Over the course of ASHEX clinical-isolate collection, one individual isolate of Cupriavidus campinensis was analyzed. The associated biochemical result form is presented here.

Test	+	_	Raw%	<b>W95</b> %	Test	+	_	Raw%	<b>W95</b> %
Motility	1	0	100.00	60.33	$H_2S$	0	1	0.00	39.67
Oxidase	1	0	100.00	60.33	Pseudo P	0	1	0.00	39.67
Catalase	1	0	100.00	60.33	Pseudo F	0	1	0.00	39.67
Yellow Pigment	0	1	0.00	39.67	NO <sub>3</sub> Reduced	1 0		100.00	60.33
Pink Pigment	0	1	0.00	39.67	Gas from $NO_3$	0	1	0.00	39.67
Beta Hemolysis	0	1	0.00	39.67	$NO_2$ Reduced	0	1	0.00	39.67
Growth on Mac	1	0	100.00	60.33	Gas from $NO_2$	0	1	0.00	39.67
Dnase	0	1	0.00	39.67	OF Fructose	0	1	0.00	39.67
Starch	0	1	0.00	39.67	OF Dextrose	0	1	0.00	39.67
Lecithinase	0	1	0.00	39.67	OF Lactose	0	1	0.00	39.67
Lipase	0	1	0.00	39.67	OF Maltose	0	1	0.00	39.67
PYR	1	0	100.00	60.33	OF Mannitol	0	1	0.00	39.67
LAP	1	0	100.00	60.33	OF Xylose	0	1	0.00	39.67
ESC Spot Test	0	1	0.00	39.67	OF Sucrose	0	1	0.00	39.67
Penicillin (10U)	0	1	0.00	39.67	Arginine	0	1	0.00	39.67
Vancomycin $(30\mu g)$	0	1	0.00	39.67	Lysine	0	1	0.00	39.67
Colistin $(10\mu g)$	1	0	100.00	60.33	Ornithine	0	1	0.00	39.67
Polymyxin B (300U)	1	0	100.00	60.33	Acetamide	0	1	0.00	39.67
					Esculin	0	1	0.00	39.67
					Gelatin	0	1	0.00	39.67
					Indole	0	1	0.00	39.67
					Malonate	1	0	100.00	60.33
					PAD	0	1	0.00	39.67
					Urea 2 hrs.	0	1	0.00	39.67
					Urea 48 hrs.	1	0	100.00	60.33
					6.5% NaCl	0	1	0.00	39.67
					10% Lactose	0	1	0.00	39.67
					ONPG	0	1	0.00	39.67
					Growth 42°C	0	1	0.00	39.67

Table 48: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as  $n_+/(n_+ + n_-)$ , where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which shifts raw percentages towards 50% with a strength dependent on the total number of test occurrences. The four antibiotic tests at the bottom of Column 1 are sensitivity tests where a positive result indicates sensitivity to the drug.

	Date Inoculated: 5-27-10	
	Final Identification: Best fit Pseude	MONAS ALCALIGENES P.S.
	Comments: CapRIAVIAUS C.	AMPENENSIS 614/10
	CONFIRMED by D	NA Sequencing
		5/28 6/4/10
	Gram Morph.	<u>Tubes 48 h 7 day</u>
	Gram Test 24h 49-New	KIA <u>ENC K/K</u>
	Motility Wet Prep New Corci 4 3 m Roods	
	Motility Deep Pos! Pos	Pseudo P NeG Neb
	Oxidase Aug	Pseudo F <u>Alece</u> <u>Nele</u>
	Catalase STRONG 805	NO <sub>3</sub> reduced $POS$
	PLATES 24 48h 7 day	Gas from NO <sub>3</sub> <u>Ne6</u> <u>Ne6</u> NO <sub>2</sub> reduced <u>Ne6</u>
	Odor Alew C	$NO_2$ reduced $NeG$ Gas from $NO_2$ $NeG$
9	Pigment on swab <i>Flosh</i>	
	Pigment on BAP	OF Fructose <u>Blue</u> OF Dextrose
	Morphology on BAP SHOOTA-SPACE 24h	OF Lactose
	Beta hemolysis New	OF Maltose
	Growth on Mac <u>pos</u> <u>pos</u>	OF Mannitol OF Xylose
	DNase hydrolysis <u>Neb</u>	OF Sucrose
	Starch hydrolysis <u>New</u> New	Arginine <u>Nec</u> <u>Nec</u>
	Lecithinase <u>Nece</u> Nece	Lysine
	Lipase <u>New</u> New	Ornithine
	Rapid PYR Pos	Base Control
	Rapid LAP <u>POS</u>	Acetamide New New
	Rapid ESC <u>Ne6</u>	Esculin <u>Nela</u> Gelatin <u>Nela</u>
	Sensitivity to:	Indole NeG
	Penicillin (10 U) $\underline{\beta} = \underline{\beta} = \underline{\beta}$	Malonate New Pos
	Vancomycin (30 ug) $\underline{R}$ $\underline{R}$	PAD <u>NCG</u> Ureanlogh W+SLANT ONLY 6/4 SLANT
	Colistin (10 mcg) $\underline{S-14}$ $\underline{5}$	6.5% NaCL NEG BUTT
	Polymyxin B (300 U) $5 - 17 5$	10% Lactose <u>Nele</u> <u>Nele</u> ONPG <u>Nele</u> <u>Nele</u>
		Growth $42^{\circ}$ Nelse Nelse

Figure 162: Cupriavidus campinensis isolate 1-of-1.

### 16.2 Cupriavidus gilardii

Over the course of ASHEX clinical-isolate collection, two individual isolates of Cupriavidus gilardii were analyzed. Both recorded results are pictured in this subsection.

Test	+	_	Raw%	<b>W95</b> %	Test	+	_	Raw%	W95%
Motility	2	0	100.00	67.12	$H_2S$	0	2	0.00	32.88
Oxidase	2	0	100.00	67.12	Pseudo P	0	2	0.00	32.88
Catalase	2	0	100.00	67.12	Pseudo F	0	2	0.00	32.88
Yellow Pigment	0	2	0.00	32.88	NO <sub>3</sub> Reduced	1	1	50.00	50.00
Pink Pigment	0	2	0.00	32.88	Gas from $NO_3$	0	2	0.00	32.88
Beta Hemolysis	0	2	0.00	32.88	NO <sub>2</sub> Reduced	1	1	50.00	50.00
Growth on Mac	2	0	100.00	67.12	Gas from $NO_2$	0	2	0.00	32.88
Dnase	0	2	0.00	32.88	OF Fructose	0	2	0.00	32.88
Starch	0	2	0.00	32.88	OF Dextrose	0	2	0.00	32.88
Lecithinase	0	2	0.00	32.88	OF Lactose	0	2	0.00	32.88
Lipase	0	2	0.00	32.88	OF Maltose	0	2	0.00	32.88
PYR	0	2	0.00	32.88	OF Mannitol	0	2	0.00	32.88
LAP	2	0	100.00	67.12	OF Xylose	0	2	0.00	32.88
ESC Spot Test	0	2	0.00	32.88	OF Sucrose	0	2	0.00	32.88
Penicillin (10U)	0	2	0.00	32.88	Arginine	0	2	0.00	32.88
Vancomycin $(30\mu g)$	0	2	0.00	32.88	Lysine	0	2	0.00	32.88
Colistin $(10\mu g)$	2	0	100.00	67.12	Ornithine	0	2	0.00	32.88
Polymyxin B (300U)	2	0	100.00	67.12	Acetamide	0	2	0.00	32.88
					Esculin	0	2	0.00	32.88
					Gelatin	0	2	0.00	32.88
					Indole	0	2	0.00	32.88
					Malonate	2	0	100.00	67.12
					PAD	0	2	0.00	32.88
					Urea 2 hrs.	0	2	0.00	32.88
					Urea 48 hrs.	0	2	0.00	32.88
					6.5% NaCl	0	2	0.00	32.88
					10% Lactose	0	2	0.00	32.88
					ONPG	0	2	0.00	32.88
					Growth 42°C	2	0	100.00	67.12

Table 49: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as  $n_+/(n_+ + n_-)$ , where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which shifts raw percentages towards 50% with a strength dependent on the total number of test occurrences. The four antibiotic tests at the bottom of Column 1 are sensitivity tests where a positive result indicates sensitivity to the drug.

Date Inoculated:	2-3-10				
Final Identification:	2-16-10 CupRIA	vidus	9,LAR	dii	
Comments:	CON firmed	by DNA	Seque	NCING	2/23/10
		/	ŀ	/	PS
Gram Morph. Gram Test Motility Wet Prep	48h 105 coccord to SMALL ROBS	Tubes KIA H2S	48 h K/NC Neco	13 7 day K/K NEG	
Motility Deep	POS POS	Pseudo P	Nea	NEG	
Oxidase	POS	Pseudo F	NEG	New	
Catalase	STRONG DOS	NO3 reduced		Nele	
PLATES	48.h . 1 day / 3	Gas from NO <sub>3</sub> NO <sub>2</sub> reduced	New	NEG	
Odor	NONE	Gas from NO <sub>2</sub>	Nec	New	
Pigment on swab	Flegh		BLUE	BLUE !	
Pigment on BAP	GREY	OF Fructose OF Dextrose	DLue	1	
Morphology on BAP	Smooth	OF Lactose			
Beta hemolysis	NEG	OF Maltose OF Mannitol			
Growth on Mac	POS POS	OF Maninton OF Xylose			
DNase hydrolysis	New New	OF Sucrose	$\mathbf{N}$	$\overline{\mathbf{V}}$	
Starch hydrolysis	Nece Nec	Arginine	NeG-	New	
Lecithinase	NCG- NCG	Lysine			
Lipase	NEG NEG	Ornithine Deep Control			
Rapid PYR	NºCCa.	Base Control	<del>\</del> /	¥	
Rapid LAP	POS	Acetamide	Nec-	Nela	
Rapid ESC	Nela	Esculin Gelatin	NEG	Neb	
Sensitivity to:		Indole	1020	Nel	
Penicillin (10 U)	R R	Malonate	Neb	pos!	
Vancomycin (30 ug)	RR	PAD Urea/ <u>C6-</u> 2 h	Ne6-	NCG	
Colistin (10 mcg)	5-12 5	6.5% NaCL	Nela	New	
Polymyxin B (300 U)	<u>5-14</u> <u>G</u>	10% Lactose ONPG Growth 42 <sup>0</sup>	NEG- NEG- POS	NCW POS	

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 163: Cupriavidus gilardii isolate 1-of-2.

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Maldi: Cupriavidus gilardii

Final Identification:

Comments:

1/27/16 10 DAYS 50 Gram Morph. Tubes 48 h <u>7 day</u> KIA Gram Test  $H_2S$ Neh Motility Wet Prep Pseudo P Motility Deep Pos Pseudo F Oxidase 005 Catalase +NO3 reduced Catpos Red Gas from NO<sub>3</sub> New PLATES 5d <u>48 h</u> 7 day + NO2 reduced Chon-PC Pos Odor Pos Gas from NO<sub>2</sub> Non Pigment on swab peach De **OF** Fructose Du Pigment on BAP wh ush OF Dextrose Morphology on BAP wet mind round, wet **OF** Lactose **OF** Maltose Beta hemolysis ACC DARKE OF Mannitol BLUE Growth on Mac vd. and OF Xylose DNase hydrolysis OF Sucrose Starch hydrolysis Arginine Lecithinase Lysine Ornithine Lipase Base Control Rapid PYR Jeg Rapid LAP Acetamide Esculin Rapid ESC Gelatin Ve Sensitivity to: Indole Penicillin (10 U) 6 Malonate PAD Vancomycin (30 ug) R Up. 0 Urea Nog2 h Non AS 125 Colistin (10 mcg) 6.5% NaCL Nou 10% Lactose Polymyxin B (300 U) 14/24 ONPG Growth 42° Pa

prinuidis gilardii

2.435

R.S. 1/27/16

Note: All biochemical tests (except where noted) are incubated at 30°C and read after 48 hrs. incubation and again at 7 days.

Figure 164: Cupriavidus gilardii isolate 2-of-2.

POS

#### 16.3 Cupriavidus metallidurans

Over the course of ASHEX clinical-isolate collection, one individual isolate of Cupriavidus metallidurans was analyzed. The associated biochemical result form is NOT presented here.

Test	+	_	Raw%	W95%	Test	+	_	Raw%	W95%
Motility	1	0	100.00	60.33	$H_2S$	0	1	0.00	39.67
Oxidase	1	0	100.00	60.33	Pseudo P	0	1	0.00	39.67
Catalase	1	0	100.00	60.33	Pseudo F	0	1	0.00	39.67
Yellow Pigment	0	1	0.00	39.67	NO <sub>3</sub> Reduced	1	0	100.00	60.33
Pink Pigment	0	1	0.00	39.67	Gas from $NO_3$	1	0	100.00	60.33
Beta Hemolysis	0	1	0.00	39.67	$NO_2$ Reduced	1	0	100.00	60.33
Growth on Mac	1	0	100.00	60.33	Gas from $NO_2$	1	0	100.00	60.33
Dnase	0	1	0.00	39.67	OF Fructose	0	1	0.00	39.67
Starch	0	1	0.00	39.67	OF Dextrose	0	1	0.00	39.67
Lecithinase	0	1	0.00	39.67	OF Lactose	0	1	0.00	39.67
Lipase	0	1	0.00	39.67	OF Maltose	0	1	0.00	39.67
PYR	1	0	100.00	60.33	OF Mannitol	0	1	0.00	39.67
LAP	1	0	100.00	60.33	OF Xylose	0	1	0.00	39.67
ESC Spot Test	0	1	0.00	39.67	OF Sucrose	0	1	0.00	39.67
Penicillin (10U)	0	1	0.00	39.67	Arginine	1	0	100.00	60.33
Vancomycin $(30\mu g)$	0	1	0.00	39.67	Lysine	0	1	0.00	39.67
Colistin $(10\mu g)$	0	1	0.00	39.67	Ornithine	0	1	0.00	39.67
Polymyxin B (300U)	0	1	0.00	39.67	Acetamide	0	1	0.00	39.67
					Esculin	0	1	0.00	39.67
					Gelatin	0	1	0.00	39.67
					Indole	0	1	0.00	39.67
					Malonate	1	0	100.00	60.33
					PAD	0	1	0.00	39.67
					Urea 2 hrs.	0	1	0.00	39.67
					Urea 48 hrs.	1	0	100.00	60.33
					6.5% NaCl	0	1	0.00	39.67
					10% Lactose	0	1	0.00	39.67
					ONPG	0	1	0.00	39.67
					Growth 42°C	0	1	0.00	39.67

Table 50: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as  $n_+/(n_+ + n_-)$ , where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which shifts raw percentages towards 50% with a strength dependent on the total number of test occurrences. The four antibiotic tests at the bottom of Column 1 are sensitivity tests where a positive result indicates sensitivity to the drug.

#### 16.4 Cupriavidus pauculus

Over the course of ASHEX clinical-isolate collection, 11 individual isolates of Cupriavidus pauculus were analyzed. Two of the 11 recorded results are pictured in this subsection.

Test	+	-	Raw%	<b>W95</b> %	Test	+	_	Raw%	W95%
Motility	11	0	100.00	87.06	$H_2S$	0	11	0.00	12.94
Oxidase	11	0	100.00	87.06	Pseudo P	0	11	0.00	12.94
Catalase	11	0	100.00	87.06	Pseudo F	0	11	0.00	12.94
Yellow Pigment	0	11	0.00	12.94	NO <sub>3</sub> Reduced	0	11	0.00	12.94
Pink Pigment	0	11	0.00	12.94	Gas from $NO_3$	0	5	0.00	21.72
Beta Hemolysis	0	5	0.00	21.72	NO <sub>2</sub> Reduced	0	11	0.00	12.94
Growth on Mac	11	0	100.00	87.06	Gas from $NO_2$	0	5	0.00	21.72
Dnase	0	11	0.00	12.94	OF Fructose	0	11	0.00	12.94
Starch	0	11	0.00	12.94	OF Dextrose	0	11	0.00	12.94
Lecithinase	0	6	0.00	19.52	OF Lactose	0	11	0.00	12.94
Lipase	0	6	0.00	19.52	OF Maltose	0	11	0.00	12.94
PYR	3	1	75.00	62.75	OF Mannitol	0	11	0.00	12.94
LAP	4	0	100.00	75.50	OF Xylose	0	11	0.00	12.94
ESC Spot Test	0	4	0.00	24.50	OF Sucrose	0	5	0.00	21.72
Penicillin (10U)	1	10	9.09	19.68	Arginine	0	11	0.00	12.94
Vancomycin $(30\mu g)$	0	11	0.00	12.94	Lysine	0	11	0.00	12.94
Colistin $(10\mu g)$	11	0	100.00	87.06	Ornithine	0	11	0.00	12.94
Polymyxin B (300U)	6	0	100.00	80.48	Acetamide	0	11	0.00	12.94
					Esculin	0	11	0.00	12.94
					Gelatin	0	11	0.00	12.94
					Indole	0	9	0.00	14.96
					Malonate	8	3	72.73	66.84
					PAD	0	11	0.00	12.94
					Urea 2 hrs.	11	0	100.00	87.06
					Urea 48 hrs.	11	0	100.00	87.06
					6.5% NaCl	6	5	54.55	53.37
					10% Lactose	0	11	0.00	12.94
					ONPG	0	9	0.00	14.96
					Growth 42°C	8	3	72.73	66.84

Table 51: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as  $n_+/(n_+ + n_-)$ , where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which shifts raw percentages towards 50% with a strength dependent on the total number of test occurrences. The four antibiotic tests at the bottom of Column 1 are sensitivity tests where a positive result indicates sensitivity to the drug.

Date Inoculated:	2-14-07	7		•		
Final Identification:	2-22-07	CupRIA	vidus DA	uculu	s P.	5.
Comments:					2/2	3/07
Comments					1 11	
	· · ·		0	LD NOTES	2 Bodetil	Per
Gram Morph.			Tuber	49 h	7 day	only
-	ual		<u>Tubes</u> KIA	<u>48 h</u> . KINC	7 day	,
Gram Test	48h	1. RODS	H <sub>2</sub> S	XI26	slight 1	425
Motility Wet Prep	107			****		
Motility Deep		05	Pseudo P Pseudo F	Nelo-	NEW	
Oxidase	POS		r Scudo I	Nelo	New	
Catalase	STRONG	POS	NO <sub>3</sub> reduced		NCG	
PLATES	<u>48 h</u>	7 day	Gas from NO <sub>3</sub>	NeG-	Nele	
Odor	WONE		NO <sub>2</sub> reduced		Nela	
Pigment on swab	flesh		Gas from NO <sub>2</sub>	Nela	Neb	
Pigment on BAP	GREY		OF Fructose	BLae	BLUE	
			OF Dextrose			
Morphology on BAP	Smooth		OF Lactose			
Beta hemolysis	NEG		OF Maltose			
Growth on Mac	POS- CANEN	when Posta				
DNase hydrolysis	NEG	Nels Bue	cerrof Sucrose	V	V	
Starch hydrolysis		NEG		1101		
Lecithinase	Nec	Nela	Arginine Lysine	Nelo	Nea	
Lipase	NEG	NPIO	Ornithine		- <u> </u>	
(+) Rapid PYR		WEAKE PO	Dees Control	V		
	NG POS	wenter o	Acetamide	NEG	Nela	
Rapid ESC			Esculin	NEG	Nela	
-	NEG		Gelatin	Nee	NEG	
Sensitivity to:	~	0	Indole		Neb	
Penicillin (10 U)	_R	$-K_{-}$	Malonate	NeG-	Light BU	ie
Vancomycin (30 ug)	$R_{-}$	R	PAD Urea 252 h	New Pos!	POS!	
Colistin (10 mcg)	5-12	S	6.5% NaCL	Neo	Pes	
Polymyxin B (300 U	D 5-14	9	10% Lactose	Nec-	Nea	
			ONPG	Nele-	NEG	
			Growth 42°	POS	POS	

Figure 165: Cupriavidus pauculus isolate 1-of-11.

Date Inoculated: Final Identification:

Comments:

6-18-09 CupRIAVIDLES Auculas -0 2009 - 13 Ħ 13 DAYS Tubes Gram Morph. KIA Gram Test  $H_2S$ SMACL RODS DOS Motility Wet Prep ht pink Pseudo P NPCa Motility Deep 05 eula Pseudo F NEG IN ter FACE Pos Oxidase Catalase STRONG POS NO<sub>3</sub> reduced Gas from NO<sub>3</sub> New PLATES 24 <u>48 h</u> 7 day NO<sub>2</sub> reduced None Odor Gas from NO<sub>2</sub> Nela NE Pigment on swab flegh Deep Blue **OF** Fructose Blue Pigment on BAP GREY-TRANGLUCENT OF Dextrose Schooth Morphology on BAP **OF** Lactose OF Maltose Nela Beta hemolysis Colonies OF Mannitol POS POS Growth on Mac OF Xylose Neb NCG OF Sucrose DNase hydrolysis Nela Neb Starch hydrolysis NeG Ne6 Arginine Lecithinase Nela Nela Lysine Ornithine NeG Lipase Nele **Base** Control Rapid PYR Wt NeG POS Acetamide Ne Rapid LAP Esculin NeG Rapid ESC Gelatin Sensitivity to: Indole Malonate Penicillin (10 U) PAD Vancomycin (30 ug) R POS Urea Pos2 h 2 6.5% NaCL Colistin (10 mcg) 10% Lactose S Ne Polymyxin B (300 U)

Note: All biochemical tests (except where noted) are incubated at 30°C and read after 48 hrs. incubation and again at 7 days.

Figure 166: Cupriavidus pauculus isolate 2-of-11.

ONPG Growth 42°

## 17 GENUS DELFTIA

#### 17.1 Delftia acidovorans

Over the course of ASHEX clinical-isolate collection, 21 individual isolates of Delftia acidovorans were analyzed. 11 of the 21 recorded results are pictured in this subsection.

Test	+	_	Raw%	W95%	Test	+	_	Raw%	<b>W95</b> %
Motility	20	1	95.24	88.24	H <sub>2</sub> S	0	21	0.00	7.73
Oxidase	21	0	100.00	92.27	Pseudo P	0	21	0.00	7.73
Catalase	21	0	100.00	92.27	Pseudo F	0	21	0.00	7.73
Yellow Pigment	1	20	4.76	11.76	NO <sub>3</sub> Reduced	20	1	95.24	88.24
Pink Pigment	0	21	0.00	7.73	Gas from $NO_3$	0	11	0.00	12.94
Beta Hemolysis	0	10	0.00	13.88	NO <sub>2</sub> Reduced	0	21	0.00	7.73
Growth on Mac	21	0	100.00	92.27	Gas from $NO_2$	0	21	0.00	7.73
Dnase	0	21	0.00	7.73	OF Fructose	21	0	100.00	92.27
Starch	0	21	0.00	7.73	OF Dextrose	1	20	4.76	11.76
Lecithinase	0	11	0.00	12.94	OF Lactose	0	21	0.00	7.73
Lipase	0	11	0.00	12.94	OF Maltose	1	20	4.76	11.76
PYR	3	7	30.00	35.55	OF Mannitol	21	0	100.00	92.27
LAP	10	0	100.00	86.12	OF Xylose	0	21	0.00	7.73
ESC Spot Test	0	10	0.00	13.88	OF Sucrose	0	21	0.00	7.73
Penicillin (10U)	0	21	0.00	7.73	Arginine	0	21	0.00	7.73
Vancomycin $(30\mu g)$	0	21	0.00	7.73	Lysine	0	21	0.00	7.73
Colistin $(10\mu g)$	2	19	9.52	15.78	Ornithine	0	21	0.00	7.73
Polymyxin B (300U)	4	6	40.00	42.78	Acetamide	21	0	100.00	92.27
					Esculin	0	21	0.00	7.73
					Gelatin	0	21	0.00	7.73
					Indole	0	21	0.00	7.73
					Malonate	14	3	82.35	76.39
					PAD	0	21	0.00	7.73
					Urea 2 hrs.	0	21	0.00	7.73
					Urea 48 hrs.	1	20	4.76	11.76
					6.5% NaCl	3	18	14.29	19.81
					10% Lactose	0	17	0.00	9.22
					ONPG	0	13	0.00	11.41
					Growth 42°C	3	18	14.29	19.81

Table 52: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as  $n_+/(n_+ + n_-)$ , where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which shifts raw percentages towards 50% with a strength dependent on the total number of test occurrences. The four antibiotic tests at the bottom of Column 1 are sensitivity tests where a positive result indicates sensitivity to the drug.

		· · · · · · · · · · · · · · · · · · ·		/ ^	
Date Inocul	ated: <u>F8/28</u>				
Final Identi	fication: Delet	A Acidovors	ws P.S.	9/4/15	12×+1
Comments:	Mildi: Dulptia a	adovorans 2.385			
	DX: ; EXTREMITY AMPU	TATION	7	015-14	•
Gram Morr Gram Test Motility We Oxidase Catalase <u>PLATES</u>	et Prep rep $ros   105ros   105ros   105$	NO <sub>2</sub> TP	$\frac{W_{K}}{N} = \frac{N}{N}$ $\frac{P}{F} = \frac{N}{N}$ $\frac{M}{NO_3} = \frac{N}{NW_{T}}$	7. day K/K N - 3m blk lineC Neg Neg Neg Neg Neg Neg	Nefere
Odor Pigment on Pigment on Morpholog Beta hemol Growth on DNase hyd Starch hydr Lecithinase	BAP <u>wh</u> y on BAP <u>spready ghost</u> ysis <u>N</u> Mac <u>Pos</u> rolysis <u>N</u>	Neg Gas fro Duff OF Fro buff OF De Spring OF La Neg OF M Pas OF M Pas OF M Neg OF Su Neg Argin Neg Lysing	$\frac{NO_2}{V} = \frac{V^2\gamma}{V^2\gamma}$ $\frac{V^2\gamma}{V^2\gamma}$	<u>Hea-Neg</u> <u>hipbuldte</u> Neg <u>Be</u> <u>Be</u> <u>Be</u> <u>Be</u> <u>Be</u> <u>Be</u> <u>Neg</u>	
16 Colistin (	<u>herg</u> <u>Pos</u> <u>to:</u> (10 U) <u>(e f</u> vcin (30 ug) <u>(e f</u>	Aceta Escul Gelat Indol <u>UR</u> Malo <u>UR</u> PAD <u>Urea</u> <u>UR</u> 6.5% <u>8 S</u> 10% ONF	Control $N$ in $N$ in $N$ e $X$ in $N$ in $N$ i	Neg- Neg- Neg- Neg-yellow Pos 8112 X Neg-Yellow Neg- Neg- Neg- Neg- Neg- Neg- Neg- Neg-	5

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 167: Delftia acidovorans isolate 1-of-21.

Date Inoculated:	E 8/4/17		
Final Identification	n: Defitia acido Jora	ins Prob 99.995%	MS = 5.55
Comments:	ab report: Delftia ac	iouvans	
	Maldi: 2.5 D. acido	vorans	
_		3d.	
Gram Morph.		Tubes 48 h	<u>7 day</u>
Gram Test		KIA avan	e avance
		H <sub>2</sub> S <u>N</u>	Neg_
Motility Wet Prep	0	Pseudo P N	Near
Motility Deep	Pos D	Pseudo F N	Nea
Oxidase	pas O		
Catalase	31 Poscat. (1)	NO <sub>3</sub> reduced	Red for (+)
PLATES	.48h 7 day	Gas from NO <sub>3</sub> $\underline{N}$ NO <sub>2</sub> reduced $\underline{X}$	Red-Nen
Odor	seiset barn slight	$Gas from NO_2$	N ca
Pigment on swab	buff khaki		
-			op @ yeltop @
Pigment on BAP	gray gray	OF Dextrose	- <u>Cr</u> -
Morphology on B	AP sprendyedge spready	OF Maltose G	
Beta hemolysis	NNeg	OF Mannitol	ton(T) We top (F)
Small clear pready edge Growth on Mac	Pas Pas A		Be-
DNase hydrolysis	N Near	OF Sucrose G	<u>Bl</u>
Starch hydrolysis	N Near	Arginine	New
Lecithinase	? wait Negry	Lysine	Neg
2	? wait Nag	Ornithine	Neg
Lipase	N #019.5	neady Base Control	Neg
Rapid PYR		H. JL	s'E BE
Rapid LAP	Pas D May be	- Eculin A	Necc
Rapid ESC	N Lecthir	bet and	New
Sensitivity to:	but ju	Indole	K Neg-turned yello
Penicillin (10 U	) GR GR		SE LESE
Vancomycin (3		PAD	Alege
Colistin (10 mc		Urea $N^2$ h $6.5\%$ NaCL	15 (i) Pos (P)
			Neg-
Polymyxin B (3	00 U) 10 5 10 5	ONPG A	Neg
		Growth 42 <sup>o</sup>	NNeg
		0	U

Note: All biochemical tests (except where noted) are incubated at 30°C and read after 48 hrs. incubation and again at 7 days.

Figure 168: Delftia acidovorans isolate 2-of-21.

Final Identification:

ORANGE INDOLE POS WITH FOURCE ON BAP. BRIGHT

Comments:

Yell	on (Leonon Yellow	u) IN HI BR	oth with	th Ehrl	chs
		5		4-27-06	9 BAYS
Gram Morph. Gram Test Motility Wet Prep	24 h VERY motile RODS	$\begin{array}{c} \underline{\textbf{Tubes}}\\ \text{KIA}\\ \\ \mathbf{H}_2 S\end{array}$	<u>48 h</u> <u>K/NC</u> <u>NeG</u>	<u>7 day</u> <u>K/K</u> <u>Ne6</u>	
+ Motility Deep + Oxidase	Pos pos pos Sillone Pos	- Pseudo P - Pseudo F	NEE	Neb- Neb	Repeat No2
+ Catalase <u>PLATES</u> Odor	<u> </u>	$ \begin{array}{c} + \text{ NO}_3 \text{ reduced} \\ \hline & \text{Gas from NO}_3 \\ \hline & \text{NO}_2 \text{ reduced} \\ \hline & \text{Gas from NO}_2 \end{array} $	Not done	<u>Res</u> <u>Nes</u> <u>Nes</u> <u>Nes</u>	NEC NEC
Pigment on swab Pigment on BAP Morphology on BAP Beta hemolysis Growth on Mac DNase hydrolysis	CLEGL. <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u> <u>GREY</u>	+ OF Fructose - OF Dextrose - OF Lactose - OF Maltose + OF Mannitol - OF Xylose - OF Sucrose	Yec Blue Blue Hec Yec Blue Blue	Yel Blue Blue Hue Yel Blue Dlue	
Starch hydrolysis Lecithinase Lipase Rapid PYR	<u>New</u> <u>New</u> <u>New</u> <u>New</u> <u>New</u> <u>New</u> New	Arginine Lysine Ornithine Base Control	Nea	New	
Rapid LAP Rapid ESC Sensitivity to:	Pos Ne6	+ Acetamide - Esculin - Gelatin - Indole	Pos! NEG NEG	POS! NEG NEG	lellous
<ul> <li>Penicillin (10 U)</li> <li>Vancomycin (30 ug)</li> <li>Colistin (10 mcg)</li> <li>Polymyxin B (300 U)</li> </ul>	RR		NEG NEG NEG NEG NEG NEG	New New New New New New New	Bue

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 169: Delftia acidovorans isolate 3-of-21.

6-18-07 Delftia Acidovorans 6/25/07 P.S.

Final Identification:

Comments:

Gram Morph.		Tubes	48 h	$\frac{7 \text{ day}}{1 - 1 + 1}$
Gram Test	24/2 48h - NeG	KIA H <sub>2</sub> S	HNC	Gright HZS
Motility Wet Prep	NPG- Roby jetteny	1123	NEG	yeight 1125
Motility Deep	Pos Pos	Pseudo P	NeG	Nec
Oxidase	Pos	Pseudo F	NCG	New
Catalase	STRONG POG	NO3 reduced		POS
PLATES	<u>48 h 7 day</u>	Gas from NO <sub>3</sub> NO <sub>2</sub> reduced	Ne6-	Neb
Odor	NONE	$Gas from NO_2$	Nea	New
Pigment on swab	Bebb	0000	× .	Yer
Pigment on BAP	6REY	OF Fructose OF Dextrose	Jel Bine	Buce
Morphology on BAP	Shinny- SmeARS	OF Lactose	BLUE	Blue
Beta hemolysis	Nea Nea	OF Maltose	Bine	Bull
Growth on Mac	pos pos	OF Mannitol OF Xylose	Jel Belle	Vel Blue
DNase hydrolysis	NEG NEG BLUE	OF Sucrose	Brue	Bue
Starch hydrolysis	NEG NEG	Arginine	New	New-
Lecithinase	Neb Neb	Lysine		
Lipase	NEU NELO	Ornithine		
Rapid PYR	NeG	Base Control		<u>V</u>
Rapid LAP	POS	Acetamide	PBS !	Pos
Rapid ESC	NCG	Esculin Gelatin	NEG	New
Sensitivity to:		Indole	Neo	1100
Penicillin (10 U)	R $R$	Malonate	NEG	POS
Vancomycin (30 ug)	RR	PAD Urea <i>New</i> h	NEG	POS - SCANTONCY
Colistin (10 mcg)	R R	6.5% NaCL	Neb	NEG
Polymyxin B (300 U	RR	10% Lactose	Neg	Neco
		ONPG Growth 42⁰	SPARSE	NEG (FAINT)
		Stonut ib	14411-10	

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 170: Delftia acidovorans isolate 4-of-21.

	C I C				
Date Inoculated:	8-19-08				
Final Identification:	Defftia	Acidovor	ANS	9/2/08	P.S.
Comments: Yell.	ow indole with	ELALich	5		
ADL	nge indole on	ROD IN the	Laure		
	PORT ON PSEUdo F		24	9/2/08	14 DAYS
Gram Morph.		Tubes	.48 h	7 day	
Gram Test	24h	KIA	E/NC	K/K	
Motility Wet Prep	POS- VERY NETILE POS- DARTING SDUNN	H <sub>2</sub> S	New	New	
Motility Deep	Pos	Pseudo P	Nec	Nele	BROWNERH
Oxidase	POS	Pseudo F	NEG	New	DicfusiBle
Catalase	STRONG ASS	NO <sub>3</sub> reduced		Pos	PIGNT ON TO OC SCANT
PLATES	48 h 7 day	Gas from NO <sub>3</sub>	New	New	
Odor	None	$NO_2$ reduced Gas from $NO_2$	New	NEG	
Pigment on swab	flegh		1		
Pigment on BAP	GREY	+ OF Fructose	GRN/tel	GRN	
Morphology on BAP	Smooth-SMEARS	<ul> <li>OF Dextrose</li> <li>OF Lactose</li> </ul>	BLUE	BLUE	
Beta hemolysis	Nels Nels	-OF Maltose	Blue	BLER	
Growth on Mac	POS POS	+ OF Mannitol — OF Xylose	GRN/YeL	GRN	
DNase hydrolysis	Nel- Nel	-OF Sucrose	BLUE	BLUE	
Starch hydrolysis	NEG NEG				
Lecithinase	NRG NRG	Arginine Lysine	Nec	NeG	
Lipase	NEG NEG	Ornithine			
Rapid PYR	W+ (LIGHT PINK)	Base Control			
Rapid LAP	STRONG POS	Acetamide	Pos!	Pos!	
Rapid ESC	Nelo	Esculin	Nel	Nec	
Sensitivity to:		Gelatin Indole	Nel	NEG Xel I	rdoLe
Penicillin (10 U)	R R	Malonate	NEG	POS	-
Vancomycin (30 ug)	RR	PAD Urea <i>Ne6</i> 2 h	NEG	New	
Colistin (10 mcg)	RR	6.5% NaCL	NEG	Nel	
Polymyxin B (300 U)	9-9 S	10% Lactose	Nel	NEG-	
,		ONPG Growth 42 <sup>0</sup>	NEG	NEG	
			100		

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 171: Delftia acidovorans isolate 5-of-21.

Final Identification:

Del PtiA ACIDOUDRANS P.S. 10/29/09

Comments:

			10/0	10/21
Gram Morph.		Tubes	<i>10   9</i> 48 h	7  day
Gram Test	24h	KIA	KINC	<u>k/k</u>
Motility Wet Prep	POS medium Roads	H2S	GLight Has	NCL
Motility Deep	POS POS	Pseudo P	Nea	Nela > Pinte
Oxidase	POS	Pseudo F	NEG	Nela Nocacuor
Catalase	STRONG POS	NO <sub>3</sub> reduced		BUERY FAINT FLOORESCE
PLATES	$\frac{7}{48 \text{ h}} \qquad 7 \text{ day}$	Gas from NO <sub>3</sub>	tray bubble	TINY BUBBLE DIGGOST
Odor	fireworkes	NO <sub>2</sub> reduced		NEG
Pigment on swab		Gas from NO2	Try bubble	TINY BUBBIE
•	<u>flegh</u> Grey	OF Fructose	Yel	6RN/Yel
Pigment on BAP		OF Dextrose	Buce	Blue
Morphology on BAP	Smooth - smerrs	OF Lactose OF Maltose	BLUE	BLAC
Beta hemolysis	Nel Pos	OF Mannitol	yel	GRN/YEL
Growth on Mac	DARE DARE	OF Xylose OF Sucrose	Buce	Brue
DNase hydrolysis	Neb Nele Blue		BLUE	Blue
Starch hydrolysis	New New	Arginine	Ne6	Wele
Lecithinase	Nele Nele	Lysine Ornithine	1	
Lipase	Nelo Nelo	Base Control		
Rapid PYR	POS			D. /
Rapid LAP	P05	Acetamide Esculin	POS! NCG	Neles
Rapid ESC	Nela	Gelatin	New	NEG
Sensitivity to:	0	Indole		NEG - NO OSANGE
Penicillin (10 U)	<u>K</u> <u>K</u>	Malonate PAD	Neb	POS Nelo
Vancomycin (30 ug)		Urea <u>Veb2</u> h	NEG	DOS - SLANT
Colistin (10 mcg)	<u>R</u> R	6.5% NaCL	NEG	Nel
Polymyxin B (300 U	D <u>R</u> R	10% Lactose ONPG	NEG NEG	Nela
		Growth 42 <sup>°</sup>	Nel	New

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 172: Delftia acidovorans isolate 6-of-21.

Date Inoculated	l: <u>/-3</u>	5-10				
Final Identificat	tion:	eletia	ACIDOVORA	NS	P.S.	1/20/10
Comments:	PosiTive	FOR ORA	nge indole	BAJ @	72 hu.	\$.

Gram Morph. Gram Test Motility Wet Prep	48 h POS SMALL REAR S	Tubes KIA H2S	<u>48 h</u> <u>≠/∧ c</u> <u>∧ e (~</u>	I day K/K Nec
Motility Deep	POS POS	Pseudo P	NEG	Nela Nela 1/18/10
Oxidase	Pos	Pseudo F	Killo	Nelo
Catalase	STRONG DOS	NO <sub>3</sub> reduced		Pos
PLATES	<u>48 h 7 day</u>	Gas from NO <sub>3</sub> NO <sub>2</sub> reduced	THY Behble	Timy bubble
Odor	Newe	Gas from NO <sub>2</sub>	New	NEG
Pigment on swab	fleg L			G.R.W/YEL
Pigment on BAP	GREY_	OF Fructose OF Dextrose	<u>GRN/YEL</u> BLUC	Bue 2
Morphology on BAP		CARANCEOF Lactose	Siae	Bial
Beta hemolysis	NCG	OF Maltose OF Mannitol	BLUC	Blue
Growth on Mac	P05 P05	OF Wallinton OF Xylose	HEL/GAN BLOR	6hr/yel Blue
DNase hydrolysis	NeG NeG	OF Sucrose	BLOC	Bine
Starch hydrolysis	Ne6 Nea	Arginine	KR6	Nelo
Lecithinase	Nele Nel-	Lysine	100	
Lipase	Nel Nel	Ornithine Base Control		
Rapid PYR	NeG	Base Control	<u>V</u>	
Rapid LAP	Pos	Acetamide	Pos!	105!
Rapid ESC	NEG	Esculin Gelatin	NEG	NEL YELLOW IN HI W/
Sensitivity to:		- Indole	Nec	NEW ORANge inddet
Penicillin (10 U)	$\underline{R}$ $\underline{R}$	Malonate	4 BLUC	POS ON BAP
Vancomycin (30 ug)	R R	PAD Urea <i>Nl6-</i> 2 h	Nel	Neler
Colistin (10 mcg)	$R_{R}$	6.5% NaCL	NEG	NEG
Polymyxin B (300 U)	R (double) R	10% Lactose	Nelo	Nea
		ONPG Growth 42 <sup>°</sup>	NEG	NeG

Figure 173: Delftia acidovorans isolate 7-of-21.

8-25-11 Date Inoculated: Delffin ACIDOVORANS 12/1 Final Identification: Comments: DELEFIA ACIDONORANS BRUKER CALLED 9/2 Gram Morph. Tubes KIA Gram Test VERY MOTILE  $H_2S$ 005-Motility Wet Prep POS POS Pseudo P Neb Neu Motility Deep Pseudo F NEG Neb POS Oxidase STRONG 204 Pos Catalase NO<sub>3</sub> reduced Gas from NO<sub>3</sub> Neb Nea **PLATES** 24 48 h 7 day NO<sub>2</sub> reduced Nel SLIGHT ODOR Odor Gas from NO<sub>2</sub> Neb NEG Pigment on swab Flesh Yet/GRN **OF** Fructose GRN Pigment on BAP GREY GRN/BLUE **OF** Dextrose GRN Smooth Morphology on BAP BLUE OF Lactose BLUP BLRC Neb OF Maltose BLUC Nela Beta hemolysis tei/6RN OF Mannitol GRN/YEL Pos Pos Growth on Mac OF Xylose BLack Biae Neb Neb DNase hydrolysis OF Sucrose BLUE BLUC Neb Neb Starch hydrolysis Arginine NEG Nec Lecithinase Nele Neb Lysine Ornithine New Nel Lipase Base Control Rapid PYR LWT Pla POS POS Rapid LAP Acetamide Do Esculin NEG Rapid ESC Nel Gelatin ORANGE INGOL Sensitivity to: Nec Indole POS Malonate Penicillin (10 U) New PAD areo Vancomycin (30 ug) UreaNC62 h NEG NEG Colistin (10 mcg) 6.5% NaCL NEO NCG 10% Lactose NEG Nelo Polymyxin B (300 U) ONPG Neb Nel Growth 42<sup>0</sup> Nele NEG

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 174: Delftia acidovorans isolate 8-of-21.

Date Inoculated:	1-4-12	
Final Identification:	Delftia Acia	dourder ANS P.S. 1/6/12
Comments:	roky Life A CARCA	(15 ON PLATE - TURNS APAR GREE
No		UL COLONIES DN DNASE
Gram Morph. Gram Test Motility Wet Prep Motility Deep	72h Pos med Rods POS POS	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$
Oxidase Catalase	POS STRONG POS	Pseudo F <u>Nels</u> NO <sub>3</sub> reduced
PLATES Odor	<u>48 h 7 day</u> Slight	Gas from NO3 $2$ TINT BUBLIC $TINY BUBLICNO2 reduced$
Pigment on swab Pigment on BAP Morphology on BAP Beta hemolysis Growth on Mac	Hesh GRey Smoth New POS POS BLUE	OF Fructose $\underline{YeL/LRN}$ <u>GRN</u> OF Dextrose <u>Bive/GRN</u> <u>Bive</u> OF Lactose <u>Bive</u> <u>Bive</u> OF Maltose <u>Bive</u> <u>Bive</u> OF Mannitol <u>YeL/LRN</u> <u>YeL</u> OF Xylose <u>Bive</u> <u>Bive</u>
DNase hydrolysis Starch hydrolysis Lecithinase Lipase Rapid PYR	<u>NCC</u> <u>NeC</u> Country <u>NCC</u> <u>NCC</u> <u>NCC</u> <u>NCC</u> <u>NCC</u> NCC	OF Sucrose     BLG.E     BLG.E       Arginine     Nec-       Lysine     Image: Control       Base Control     Image: Control
Rapid LAP Rapid ESC <u>Sensitivity to:</u> Penicillin (10 U) Vancomycin (30 ug)	R R R R R R R	Acetamide $Pos!PosEsculinNecoNecoGelatinNecoNecoIndoleNecoMalonatePosPosPADNecoUreaNecoNecoNeco$
Colistin (10 mcg) Polymyxin B (300 U)		$\begin{array}{cccccccccccccccccccccccccccccccccccc$

Figure 175: Delftia acidovorans isolate 9-of-21.

Final Identification:

F8/28

Delftia

Maldi:

DeletiA Acidovorsus P.S. 9/4/

acidovarans 2.385

Comments:

Gram Morph. Tubes <u>48 h</u> 7 day KIA Gram Test H<sub>2</sub>S ٨ So Motility Wet Prep Pseudo P Jug Motility Deep Pos Pseudo F Nea Oxidase POS Red - POS Catalase POS NO3 reduced Nex Gas from NO<sub>3</sub> PLATES 48 h 7 day NO2 reduced Rea-Neg Neg Neg Odor Gas from NO<sub>2</sub> trybubble Pigment on swab puff OF Fructose Pigment on BAP wh OF Dextrose Bl Morphology on BAP Smead OF Lactose Be Sneady ghost Bl Neg OF Maltose Bl Be N Beta hemolysis OF Mannitol ike for (v Pas Growth on Mac Pos OF Xylose Be Be DNase hydrolysis Bl Neg OF Sucrose Bl Neg Starch hydrolysis Arginine Lecithinase Nea Lysine N Ornithine N Lipase Base Control N Rapid PYR Neg Rapid LAP Pas Acetamide Esculin Nach Rapid ESC Neg Gelatin Neg Sensitivity to: Indole Nea-yellow pos Penicillin (10 U) Malonate LeR f PAD Le F. Vancomycin (30 ug) 6R Urea N/2 h Nog 6R UR Colistin (10 mcg) Neg 6.5% NaCL K. Neg 10% Lactose Polymyxin B (300 U) 85 8 5 ONPG Nog Growth 42º TSA Neg

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 176: Delftia acidovorans isolate 10-of-21.

Date Inoculated: $W \frac{1}{13}/16$	
Final Identification: Del FTIA A	terdovorans P.S. 1/27/16
Comments: Delffa acidovovans (Maldi	1.947)
An Did Not produ	
	Tubes $18h$ 7 day $1/27/16$ 1/27/16
Gram Morph.	
Gram Test	KIA <u>KINC</u> <u>KIK</u> SLight Hzs
Motility Wet Prep	Sejat blk like interfore
+ Motility Deep POS Wk Pos? Wk Pos 7 day	
Oxidase <u>los</u>	Pseudo F
Catalase Sworg Pas	+ NO3 reduced X fed - Res
PLATES 5d 48h 7 day	-Gas from NO3 N thybubble Neg
Odor los Pas Mousey	$-NO_2$ reduced $\times$ <u>p.a.</u> <u>Neg</u>
Pigment on swab Buff Buff	
Pigment on BAP when when	+ OF Fructose <u>Gr-Yellow</u> tep + OF Dextrose <u>Bl</u> <u>Bl</u> -
Morphology on BAP why spread Spready edges	
Beta hemolysis New New	OF Maltose <u>Be</u> <u>Be</u> –
Growth on Mac POS-Smerdy POS V	+ OF Mannitol <u>G-ye</u> <u>Gr-ye</u> + OF Xylose <u>Bl</u> <u>Bl</u> –
DNase hydrolysis DK Near Say Neg Blue	
Starch hydrolysis Neg Neg V	
Lecithinase Neg Neg V	Arginine <u>N</u> <u>New</u> -
Lipase Ne Neg L	Ornithine New -
Rapid PYR New	Base Control Neg
Rapid LAP Pos	Acetamide Pos Pos
Rapid ESC New	Esculin N New V
Sensitivity to:	Gelatin <u>New</u> Indole X New
Penicillin (10 U) 6 F / R	Malonate Pos pos (
Vancomycin (30 ug) UP UP	PAD Nex X
Colistin (10 mcg) $UF$ $UF$	Urea $\frac{N^2}{2}$ h $\frac{N^2}{N}$ $\frac{N^2}{N}$ $\frac{N^2}{N}$ $\frac{N^2}{N}$
Polymyxin B (300 U) $75$ $35$ $700$	10% Lactose 180 Hara
	ONPG New New V
	Growth 42° New New

Figure 177: Delftia acidovorans isolate 11-of-21.

# 18 GENUS ELIZABETHKINGIA

#### 18.1 Elizabethkingia meningoseptica

Over the course of ASHEX clinical-isolate collection, 28 individual isolates of Elizabethkingia meningoseptica were analyzed. 14 of the 28 recorded results are pictured in this subsection.

Test	+	_	Raw%	W95%	Test	+	_	Raw%	W95%
Motility	1	27	3.57	9.17	H <sub>2</sub> S	0	28	0.00	6.03
Oxidase	28	0	100.00	93.97	Pseudo P	0	28	0.00	6.03
Catalase	28	0	100.00	93.97	Pseudo F	0	28	0.00	6.03
Yellow Pigment	7	21	25.00	28.02	NO <sub>3</sub> Reduced	1	27	3.57	9.17
Pink Pigment	0	28	0.00	6.03	Gas from $NO_3$	0	23	0.00	7.16
Beta Hemolysis	8	14	36.36	38.39	NO <sub>2</sub> Reduced	15	13	53.57	53.14
Growth on Mac	0	28	0.00	6.03	Gas from $NO_2$	0	23	0.00	7.16
Dnase	27	1	96.43	90.83	OF Fructose	24	4	85.71	81.41
Starch	8	20	28.57	31.16	OF Dextrose	23	5	82.14	78.26
Lecithinase	0	28	0.00	6.03	OF Lactose	9	19	32.14	34.30
Lipase	0	28	0.00	6.03	OF Maltose	26	2	92.86	87.69
PYR	12	8	60.00	58.39	OF Mannitol	24	4	85.71	81.41
LAP	21	0	100.00	92.27	OF Xylose	3	25	10.71	15.45
ESC Spot Test	18	3	85.71	80.19	OF Sucrose	1	22	4.35	10.88
Penicillin (10U)	0	28	0.00	6.03	Arginine	0	28	0.00	6.03
Vancomycin $(30\mu g)$	27	1	96.43	90.83	Lysine	0	28	0.00	6.03
Colistin $(10\mu g)$	0	28	0.00	6.03	Ornithine	0	28	0.00	6.03
Polymyxin B (300U)	0	28	0.00	6.03	Acetamide	0	28	0.00	6.03
					Esculin	28	0	100.00	93.97
					Gelatin	27	1	96.43	90.83
					Indole	26	2	92.86	87.69
					Malonate	3	25	10.71	15.45
					PAD	0	28	0.00	6.03
					Urea 2 hrs.	0	28	0.00	6.03
					Urea 48 hrs.	9	19	32.14	34.30
					6.5% NaCl	5	23	17.86	21.74
					10% Lactose	2	26	7.14	12.31
					ONPG	28	0	100.00	93.97
					Growth 42°C	3	25	10.71	15.45

Table 53: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as  $n_+/(n_+ + n_-)$ , where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which shifts raw percentages towards 50% with a strength dependent on the total number of test occurrences. The four antibiotic tests at the bottom of Column 1 are sensitivity tests where a positive result indicates sensitivity to the drug.

Final Identification:

Comments:

Chryseobacterium Meningosepticum

	11/20 11/23
Gram Morph. <u>Gne</u>	Tubes ut up 48 h 7 day
Gram Test	HIA WIN KINC HI-
Motility Wet Prep /2004 - Long Rols -	Neg-H25 Neg-Neg-
- Motility Deep AVEG NEG	- Pseudo P NEG Nec-
+ Oxidase Pos	-Pseudo F Neb Neb
+ Catalase SiRong jobs	NO <sub>3</sub> reduced
<u>PLATES</u> $48 \text{ h}$ 7 day	$\rightarrow$ Gas from NO <sub>3</sub> $\rightarrow Post - $
Odor Noth BALLS	$\begin{array}{c} \hline NO_2 \text{ reduced} \\ \hline Gas from NO_2 \\ \hline Ne \\ \hline Sec \\ \hline Sec \\ \hline Ne \\ \hline Sec \\ \hline Ne \\ \hline Sec \\ \\ Sec \\ \hline Sec \\ \hline Sec \\ \hline Sec \\ \hline Sec \\ \\ \\ Sec \\ \\ \\ Sec \\ \\ \\ Sec \\ \\ \\ Sec$
Pigment on swab interspirate Flesh	
- Pigment on BAP	OF Fructose GRN YeL OF Dextrose Axaben YeL
Morphology on BAP Shooth	- OF Dextrose <u>Blue</u> <u>Yec</u> - OF Lactose <u>Blue</u> <u>Blue</u>
- Beta hemolysis reg	+ OF Maltose BLA/LAN GRN
	+ OF Mannitol <u>GRN</u> <u>GRN</u>
1	- OF Xylose <u>Blae</u> <u>Blae</u> - OF Sucrose <u>Yec/GRN</u> <u>YeL</u>
	OF Sucrose <u>Yec/GRN</u> YeL
- Starch hydrolysis <u>Nec</u> <u>Nec</u>	- Arginine No OIL
- Lecithinase while the Nece Nece	- Lysine New were
- Lipase 1 Nec NeG	Ornithine <u>Nec</u> <u>Nec</u>
Rapid PYR Neb	Base Control New New
+ Rapid LAP Po5 !	- Acetamide Nel- Nel-
	$\frac{+}{-} \frac{\text{Esculin}}{\text{Gelatin}} \qquad \frac{POS}{NCS} \qquad \frac{POS}{-}$
Sensitivity to: Sit up 1/18	+ Indole Pos
- Penicillin (10 U) $\beta$ R	Malonate NeG NeG
+ Vancomycin (30 ug) $15$ S	- PAD <u>Neb</u> UreanEg2h <u>Neb</u> Neb
$\sim$ Colistin (10 mcg) $\sim$ $R$	$- 6.5\% \text{ NaCL} \qquad NCG \qquad NCG \qquad NCG$
Polymyxin B (300 U)	10% Lactose NEG NEC
	+ ONPG Pos Pos
	Growth 42° NCG NCG

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 178: Elizabethkingia meningoseptica isolate 1-of-28.

Date Inoculated: Final Identification:

Comments:

2-22-06 on: Chrygeobacterius Meningogepticut P.S. White on Starch 3/9/06

					2	-24-06	
	Gram Morph.		è		Tubes	<u>48 h</u>	<u>7 day</u>
	Gram Test	zih				Yelforg	Yel/yel/ozo
	Motility Wet Prep	Nela- Los	16GNB		H <sub>2</sub> S	Nec	Nela
-	Motility Deep	NeG	Neb		Pseudo P	New	Nela
1	Oxidase	POS	1	-	Pseudo F	Nec	Neco
t	Catalase	GTRONG	109	_	NO <sub>3</sub> reduced		nea
1	PLATES	48 h	7 day	-	Gas from NO <sub>3</sub>	New	New
	Odor	AVENCA	1 ddy	_	$-NO_2$ reduced		Nec
	Pigment on swab	Flesh			Gas from NO <sub>2</sub>	New	NCO
	Pigment on BAP	GREY		+	OF Fructose	Yel	Yel
	Morphology on BAP	Surveth		+	OF Dextrose	BLUE	6 RAV
					OF Maltose	Yel	GRN
	Beta hemolysis Growth on Mac NE	Neb	-Des VIP	۰.	-OF Mannitol	Yel	GRN
-	Growin on Mac 22	1	DAS	-	-OF Xylose	Bue	Brae
+	DNase hydrolysis	POS	10/		OF Sucrose	Yel/GRN	Blue
	-Starch hydrolysis	NEG	Neb	-	- Arginine	Neg	NCG
-	Lecithinase	New	Neg	~	- Lysine		
	Lipase	NEG	Nea	-	Ornithine Base Control		-1/-
-	-Rapid PYR	Neb			Dase control	V	<del>\</del>
+	Rapid LAP	P05!		-	Acetamide	Nea	NEG
+	Rapid ESC	N+		7	- Esculin Gelatin	POS	Pos
v	Sensitivity to:			+-	Indole		105
-	- Penicillin (10 U)		R	-	- Malonate	Neg	NCG
+	- Vancomycin (30 ug)	8-12	5	-	−PAD −Urea <b>N46-</b> 2 h	Neb	Nela
-	Colistin (10 mcg)	R	R	_	-6.5% NaCL	NEG	NEG
_	Polymyxin B (300 U	R	R	-	-10% Lactose	Lt. Yec SLAN	T_NEG
				1	- ONPG Growth 42°	POS	102

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 179: Elizabethkingia meningoseptica isolate 2-of-28.

	Date Inoculated:	10-20-	06				- 0/
	Final Identification:	10-27-	06 Eli	ZABETH King	IA MEN	ingosepti	<u>c</u> A
				RCH AT 3			as.
						1	0/27/06
	LIGH	FI FINR	00 266	@ 7 1445	20		 
	Gram Morph.			Tubes	3D <u>48h</u>	7 day	
	Gram Test	30		KIA	E/NC	K/K	
	Motility Wet Prep	NEG	SM RODS	$-H_2S$	NEG	NEG	
	Motility Deep	NCG	NC6-	- Pseudo P	Nec	NeG-	
+	Oxidase	Pos		-Pseudo F	NRG	Nela	
+	Catalase	POS		-NO <sub>3</sub> reduced		New	
	PLATES	<u>48 h</u>	7 day	-Gas from NO <sub>3</sub> +NO <sub>2</sub> reduced	NEG	<u>NeG</u> POS	
	Odor	ATONIA		Gas from NO <sub>2</sub>	Nela	Nela	
	Pigment on swab	Glegh		+ OF Fructose	Yel	Yel	
	Pigment on BAP	GRE-		+ OF Dextrose	GRN	tel lla Riv	
	Morphology on BAP	SUTOOTL		OF Lactose	BLUE	Bull	
+	- Beta hemolysis	pos		OF Maltose OF Mannitol	GRN	<u>YEL/GIZIV</u> YEL/GRN	
	- Growth on Mac	NeG	NCG	OF Xylose	BLUE	BLUE	
	- DNase hydrolysis	POS	POS	-OF Sucrose	BLUE	BLUE	
	- Starch hydrolysis	NEG	Q65)	- Arginine	Nea	NEG	
_	- Lecithinase	Nele	NEG	- Lysine			
	Lipase	NEG	NEG	<ul> <li>Ornithine</li> <li>Base Control</li> </ul>		-1	
•	-Rapid PYR	POS			¥/		
	- Rapid LAP	•	lery strong)	Acetamide Esculin	NEG	Neb-	
+	-Rapid ESC	POS		Gelatin	Pos	POS	
	Sensitivity to:	$\bigcirc$	~	Indole		03	
455°	Penicillin (10 U)	1<	_K	Malonate PAD	NEG	Nee	
_	Vancomycin (30 ug)	5-12	_5	Urea <i>N<u></u>_Urea</i>	NeG	NEG	
	Colistin (10 mcg)	<u></u>	R	-6.5% NaCL 10% Lactose	NEG-	NEG	
-	Polymyxin B (300 U)		_K	+ ONPG	POS	POS	
				Growth 42 <sup>0</sup>	NEG	Nela	

Figure 180: Elizabethkingia meningoseptica isolate 3-of-28.

Re	eference No./Name:					N
Da	ate Inoculated:	12-5-	06			12/13/06
Fir	nal Identification:	12-13-	06 EL12	ABETHEN	Vgia W	newingo septica A.S.
Co	omments: Dibbe				<i>v</i>	Seudo PEE 48h.
	Pench	ON 9Y	Arch @ 71	AYS Ball		·
	ram Morph. ram Test	24hr.	48h	-	48 h E/NC	7 day K/K
M	otility Wet Prep	Neb Me	ed ized & NEC	H <sub>2</sub> S	NEG	Gught H2E @ INter FACE
,	otility Deep xidase	New Pos	Neig	<ul><li>Pseudo P</li><li>Pseudo F</li></ul>	NECO	Nel- Nel- Yel dikourbe pignent
	LATES	<u>POS</u> <u>48 h</u> MOTH BALL	<u>/ uay</u>	<ul> <li>NO₃ reduced</li> <li>Gas from NO₃</li> <li>✓ NO₂ reduced</li> <li>Gas from NO₂</li> </ul>	tiny bubble	NEG
- Pij M + Be	gment on swab gment on BAP forphology on BAP eta hemolysis rowth on Mac Nase hydrolysis	Buff GREY SHOOTH POS NEG POS	NEG	OF Fructose OF Dextrose OF Lactose OF Maltose OF Mannitol OF Xylose OF Sucrose	BLUE	CRN GRN LIGHT BUME GRN GRN DARE BLUE DARE BLUE DARE BLUE
- Le	arch hydrolysis ecithinase ipase apid PYR	Nec- Nec- Nec-	NEG NEG WEG	Arginine Lysine Ornithine Base Control	Ne G	Nec
+ Ra + Ra <u>Se</u>	apid LAP apid ESC <u>ensitivity to:</u> Penicillin (10 U)		STRENG t)	Acetamide Esculin Gelatin Indole Malonate	NeG POS NeG NeG	NEG POS POS NEG
	Vancomycin (30 ug) Colistin (10 mcg) Polymyxin B (300 U)	RR	$\frac{R}{R}$ +	PAD Urea $\underline{\mathcal{M}}$ h 6.5% NaCL 10% Lactose $\underline{\mathcal{M}}$ ONPG $\underline{G}$ rowth 42°	NEG NEG NEG NEG NEG	POG (GLANT) NEG NEG POS NEG

Figure 181: Elizabethkingia meningoseptica isolate 4-of-28.

9-18-07 Date Inoculated: on: <u>ELIZABETH EINGIA</u> Yel diffusible pignent Meningosepi Final Identification: Pseudo Comments: ON ROSE COLOR ON STARch & E66 7 DAYS Yolke @ 9/24 Gram Morph. Tubes 48 h 7 day KIA HINC 24 h Gram Test H2S  $H_2S$ Nec Motility Wet Prep Nº6 - Sm Rods Yel dief pignet Motility Deep NeG NEG Pseudo P NeG Nele Nec Pseudo F New INOCULUN POG Oxidase PINTE @ 7 DAYS POS Catalase STRONG Nel NO<sub>3</sub> reduced Gas from NO<sub>3</sub> Ne New PLATES 48 h 7 day NO<sub>2</sub> reduced Ne NONE Odor MOTH BALLS Gas from NO<sub>2</sub> Nec New Plech Pigment on swab **OF** Fructose Vel ec bright grey Pigment on BAP **OF** Dextrose YEL 21 Smooth Morphology on BAP **OF** Lactose GEN/BLUE rue OF Maltose POY RN Neb Yel Beta hemolysis **OF** Mannitol ler eL Growth on Mac Nels Neb **OF** Xylose BLLE BLUE POS POG BLUE **OF** Sucrose DNase hydrolysis BLUP APEG Starch hydrolysis NEG Neb Nec Arginine NPG Neu-Lecithinase Lysine NeG Ornithine Lipase Nele **Base** Control Pos (weak) Rapid PYR POS (STRONG) Rapid LAP Acetamide el **Æ**Esculin Rapid ESC POS Gelatin Sensitivity to: 🗲 Indole Malonate NCU Penicillin (10 U) PAD 26 8-16 Vancomycin (30 ug) UreaNela 2 h NPI Nea Colistin (10 mcg) 6.5% NaCL NEC 10% Lactose NP6 Polymyxin B (300 U) ONPG POS Growth 42° Nela

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 182: Elizabethkingia meningoseptica isolate 5-of-28.

9-25-07 ion: ELIZABETHKINGIA MENINGOSEPTILA 19/5/07 AS PEACH colored on Egg Yolk & Storeh @ Teh Date Inoculated: Final Identification: Comments:

		9/	128	
Gram Morph.	(	Tubes	<u>48 h</u>	$\frac{7 \text{ day}}{100000000000000000000000000000000000$
Gram Test	48hR 24h	KIA H <sub>2</sub> S G	KINC .	Shalt Has
Motility Wet Prep	NEG- SM. Rods NEG	Π <sub>2</sub> 5 5	CIGHT ITZ >	
Motility Deep	NeG NeG	Pseudo P	NeG	NEG You diff pight
Oxidase	Pos	Pseudo F	NEG	NEG ON Prevelo P
Catalase	STRONG POS	NO <sub>3</sub> reduced		Nela
PLATES	<u>48 h 7 day</u>	Gas from $NO_3$	Nela	Neu
Odor	None	$NO_2$ reduced Gas from $NO_2$	New	Nela
Pigment on swab	flesh			YeL
Pigment on BAP	GREY- Slight yel center	OF Fructose OF Dextrose	Yel_	Yel
Morphology on BAP	Smooth-entire	OF Lactose	Bive	YEL/GRN
Beta hemolysis	NeG	OF Maltose OF Mannitol	VeL_	Yel Yel
Growth on Mac	New New	OF Maintion OF Xylose	Yec Blue	BLUE
DNase hydrolysis	POS POS	OF Sucrose	Blue	BLUE
Starch hydrolysis	Neb Her Wt	Arginine	NeG	NeG
Lecithinase	Neb Neb	Lysine		
Lipase	Nela Nela	Ornithine Base Control		
Rapid PYR	NEG	base Control		
Rapid LAP	Pos!	Acetamide	Nele	NeG-
Rapid ESC	POS	Esculin Gelatin	PAS	Posi
Sensitivity to:	<b>A</b>		102	POS
Penicillin (10 U)	$\underline{R}$ $\underline{R}$	Malonate	NEG	Neo
Vancomycin (30 ug	) <u>3-10</u> 5	PAD Urea <u>/V@2</u> -h	Nel	NPG
Colistin (10 mcg)	RR	6.5% NaCL	wt	VERY WEAK +
Polymyxin B (300 I	U) <u>R</u>	10% Lactose ONPG	NeG_ Pess	NEG POF
		Growth 42 <sup>°</sup>	New	Nel-

Figure 183: Elizabethkingia meningoseptica isolate 6-of-28.

E4	IZA BETH	ENG-1A	MENIN goseptica
Comments: Yellow diffies, ble pigmen	+ Pacendo &	3 har	Meningoseptica s P.S. 10/18/08
, ,			
LIGHT SALMON COLOR S	iArch & Ed		<u>@ 30 AY 5</u> 10/10/08
Gram Morph.	Tubes	1 <i>0 10 08</i> 48 h	Iday il DAY
Gram Test	KIA	KINC	KIK
Motility Wet Prep Neb - 3m kod 4	$H_2S$	Nec	SUGHT H2S
Motility Deep NeG NeG	Pseudo P	Nele	Nece yellow diffusible Nece Dight Pseudo P
Oxidase Pos	Pseudo F	NEG	NEL PINE INACULA
Catalase Pos	NO <sub>3</sub> reduced		Nel ON BOTH Tubes
PLATES 48 h 7-day // DAY	Gas from NO <sub>3</sub>	Ne6-	NEG
Odor North BAUS Hoth BAUS	$NO_2$ reduced Gas from $NO_2$	Nela	Nels- Nels-
Pigment on swab Light Pink		Neces	
Pigment on BAP GREY Fizestt	OF Fructose OF Dextrose	Yec	Yel
Morphology on BAP Smooth duell	OF Lactose	BLUE	YEL KARN
Beta hemolysis New Pos	OF Maltose	Yer	Yei
Growth on Mac Neb Neb	OF Mannitol OF Xylose	BLUE	YEL YEL YORN
DNase hydrolysis	OF Sucrose	Bull	BLue
Starch hydrolysis <u>New Pos</u>	Arginine	New	Nec
Lecithinase Net-	Lysine		
Lipase New	Ornithine		<del></del>
Rapid PYR New	Base Control		
Rapid LAP <u>Po 3</u>	Acetamide	New	Nece_
Rapid ESC <u>Pos</u>	Esculin Gelatin	405 : IN +	Pos !
Sensitivity to:	Indole		Pos
Penicillin (10 U) $\underline{R}$ $\underline{K}$	Malonate PAD	Neb	Nla
Vancomycin (30 ug) $\underline{S-16}$	Urea <u>Nel</u> 2 h	Nela	Neca
Colistin (10 mcg) $R - R$	6.5% NaCL	NPC	Nela
Polymyxin B (300 U)	10% Lactose ONPG	Ne6 Pos!	NECT D.R.ANG-C
	Growth 42 <sup>o</sup>	POS	-

١

1

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 184: Elizabethkingia meningoseptica isolate 7-of-28.

Date Inoculated: $12 - 3 - 10$	
Final Identification: <u>ELIZABENEINGIA</u> MENINGOSEPTICA Comments: <u>Perchal PARICO IT COLOR ON STARCH &amp; Egg Yolle</u>	P.S.
Comments: Percha PPRICOTT COLOR ON STARCH & Egg Yolle	
12/6-72h	

		/	12/6 72h	
Gram Morph.		Tubes	48 h	<u>7 day</u>
Gram Test	72h	KIA	FINC	KK
Motility Wet Prep	NEG-SM. ROals	$H_2S$	neo	SLIGHT IT2 7
Motility Deep	Nel Nel	Pseudo P	NeG-	New Yel diffies ble piquet on Pseudof
Oxidase	SLOW POS/ Then StRox	Pseudo F	NCG	NPG
Catalase	P05	NO <sub>3</sub> reduced		NEG
PLATES 7	<sup>2</sup> <u>48 h</u> <u>7 day</u>	Gas from NO <sub>3</sub> NO <sub>2</sub> reduced	Nela	NEC
Odor	AMONIA	$Gas from NO_2$	Nel	NEG
Pigment on swab	flesh			
Pigment on BAP	GREY	OF Fructose OF Dextrose	Yel Yel	Yel
Morphology on BAP	Surrouth - Shikny	OF Lactose	Blue	Blue
Beta hemolysis	NEG	OF Maltose	Yel	Yel
Growth on Mac	NEG NEG	OF Mannitol OF Xylose	Yel Blue	Yec BLCC
DNase hydrolysis	POS POS	OF Sucrose	BLUE	Blue
Starch hydrolysis	New New (wt	) Arginine	NRG	NeL
Lecithinase	NEG NCG	Lysine	NEG	
Lipase	NCG NCG	Ornithine	,	
Rapid PYR	NEG	Base Control	-V	
Rapid LAP	POS	Acetamide	New	Nela
Rapid ESC	NEG (Pekhaps W+)	Esculin Gelatin	POG NPG	Pos
Sensitivity to:		Indole	NEG	105
Penicillin (10 U)	R R	Malonate	New	Nele
Vancomycin (30 ug)	<u>S-11</u> <u>S</u>	PAD Urea	NCG-SLANT	- WY SCANT OFILY
Colistin (10 mcg)	R R	6.5% NaCL	NEG	New
Polymyxin B (300 U)	<u>R</u> R	10% Lactose	Nela	New
		ONPG Growth 42 <sup>0</sup>	NPG	POS NEG

Figure 185: Elizabethkingia meningoseptica isolate 8-of-28.

Date Inoculated: /-	3-11				
Final Identification:	ELIZABETHE	INGIA ME	NINgo	septic A	_
Comments:		STARCH @ 4		P.S. 1	114/11
Gram Morph. Gram Test Motility Wet Prep	24h New-cb	<u>Tubes</u> KIA H <sub>2</sub> S	1-7-11 <u>48 h</u> <u>K</u> <u>K</u> <u>K</u> <u>K</u> <u>K</u>	1-12-) 7 day F/K 541ght h	1 9 DAYS 425
Motility Deep Oxidase	POS POS POS	Pseudo P Pseudo F	NEG- NEG-	NEG-	Slight yellow de l'ober ble piget Pieudo P
Catalase PLATES Odor	<u>STRONG POS</u> <u>48 h 7 day</u> <u>NONE</u>	$NO_3$ reduced Gas from $NO_3$ $NO_2$ reduced Gas from $NO_2$	Nec_ Nec_	Neb Neb Neb	
Pigment on swab Pigment on BAP Morphology on BAP Beta hemolysis Growth on Mac	<u>61050</u> <u>LIGHTG!RY</u> <u>SHOOTL</u> <u>NEG</u> NEG NEG	<ul> <li>+ OF Fructose</li> <li>+ OF Dextrose</li> <li>- OF Lactose</li> <li>+ OF Maltose</li> <li>+ OF Mannitol</li> </ul>	<u>Yel/GRN</u> <u>Yel/GRN</u> <u>BLWE</u> <u>GRN</u> <u>Yel/GR</u> N		
DNase hydrolysis Starch hydrolysis	POS POS New New	<ul> <li>OF Xylose</li> <li>OF Sucrose</li> <li>Arginine</li> </ul>	Bene Bene Nela	BLUE BLUE NEG	
Lecithinase Lipase Rapid PYR	<u>Nec</u> <u>Nec</u> <u>Nec</u> <u>Nec</u> <u>-<del>Nec</del> (</u> W+)	Lysine Ornithine Base Control			
Rapid LAP Rapid ESC	POS !! POS	<ul> <li>Acetamide</li> <li>Esculin</li> <li>Gelatin</li> </ul>	NCG POS WT	NeG- Pos Pos	
Sensitivity to: Penicillin (10 U) Vancomycin (30 ug) Colistin (10 mcg) Polymyxin B (300 U)	<u>R</u> <u>R</u> 5-12 <u>5</u> <u>R</u> <u>R</u> <u>R</u>	<ul> <li>H Indole</li> <li>Malonate</li> <li>PAD</li> <li>Urea Mc-2 h</li> <li>6.5% NaCL</li> <li>10% Lactose</li> <li>ONPG</li> <li>Growth 42<sup>0</sup></li> </ul>	NCG HPINKSUN Neg Neg Pos Neg	NeG NeG NeG NeG NeG NeG NeG NeG NeG NeG	

Figure 186: Elizabethkingia meningoseptica isolate 9-of-28.

Final Identification:

11-9-11 ELIZABETH KINGIA MENINGO SEPTICA 12/1/11 P.S.

Comments:

Gram Morph. Gram Test	246 able Son-med	<u>Tubes</u> KIA H <sub>2</sub> S	<u>48 h</u> ENC New	11/17/11 8 DAT <u>7 day</u> <u>K/NC</u> <u>AC5</u>	15
Motility Wet Prep Motility Deep Oxidase	NEG- NEG NEG- NEG POS	Pseudo P Pseudo F	NCG-	NCG- NCG	
Catalase <u>PLATES</u> Odor	STRONG POS 48 h 7 day NONC	$NO_3$ reduced Gas from $NO_3$ $NO_2$ reduced Gas from $NO_2$	Nºle Nºle	NCC NCC NCC NCC	
Pigment on swab Pigment on BAP Morphology on BAP Beta hemolysis Growth on Mac DNase hydrolysis	<u>Flegh</u> <u>Gref</u> <u>Smooth</u> <u>Neb</u> <u>Neb</u> <u>Neb</u> <u>Pos</u> <u>Pos</u>	OF Fructose + OF Dextrose + OF Lactose + OF Maltose OF Mannitol - OF Xylose - OF Sucrose	GRN Bive Blue GRN GRN GRN BLUE BLUE	CRN Yec Yec Tec CRN Deep Bune Deep Bune	
Starch hydrolysis Lecithinase Lipase Rapid PYR	NEG WE NEG NEG NEG NEG NEG	Arginine Lysine Ornithine Base Control		<u>Nec</u>	
Rapid LAP Rapid ESC <u>Sensitivity to:</u> Penicillin (10 U) Vancomycin (30 ug) Colistin (10 mcg) Polymyxin B (300 U)	<u>Pos!</u> <u>NeG</u> <u>R</u> <u>R</u> <u>R</u> <u>R</u> <u>R</u> <u>R</u> <u>R</u>	Acetamide Esculin Gelatin + Indole Malonate PAD Urea <u>Mee</u> 2 h 6.5% NaCL 10% Lactose ONPG Growth 42 <sup>0</sup>	Nº6 POS! Nº6 Nº6 Nº6 Nº6 Nº6 Nº6 Nº6 Nº6	New Pos Pos Pos New New New New New	
		010wul 42	Neb	-NeG	

Note: All biochemical tests (except where noted) are incubated at  $30^{0}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 187: Elizabethkingia meningoseptica isolate 10-of-28.

2-24-12 ELIZABETH FINGIA MENINGOSEPTICA P.S. 3/10/12

Comments:

Final Identification:

				3/10/12 15 DAYS
Gram Morph.	4	Tubes	<u>48 h</u>	7 day
Gram Test	72 h	KIA H <sub>2</sub> S	KINC	F/12 NCO
Motility Wet Prep	NEG Sm Rodes	1125	_New	7/ 6
Motility Deep	tes Nel-	Pseudo P	Nec	Nec- > Yellow
Oxidase	Pos	Pseudo F	NEC	NEG Disfasible pignent P97
Catalase	GTRONG POG -	NO <sub>3</sub> reduced		NAG
PLATES	<u>48 h 7 day</u>	- Gas from $NO_3$ - $HO_2$ reduced	Son Bubyle	TINY BUBBLE
Odor	GLIGHT SHOME LIKE .		NEG	Neb
Pigment on swab	Flegh BAD TOE JAN			Net
Pigment on BAP	GREY	OF Fructose OF Dextrose	GRN	Yel Yel
Morphology on BAP	Smooth Entire	OF Lactose	Beal	Beul
Beta hemolysis	AFEFE POS	OF Maltose	GRN	YeL YeL
Growth on Mac	NO GROWTH NEG	OF Mannitol OF Xylose	BLUE	RLUC
DNase hydrolysis	POS POS	OF Sucrose	BLUE	buce
Starch hydrolysis	W+ POS	Arginine	Nele	Nec
Lecithinase	NEG NEG	Lysine		
Lipase	NEG NEG	Ornithine		
Rapid PYR	10 4	Base Control		
Rapid LAP	POS	Acetamide	Nele	Nec
Rapid ESC	205	Esculin Gelatin	POS! Nela	Pos /
Sensitivity to:		Indole	Neco	POS
Penicillin (10 U)	RR	Malonate	Nela	POS
Vancomycin (30 ug)	S-15 5	PAD Urea <i>N€6</i> 2 h	Nelon Des servit	POS GLANT & BUTT
Colistin (10 mcg)	<u>R</u> <u>R</u>	6.5% NaCL	NEL	NEG
Polymyxin B (300 U	R R	10% Lactose	NEG	Neb- POS
		ONPG Growth 42 <sup>0</sup>	NEG	Neg

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 188: Elizabethkingia meningoseptica isolate 11-of-28.

W 8/24/16 Date Inoculated: P.S. MENINGO SeptiCA ELIZABETH Final Identification: INGIA 9/14/16 Comments: MS Rapid 1D 99.47% Eliz Deringeseptica Sent to IDPH 9/14 3Neeks Gram Morph. Tubes 7 day 48 h KIA Gram Test  $H_2S$ Nea blk Motility Wet Prep Pseudo P Motility Deep eetes 3 Pseudo F Oxidase Catalase ick Pos NO<sub>3</sub> reduced Rid aptor Zh Ne Gas from NO<sub>3</sub> trybubble try bubbe N PLATES <u>48 h</u> 7 day NO<sub>2</sub> reduced Red Odor As-indistinct peight Gas from NO<sub>2</sub> Pigment on swab dkgold **OF** Fructose Yec Pigment on BAP yellow-gro **OF** Dextrose Morphology on BAP pound wet OF Lactose round wet OF Maltose Beta hemolysis Neg Neg OF Mannitol Growth on Mac OF Xylose -61 **OF** Sucrose DNase hydrolysis BC-G Bl Starch hydrolysis Arginine Lecithinase Lysine Ne Ornithine Lipase aa Base Control Rapid PYR POS Acetamide Rapid LAP Esculin Rapid ESC Gelatin Sensitivity to: Indole POS AT JUES Malonate Penicillin (10 U) 6 R Le R PAD 105 105 Vancomycin (30 ug) Urea  $N_2$  h ottomk 20 GR LER Colistin (10 mcg) 6.5% NaCL Nec 10% Lactose 6R R Polymyxin B (300 U) ONPG μ Growth 42° lt film Neg

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 189: Elizabethkingia meningoseptica isolate 12-of-28.

Date Inoculated: Final Identification: m 6/20/14

Maldi - E. Nerigosephica-

Comments:

1

1

	Gram Morph. Gram Test Motility Wet Prep			<u>Tubes</u> KIA H <sub>2</sub> S	48 h K/NC	<u>7 day</u> <u><u><u><u> </u> - <u> </u> - <u> </u>- <u> </u>- <u> </u>- <u> </u>- <u> </u></u></u></u>
-	Motility Deep Oxidase	HE' Nop POS	Neg 7dg	Pseudo P Pseudo F	N	Neg Pinte at Neg Interface
Yellow	Catalase PLATES Odor Pigment on swab Pigment on BAP Morphology on BAP Beta hemolysis	<u>As</u> Elf <u>ash</u> Set <u>annionio</u> <u>Otpeact</u> <u>Uh</u> <u>wetrd</u> <u>N</u>	<u>7 day</u> <u>slight annonia</u> <u>tan</u> <u>iyil-gr</u> <u>witrourd</u> - <u>Neg</u>	NO <sub>3</sub> reduced Gas from NO <sub>3</sub> NO <sub>2</sub> reduced Gas from NO <sub>2</sub> OF Fructose OF Dextrose OF Lactose OF Maltose	N N N N N N N N N N N N N N N N N N N	Rid uffr Zn-Neg-V Neg- Rid-Neg- <del>Rid-Neg- Reg-Neg-Neg-</del> <u>Pos</u> <u>Gr Neg-Lt-Benee</u> <u>Pos</u> <u>Pos</u>
	Growth on Mac DNase hydrolysis Starch hydrolysis Lecithinase Lipase Rapid PYR	N Pos N N Pos-etpin	<u>Pos</u> V <u>Neg-</u> V <u>Neg-</u> V <u>Neg-</u> V	OF Mannitol – OF Xylose – OF Sucrose Arginine Lysine Ornithine Base Control	Be-a-	Pos Gr Neg Lt. Brace Be Nog Doep Brace Neg Neg Neg
	Rapid LAP Rapid ESC <u>Sensitivity to:</u> Penicillin (10 U) Vancomycin (30 ug Colistin (10 mcg) Polymyxin B (300 U	$\frac{f_{CS}}{R_{S}}$ $\frac{f_{CS}}{R_{S}}$ $\frac{f_{CS}}{f_{C}}$ $\frac{f_{CS}}{f_{C}}$	Let v 125 v Let v Let v Let v	Acetamide Esculin Gelatin Indole Malonate PAD Urea <u>1</u> 2 h 6.5% NaCL 10% Lactose ONPG Growth 42 <sup>0</sup>	N N N N N N N N N N N N N N N N N N N	Neg POS POS Neg Neg Neg Neg Neg Neg Neg

Sint for prevencing ELIZABETH LINGIA MENINGO SEPTICA 1//16 P.S.

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 190: Elizabethkingia meningoseptica isolate 13-of-28.

Date Inoculated:	m 4/6/14		
Final Identification:	ELIZABETH FIN	gia Meni	Ngoseptica P.S.
Comments: Lab IL	S: Elizabethkingia meningos	eptica	6/24/16
Maldi	: Eliz. meningoseptica	2.061 /2.09	7 Yellow on Deads P4F
	e griteinige oprie		6/24
Gram Morph.		<u>Tubes</u> KIA	$\frac{48 \text{ h}}{\text{k/k}} \frac{7 \text{ day}}{\text{k/k}}$
Gram Test		$H_2S$	New - bikthin band
Motility Wet Prep			ntega
Motility Deep	Neg 400 Neg 7d	Pseudo P Pseudo F	N Neg- Yec
Oxidase	HOS	r seudo r	IN INEG - COL
Catalase	POS -	NO <sub>3</sub> reduced	X Cleanepterson +
PLATES		Gas from $NO_3$ $NO_2$ reduced	thybubble trybubble -
Odor	0 - 15	- Gas from NO <sub>2</sub>	ting bubble ting bubble -
Pigment on swab	buff dkbr-gray		
Pigment on BAP	wh-gray yel-gray yet	OF Fructose OF Dextrose	yeltop + yel +
Morphology on BAP	raind, wet wind wet	OF Lactose	Bl-Gr - yel top +
Beta hemolysis	Neg Neg	OF Maltose	Bl-Gr - yel top +
Growth on Mac	Neg Neg	OF Mannitol OF Xylose	ye top + ye top +
DNase hydrolysis	Pos Pos	OF Sucrose	Blor blue
Starch hydrolysis	Neg Ner v	A	
Lecithinase	New New	Arginine Lysine	N Neg V
Lipase	New Ner-	Ornithine	N Nec
Rapid PYR	New light? pallark	Base Control	N_ Neg
Rapid LAP	Pos	Acetamide	N NEA V
Rapid ESC	wet? Itgray	Esculin	Possent pos
Sensitivity to:		Gelatin Indole	Pos pos
Penicillin (10 U)	6P GRV	Indole Malonate	New
Vancomycin (30 ug)	155 155 V	PAD	Neg X
Colistin (10 mcg)	6F 6R V	Urea $N_2$ h	N Neg (Verysitpick)
Polymyxin B (300 U)		6.5% NaCL 10% Lactose	N Negt (petyollowe top
1 orymyxin D (500 O)	ur ur	+ ONPG	POS. POS \$0
	-	Growth 42 <sup>0</sup>	N Neg-

Figure 191: Elizabethkingia meningoseptica isolate 14-of-28.

# 19 GENUS EMPEDOBACTER19.1 Empedobacter brevis

Over the course of ASHEX clinical-isolate collection, one individual isolate of Empedobacter brevis was analyzed. The associated biochemical result form is NOT presented here.

Test	+	_	Raw%	<b>W95</b> %	Test	+	_	Raw%	<b>W95</b> %
Motility	0	1	0.00	39.67	$H_2S$	0	1	0.00	39.67
Oxidase	1	0	100.00	60.33	Pseudo P	0	1	0.00	39.67
Catalase	0	1	0.00	39.67	Pseudo F	0	1	0.00	39.67
Yellow Pigment	0	1	0.00	39.67	NO <sub>3</sub> Reduced	0	1	0.00	39.67
Pink Pigment	0	1	0.00	39.67	Gas from $NO_3$	0	1	0.00	39.67
Beta Hemolysis	0	0	50.00	50.00	$NO_2$ Reduced	0	1	0.00	39.67
Growth on Mac	1	0	100.00	60.33	Gas from $NO_2$	0	1	0.00	39.67
Dnase	1	0	100.00	60.33	OF Fructose	0	1	0.00	39.67
Starch	1	0	100.00	60.33	OF Dextrose	0	1	0.00	39.67
Lecithinase	0	1	0.00	39.67	OF Lactose	0	1	0.00	39.67
Lipase	0	1	0.00	39.67	OF Maltose	0	1	0.00	39.67
PYR	0	0	50.00	50.00	OF Mannitol	0	1	0.00	39.67
LAP	0	0	50.00	50.00	OF Xylose	0	1	0.00	39.67
ESC Spot Test	0	0	50.00	50.00	OF Sucrose	0	0	50.00	50.00
Penicillin (10U)	1	0	100.00	60.33	Arginine	0	1	0.00	39.67
Vancomycin $(30\mu g)$	1	0	100.00	60.33	Lysine	0	1	0.00	39.67
Colistin $(10\mu g)$	0	1	0.00	39.67	Ornithine	0	1	0.00	39.67
Polymyxin B (300U)	0	1	0.00	39.67	Acetamide	0	1	0.00	39.67
					Esculin	0	1	0.00	39.67
					Gelatin	0	1	0.00	39.67
					Indole	1	0	100.00	60.33
					Malonate	0	1	0.00	39.67
					PAD	0	1	0.00	39.67
					Urea 2 hrs.	0	1	0.00	39.67
					Urea 48 hrs.	0	1	0.00	39.67
					6.5% NaCl	0	1	0.00	39.67
					10% Lactose	0	1	0.00	39.67
					ONPG	0	1	0.00	39.67
					Growth 42°C	0	1	0.00	39.67

Table 54: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as  $n_+/(n_+ + n_-)$ , where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which shifts raw percentages towards 50% with a strength dependent on the total number of test occurrences. The four antibiotic tests at the bottom of Column 1 are sensitivity tests where a positive result indicates sensitivity to the drug.

# 20 GENUS INQUILINUS20.1 Inquilinus limosus

Over the course of ASHEX clinical-isolate collection, one individual isolate of Inquilinus limosus was analyzed. The associated biochemical result form is presented here.

Test	+	_	Raw%	W95%	Test	+	_	Raw%	W95%
Motility	0	1	0.00	39.67	H <sub>2</sub> S	0	1	0.00	39.67
Oxidase	1	0	100.00	60.33	Pseudo P	0	1	0.00	39.67
Catalase	1	0	100.00	60.33	Pseudo F	0	1	0.00	39.67
Yellow Pigment	0	1	0.00	39.67	NO <sub>3</sub> Reduced	0	1	0.00	39.67
Pink Pigment	0	1	0.00	39.67	Gas from NO <sub>3</sub>	0	1	0.00	39.67
Beta Hemolysis	0	1	0.00	39.67	NO <sub>2</sub> Reduced	0	1	0.00	39.67
Growth on Mac	0	1	0.00	39.67	Gas from $NO_2$	0	1	0.00	39.67
Dnase	0	1	0.00	39.67	OF Fructose	1	0	100.00	60.33
Starch	0	1	0.00	39.67	OF Dextrose	1	0	100.00	60.33
Lecithinase	0	1	0.00	39.67	OF Lactose	0	1	0.00	39.67
Lipase	0	1	0.00	39.67	OF Maltose	0	1	0.00	39.67
PYR	1	0	100.00	60.33	OF Mannitol	1	0	100.00	60.33
LAP	1	0	100.00	60.33	OF Xylose	0	1	0.00	39.67
ESC Spot Test	1	0	100.00	60.33	OF Sucrose	0	1	0.00	39.67
Penicillin (10U)	0	1	0.00	39.67	Arginine	0	1	0.00	39.67
Vancomycin $(30\mu g)$	0	1	0.00	39.67	Lysine	0	1	0.00	39.67
Colistin $(10\mu g)$	0	1	0.00	39.67	Ornithine	0	1	0.00	39.67
Polymyxin B (300U)	0	1	0.00	39.67	Acetamide	0	1	0.00	39.67
					Esculin	1	0	100.00	60.33
					Gelatin	0	1	0.00	39.67
					Indole	0	1	0.00	39.67
					Malonate	1	0	100.00	60.33
					PAD	0	1	0.00	39.67
					Urea 2 hrs.	0	1	0.00	39.67
		-			Urea 48 hrs.	0	1	0.00	39.67
					6.5% NaCl	0	1	0.00	39.67
					10% Lactose	0	1	0.00	39.67
					ONPG	1	0	100.00	60.33
					Growth 42°C	1	0	100.00	60.33

Table 55: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as  $n_+/(n_+ + n_-)$ , where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which shifts raw percentages towards 50% with a strength dependent on the total number of test occurrences. The four antibiotic tests at the bottom of Column 1 are sensitivity tests where a positive result indicates sensitivity to the drug.

Date Inoculated: 5-12-10 CACMLE UNENDLON INQUILINUS limosus

Final Identification:

Comments:

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				-	
Gram Morph.			Tubes	5/14- 48.h	7 day
Gram Test	48h		KIA	E/NC	KINC
Motility Wet Prep	Ne6- Decci - 31Ng	Ly	$H_2S$	Nec-	NeG
Motility Deep	NEG POS? PARA	25	Pseudo P	Nec	WEG-
Oxidase	POS		Pseudo F	NCG	New
Catalase	Pos		NO <sub>3</sub> reduced		New
PLATES	48 h 7 day	-	Gas from NO <sub>3</sub>	NeG	Tray Brobble
Odor	NENE		NO <sub>2</sub> reduced Gas from NO <sub>2</sub>	NEG	<u>NEC</u>
Pigment on swab	white-cream		Gas 110111102		
Pigment on BAP	white		OF Fructose	<u>GRN</u> GRN	<u>Yel</u> GRN
Morphology on BAP	OPAQUE-PASTY	+	OF Dextrose OF Lactose	BLUE	BLUE
Beta hemolysis	Nela	-	OF Maltose	Bill	Bue
Growth on Mac	NEG-NO GROWTH	+	OF Mannitol OF Xylose	GRN	Hel Blue
DNase hydrolysis	NEG NEG	-	OF Sucrose	Bue	BLUE NEC
Starch hydrolysis	Nel Nel		Ameining	NeG-	HEAT PURPLE
Lecithinase	New Nece		Arginine Lysine	1	NEG- 7
Lipase	NEG NEG		Ornithine		Nec- Ne
Rapid PYR	Pos		Base Control		Nela
Rapid LAP	POS		Acetamide	Nec	Neb
Rapid ESC	POS	+	Esculin Gelatin	POS	Pos ! New
Sensitivity to:			Indole	1100	New
Penicillin (10 U)	R_R	t	Malonate	New	POS
Vancomycin (30 ug)	R_R		PAD Urea <u>Nel</u> 2 h	NºCo NºCo	slight pink 9
Colistin (10 mcg)	<u>R</u> R	-	6.5% NaCL	NEG	fes
Polymyxin B (300 U)	RR		10% Lactose ONPG	NeG-	NEG-
			Growth $42^{\circ}$	POS	POS

Note: All biochemical tests (except where noted) are incubated at 30°C and read after 48 hrs. incubation and again at 7 days.

Figure 192: Inquilinus limosus isolate 1-of-1.

# 21 GENUS KERSTERSIA

#### 21.1 Kerstersia gyiorum

Over the course of ASHEX clinical-isolate collection, six individual isolates of Kerstersia gyiorum were analyzed. Two of the six recorded results are pictured in this subsection.

Test	+	_	Raw%	<b>W95</b> %	Test	+	_	Raw%	W95%
Motility	5	1	83.33	70.32	$H_2S$	0	6	0.00	19.52
Oxidase	0	6	0.00	19.52	Pseudo P	0	6	0.00	19.52
Catalase	6	0	100.00	80.48	Pseudo F	0	6	0.00	19.52
Yellow Pigment	0	6	0.00	19.52	NO <sub>3</sub> Reduced	0	6	0.00	19.52
Pink Pigment	0	6	0.00	19.52	Gas from $NO_3$	0	6	0.00	19.52
Beta Hemolysis	0	6	0.00	19.52	NO <sub>2</sub> Reduced	0	6	0.00	19.52
Growth on Mac	6	0	100.00	80.48	Gas from $NO_2$	0	6	0.00	19.52
Dnase	0	6	0.00	19.52	OF Fructose	0	6	0.00	19.52
Starch	0	6	0.00	19.52	OF Dextrose	0	6	0.00	19.52
Lecithinase	0	6	0.00	19.52	OF Lactose	0	6	0.00	19.52
Lipase	0	6	0.00	19.52	OF Maltose	0	6	0.00	19.52
PYR	0	6	0.00	19.52	OF Mannitol	0	6	0.00	19.52
LAP	6	0	100.00	80.48	OF Xylose	0	6	0.00	19.52
ESC Spot Test	0	6	0.00	19.52	OF Sucrose	0	6	0.00	19.52
Penicillin (10U)	0	6	0.00	19.52	Arginine	0	6	0.00	19.52
Vancomycin $(30\mu g)$	0	6	0.00	19.52	Lysine	0	6	0.00	19.52
Colistin $(10\mu g)$	6	0	100.00	80.48	Ornithine	0	6	0.00	19.52
Polymyxin B (300U)	6	0	100.00	80.48	Acetamide	0	6	0.00	19.52
					Esculin	0	6	0.00	19.52
					Gelatin	0	6	0.00	19.52
					Indole	0	6	0.00	19.52
					Malonate	4	2	66.67	60.16
					PAD	0	6	0.00	19.52
					Urea 2 hrs.	0	6	0.00	19.52
					Urea 48 hrs.	0	6	0.00	19.52
					6.5% NaCl	6	0	100.00	80.48
					10% Lactose	0	6	0.00	19.52
					ONPG	0	6	0.00	19.52
					Growth 42°C	6	0	100.00	80.48

Table 56: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as  $n_+/(n_+ + n_-)$ , where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which shifts raw percentages towards 50% with a strength dependent on the total number of test occurrences. The four antibiotic tests at the bottom of Column 1 are sensitivity tests where a positive result indicates sensitivity to the drug.

Date Inoculated:	F 1/13/17			•	
Final Identification:	Karstevsia	gyiorum	Prob. 97	1162 pu	dal 100
Comments: La	b 1D: Kerster	sia aviora	m Mal	di 2.11	upt raidi 2.44
		51			1
				20	17-10
Gram Morph.			Tubes	72 48 h	7 day
Gram Test			KIA	KINC	KK
Motility Wet Prep	)	Iday	H <sub>2</sub> S	Nez	Neg dot of blk
Motility Deep	NIGG-	that sping	Pseudo P	Neg	Neg
Oxidase	Verslow + (	New	Pseudo F	Neg	Neg
Catalase	Pas	map 1	NO <sub>3</sub> reduced	V	Pedilla Zo -
PLATES		lay	$Gas from NO_3$	tin pubble	tubable -
Odor		hay	NO <sub>2</sub> reduced	X	Red-Neg -
	Sight blind	pleady	Gas from NO <sub>2</sub>	they pubble	- thypubble -
Pigment on swab	It straw et	Straw	OF Fructose	Nor-Ge	Blue-Co-
Pigment on BAP	- wh - gray _	thospay	OF Dextrose	They or	face -
Morphology on BAI	Sneady close	spready	OF Lactose		
Beta hemolysis	Ner	Neg	OF Maltose		
Growth on Mac	Pos	POS (F)	OF Mannitol OF Xylose		
DNase hydrolysis	Neg	Neg	OF Sucrose	$\downarrow$	
Starch hydrolysis	Neg	Neg	Arginine	Uner	1/11 -
Lecithinase	Nea	New	Lysine	Nors	Nea -
Lipase	Neg	Nez	Ornithine		plaz -
Rapid PYR	Neg .	<i>0</i>	Base Control	<u> </u>	Noj -
Rapid LAP	Pase		Acetamide	Ner	Nen
Rapid ESC	Ner		Esculin	Ner	Na
Sensitivity to:			Gelatin Indole	Ng	Neg
Penicillin (10 U)	6 R	lef 6	Malonate	105	POS D
Vancomycin (30 u	g) (e R	LIR	PAD	Neg	
Colistin (10 mcg)	115	IIS P	Urea <u>№</u> 2 h 6.5% NaCL	Nec Dos	-Neg- Pos (P)
Polymyxin B (300	U 155	KS P	10% Lactose	Neg	Ner
1 organiyani D (500			ONPG	Neg	Neg a
			Growth 42 <sup>0</sup>	Pos	_Pos_(+)

Figure 193: Kerstersia gyiorum isolate 1-of-6.

Date Inoculated:	W 8/23/17		
Final Identification:	Kerstersia gyiorum	Prob 97.716%	MS= 100
Comments: Lab	1D: Kerstersia gyic	orum	
	edi: Kerstersia gyro	vum 2.45	
			<b>7 1 </b>
Gram Morph.		Tubes 48/h KIA	<u>7 day</u> K/K
Gram Test		H <sub>2</sub> S	Neg
Motility Wet Prep		1	lac
Motility Deep	Pos @	Pseudo P Pseudo F	Neg-
Oxidase	Ner		
Catalase	Pos @	NO <sub>3</sub> reduced X	Redafter to NS
PLATES	48 h 7 day	Gas from NO <sub>3</sub>	Red -Ngt
Odor	Frito snell	Gas from NO <sub>2</sub>	Neg
Pigment on swab	buff	OF Fructose	Nea
Pigment on BAP	white	OF Dextrose	Nor
Morphology on BAP	Spready "ghost"	OF Lactose	Nex
Beta hemolysis	Neg	OF Maltose OF Mannitol	Noz-
Growth on Mac	Pos D	OF Xylose	Neg
DNase hydrolysis	Neg	OF Sucrose	Neg-
Starch hydrolysis	Noz	Arginine	Nea
Lecithinase	Nor	Lysine	Neg
Lipase	Neg	Ornithine Base Control	- Ng
Rapid PYR	Ness		
Rapid LAP	Pos@>Iday	Acetamide	Neg
Rapid ESC	Noz	Esculin Gelatin	- New
Sensitivity to:	0	Indole X	Neg
Penicillin (10 U)	6 R	Malonate	- B.C
Vancomycin (30 ug)	6 R	PAD Urea2 h	Wex
Colistin (10 mcg)	135 D	6.5% NaCL	PDS D
Polymyxin B (300 U)	135 D	10% Lactose ONPG	- Neg
		Growth 42 <sup>o</sup>	Pos D

Figure 194: Kerstersia gyiorum isolate 2-of-6.

# 22 GENUS LARIBACTER22.1 Laribacter hongkongensis

Over the course of ASHEX clinical-isolate collection, two individual isolates of Laribacter hongkongensis were analyzed. Zero of the two recorded results are pictured in this subsection.

Test	+	_	Raw%	<b>W95</b> %	Test	+	—	Raw%	W95%
Motility	2	0	100.00	67.12	$H_2S$	0	2	0.00	32.88
Oxidase	2	0	100.00	67.12	Pseudo P	0	2	0.00	32.88
Catalase	2	0	100.00	67.12	Pseudo F	0	2	0.00	32.88
Yellow Pigment	0	2	0.00	32.88	NO <sub>3</sub> Reduced	2	0	100.00	67.12
Pink Pigment	0	2	0.00	32.88	Gas from $NO_3$	0	2	0.00	32.88
Beta Hemolysis	0	2	0.00	32.88	NO <sub>2</sub> Reduced	0	2	0.00	32.88
Growth on Mac	2	0	100.00	67.12	Gas from $NO_2$	0	2	0.00	32.88
Dnase	0	2	0.00	32.88	OF Fructose	0	2	0.00	32.88
Starch	0	2	0.00	32.88	OF Dextrose	0	2	0.00	32.88
Lecithinase	0	2	0.00	32.88	OF Lactose	0	2	0.00	32.88
Lipase	0	2	0.00	32.88	OF Maltose	0	2	0.00	32.88
PYR	0	2	0.00	32.88	OF Mannitol	0	2	0.00	32.88
LAP	2	0	100.00	67.12	OF Xylose	0	2	0.00	32.88
ESC Spot Test	0	2	0.00	32.88	OF Sucrose	0	2	0.00	32.88
Penicillin (10U)	0	2	0.00	32.88	Arginine	2	0	100.00	67.12
Vancomycin $(30\mu g)$	0	2	0.00	32.88	Lysine	0	2	0.00	32.88
Colistin $(10\mu g)$	2	0	100.00	67.12	Ornithine	0	2	0.00	32.88
Polymyxin B (300U)	2	0	100.00	67.12	Acetamide	0	2	0.00	32.88
					Esculin	0	2	0.00	32.88
					Gelatin	0	2	0.00	32.88
					Indole	0	2	0.00	32.88
					Malonate	2	0	100.00	67.12
					PAD	0	2	0.00	32.88
					Urea 2 hrs.	2	0	100.00	67.12
					Urea 48 hrs.	2	0	100.00	67.12
					6.5% NaCl	0	2	0.00	32.88
					10% Lactose	0	2	0.00	32.88
					ONPG	0	2	0.00	32.88
					Growth 42°C	2	0	100.00	67.12

Table 57: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as  $n_+/(n_+ + n_-)$ , where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which shifts raw percentages towards 50% with a strength dependent on the total number of test occurrences. The four antibiotic tests at the bottom of Column 1 are sensitivity tests where a positive result indicates sensitivity to the drug.

# 23 GENUS METHYLOBACTERIUM23.1 Methylobacterium species

Over the course of ASHEX clinical-isolate collection, 13 individual isolates of Methylobacterium species were analyzed. One of the 13 recorded results is pictured in this subsection.

Test	+	-	Raw%	<b>W95</b> %	Test	+	_	Raw%	W95%
Motility	1	12	7.69	17.34	H <sub>2</sub> S	0	13	0.00	11.41
Oxidase	12	0	100.00	87.87	Pseudo P	0	13	0.00	11.41
Catalase	13	0	100.00	88.59	Pseudo F	0	13	0.00	11.41
Yellow Pigment	0	13	0.00	11.41	NO <sub>3</sub> Reduced	5	8	38.46	41.09
Pink Pigment	12	0	100.00	87.87	Gas from $NO_3$	0	3	0.00	28.08
Beta Hemolysis	0	3	0.00	28.08	NO <sub>2</sub> Reduced	0	13	0.00	11.41
Growth on Mac	0	13	0.00	11.41	Gas from $NO_2$	0	3	0.00	28.08
Dnase	0	13	0.00	11.41	OF Fructose	9	4	69.23	64.84
Starch	6	7	46.15	47.03	OF Dextrose	8	5	61.54	58.91
Lecithinase	0	4	0.00	24.50	OF Lactose	0	13	0.00	11.41
Lipase	0	4	0.00	24.50	OF Maltose	0	13	0.00	11.41
PYR	0	3	0.00	28.08	OF Mannitol	0	13	0.00	11.41
LAP	1	2	33.33	42.69	OF Xylose	9	4	69.23	64.84
ESC Spot Test	0	3	0.00	28.08	OF Sucrose	0	3	0.00	28.08
Penicillin (10U)	4	9	30.77	35.16	Arginine	0	13	0.00	11.41
Vancomycin $(30\mu g)$	0	13	0.00	11.41	Lysine	0	13	0.00	11.41
Colistin $(10\mu g)$	0	13	0.00	11.41	Ornithine	0	13	0.00	11.41
Polymyxin B (300U)	2	2	50.00	50.00	Acetamide	2	11	15.38	23.28
					Esculin	0	13	0.00	11.41
					Gelatin	0	13	0.00	11.41
					Indole	0	13	0.00	11.41
					Malonate	7	0	100.00	82.28
					PAD	0	13	0.00	11.41
					Urea 2 hrs.	0	13	0.00	11.41
					Urea 48 hrs.	9	4	69.23	64.84
					6.5% NaCl	2	11	15.38	23.28
					10% Lactose	0	7	0.00	17.72
					ONPG	0	3	0.00	28.08
					Growth 42°C	1	12	7.69	17.34

Table 58: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as  $n_+/(n_+ + n_-)$ , where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which shifts raw percentages towards 50% with a strength dependent on the total number of test occurrences. The four antibiotic tests at the bottom of Column 1 are sensitivity tests where a positive result indicates sensitivity to the drug.

	Date Inoculated:	12-2-	09				
	Final Identification:	12-14-0	9 M	ethy Lobacte	r ericed	Specie	°S
	Comments: Pink	E color	ies on	Pseudo PoF,	STARCH	Egg Yold	6 484
	Boyak	A Red in	Papudo	PHE @ 12 DAYS			
	Vicizi	i here on	Rand	GTARCH DEGG		12/14 12	2 DAYS
	Gram Morph.			Tubes	48 h	7 day	
	Gram Test	48h	4D	KIA	Neb-	KK	
	Motility Wet Prep	Nela	Neld	H <sub>2</sub> S	Neo	her	
-	Motility Deep	Nela	905 Z	Pseudo P	Neb	peb-	
	Oxidase	POS		Pseudo F	New	NEG	
	Catalase	pos		NO <sub>3</sub> reduced		NCG	
	PLATES	<u>48 h</u>	7 day	Gas from NO <sub>3</sub> NO <sub>2</sub> reduced	Nea	NeG	
1	Odor	NONE		Gas from NO <sub>2</sub>	NEG	Ne6- Ne6-	
	Pigment on swab	CRIMSON K	ed				
	Pigment on BAP	PINKE		+ OF Fructose + OF Dextrose	YeL YeL	Yel GRN	
	Morphology on BAP	DRY		- OF Lactose	GRN	Real	
	Beta hemolysis	Neb		- OF Maltose	GRN	Bacel	
	Growth on Mac	New	Neb	<ul> <li>OF Mannitol</li> <li>OF Xylose</li> </ul>	GRN GRN	GRN	
	DNase hydrolysis	NEG	NeG	_ OF Sucrose	GAN	BLEE	
	Starch hydrolysis	Nele	Pos	Arginine	Nec	NEG	
	Lecithinase	NEG	New	Lysine		1	
	Lipase	Neb	Nela	Ornithine			
	Rapid PYR	New		Base Control		_¥(	
	Rapid LAP	Pos		Acetamide	Pos	Pos!	
	Rapid ESC	New		Esculin Gelatin	Nea	NEG	•
	Sensitivity to:			Indole		Nel	
	Penicillin (10 U)	$-R_{-}$	$R_{-}$	Malonate	POS	P05 !	
	Vancomycin (30 ug)	R	R	PAD Urea2 h	POS (SLA	NEC NTONLY)	05 SLAN & Butt
	Colistin (10 mcg)	R	R	6.5% NaCL	Nel	NEG	
1	Polymyxin B (300 U)	R	R	10% Lactose	Nela	NeG-	
				ONPG Growth 42 <sup>°</sup>	NEL	Nel	

Figure 195: Methylobacterium species isolate 1-of-13.

# 24 GENUS MORAXELLA24.1 Moraxella atlantae

Over the course of ASHEX clinical-isolate collection, one individual isolate of Moraxella atlantae was analyzed. The associated biochemical result form is NOT presented here.

Test	+	_	Raw%	<b>W95</b> %	Test	+	—	Raw%	<b>W95</b> %
Motility	0	1	0.00	39.67	$H_2S$	0	1	0.00	39.67
Oxidase	1	0	100.00	60.33	Pseudo P	0	1	0.00	39.67
Catalase	1	0	100.00	60.33	Pseudo F	0	1	0.00	39.67
Yellow Pigment	0	1	0.00	39.67	NO <sub>3</sub> Reduced	0	1	0.00	39.67
Pink Pigment	0	1	0.00	39.67	Gas from $NO_3$	0	0	50.00	50.00
Beta Hemolysis	0	0	50.00	50.00	$NO_2$ Reduced	0	1	0.00	39.67
Growth on Mac	1	0	100.00	60.33	Gas from $NO_2$	0	0	50.00	50.00
Dnase	0	1	0.00	39.67	OF Fructose	0	1	0.00	39.67
Starch	0	1	0.00	39.67	OF Dextrose	0	1	0.00	39.67
Lecithinase	0	0	50.00	50.00	OF Lactose	0	1	0.00	39.67
Lipase	0	0	50.00	50.00	OF Maltose	0	1	0.00	39.67
PYR	0	0	50.00	50.00	OF Mannitol	0	1	0.00	39.67
LAP	0	0	50.00	50.00	OF Xylose	0	1	0.00	39.67
ESC Spot Test	0	0	50.00	50.00	OF Sucrose	0	0	50.00	50.00
Penicillin (10U)	1	0	100.00	60.33	Arginine	0	1	0.00	39.67
Vancomycin $(30\mu g)$	0	1	0.00	39.67	Lysine	0	1	0.00	39.67
Colistin $(10\mu g)$	1	0	100.00	60.33	Ornithine	0	1	0.00	39.67
Polymyxin B (300U)	0	0	50.00	50.00	Acetamide	0	1	0.00	39.67
					Esculin	0	1	0.00	39.67
					Gelatin	0	1	0.00	39.67
					Indole	0	1	0.00	39.67
					Malonate	0	1	0.00	39.67
					PAD	0	1	0.00	39.67
					Urea 2 hrs.	0	1	0.00	39.67
					Urea 48 hrs.	0	1	0.00	39.67
					6.5% NaCl	1	0	100.00	60.33
					10% Lactose	0	1	0.00	39.67
					ONPG	0	1	0.00	39.67
					Growth 42°C	1	0	100.00	60.33

Table 59: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as  $n_+/(n_+ + n_-)$ , where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which shifts raw percentages towards 50% with a strength dependent on the total number of test occurrences. The four antibiotic tests at the bottom of Column 1 are sensitivity tests where a positive result indicates sensitivity to the drug.

### 24.2 Moraxella lacunata

Over the course of ASHEX clinical-isolate collection, five individual isolates of Moraxella lacunata were analyzed. Zero of the five recorded results are pictured in this subsection.

Test	+	_	Raw%	<b>W95</b> %	Test	+	_	Raw%	W95%
Motility	0	5	0.00	21.72	$H_2S$	0	5	0.00	21.72
Oxidase	5	0	100.00	78.28	Pseudo P	0	5	0.00	21.72
Catalase	5	0	100.00	78.28	Pseudo F	0	5	0.00	21.72
Yellow Pigment	0	5	0.00	21.72	NO <sub>3</sub> Reduced	2	3	40.00	44.34
Pink Pigment	0	5	0.00	21.72	Gas from $NO_3$	0	5	0.00	21.72
Beta Hemolysis	0	5	0.00	21.72	NO <sub>2</sub> Reduced	0	5	0.00	21.72
Growth on Mac	0	5	0.00	21.72	Gas from $NO_2$	0	5	0.00	21.72
Dnase	0	5	0.00	21.72	OF Fructose	0	5	0.00	21.72
Starch	0	5	0.00	21.72	OF Dextrose	0	5	0.00	21.72
Lecithinase	0	5	0.00	21.72	OF Lactose	0	5	0.00	21.72
Lipase	0	5	0.00	21.72	OF Maltose	0	5	0.00	21.72
PYR	0	5	0.00	21.72	OF Mannitol	0	5	0.00	21.72
LAP	5	0	100.00	78.28	OF Xylose	0	5	0.00	21.72
ESC Spot Test	0	5	0.00	21.72	OF Sucrose	0	5	0.00	21.72
Penicillin (10U)	2	3	40.00	44.34	Arginine	0	5	0.00	21.72
Vancomycin $(30\mu g)$	5	0	100.00	78.28	Lysine	0	5	0.00	21.72
Colistin $(10\mu g)$	5	0	100.00	78.28	Ornithine	0	5	0.00	21.72
Polymyxin B (300U)	4	1	80.00	66.97	Acetamide	0	5	0.00	21.72
					Esculin	0	5	0.00	21.72
					Gelatin	3	2	60.00	55.66
					Indole	0	5	0.00	21.72
					Malonate	0	5	0.00	21.72
					PAD	0	5	0.00	21.72
					Urea 2 hrs.	0	5	0.00	21.72
					Urea 48 hrs.	0	5	0.00	21.72
					6.5% NaCl	0	5	0.00	21.72
					10% Lactose	0	5	0.00	21.72
					ONPG	0	5	0.00	21.72
					Growth 42°C	0	5	0.00	21.72

Table 60: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as  $n_+/(n_+ + n_-)$ , where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which shifts raw percentages towards 50% with a strength dependent on the total number of test occurrences. The four antibiotic tests at the bottom of Column 1 are sensitivity tests where a positive result indicates sensitivity to the drug.

### 24.3 Moraxella lincolnii

Over the course of ASHEX clinical-isolate collection, one individual isolate of Moraxella lincolnii was analyzed. The associated biochemical result form is NOT pictured in this subsection.

Test	+	_	Raw%	W95%	Test	+	—	Raw%	W95%
Motility	0	1	0.00	39.67	$H_2S$	0	1	0.00	39.67
Oxidase	1	0	100.00	60.33	Pseudo P	0	1	0.00	39.67
Catalase	1	0	100.00	60.33	Pseudo F	0	1	0.00	39.67
Yellow Pigment	0	1	0.00	39.67	NO <sub>3</sub> Reduced	0	1	0.00	39.67
Pink Pigment	0	1	0.00	39.67	Gas from $NO_3$	0	1	0.00	39.67
Beta Hemolysis	0	1	0.00	39.67	$NO_2$ Reduced	1	0	100.00	60.33
Growth on Mac	0	1	0.00	39.67	Gas from $NO_2$	0	1	0.00	39.67
Dnase	0	1	0.00	39.67	OF Fructose	0	1	0.00	39.67
Starch	0	1	0.00	39.67	OF Dextrose	0	1	0.00	39.67
Lecithinase	0	1	0.00	39.67	OF Lactose	0	1	0.00	39.67
Lipase	0	1	0.00	39.67	OF Maltose	0	1	0.00	39.67
PYR	0	1	0.00	39.67	OF Mannitol	0	1	0.00	39.67
LAP	1	0	100.00	60.33	OF Xylose	0	1	0.00	39.67
ESC Spot Test	0	1	0.00	39.67	OF Sucrose	0	1	0.00	39.67
Penicillin (10U)	0	1	0.00	39.67	Arginine	0	1	0.00	39.67
Vancomycin $(30\mu g)$	0	1	0.00	39.67	Lysine	0	1	0.00	39.67
Colistin $(10\mu g)$	1	0	100.00	60.33	Ornithine	0	1	0.00	39.67
Polymyxin B (300U)	1	0	100.00	60.33	Acetamide	0	1	0.00	39.67
					Esculin	0	1	0.00	39.67
					Gelatin	0	1	0.00	39.67
					Indole	0	1	0.00	39.67
					Malonate	0	1	0.00	39.67
					PAD	0	1	0.00	39.67
					Urea 2 hrs.	0	1	0.00	39.67
					Urea 48 hrs.	0	1	0.00	39.67
					6.5% NaCl	0	1	0.00	39.67
					10% Lactose	0	1	0.00	39.67
					ONPG	0	1	0.00	39.67
					Growth $42^{\circ}C$	1	0	100.00	60.33

Table 61: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as  $n_+/(n_+ + n_-)$ , where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which shifts raw percentages towards 50% with a strength dependent on the total number of test occurrences. The four antibiotic tests at the bottom of Column 1 are sensitivity tests where a positive result indicates sensitivity to the drug.

### 24.4 Moraxella nonliquefaciens

Over the course of ASHEX clinical-isolate collection, seven individual isolates of Moraxella nonliquefaciens were analyzed. Two of the seven recorded results are pictured in this subsection.

Test	+	_	Raw%	<b>W95</b> %	Test	+	_	Raw%	W95%
Motility	0	7	0.00	17.72	$H_2S$	0	7	0.00	17.72
Oxidase	7	0	100.00	82.28	Pseudo P	0	7	0.00	17.72
Catalase	7	0	100.00	82.28	Pseudo F	0	7	0.00	17.72
Yellow Pigment	0	7	0.00	17.72	NO <sub>3</sub> Reduced	7	0	100.00	82.28
Pink Pigment	0	7	0.00	17.72	Gas from $NO_3$	0	5	0.00	21.72
Beta Hemolysis	0	4	0.00	24.50	$NO_2$ Reduced	0	7	0.00	17.72
Growth on Mac	2	5	28.57	36.16	Gas from $NO_2$	0	5	0.00	21.72
Dnase	0	7	0.00	17.72	OF Fructose	0	7	0.00	17.72
Starch	0	7	0.00	17.72	OF Dextrose	0	7	0.00	17.72
Lecithinase	0	5	0.00	21.72	OF Lactose	0	7	0.00	17.72
Lipase	0	5	0.00	21.72	OF Maltose	0	7	0.00	17.72
PYR	0	3	0.00	28.08	OF Mannitol	0	7	0.00	17.72
LAP	3	0	100.00	71.92	OF Xylose	0	7	0.00	17.72
ESC Spot Test	0	3	0.00	28.08	OF Sucrose	0	3	0.00	28.08
Penicillin (10U)	5	2	71.43	63.84	Arginine	0	7	0.00	17.72
Vancomycin $(30\mu g)$	6	1	85.71	73.06	Lysine	0	7	0.00	17.72
Colistin $(10\mu g)$	7	0	100.00	82.28	Ornithine	0	7	0.00	17.72
Polymyxin B (300U)	5	0	100.00	78.28	Acetamide	0	7	0.00	17.72
					Esculin	0	7	0.00	17.72
					Gelatin	0	7	0.00	17.72
					Indole	0	7	0.00	17.72
					Malonate	0	7	0.00	17.72
					PAD	0	7	0.00	17.72
					Urea 2 hrs.	0	7	0.00	17.72
					Urea 48 hrs.	0	7	0.00	17.72
					6.5% NaCl	0	7	0.00	17.72
					10% Lactose	0	7	0.00	17.72
					ONPG	0	7	0.00	17.72
					Growth 42°C	1	6	14.29	26.94

Table 62: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as  $n_+/(n_+ + n_-)$ , where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which shifts raw percentages towards 50% with a strength dependent on the total number of test occurrences. The four antibiotic tests at the bottom of Column 1 are sensitivity tests where a positive result indicates sensitivity to the drug. Date Inoculated:

7-5-07

Final Identification:

Comments:

1

ENdIN

Gram Morph. Tubes 7 day KIA Gram Test 486 H<sub>2</sub>S Nele Cocci- 496, pRS Neu Motility Wet Prep NG Sheat CHAINS Motility Deep NeG Pseudo P NeG Nela Pseudo F New New Oxidase POS Catalase STRONG POS NO3 reduced Gas from NO<sub>3</sub> Pos Neu PLATES <u>48 h</u> 7 day NO<sub>2</sub> reduced NONP Odor Gas from NO<sub>2</sub> New NCG TINS Pigment on swab BUFF GRN **OF** Fructose GRN Pigment on BAP GREY **OF** Dextrose TRANSLUCENT - SPREADLY Morphology on BAP **OF** Lactose pherry Nelo Atto. Like Gried OF Maltose Beta hemolysis **OF Mannitol** Egg N.G. Growth on Mac NIG OF Xylose **OF** Sucrose DNase hydrolysis N.G N.G. Starch hydrolysis Nec Neo Arginine Nec-NEG Lecithinase NEG NeG Lysine Ornithine New Lipase Nela Base Control Rapid PYR NEG Rapid LAP Acetamide Neb NEG Esculin Neb NeG NeG Rapid ESC Gelatin NEG Nea Sensitivity to: Indole NeG Malonate Penicillin (10 U) Nec Nec PAD Nel 5-22 5 Vancomycin (30 ug) Urea Neb2 h Neu NPC ATTPICAL 5-17 Colistin (10 mcg) 6.5% NaCL Nec 10% Lactose NeG 5-1 Polymyxin B (300 U) 5 ONPG Nec NRG Growth 42° NCG NeG

MORAXELLA NONLIque FACIENS

Note: All biochemical tests (except where noted) are incubated at 30°C and read after 48 hrs. incubation and again at 7 days

Figure 196: Moraxella nonliquefaciens isolate 1-of-7.

7-13-07

Date Inoculated:	10-15-07			
Final Identification:	10-24-07 Mores	Yella NON	Lique	FACIENS
Comments:	CONFI	Romeal by	Segu	
			Jeja	
				0
Gram Morph.		Tubes	48 h	9 d 4 y 5
Gram Test	486	KIA	*KINC	ANC
	NR. MEDRODS	$H_2S$	Arelo	Neb
Motility Wet Prep		Pseudo P	AFRI-	NeG
Motility Deep	NEG NEG	Pseudo F	Nele	NEG
Oxidase	POS	1		
Catalase		★NO <sub>3</sub> reduced Gas from NO <sub>3</sub>	1001	POS
<b>PLATES</b>	48 h 7 day 9 b	$NO_2$ reduced	Nela	NEG
Odor	None	Gas from NO <sub>2</sub>	New	NEC
Pigment on swab	Buee	OF Fructose	GRN	BRN
Pigment on BAP	White/GREY	OF Dextrose	1 CONCIN	<u>Option</u>
Morphology on BAP	TRANSLUCENT - PLTTING	OF Lactose		
Beta hemolysis	NEG OR SPREADING	<ul> <li>OF Maltose</li> <li>OF Mannitol</li> </ul>		
Growth on Mac	NEG NEG 91	OF Mainton		
DNase hydrolysis	NELS- which tept - NE	G OF Sucrose	V	V
Starch hydrolysis	Nele Nela	(BITED	Neb	1106
Lecithinase	NEL NEL	Arginine Lysine	1000	Neb
Lipase	NEG NEG	Ornithine		
Rapid PYR	NeG	Base Control	V	
Rapid LAP	POS	Acetamide	Nela	Nela
Rapid ESC	NeG	Esculin	Neb	Nela
Sensitivity to:		Gelatin Indole	Neb	NEG- NEG
Penicillin (10 U)	R R	Malonate	Neb	NCG
Vancomycin (30 ug)	5-20 5	PAD	NEG	
Colistin (10 mcg)	S-18 S	Urea <u>N<i>°6</i></u> 2 h 6.5% NaCL	NEG	NPG- NPG
Polymyxin B (300 U)	C	10% Lactose	NEL	NEG
$10191119\times111$ D ( $500$ O)		ONPG	New	NEG
		Growth 42 <sup>°</sup>	whi bited	INhibited

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 197: Moraxella nonliquefaciens isolate 2-of-7.

#### 24.5 Moraxella osloensis

Over the course of ASHEX clinical-isolate collection, four individual isolates of Moraxella osloensis were analyzed. Zero of the four recorded results are pictured in this subsection.

Test	+	_	Raw%	W95%	Test	+	_	Raw%	W95%
Motility	0	4	0.00	24.50	$H_2S$	0	4	0.00	24.50
Oxidase	4	0	100.00	75.50	Pseudo P	0	4	0.00	24.50
Catalase	4	0	100.00	75.50	Pseudo F	0	4	0.00	24.50
Yellow Pigment	0	4	0.00	24.50	NO <sub>3</sub> Reduced	0	4	0.00	24.50
Pink Pigment	0	4	0.00	24.50	Gas from $NO_3$	0	3	0.00	28.08
Beta Hemolysis	0	3	0.00	28.08	NO <sub>2</sub> Reduced	0	4	0.00	24.50
Growth on Mac	0	4	0.00	24.50	Gas from $NO_2$	0	3	0.00	28.08
Dnase	0	4	0.00	24.50	OF Fructose	0	4	0.00	24.50
Starch	0	4	0.00	24.50	OF Dextrose	0	4	0.00	24.50
Lecithinase	0	3	0.00	28.08	OF Lactose	0	4	0.00	24.50
Lipase	0	3	0.00	28.08	OF Maltose	0	4	0.00	24.50
PYR	0	2	0.00	32.88	OF Mannitol	0	4	0.00	24.50
LAP	2	0	100.00	67.12	OF Xylose	0	4	0.00	24.50
ESC Spot Test	0	2	0.00	32.88	OF Sucrose	0	2	0.00	32.88
Penicillin (10U)	2	2	50.00	50.00	Arginine	0	4	0.00	24.50
Vancomycin $(30\mu g)$	3	1	75.00	62.75	Lysine	0	4	0.00	24.50
Colistin $(10\mu g)$	4	0	100.00	75.50	Ornithine	0	4	0.00	24.50
Polymyxin B (300U)	3	0	100.00	71.92	Acetamide	0	4	0.00	24.50
					Esculin	0	4	0.00	24.50
					Gelatin	0	4	0.00	24.50
					Indole	0	4	0.00	24.50
					Malonate	0	3	0.00	28.08
					PAD	0	4	0.00	24.50
					Urea 2 hrs.	0	4	0.00	24.50
					Urea 48 hrs.	0	4	0.00	24.50
					6.5% NaCl	0	4	0.00	24.50
					10% Lactose	0	3	0.00	28.08
					ONPG	0	3	0.00	28.08
					Growth 42°C	0	4	0.00	24.50

Table 63: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as  $n_+/(n_+ + n_-)$ , where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which shifts raw percentages towards 50% with a strength dependent on the total number of test occurrences. The four antibiotic tests at the bottom of Column 1 are sensitivity tests where a positive result indicates sensitivity to the drug.

# 25 GENUS MYROIDES

#### 25.1 Myroides odoratus

Over the course of ASHEX clinical-isolate collection, 19 individual isolates of Myroides odoratus were analyzed. Ten of the 19 recorded results are pictured in this subsection.

Test	+	_	Raw%	<b>W95</b> %	Test	+	_	Raw%	W95%
Motility	0	19	0.00	8.41	H <sub>2</sub> S	0	19	0.00	8.41
Oxidase	19	0	100.00	91.59	Pseudo P	0	19	0.00	8.41
Catalase	18	1	94.74	87.21	Pseudo F	0	19	0.00	8.41
Yellow Pigment	16	3	84.21	78.46	NO <sub>3</sub> Reduced	0	19	0.00	8.41
Pink Pigment	0	19	0.00	8.41	Gas from $NO_3$	0	16	0.00	9.68
Beta Hemolysis	7	9	43.75	44.96	NO <sub>2</sub> Reduced	15	4	78.95	74.08
Growth on Mac	7	12	36.84	39.06	Gas from $NO_2$	11	5	68.75	65.12
Dnase	16	3	84.21	78.46	OF Fructose	6	13	31.58	34.68
Starch	1	18	5.26	12.79	OF Dextrose	1	18	5.26	12.79
Lecithinase	0	16	0.00	9.68	OF Lactose	2	17	10.53	17.17
Lipase	1	15	6.25	14.72	OF Maltose	0	19	0.00	8.41
PYR	4	10	28.57	33.19	OF Mannitol	0	19	0.00	8.41
LAP	11	3	78.57	72.42	OF Xylose	0	19	0.00	8.41
ESC Spot Test	0	14	0.00	10.77	OF Sucrose	0	16	0.00	9.68
Penicillin (10U)	3	16	15.79	21.54	Arginine	0	19	0.00	8.41
Vancomycin $(30\mu g)$	17	2	89.47	82.83	Lysine	0	19	0.00	8.41
Colistin $(10\mu g)$	0	19	0.00	8.41	Ornithine	0	19	0.00	8.41
Polymyxin B (300U)	1	18	5.26	12.79	Acetamide	0	19	0.00	8.41
					Esculin	0	19	0.00	8.41
					Gelatin	19	0	100.00	91.59
					Indole	0	19	0.00	8.41
					Malonate	11	8	57.89	56.57
					PAD	7	12	36.84	39.06
					Urea 2 hrs.	8	11	42.11	43.43
					Urea 48 hrs.	17	2	89.47	82.83
					6.5% NaCl	14	5	73.68	69.70
					10% Lactose	0	19	0.00	8.41
					ONPG	0	19	0.00	8.41
					Growth 42°C	6	13	31.58	34.68

Table 64: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as  $n_+/(n_+ + n_-)$ , where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which shifts raw percentages towards 50% with a strength dependent on the total number of test occurrences. The four antibiotic tests at the bottom of Column 1 are sensitivity tests where a positive result indicates sensitivity to the drug.

	Date Inoculated:	7 1/22/13	Fire per	a 12/2/13 - 10.	dogs		10
	Final Identification:	Myroides a	dorates	prv P.S.			
	Comments: Spread	y yellowon Mcc	lung, yellow a	n Stara	20	213-21	
	Labrepo	A: Myroides (F	lavobadenin) a	odovatus	Maldi	: M: odovatim	imus 2.277
	Gram Morph. Gram Test Motility Wet Prep	gar		<u>Tubes</u> KIA H <sub>2</sub> S	12- 48 h K/NC N	10 7 day 14 k. 10	
	Motility Deep Oxidase	Nelo		Pseudo P Pseudo F	 /	N	
	Odor	Po 9 - <u>48 h</u> <u>~7 da</u> 	av —	- NO <sub>3</sub> reduced Gas from NO <sub>3</sub> NO <sub>2</sub> reduced Gas from NO <sub>2</sub>	X hrybubble X Smbubble	<u>red afte</u> zinc try bubbe Ne <u>clear - Po</u> s <u>Pos</u>	
	Pigment on swab Pigment on BAP Morphology on BAP Beta hemolysis Growth on Mac	de gold _d _yellow yellow spreedy fos	<u>yella</u> w <u>yellaw</u> <u>yellaw</u> spraedz- Pos (inhibite	OF Fructose OF Dextrose OF Lactose OF Maltose OF Mannitol	Be-Gr N Be-Gr N Be-Gr N Be-Gr N Be-Gr N	Be N Be N Be N Be N Be N	) all Blue
repret	DNase hydrolysis Starch hydrolysis Lecithinase Lipase Rapid PYR	Pos	<u>Aos</u> grut <u>N</u> <u>N</u> <u>N</u> <u>V</u> <u>V</u>	OF Xylose OF Sucrose Arginine Lysine Ornithine Base Control	<u>Be-a</u> <u>N</u> <u>N</u> <u>N</u>		
	Rapid LAP Rapid ESC <u>Sensitivity to:</u> Penicillin (10 U) Vancomycin (30 ug)	Pos N Lo R L 10 S	p P 10 S	Acetamide Esculin Gelatin Indole Malonate PAD	N Pas X Rene Pa	X	
	Colistin (10 mcg) Polymyxin B (300 U	6 R I	6 R	Urea 2022 h 6.5% NaCL 10% Lactose ONPG Growth 42° 73	Net Appos	Pas .** Pas N N	

Figure 198: Myroides odoratus isolate 1-of-19.

Date Inocul	ated: 2-44
Final Identif	ated: <u>2-14-06 Left Fost debrided tissue</u> Tration: <u>ITYROIDES OBORATUS P.5. 3/8/1960</u>
Comments:	

			2-24-06
	Gram Morph. 244	$- \frac{\text{Tubes}}{\frac{48 \text{ h}}{6}}$	$\frac{7 \text{ day}}{1}$
	Gram Test	$ H_2S$ $Neb-$	F/K Nel
	Motility Wet Prep New Med Row	els NED	Neo
	Motility Deep <u>Nela Nela</u>	Pseudo P <u>Nele</u>	Nec
	+ Oxidase Pos	Pseudo F Ne G	NEG
	+ Catalase STRONG POS	- NO <sub>3</sub> reduced	AOS NEG
	PLATES <u>48 h</u> <u>7 day</u>	- Gas from NO <sub>3</sub> <u>Ne6</u>	Nela
-	Odor Apples	$- \frac{1}{1000} \text{ NO}_2 \text{ reduced}$	NEG
	Pigment on swab ORANGE		
	+ Pigment on BAP Yel-ORANGE	- OF Fructose <u>Blue</u> - OF Dextrose	Deep Drue
	Morphology on BAP Duc- SPREADY	OF Lactose	
	Beta hemolysis Neb	OF Maltose	
	+ Growth on Mac Pos_pos_ Pos	G OF Mannitol	
	+ DNase hydrolysis <u>Pos</u> Pos		V
	Starch hydrolysis	Arginine NCG-	NEG
	Lecithinase Nele Nele		nce.
	- Lipase New New	-Ornithine	
	- Rapid PYR <u>New</u>	Base Control	V
	- Rapid LAP Nele	- Acetamide <u>Nec</u>	NEG
	- Rapid ESC Nela	$\begin{array}{c} - \text{Esculin} \\ + \text{Gelatin} \\ \end{array} \xrightarrow{NCO} \\ \hline POS \\ \end{array}$	New
	Sensitivity to:	- Indole	Nel
	- Penicillin (10 U) _ R _ SAV		Lt. BLUE
	+ Vancomycin (30 ug) <u>S - 8</u>	$- + Urea \underline{NCOT} + \underline{POS}$	POS
	- Colistin (10 mcg)	+ 6.5% NaCL NeG	pos!
-	— Polymyxin B (300 U) _ <i>N</i> , <b>b</b> ,	10% Lactose Nele	Nec
		- ONPG	Ner

Figure 199: Myroides odoratus isolate 2-of-19.

Date Inoculated:

Final Identification:

Comments:

-

ORANGE ON ALL MEDIA

5-12-07

	Gram Morph.			Tubes	48 h	7 day	
	Gram Test	24h	the state	KIA - H₂S	RINC AVRING	Ele IC	<b>C</b>
	Motility Wet Prep	New-M	entium to -	" 11 <sub>2</sub> 5	NEW	Signe uz.	
	Motility Deep	New	NEG	Pseudo P	Neb	Nela	
	Oxidase	Pos		Pseudo F	Nelo	Neo	
	Catalase	POS		NO3 reduced			
	PLATES	<u>48 h</u>	7 day	Gas from NO <sub>3</sub>	Nele	Nec	
	Odor	FRUIT-	ALONIA	NO <sub>2</sub> reduced Gas from NO <sub>2</sub>	Nele	New	
	Pigment on swab	ORANG	e				
	Pigment on BAP	ORANGE		OF Fructose OF Dextrose	Brue	BLUE/GRA	$\checkmark$
	Morphology on BAP	SMOOTH -	ENTIRE	OF Lactose		BREEFER	DARE BLAI
	Beta hemolysis	New	<u> </u>	OF Maltose		PARE BL	urfban ie
	Growth on Mac	Reb	Neb	OF Mannitol OF Xylose		DARK BL	we
	DNase hydrolysis	POS	POS	OF Sucrose	V	8ARK BL	ue
-	Starch hydrolysis	Wette	WEAGE?	Arginine	NEG	Neb	
	Lecithinase	NeG	Nela	Lysine	Neu	1	
	Lipase	POS	Pos	Ornithine			
	Rapid PYR	Nelo		Base Control			
	Rapid LAP	POS		Acetamide	NEG	Nela E	CUORESCENT
	Rapid ESC	Neb		Esculin N <sup>e</sup> 6- Gelatin	-Light bra	W BROWN =	Eque New Neb
	Sensitivity to:		<u> </u>	Indole Light	PINE	NEG	1000
	Penicillin (10 U)	R	$R_{-}$	Malonate	Neb	Neb	
	Vancomycin (30 ug)	5-13		PAD Urea <i>Ne</i> 62 h	NeG	Nel	
	Colistin (10 mcg)	R	R	6.5% NaCL	New	Nelo	
	Polymyxin B (300 U	n R	R	10% Lactose		Nec	
				ONPG Growth 42⁰	Nelo	NCG	
					1.0	11-2	

5-17-07 MYROIDES ODORATUS AS

Note: All biochemical tests (except where noted) are incubated at 30°C and read after 48 hrs. incubation and again at 7 days.

Figure 200: Myroides odoratus isolate 3-of-19.

Date Inoculated:

Final Identification:

Comments:

7-7-09 ion: <u>MyRordes odorAtus 7/15/09 AS</u> Appricot on Starch And Egg Yollie

					7/14	
Gram Morph.			Tubes	$\frac{48 \text{ h}}{1}$	7 day	
Gram Test			KIA	K/NC	HR.	~
Motility Wet Prep	Ne6 - 9	COCO GACILI	$-H_2S$	Nel	Slight HZ	>
Motility Deep	Neb	NeG	Pseudo P	Nela	Nec-	
Oxidase	Pos		Pseudo F	NCG	Nele	
Catalase	STRONLE	105	NO <sub>3</sub> reduced		Nele	
PLATES	<u>48 h</u>	7 day	Gas from $NO_3$ $NO_2$ reduced	NEG	Ne6_ ADS	
Odor	GRUITY		$Gas from NO_2$	POS	Pos	
Pigment on swab	Yellow		07.7		Due	
Pigment on BAP	Yellow		OF Fructose OF Dextrose	BLUE	Bine	
Morphology on BAP	LARGE Spi	rend-1	OF Lactose			
Beta hemolysis	Neb	,	OF Maltose OF Mannitol			
Growth on Mac	P05	POS	OF Maninton OF Xylose			
DNase hydrolysis	POSI	Pos	OF Sucrose	$\overline{\mathbf{V}}$	$\overline{\mathbf{V}}$	
Starch hydrolysis	NCG	Nel	Arginine	Ne6-	Nec	
Lecithinase	BARCU-	NeG	Lysine			
Lipase	New	Nel	Ornithine Base Control			
Rapid PYR	POS		Base Control	<del>\</del>		
Rapid LAP	POS		Acetamide	Neb	Nec	
Rapid ESC	Neb		Esculin Gelatin	POSI	ROS	
Sensitivity to:	0	0	Indole		Nele	
Penicillin (10 U)	$\mathbb{R}$	<u> </u>	Malonate	POS	POS	
Vancomycin (30 ug)	5-11	9	PAD Urea 2 h	POS	POS	
Colistin (10 mcg)		R	6.5% NaCL	POS	Pos!	
Polymyxin B (300 U	) <u>R</u>	_K_	10% Lactose ONPG	Nea	Nec-	
			Growth 42 <sup>°</sup>	NEG	Neo	

Note: All biochemical tests (except where noted) are incubated at 30°C and read after 48 hrs. incubation and again at 7 days.

Figure 201: Myroides odoratus isolate 4-of-19.

Date Inoculated: 7-,		@BORATUS	7/22	In P.	5
Comments: //	ellow on BAP				
Gram Morph. Gram Test Motility Wet Prep Motility Deep Oxidase	484 Neb Neb Neb Pos	Tubes KIA H <sub>2</sub> S Pseudo P Pseudo F	7/14 <u>48 h</u> <u>k/rc</u> <u>rec</u> <u>nec</u>	7/20 7 day <u>E/WC</u> <u>Pos nt</u> W B®TTON 0 <u>NCG</u> NCG	HenGace F Beep/But7
Catalase <u>PLATES</u> Odor Pigment on swab Pigment on BAP Morphology on BAP	<u>STRONG</u> POS <u>48 h</u> <u>7 dav</u> <u>CRUTY</u> <u>Butferscotch</u> <u>Yellow</u> Shinny-Sorendy	NO <sub>3</sub> reduced Gas from NO <sub>3</sub> NO <sub>2</sub> reduced Gas from NO <sub>2</sub> OF Fructose OF Dextrose OF Lactose	Neb Pos GRN Blae 340e	NEC NEC- POS POS GRN/YEL BLUE	
Beta hemolysis	h.bited-GROWTH At 45 POS POS	OF Maltose	Bive Bive Bive Bive		
Starch hydrolysis Lecithinase Lipase Rapid PYR	Nels Nels Nels Nels Nels Nels Pos	Arginine Lysine Ornithine Base Control	Ne6	NOS/1	Repent 7/ all cont. Neb 7/22/1
Rapid LAP Rapid ESC <u>Sensitivity to:</u>	Pos	Acetamide Esculin Gelatin Indole	Neb Neb POS	Net New POS! NEW	
Penicillin (10 U) Vancomycin (30 ug) Colistin (10 mcg) Polymyxin B (300 U)	<u>R</u> <u>S-8.6</u> <u>R-9</u> <u>R-11</u> <u>R</u>	Malonate PAD Urea2 h 6.5% NaCL 10% Lactose ONPG Growth 42 <sup>0</sup>	GRN POS POS POG NEG NEG NEG	POS POS Nec- Nec- Nec- Nec-	Pos

Figure 202: Myroides odoratus isolate 5-of-19.

Date Inoculated: 9-15-11

MYROIDES ODORATUS Final Identification:

11-4-11 P.S.

Comments:

			24	9/27 12 DAYS
Gram Morph.		Tubes	<u>48 h</u>	7  day
Gram Test	246	KIA	E/NC	KIK
Motility Wet Prep	NEE SIN Roal	$H_2S$	New	Neu
Motility Deep	New Neb	Pseudo P	Nea	Nel-
Oxidase	POS	Pseudo F	NEG	Nela
Catalase	STRONG DOS	NO <sub>3</sub> reduced		Nelo
<b>PLATES</b>	<u>48 h</u> <u>7 day</u>	Gas from NO <sub>3</sub>	Neb	Nea
Odor	Greaty	NO <sub>2</sub> reduced Gas from NO <sub>2</sub>	Nele	DOS
Pigment on swab	Yellow		NECE	_F0 3
Pigment on BAP	Cor Yellow	OF Fructose	Bue	Deep Black
Morphology on BAP	Spready	OF Dextrose OF Lactose		
Beta hemolysis	NEC	OF Maltose		
Growth on Mac	Nobbeled NEG	OF Mannitol		
DNase hydrolysis	POS POS	OF Xylose OF Sucrose		
Starch hydrolysis	Nece			
Lecithinase	NEG NEG	Arginine Lysine	Nec	New
Lipase	NEO- Neler	Ornithine	1	
Rapid PYR	AFEC aut	Base Control	V	$\checkmark$
Rapid LAP	Pog	Acetamide	Nec	Nec-
Rapid ESC	Ne(z	Esculin	New	Nels i
Sensitivity to:		Gelatin		POSI
Penicillin (10 U)	R	Indole Malonate	Nec	BLUC
Vancomycin (30 ug)	<u> </u>	PAD	Nele	
	<i>D</i>	Uread <u>e</u> 6h	Pos	POS SCANT& BUTT
Colistin (10 mcg)		6.5% NaCL 10% Lactose	NF	POS Nec-
Polymyxin B (300 U)	)/\	ONPG	Nel	NEG
		Growth 42 <sup>0</sup>	Nele	NEO

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 203: Myroides odoratus isolate 6-of-19.

Date Inoculated:

Final Identification:

MYROIDES ODORATUS P.S. 9/26/12

9-15-12

Comments:

Yellow on ALL MEDIA

				9/26 11 DAYS
Gram Morph.	5	Tubes	48 h	$\frac{7 \text{ day}}{6}$
Gram Test	24h	KIA H <sub>2</sub> S	+/NC	KIR HS
Motility Wet Prep	NCG BODG	1125	1000	_Slight Hz S
Motility Deep	Neb Neb	Pseudo P	NRG	Nea
Oxidase	Pos	Pseudo F	Nela	NEG-
Catalase	Pos	NO <sub>3</sub> reduced		Nela
<b>PLATES</b>	<u>48 h</u> <u>7 day</u>	Gas from NO <sub>3</sub>	NeG	NEG_
Odor	fruity	NO <sub>2</sub> reduced Gas from NO <sub>2</sub>	POS	 D05
Pigment on swab	Yellow			
Pigment on BAP	Yellow	OF Fructose OF Dextrose	BLUE	DARE BLUE
Morphology on BAP	SPREADY	OF Lactose		
Beta hemolysis	Nela	OF Maltose		
Growth on Mac	NeG NeG	OF Mannitol OF Xylose		
DNase hydrolysis	POS! POS	OF Sucrose	V	×
Starch hydrolysis	Ne6- Ne6		the l	41.07
Lecithinase	Neb Neb	Arginine Lysine	Ne6-	Ne6
Lipase	Nel- Nel	Ornithine		
Rapid PYR	NEG	Base Control	V	<u> </u>
Rapid LAP	POS	Acetamide	Ne6-	Nele-
Rapid ESC	Nela	Esculin	Nel	Neb
Sensitivity to:		Gelatin Indole	<u>POS !</u>	POS NeG
Penicillin (10 U)	RR	Malonate	Neb	Pos
Vancomycin (30 ug)	5-9 5	PAD	POS	Pos
Colistin (10 mcg)	RR	Urea <u>№<i>ℓ€</i></u> 2 h 6.5% NaCL	POS	P05 .!!
Polymyxin B (300 U)	RR	10% Lactose	NeG	Arece
		ONPG Growth 42 <sup>0</sup>	Neg	Nec-
		010wul 42	11 -0-	_// CG

Note: All biochemical tests (except where noted) are incubated at 30°C and read after 48 hrs. incubation and again at 7 days.

Figure 204: Myroides odoratus isolate 7-of-19.

Date Inoculated:	W3/18/15		·
Final Identification:	MYROMES ode	oratus / odoratin	nimus P.S.
Comments: Maga	: Myroides ordioratimimus	1.44/2 + 1.308	3/30/15
2	1		
Deep	D TAN PIGMENT ON	Bld@ 12 dAys	3/3
Gram Morph.		Tubes 48 h	7 day 1/2
Gram Test		KIA KINC	KK
Motility Wet Prep		H2S Neg	Neg
Motility Deep	Neg- Neg 7d V	Pseudo P Neg-	Neon
Oxidase	Abs a	Pseudo F Neg	Neg
Catalase	Neg pot uk (Pos)	$NO_3$ reduced $\swarrow$	Redefferten-Neg
PLATES	48 h 7 day	Gas from NO3 Ner	r_ Neg "
Odor	Slight Pos	$NO_2$ reduced $\swarrow$ Gas from $NO_2$ Pos	Pos: 4
Pigment on swab	biff Degred	0	
Pigment on BAP	uh-gr yel-gray	OF Fructose <u>Hel</u> + OF Dextrose Be-	
Morphology on BAP	Smrduet Snivet	OF Lactose Be-0	r Be - v
Beta hemolysis	Neg Neg	OF Maltose <u>Bl-6</u> OF Mannitol Bl-6	
Growth on Mac	Neg_ Neg	$/$ OF Xylose $\frac{R}{R}$	
DNase hydrolysis	Pos Pos lapin	Nezare OF Sucrose	r Be-V
Starch hydrolysis	Neg Neg 1	Arginine N.	in Nea
Lecithinase	Neg Neg "	Lysine N	erg Neg v
Lipase	Neg Neg "	Ornithine <u>M</u> Base Control M	Neg v
Rapid PYR	Neg		g
Rapid LAP	Pos	Acetamide <u>M</u>	ling Neg
Rapid ESC	Neg	Esculin	Jen Pas
Sensitivity to:		Indole	X Neg 1
Penicillin (10 U)	6R GR	V Malonate	leg pos "
Vancomycin (30 ug		PAD Urea Nd 2 h	Jeg X Pos V
Colistin (10 mcg)	LOP 6P	6.5% NaCL	Dos Pos V
Polymyxin B (300	UN LAR LAR		Veg Neg
			Ney Neg

Figure 205: Myroides odoratus isolate 8-of-19.

	Date Inoculated:	F 10/16/15					<u></u>
	Final Identification:	Myroides	oboratus/	6 DORATIMI	Nus F	5. 10/30	115
(AST parforme on T5899		di : 2.432 My	wites odovatu			12 jupple sike lit	)
a 75899	-	<u></u>	0 10-11	757427 fo		10 lo	130/15
	Gram Morph. Gram Test			KIA	K/K	KK	
	Motility Wet Prep			H2S black thin line einter	Neg-	Black pignedon	re.
	Motility Deep Oxidase	New N POS	e6 (15 DAY)	Pseudo P Pseudo F	μ 	Nez > Y	ec part
	Catalase <u>PLATES</u>	<u>wkpos</u> <u>48 h</u> 5d <u>7 d</u>	ay	$NO_3$ reduced Gas from $NO_3$ $NO_2$ reduced	Nog-	dul2n Nog-	1
yerow +	Odor Pigment on swab Pigment on BAP	dk. olivegr.	<u>karkol</u> ive Smerdy up or	Gas from NO <sub>2</sub> OF Fructose	Be	Pos_+	
{ - 1	Morphology on BAP Beta hemolysis Growth on Mac	spready	para get 81 Pos Neg-	OF Dextrose OF Lactose OF Maltose OF Mannitol OF Xylose OF Sucrose	BL yet Gr + BL BL BL BL	Be - Be - Be - Be - Be -	
Spready yellow growth	DNase hydrolysis Starch hydrolysis Lecithinase Lipase Rapid PYR	N N Neg N	Nez V Nez V Nez V	Arginine Lysine Ornithine Base Control	222	Neg Neg Neg Neg	
	Rapid LAP Rapid ESC <u>Sensitivity to:</u>	N Pos		Acetamide Esculin Gelatin Indole	N Pos X	Neg Neg Pos Neg	
	Penicillin (10 U) Vancomycin (30 ug Colistin (10 mcg) Polymyxin B (300	Le P	GR V 105 V GR V	Malonate PAD Urea <u>1</u> _2 h 6.5% NaCL 10% Lactose ONPG	Pos? <u>Thi</u> ng Pos? <u>Thi</u> ng <u>Pos !!</u> <u>N</u> N	Pos rine X Pos Nay Nay	Repeaturea 2° (F)
				Growth 42 <sup>0</sup>	N/WCT?	Neg V	hus

Figure 206: Myroides odoratus isolate 9-of-19.

W5/18/14 Date Inoculated: P.S. 5/27/16 Tyroides odoratus / odoratiminus Final Identification: Comments: 1.408 Myrvides odovatus Maldi: Mywides 466 NO forther work up Gram Morph. 48 h 7 day Tubes KIA Gram Test  $H_2S$ Motility Wet Prep Pseudo P Motility Deep Til Pseudo F Oxidase Catalase WK POS NO<sub>3</sub> reduced Gas from NO<sub>3</sub> PLATES 48 h 7 day NO<sub>2</sub> reduced Odor Stink Gas from NO<sub>2</sub> Pigment on swab **OF** Fructose Pigment on BAP maynet **OF** Dextrose Bl PO Morphology on BAP Vai Sed **OF** Lactose bullseye, duill OF Maltose Beta hemolysis POS OF Mannitol Growth on Mac Ver OF Xylose **OF** Sucrose DNase hydrolysis Starch hydrolysis Arginine Lecithinase Lysine Ornithine Lipase Base Control Rapid PYR leg Rapid LAP Acetamide Esculin Rapid ESC Gelatin Sensitivity to: Indole Penicillin (10 U) Malonate PAD Vancomycin (30 ug) 5 Urea N 2 h pos Colistin (10 mcg) 6.5% NaCL Pns 'rs 10% Lactose Polymyxin B (300 U) 6 ONPG double 300 Growth 42° 03 Pas

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 207: Myroides odoratus isolate 10-of-19.

### 26 GENUS NEISSERIA

#### 26.1 Neisseria elongata ss. elongata

Over the course of ASHEX clinical-isolate collection, three individual isolates of Neisseria elongata ss. elongata were analyzed. Zero of the three recorded results are pictured in this subsection.

Test	+	_	Raw%	<b>W95</b> %	Test	+	_	Raw%	<b>W95</b> %
Motility	0	3	0.00	28.08	$H_2S$	0	3	0.00	28.08
Oxidase	3	0	100.00	71.92	Pseudo P	0	3	0.00	28.08
Catalase	0	3	0.00	28.08	Pseudo F	0	3	0.00	28.08
Yellow Pigment	0	3	0.00	28.08	NO <sub>3</sub> Reduced	0	3	0.00	28.08
Pink Pigment	0	3	0.00	28.08	Gas from $NO_3$	0	1	0.00	39.67
Beta Hemolysis	0	1	0.00	39.67	NO <sub>2</sub> Reduced	0	3	0.00	28.08
Growth on Mac	0	3	0.00	28.08	Gas from $NO_2$	0	1	0.00	39.67
Dnase	0	3	0.00	28.08	OF Fructose	0	3	0.00	28.08
Starch	0	3	0.00	28.08	OF Dextrose	0	3	0.00	28.08
Lecithinase	0	1	0.00	39.67	OF Lactose	0	3	0.00	28.08
Lipase	0	1	0.00	39.67	OF Maltose	0	3	0.00	28.08
PYR	0	0	50.00	50.00	OF Mannitol	0	3	0.00	28.08
LAP	0	0	50.00	50.00	OF Xylose	0	3	0.00	28.08
ESC Spot Test	0	0	50.00	50.00	OF Sucrose	0	1	0.00	39.67
Penicillin (10U)	3	0	100.00	71.92	Arginine	0	3	0.00	28.08
Vancomycin $(30\mu g)$	2	1	66.67	57.31	Lysine	0	3	0.00	28.08
Colistin $(10\mu g)$	3	0	100.00	71.92	Ornithine	0	3	0.00	28.08
Polymyxin B (300U)	1	0	100.00	60.33	Acetamide	0	3	0.00	28.08
					Esculin	0	3	0.00	28.08
					Gelatin	0	3	0.00	28.08
					Indole	0	3	0.00	28.08
					Malonate	0	3	0.00	28.08
					PAD	1	2	33.33	42.69
					Urea 2 hrs.	0	3	0.00	28.08
					Urea 48 hrs.	0	3	0.00	28.08
					6.5% NaCl	0	3	0.00	28.08
					10% Lactose	0	3	0.00	28.08
					ONPG	0	3	0.00	28.08
					Growth 42°C	3	0	100.00	71.92

Table 65: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as  $n_+/(n_+ + n_-)$ , where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which shifts raw percentages towards 50% with a strength dependent on the total number of test occurrences. The four antibiotic tests at the bottom of Column 1 are sensitivity tests where a positive result indicates sensitivity to the drug.

#### 26.2 Neisseria elongata ss. glycolitica

Over the course of ASHEX clinical-isolate collection, two individual isolates of Neisseria elongata ss. glycolitica were analyzed. Zero of the two recorded results are pictured in this subsection.

Test	+	_	Raw%	<b>W95</b> %	Test	+	_	Raw%	<b>W95</b> %
Motility	0	2	0.00	32.88	$H_2S$	0	2	0.00	32.88
Oxidase	2	0	100.00	67.12	Pseudo P	0	2	0.00	32.88
Catalase	2	0	100.00	67.12	Pseudo F	0	2	0.00	32.88
Yellow Pigment	0	2	0.00	32.88	NO <sub>3</sub> Reduced	0	2	0.00	32.88
Pink Pigment	0	1	0.00	39.67	Gas from $NO_3$	0	2	0.00	32.88
Beta Hemolysis	0	2	0.00	32.88	NO <sub>2</sub> Reduced	0	2	0.00	32.88
Growth on Mac	0	2	0.00	32.88	Gas from $NO_2$	0	2	0.00	32.88
Dnase	0	2	0.00	32.88	OF Fructose	0	2	0.00	32.88
Starch	0	2	0.00	32.88	OF Dextrose	0	2	0.00	32.88
Lecithinase	0	2	0.00	32.88	OF Lactose	0	2	0.00	32.88
Lipase	0	2	0.00	32.88	OF Maltose	0	2	0.00	32.88
PYR	0	2	0.00	32.88	OF Mannitol	0	2	0.00	32.88
LAP	2	0	100.00	67.12	OF Xylose	0	2	0.00	32.88
ESC Spot Test	0	2	0.00	32.88	OF Sucrose	0	2	0.00	32.88
Penicillin (10U)	2	0	100.00	67.12	Arginine	0	2	0.00	32.88
Vancomycin $(30\mu g)$	2	0	100.00	67.12	Lysine	0	2	0.00	32.88
Colistin $(10\mu g)$	2	0	100.00	67.12	Ornithine	0	2	0.00	32.88
Polymyxin B (300U)	2	0	100.00	67.12	Acetamide	0	2	0.00	32.88
					Esculin	0	2	0.00	32.88
					Gelatin	0	2	0.00	32.88
					Indole	0	2	0.00	32.88
					Malonate	0	2	0.00	32.88
					PAD	0	2	0.00	32.88
					Urea 2 hrs.	0	2	0.00	32.88
					Urea 48 hrs.	0	2	0.00	32.88
					6.5% NaCl	0	2	0.00	32.88
					10% Lactose	0	2	0.00	32.88
					ONPG	0	2	0.00	32.88
					Growth $42^{\circ}C$	0	2	0.00	32.88

Table 66: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as  $n_+/(n_+ + n_-)$ , where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which shifts raw percentages towards 50% with a strength dependent on the total number of test occurrences. The four antibiotic tests at the bottom of Column 1 are sensitivity tests where a positive result indicates sensitivity to the drug.

#### 26.3 Neisseria elongata ss. nitroreducens

Over the course of ASHEX clinical-isolate collection, nine individual isolates of Neisseria elongata ss. nitroreducens were analyzed. One of the nine recorded results is pictured in this subsection.

Test	+	_	Raw%	W95%	Test	+	—	Raw%	W95%
Motility	0	9	0.00	14.96	$H_2S$	0	9	0.00	14.96
Oxidase	9	0	100.00	85.04	Pseudo P	0	9	0.00	14.96
Catalase	0	9	0.00	14.96	Pseudo F	0	9	0.00	14.96
Yellow Pigment	0	9	0.00	14.96	NO <sub>3</sub> Reduced	9	0	100.00	85.04
Pink Pigment	0	9	0.00	14.96	Gas from $NO_3$	0	9	0.00	14.96
Beta Hemolysis	0	9	0.00	14.96	$NO_2$ Reduced	8	1	88.89	77.26
Growth on Mac	0	9	0.00	14.96	Gas from $NO_2$	0	9	0.00	14.96
Dnase	0	9	0.00	14.96	OF Fructose	0	9	0.00	14.96
Starch	0	9	0.00	14.96	OF Dextrose	0	9	0.00	14.96
Lecithinase	0	9	0.00	14.96	OF Lactose	0	9	0.00	14.96
Lipase	0	9	0.00	14.96	OF Maltose	0	9	0.00	14.96
PYR	0	9	0.00	14.96	OF Mannitol	0	9	0.00	14.96
LAP	1	8	11.11	22.74	OF Xylose	0	9	0.00	14.96
ESC Spot Test	0	9	0.00	14.96	OF Sucrose	0	9	0.00	14.96
Penicillin (10U)	7	2	77.78	69.47	Arginine	0	9	0.00	14.96
Vancomycin $(30\mu g)$	8	1	88.89	77.26	Lysine	0	9	0.00	14.96
Colistin $(10\mu g)$	9	0	100.00	85.04	Ornithine	0	9	0.00	14.96
Polymyxin B (300U)	9	0	100.00	85.04	Acetamide	0	9	0.00	14.96
					Esculin	0	9	0.00	14.96
					Gelatin	0	9	0.00	14.96
					Indole	0	9	0.00	14.96
					Malonate	0	9	0.00	14.96
					PAD	0	9	0.00	14.96
					Urea 2 hrs.	0	9	0.00	14.96
					Urea 48 hrs.	0	9	0.00	14.96
					6.5% NaCl	0	9	0.00	14.96
					10% Lactose	0	9	0.00	14.96
					ONPG	0	9	0.00	14.96
					Growth 42°C	0	9	0.00	14.96

Table 67: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as  $n_+/(n_+ + n_-)$ , where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which shifts raw percentages towards 50% with a strength dependent on the total number of test occurrences. The four antibiotic tests at the bottom of Column 1 are sensitivity tests where a positive result indicates sensitivity to the drug.

Date Inoculated: $W^{-7/19/17}$		0 000 005 100
Final Identification: <u>Nelsseria elongata</u>	ss. morequeens	Prop 100% MS 100
Final Identification: <u>Nelsseria elongata</u> Comments: <u>Lab nort: Saprophytic Neisser</u>	a spp.	
continentia.	130	
Moldi Neissena llorgata		
Gram Morph. Gram Test Motility Wet Prep Motility Deep Neg Oxidase Catalase PLATES Sd 48-tr Pigment on swab Pigment on BAP Pigment on BAP Pigment on BAP Pigment on BAP Pigment on BAP Pigment on BAP Pigment on BAP Starch hydrolysis Starch hydrolysis Lecithinase Neg Neg Neg Neg Neg Neg Neg Ne	Tubes48 hKIA $\not{k} \mid \not{k} \mid$ H <sub>2</sub> S $\mathcal{N}$ Pseudo P $\mathcal{N}$ Pseudo F $\mathcal{N}$ NO <sub>3</sub> reduced $\mathcal{X}$ Gas from NO <sub>3</sub> $\mathcal{X}$ NO <sub>2</sub> reduced $\mathcal{X}$	7 day KIK Neg Neg Red D Neg Cleon D Neg Gun - Neg Kig Neg
Rapid PYR $N$ Rapid LAP $N$ Rapid ESC $N$ Sensitivity to: Penicillin (10 U) <u>195</u> <u>195</u> $\Phi$ Vancomycin (30 ug) <u>135</u> <u>135</u> $\Phi$ Vancomycin (10 mcg) <u>12/325</u> $D$ Polymyxin B (300 U) <u>14</u> <u>145</u> $\Phi$	Acetamide $N$ Esculin $N$ Gelatin $N$ Indole $X$ Malonate $N$ PAD $M$ Urea $N^2$ h $0.5\%$ NaCL $N$ 10% Lactose $N$ ONPG $N$ Growth 42° $N$	Neg Neg Neg Neg Neg Neg Neg Neg

Figure 208: Neisseria elongata ss. nitroreducens isolate 1-of-9.

#### 26.4 Neisseria weaveri

Over the course of ASHEX clinical-isolate collection, four individual isolates of Neisseria weaveri were analyzed. Zero of the four recorded results are pictured in this subsection.

Test	+	_	Raw%	<b>W95</b> %	Test	+	—	Raw%	W95%
Motility	0	4	0.00	24.50	$H_2S$	0	4	0.00	24.50
Oxidase	4	0	100.00	75.50	Pseudo P	0	4	0.00	24.50
Catalase	4	0	100.00	75.50	Pseudo F	0	4	0.00	24.50
Yellow Pigment	2	2	50.00	50.00	NO <sub>3</sub> Reduced	0	4	0.00	24.50
Pink Pigment	0	4	0.00	24.50	Gas from $NO_3$	0	3	0.00	28.08
Beta Hemolysis	0	3	0.00	28.08	NO <sub>2</sub> Reduced	0	4	0.00	24.50
Growth on Mac	0	4	0.00	24.50	Gas from $NO_2$	0	3	0.00	28.08
Dnase	4	0	100.00	75.50	OF Fructose	0	4	0.00	24.50
Starch	0	4	0.00	24.50	OF Dextrose	0	4	0.00	24.50
Lecithinase	0	4	0.00	24.50	OF Lactose	0	4	0.00	24.50
Lipase	0	3	0.00	28.08	OF Maltose	0	4	0.00	24.50
PYR	0	3	0.00	28.08	OF Mannitol	0	4	0.00	24.50
LAP	3	0	100.00	71.92	OF Xylose	0	4	0.00	24.50
ESC Spot Test	0	3	0.00	28.08	OF Sucrose	0	3	0.00	28.08
Penicillin (10U)	4	0	100.00	75.50	Arginine	0	4	0.00	24.50
Vancomycin $(30\mu g)$	4	0	100.00	75.50	Lysine	0	4	0.00	24.50
Colistin $(10\mu g)$	4	0	100.00	75.50	Ornithine	0	4	0.00	24.50
Polymyxin B (300U)	3	0	100.00	71.92	Acetamide	0	4	0.00	24.50
					Esculin	0	4	0.00	24.50
					Gelatin	0	4	0.00	24.50
					Indole	0	4	0.00	24.50
					Malonate	1	3	25.00	37.25
					PAD	0	4	0.00	24.50
					Urea 2 hrs.	0	4	0.00	24.50
					Urea 48 hrs.	0	4	0.00	24.50
					6.5% NaCl	0	4	0.00	24.50
					10% Lactose	0	4	0.00	24.50
					ONPG	1	3	25.00	37.25
					Growth 42°C	4	0	100.00	75.50

Table 68: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as  $n_+/(n_+ + n_-)$ , where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which shifts raw percentages towards 50% with a strength dependent on the total number of test occurrences. The four antibiotic tests at the bottom of Column 1 are sensitivity tests where a positive result indicates sensitivity to the drug.

#### 26.5 Neisseria zoodegmatis

Over the course of ASHEX clinical-isolate collection, one individual isolate of Neisseria zoodegmatis was analyzed. The associated biochemical result form is presented here.

Test	+	_	Raw%	W95%	Test	+	_	Raw%	W95%
Motility	0	1	0.00	39.67	$H_2S$	0	1	0.00	39.67
Oxidase	1	0	100.00	60.33	Pseudo P	0	1	0.00	39.67
Catalase	1	0	100.00	60.33	Pseudo F	0	1	0.00	39.67
Yellow Pigment	1	0	100.00	60.33	NO <sub>3</sub> Reduced	1	0	100.00	60.33
Pink Pigment	0	1	0.00	39.67	Gas from $NO_3$	0	1	0.00	39.67
Beta Hemolysis	0	1	0.00	39.67	$NO_2$ Reduced	1	0	100.00	60.33
Growth on Mac	0	1	0.00	39.67	Gas from $NO_2$	0	1	0.00	39.67
Dnase	0	1	0.00	39.67	OF Fructose	0	1	0.00	39.67
Starch	0	1	0.00	39.67	OF Dextrose	1	0	100.00	60.33
Lecithinase	0	1	0.00	39.67	OF Lactose	0	1	0.00	39.67
Lipase	0	1	0.00	39.67	OF Maltose	0	1	0.00	39.67
PYR	0	1	0.00	39.67	OF Mannitol	0	1	0.00	39.67
LAP	1	0	100.00	60.33	OF Xylose	0	1	0.00	39.67
ESC Spot Test	0	1	0.00	39.67	OF Sucrose	0	1	0.00	39.67
Penicillin (10U)	0	1	0.00	39.67	Arginine	0	1	0.00	39.67
Vancomycin $(30\mu g)$	1	0	100.00	60.33	Lysine	0	1	0.00	39.67
Colistin $(10\mu g)$	1	0	100.00	60.33	Ornithine	0	1	0.00	39.67
Polymyxin B (300U)	1	0	100.00	60.33	Acetamide	0	1	0.00	39.67
					Esculin	0	1	0.00	39.67
					Gelatin	0	1	0.00	39.67
					Indole	0	1	0.00	39.67
					Malonate	0	1	0.00	39.67
					PAD	0	1	0.00	39.67
					Urea 2 hrs.	0	1	0.00	39.67
					Urea 48 hrs.	0	1	0.00	39.67
					6.5% NaCl	0	1	0.00	39.67
					10% Lactose	0	1	0.00	39.67
					ONPG	0	1	0.00	39.67
					Growth 42°C	1	0	100.00	60.33

Table 69: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as  $n_+/(n_+ + n_-)$ , where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which shifts raw percentages towards 50% with a strength dependent on the total number of test occurrences. The four antibiotic tests at the bottom of Column 1 are sensitivity tests where a positive result indicates sensitivity to the drug.

Date Inoculated:	W 9/23/15					
Final Identification:	Neisser	214 200	odeq MAT	tis P.	5. 11/1/15	
Comments: Maldi	: Neisseria Z	coodegmantis	2.254	Sez: Neis	s. Zoodegmatis	
Catbite	e wound in care	₽			10/2/	15
Gram Morph.			Tubes	<u>48 h</u>	7 day	
Gram Test			KIA	MK_	-KK	
Motility Wet Prep			H <sub>2</sub> S	_Neg_	Meg_ U	
Motility Deep	New 450	Neg Ida	Pseudo P	Nag	Neg V	
Oxidase	POS	0 - 0	Pseudo F	Neg	Neg	
Catalase	Pas	+	NO <sub>3</sub> reduced	$\times$	Pink - Pos -	
PLATES	<u>48 h</u> 7 da		Gas from NO <sub>3</sub>	New	Neg	
Odor	Neg N		$NO_2$ reduced Gas from $NO_2$	New	the hilde the	
Pigment on swab	yellow yel	low	2		The contract in 0	
Pigment on BAP	whyel wh-	11 alling 1	OF Fructose OF Dextrose	Gr Neg	pka-	
Morphology on BAP	Smird Sm		OF Lactose		DKGr -	
Beta hemolysis	Neg_1	Jeg	OF Maltose		DKG -	
Growth on Mac	Neg	N	OF Mannitol OF Xylose		DKG -	
DNase hydrolysis	Neg	Neg- BLUE	OF Sucrose	VV	DKG-	
Starch hydrolysis	Neg	New	Arginine	Nen	Alex M	
Lecithinase	Neg 1	log v	Lysine	Neg	New	
Lipase	Neg 1	Veg V	Ornithine		Neg-	
Rapid PYR	Neg		Base Control	V	_Nez_	
Rapid LAP	Pos		Acetamide	N	Neg -	
Rapid ESC	Ner	alu	Esculin Gelatin	N	New V	Acres
Sensitivity to:		WY YE	Indole	X	Ner -	aj
Penicillin (10 U)	6R 6	(33) on the	Malonate	N Gyel-gr	) New V	
Vancomycin (30 ug)	135 V 13		PAD Urea <u>Md2</u> h	Ner	Neg V	
Colistin (10 mcg)	155 1	5 Cartinn.	6.5% NaCL	Ner	Ner	
Polymyxin B (300 U)	15 5 15		10% Lactose ONPG	Neg	Neg	
		jso Bap	Growth 42 <sup>0</sup>	Pos	Pos	

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 209: Neisseria zoodegmatis isolate 1-of-1.

# 27 GENUS OCHROBACTRUM27.1 Ochrobactrum anthropi

Over the course of ASHEX clinical-isolate collection, ten individual isolates of Ochrobactrum anthropi were analyzed. Two of the ten recorded results are pictured in this subsection.

Test	+	_	Raw%	<b>W95</b> %	Test	+	_	Raw%	W95%
Motility	10	0	100.00	86.12	H <sub>2</sub> S	0	10	0.00	13.88
Oxidase	10	0	100.00	86.12	Pseudo P	0	10	0.00	13.88
Catalase	10	0	100.00	86.12	Pseudo F	0	10	0.00	13.88
Yellow Pigment	0	10	0.00	13.88	NO <sub>3</sub> Reduced	6	4	60.00	57.22
Pink Pigment	0	10	0.00	13.88	Gas from $NO_3$	2	2	50.00	50.00
Beta Hemolysis	0	4	0.00	24.50	NO <sub>2</sub> Reduced	8	2	80.00	71.67
Growth on Mac	10	0	100.00	86.12	Gas from $NO_2$	3	1	75.00	62.75
Dnase	0	10	0.00	13.88	OF Fructose	7	3	70.00	64.45
Starch	0	10	0.00	13.88	OF Dextrose	9	1	90.00	78.90
Lecithinase	0	4	0.00	24.50	OF Lactose	0	10	0.00	13.88
Lipase	0	4	0.00	24.50	OF Maltose	5	5	50.00	50.00
PYR	4	0	100.00	75.50	OF Mannitol	2	8	20.00	28.33
LAP	4	0	100.00	75.50	OF Xylose	8	2	80.00	71.67
ESC Spot Test	0	4	0.00	24.50	OF Sucrose	0	4	0.00	24.50
Penicillin (10U)	0	10	0.00	13.88	Arginine	4	6	40.00	42.78
Vancomycin $(30\mu g)$	0	10	0.00	13.88	Lysine	0	10	0.00	13.88
Colistin $(10\mu g)$	9	1	90.00	78.90	Ornithine	0	10	0.00	13.88
Polymyxin B (300U)	4	0	100.00	75.50	Acetamide	0	10	0.00	13.88
					Esculin	5	5	50.00	50.00
					Gelatin	0	10	0.00	13.88
					Indole	0	10	0.00	13.88
					Malonate	3	7	30.00	35.55
					PAD	9	1	90.00	78.90
					Urea 2 hrs.	6	4	60.00	57.22
					Urea 48 hrs.	10	0	100.00	86.12
					6.5% NaCl	8	2	80.00	71.67
					10% Lactose	0	10	0.00	13.88
					ONPG	0	8	0.00	16.22
					Growth 42°C	4	6	40.00	42.78

Table 70: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as  $n_+/(n_+ + n_-)$ , where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which shifts raw percentages towards 50% with a strength dependent on the total number of test occurrences. The four antibiotic tests at the bottom of Column 1 are sensitivity tests where a positive result indicates sensitivity to the drug.

Date Inoculated: Final Identification: Comments: <u>made</u>	5/31/05 ultoid	Ochr	obactru 6/8/05	- P.S.	$p_i$
Gram Morph. Gram Test Motility Wet Prep Motility Deep Oxidase Catalase PLATES Odor Pigment on swab Pigment on BAP Morphology on BAP Beta hemolysis Growth on Mac DNase hydrolysis Starch hydrolysis Lecithinase Lipase Rapid PYR Rapid ESC Sensitivity to: Penicillin (10 U)	Ned POS NeG POG + RAPID POS 48 h 7 day New e-91. Ameni buff At. 62e7 Gunoeth-shinny ⇒ Nec	<ul> <li>OF Fructose</li> <li>OF Dextrose</li> <li>OF Lactose</li> <li>OF Maltose</li> <li>OF Mannitol</li> <li>OF Xylose</li> <li>OF Sucrose</li> <li>Arginine</li> <li>Lysine</li> </ul>	POS GRN GRN GRN GRN GRN GRN GRN GRN MEG NEG NEG NEG NEG	6/9/05 <u>7 day</u> <u>NC/NC</u> <u>NEG</u> <u>NEG</u> <u>NEG</u> <u>POS</u> <u>POS</u> <u>POS</u> <u>POS</u> <u>Yez/GRN</u> <u>Yez/GRN</u> <u>Yez/GRN</u> <u>Yez/GRN</u> <u>Yez/GRN</u> <u>Yez/GRN</u> <u>Yez/GRN</u> <u>Yez/GRN</u> <u>Yez/GRN</u> <u>Yez/GRN</u> <u>Yez/GRN</u> <u>Yez/GRN</u> <u>Yez/GRN</u> <u>Yez/GRN</u> <u>Yez/GRN</u> <u>Yez/GRN</u> <u>Yez/GRN</u> <u>Yez/GRN</u> <u>Yez/GRN</u> <u>Yez/GRN</u> <u>Yez/GRN</u> <u>Yez/GRN</u> <u>Yez/GRN</u> <u>Yez/GRN</u> <u>Yez/GRN</u> <u>Yez/GRN</u> <u>Yez/GRN</u> <u>Yez/GRN</u> <u>Yez/GRN</u> <u>Yez/GRN</u> <u>Yez/GRN</u> <u>Yez/GRN</u> <u>Yez/GRN</u> <u>Yez/GRN</u> <u>Yez/GRN</u> <u>Yez/GRN</u> <u>Yez/GRN</u> <u>Yez/GRN</u> <u>Yez/GRN</u> <u>Yez/GRN</u> <u>Yez/GRN</u> <u>Yez/GRN</u> <u>Yez/GRN</u> <u>Yez/GRN</u> <u>Yez/GRN</u> <u>Yez/GRN</u> <u>Yez/GRN</u> <u>Yez/GRN</u> <u>Yez/GRN</u> <u>Yez/GRN</u> <u>Yez/GRN</u> <u>Yez/GRN</u> <u>Yez/GRN</u> <u>Yez/GRN</u> <u>Yez/GRN</u> <u>Yez/GRN</u> <u>Yez/GRN</u> <u>Yez/GRN</u> <u>Yez/GRN</u> <u>Yez/GRN</u> <u>Yez/GRN</u> <u>Yez/GRN</u> <u>Yez/GRN</u> <u>Yez/GRN</u> <u>Yez/GRN</u> <u>Yez/GRN</u> <u>Yez/GRN</u> <u>Yez/GRN</u> <u>Yez/GRN</u> <u>Yez/GRN</u> <u>Yez/GRN</u> <u>Yez/GRN</u> <u>Yez/GRN</u> <u>Yez/GRN</u> <u>Yez/GRN</u> <u>Yez/GRN</u> <u>Yez/GRN</u> <u>Yez/GRN</u> <u>Yez/GRN</u> <u>Yez/GRN</u> <u>Yez/GRN</u> <u>Yez/GRN</u> <u>Yez/GRN</u> <u>Yez/GRN</u> <u>Yez/GRN</u> <u>Yez/GRN</u> <u>Yez/GRN</u> <u>Yez/GRN</u> <u>Yez/GRN</u> <u>Yez/GRN</u> <u>Yez/GRN</u> <u>Yez/GRN</u> <u>Yez/GRN</u> <u>Yez/GRN</u> <u>Yez/GRN</u> <u>Yez/GRN</u> <u>Yez/GRN</u> <u>Yez/GRN</u> <u>Yez/GRN</u> <u>Yez/GRN</u> <u>Yez/GRN</u> <u>Yez/GRN</u> <u>Yez/GRN</u> <u>Yez/GRN</u> <u>Yez/GRN</u> <u>Yez/GRN</u> <u>Yez/GRN</u> <u>Yez/GRN</u> <u>Yez/GRN</u> <u>Yez/GRN</u> <u>Yez/GRN</u> <u>Yez/GRN</u> <u>Yez/GRN</u> <u>Yez/GRN</u> <u>Yez/GRN</u> <u>Yez/GRN</u> <u>Yez/GRN</u> <u>Yez/GRN</u> <u>Yez/GRN</u> <u>X</u>	ALL WEAK
Vancomycin (30 ug) Colistin (10 mcg) Polymyxin B (300 U	5 9	$\begin{array}{c} + PAD \\ + PAD \\ - Urce \frac{105}{2}h \\ - 6.5\% \text{ NaCL} \\ - 10\% \text{ Lactose} \\ - 0NPG \\ - Growth 42^{0} \end{array}$	P09 P05 P05 Ne6 Ne6 Ne6		pes@24+ors

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 210: Ochrobactrum anthropi isolate 1-of-10.

e has caplite set #fullith 3-09 ANTHROPI DS RO D FRUM 5

Comments:

Gram Morph. Gram Test Motility Wet Prep	Pos		Tubes KIA H <sub>2</sub> S	5/11/09 <u>48 h</u> <u>E/NC</u> <u>NCO</u>	<u>7 day</u> <u>K/1K</u> <u>Slight</u> HzSr
Motility Deep	Pas	a cratea.		Nele	Nec-V
4-Oxidase	POS	1 Anticipant	Pseudo F	Nele	NEG-V
-Catalase	STRONG	Pos	$+NO_3$ reduced		A05 43
PLATES	<u>48 h</u>	7 day	-Gas from NO <sub>3</sub>	Pos	ROS Y3
Odor	AMONIA		-HO <sub>2</sub> reduced -Gas from NO <sub>2</sub>	Pos	105 1/3
Pigment on swab	Flesh				2/-
Pigment on BAP	Stight Yell	lowish	+ OF Fructose + OF Dextrose	YEL	Yel V 19 Yel V 19
Morphology on BAP	Mucord -	RUNNY	-OF Lactose	BLIER	BILL -
Beta hemolysis	NEG	,	+ OF Maltose	GRN	GRN S/A Vel 2/a
Growth on Mac	POS	pos	-+-OF Mannitol -{-OF Xylose	GRN/JEL	-100 1 71
DNase hydrolysis 5/11	NEG	New	-OF Sucrose	Bure	BLUE
Starch hydrolysis	Nea	NEG	Arginine	NeG	Nels + 13
Lecithinase	Nec	Nea	Lysine	1	
Lipase	NEG	New	Ornithine		
Rapid PYR	Pos		Base Control		
Rapid LAP	POS		- Acetamide	Nel2	NEG Y
Rapid ESC	NeG	-	-+ Esculin Gelatin	Neg	POG 4/9 NPCO
Sensitivity to:			Indole	1100	NEG
Penicillin (10 U)	R		Malonate	New	NEG Y HEHT BLEEL
Vancomycin (30 ug)	R		-+-+ PAD UreaNCC2 h	P05 !!	Pos - Pg
+ Colistin (10 mcg)	SRS.	-8 BACK	+6.5% NaCL	Pos	_PO5_ # 7/5
Polymyxin B (300 U)	5-14	4	- 10% Lactose	Neb	NPC
,		FRONT KO		New	- Nele V Ys
			ing up to disk		

Figure 211: Ochrobactrum anthropi isolate 2-of-10.

## 27.2 Ochrobactrum intermedium

Over the course of ASHEX clinical-isolate collection, 11 individual isolates of Ochrobactrum intermedium were analyzed. Three of the 11 recorded results are pictured in this subsection.

Test	+	_	Raw%	W95%	Test	+	_	Raw%	W95%
Motility	11	0	100.00	87.06	H <sub>2</sub> S	0	11	0.00	12.94
Oxidase	11	0	100.00	87.06	Pseudo P	0	11	0.00	12.94
Catalase	10	1	90.91	80.32	Pseudo F	0	11	0.00	12.94
Yellow Pigment	0	11	0.00	12.94	NO <sub>3</sub> Reduced	9	2	81.82	73.58
Pink Pigment	0	11	0.00	12.94	Gas from $NO_3$	3	4	42.86	45.39
Beta Hemolysis	1	6	14.29	26.94	NO <sub>2</sub> Reduced	10	1	90.91	80.32
Growth on Mac	11	0	100.00	87.06	Gas from $NO_2$	4	3	57.14	54.61
Dnase	0	11	0.00	12.94	OF Fructose	5	6	45.45	46.63
Starch	0	11	0.00	12.94	OF Dextrose	10	1	90.91	80.32
Lecithinase	0	11	0.00	12.94	OF Lactose	0	11	0.00	12.94
Lipase	0	11	0.00	12.94	OF Maltose	2	9	18.18	26.42
PYR	5	0	100.00	78.28	OF Mannitol	1	10	9.09	19.68
LAP	4	1	80.00	66.97	OF Xylose	11	0	100.00	87.06
ESC Spot Test	0	5	0.00	21.72	OF Sucrose	2	3	40.00	44.34
Penicillin (10U)	0	11	0.00	12.94	Arginine	0	11	0.00	12.94
Vancomycin $(30\mu g)$	0	11	0.00	12.94	Lysine	0	11	0.00	12.94
Colistin $(10\mu g)$	0	11	0.00	12.94	Ornithine	0	11	0.00	12.94
Polymyxin B (300U)	1	6	14.29	26.94	Acetamide	0	11	0.00	12.94
					Esculin	7	4	63.64	60.11
					Gelatin	0	11	0.00	12.94
					Indole	0	11	0.00	12.94
					Malonate	1	10	9.09	19.68
					PAD	11	0	100.00	87.06
					Urea 2 hrs.	8	3	72.73	66.84
					Urea 48 hrs.	11	0	100.00	87.06
					6.5% NaCl	7	4	63.64	60.11
					10% Lactose	0	11	0.00	12.94
					ONPG	0	8	0.00	16.22
					Growth 42°C	8	3	72.73	66.84

Table 71: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as  $n_+/(n_+ + n_-)$ , where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which shifts raw percentages towards 50% with a strength dependent on the total number of test occurrences. The four antibiotic tests at the bottom of Column 1 are sensitivity tests where a positive result indicates sensitivity to the drug.

M 11/23/15 Date Inoculated: Ochrobac truer intermediuor PS. 12/1 Final Identification: Comments: Maldi: Ochrobactrum internedium 2015-Gram Morph. 7 day Tubes <u>48 h</u> KIA Gram Test SLIGht H25  $H_2S$ Motility Wet Prep Pseudo P Motility Deep Pos Pas Pseudo F Oxidase Pos Catalase 90.91 Pas NO3 reduced Cler atting Pos + 81.82 Gas from NO3 42.86 PLATES <u>48 h</u> 7 day NO<sub>2</sub> reduced Cler Ĺ. ,91 Odor Pas Pas Gas from NO<sub>2</sub> NOW 7.14 Pigment on swab Buff Buff **OF** Fructose 45,45 Pigment on BAP unte white OF Dextrose Gr. 90.91 Morphology on BAP Nacord nuncoid **OF** Lactose Be 150 18.18 Beta hemolysis 19.29 OF Maltose Be 0. Nen NIO OF Mannitol 9.09 Be Growth on Mac Pos OF Xylose SPA DNase hydrolysis OF Sucrose Nea 40 Starch hydrolysis Neh Arginine Lecithinase Near Lysine Lipase Ornithine Base Control Rapid PYR Pos Rapid LAP 80 Pos Acetamide 63.64 Esculin Rapid ESC 21 Gelatin Sensitivity to: Indole Penicillin (10 U) Malonate Le R Lif. ,09 PAD 6P Vancomycin (30 ug) UP-Urea (+/2 h 72.7 Colistin (10 mcg) 18R 10R 6.5% NaCL 63.64 DOS v Polymyxin B (300 U) 4R 10% Lactose UR 14-1 14 NEG 31 ONPG 1125 Nea Growth 42° Pas Pos 72.73

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 212: Ochrobactrum intermedium isolate 1-of-11.

#28 4-10-06 0chrobactrum IN ter medium P. Date Inoculated: P.E. Final Identification: 4/13/06 066-white & micoud on Grapchy Egg Comments: 4/11/

					4/17/06
Gram Morph.	241	*	<u>Tubes</u> KIA	<u>48 h</u> E/NC	<u>7 day</u> Kik
Gram Test	24h.		- H <sub>2</sub> S	Neg	slight black
Motility Wet Prep	VERY HOT				,
+ Motility Deep	Pos	POG	<ul> <li>Pseudo P</li> <li>Pseudo F</li> </ul>	NEG	Nec
+ Oxidase	POS		- Pseudo F	NEG	Nele
Catalase	STRONG	09	- NO <sub>3</sub> reduced		Nec
PLATES	<u>48 h</u>	7 day	- Gas from NO <sub>3</sub> + NO <sub>2</sub> reduced	NEG	NEG
Odor	Foul	Foul	- Gas from NO <sub>2</sub>	POS	- P0-5
Pigment on swab	BUFF				N.
Pigment on BAP	GRRY	GREY	+ OF Fructose + OF Dextrose	Yel	<u>Yec</u>
Morphology on BAP	MULOOD	Muco.D	- OF Lactose	Rell	RULE
- Beta hemolysis	NeG		+ OF Maltose	Yel	Yel/6 PA
+ Growth on Mac		TUENDER DI	OF Mannitol	BLUE	Bue
DNase hydrolysis	NEG	New	OF Xylose	<u> </u>	DAREGRN
			- or sucrose	_[[[]]	DITICE GRI
Starch hydrolysis	NEG	NeG	Arginine	Nec	NeG
Lecithinase	NEG	Neb	- Lysine	NEG	·
Lipase		NeG	Ornithine Base Control	NRG	
+ Rapid PYR	POS			_//20	
+ Rapid LAP	POS		Acetamide	Neu	New
Rapid ESC	NEG	2	+ Esculin Gelatin	Alele	Nelo
Sensitivity to:	~	- Q - N	Indole	New	Nelon
- Penicillin (10 U)	R	R	Malonate	NEG	Nel
- Vancomycin (30 ug)	R	R	+PAD SLIGHT	- POS	DOL SLANT & BUTT
Colistin (10 mcg)	R	R	$ \begin{array}{c} + \text{Urea} \rho_{1} + P_{2} h \\ \hline 6.5\% \text{ NaCL} \end{array} $	NEG	POS SLANT & BUTT
- Polymyxin B (300 U)	R	R	-10% Lactose	Neb	NEG
			ONPG	Neb	NEL
			-f Growth 42°	POS	POS

Figure 213: Ochrobactrum intermedium isolate 2-of-11.

Final Identification:

Comments:

3-26-08 Ochrobactrury IN ter Medium #15/08 P.S.

4/5 3/28 Gram Morph. Tubes 48 h day KIA 24h KINC Gram Test  $H_2S$ Ner SLight SM. RORG c6 Motility Wet Prep Nev pos NCG POI Pseudo P Motility Deep Pseudo F Nel NCG Oxidase SLOW POS > 1 MIN 05 STRONG POS Catalase NO<sub>3</sub> reduced TINY BUBBLE New Gas from NO<sub>3</sub> PLATES <u>48 h</u> 7 day NO<sub>2</sub> reduced 105 Odor AJTON: A Gas from NO<sub>2</sub> Neb NeG Light Yellow, Pigment on swab Light butterside GREEN YeL **OF** Fructose Pigment on BAP GREY **OF** Dextrose Yel {Ľ Smooth Morphology on BAP **OF** Lactose Blue BLUE **OF** Maltose BLEE 6RN Beta hemolysis NeG Yel/GRN **OF Mannitol** Blace 005 Growth on Mac POS OF Xylose Yd/GRN <u>Ye</u>L Nee **OF** Sucrose GRN DNase hydrolysis Nela BLUE Neb Starch hydrolysis Neb Arginine Neo Lecithinase NEG Neb Lysine Ornithine Lipase Neb Base Control ろく Rapid PYR NEG- (VERY GAINT Acetamide NeG Rapid LAP Nel Esculin NEG Rapid ESC NEG Gelatin Nec Sensitivity to: Indole Malonate Penicillin (10 U) New PAD Vancomycin (30 ug) POS SCANT&BLETT Urea 2 h POS SLANT R Colistin (10 mcg) 6.5% NaCL POC EAINT 10% Lactose NEG R Neu Polymyxin B (300 U) ONPG NCO NEG Growth 42° N C 6

Note: All biochemical tests (except where noted) are incubated at 30°C and read after 48 hrs. incubation and again at 7 days.

Figure 214: Ochrobactrum intermedium isolate 3-of-11.

## 28 GENUS OLIGELLA28.1 Oligella ureolytica

Over the course of ASHEX clinical-isolate collection, three individual isolates of Oligella ureolytica were analyzed. Zero of the three recorded results are pictured in this subsection.

Test	+	_	Raw%	W95%	Test	+	_	Raw%	W95%
Motility	0	3	0.00	28.08	$H_2S$	0	3	0.00	28.08
Oxidase	3	0	100.00	71.92	Pseudo P	0	3	0.00	28.08
Catalase	2	1	66.67	57.31	Pseudo F	0	3	0.00	28.08
Yellow Pigment	0	3	0.00	28.08	NO <sub>3</sub> Reduced	2	1	66.67	57.31
Pink Pigment	0	3	0.00	28.08	Gas from $NO_3$	0	2	0.00	32.88
Beta Hemolysis	0	2	0.00	32.88	$NO_2$ Reduced	2	1	66.67	57.31
Growth on Mac	2	1	66.67	57.31	Gas from $NO_2$	0	2	0.00	32.88
Dnase	0	3	0.00	28.08	OF Fructose	0	3	0.00	28.08
Starch	0	3	0.00	28.08	OF Dextrose	0	3	0.00	28.08
Lecithinase	0	2	0.00	32.88	OF Lactose	0	3	0.00	28.08
Lipase	0	2	0.00	32.88	OF Maltose	0	3	0.00	28.08
PYR	1	1	50.00	50.00	OF Mannitol	0	3	0.00	28.08
LAP	2	0	100.00	67.12	OF Xylose	0	3	0.00	28.08
ESC Spot Test	0	2	0.00	32.88	OF Sucrose	0	3	0.00	28.08
Penicillin (10U)	0	3	0.00	28.08	Arginine	0	3	0.00	28.08
Vancomycin $(30\mu g)$	0	3	0.00	28.08	Lysine	0	3	0.00	28.08
Colistin $(10\mu g)$	2	1	66.67	57.31	Ornithine	0	3	0.00	28.08
Polymyxin B (300U)	1	1	50.00	50.00	Acetamide	0	3	0.00	28.08
					Esculin	0	3	0.00	28.08
					Gelatin	0	3	0.00	28.08
					Indole	0	3	0.00	28.08
					Malonate	2	1	66.67	57.31
					PAD	2	1	66.67	57.31
					Urea 2 hrs.	3	0	100.00	71.92
					Urea 48 hrs.	3	0	100.00	71.92
					6.5% NaCl	1	2	33.33	42.69
					10% Lactose	0	3	0.00	28.08
					ONPG	0	2	0.00	32.88
					Growth 42°C	0	3	0.00	28.08

Table 72: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as  $n_+/(n_+ + n_-)$ , where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which shifts raw percentages towards 50% with a strength dependent on the total number of test occurrences. The four antibiotic tests at the bottom of Column 1 are sensitivity tests where a positive result indicates sensitivity to the drug.

## 28.2 Oligella urethralis

Over the course of ASHEX clinical-isolate collection, 25 individual isolates of Oligella urethralis were analyzed. 11 of the 25 recorded results are pictured in this subsection.

Test	+	_	Raw%	W95%	Test	+	_	Raw%	W95%
Motility	0	25	0.00	6.66	H <sub>2</sub> S	0	25	0.00	6.66
Oxidase	25	0	100.00	93.34	Pseudo P	0	25	0.00	6.66
Catalase	25	0	100.00	93.34	Pseudo F	0	25	0.00	6.66
Yellow Pigment	0	25	0.00	6.66	NO <sub>3</sub> Reduced	0	25	0.00	6.66
Pink Pigment	0	25	0.00	6.66	Gas from $NO_3$	0	16	0.00	9.68
Beta Hemolysis	0	15	0.00	10.19	NO <sub>2</sub> Reduced	24	1	96.00	89.87
Growth on Mac	3	22	12.00	17.06	Gas from $NO_2$	8	8	50.00	50.00
Dnase	0	25	0.00	6.66	OF Fructose	0	25	0.00	6.66
Starch	0	25	0.00	6.66	OF Dextrose	0	25	0.00	6.66
Lecithinase	0	18	0.00	8.79	OF Lactose	0	25	0.00	6.66
Lipase	0	18	0.00	8.79	OF Maltose	0	25	0.00	6.66
PYR	0	14	0.00	10.77	OF Mannitol	0	25	0.00	6.66
LAP	14	0	100.00	89.23	OF Xylose	0	25	0.00	6.66
ESC Spot Test	0	14	0.00	10.77	OF Sucrose	0	15	0.00	10.19
Penicillin (10U)	12	12	50.00	50.00	Arginine	0	25	0.00	6.66
Vancomycin $(30\mu g)$	1	24	4.00	10.13	Lysine	0	25	0.00	6.66
Colistin $(10\mu g)$	25	0	100.00	93.34	Ornithine	0	25	0.00	6.66
Polymyxin B (300U)	15	0	100.00	89.81	Acetamide	0	25	0.00	6.66
					Esculin	0	25	0.00	6.66
					Gelatin	0	25	0.00	6.66
					Indole	0	25	0.00	6.66
					Malonate	10	13	43.48	44.41
					PAD	23	2	92.00	86.41
					Urea 2 hrs.	0	25	0.00	6.66
					Urea 48 hrs.	0	25	0.00	6.66
					6.5% NaCl	18	7	72.00	69.07
					10% Lactose	0	23	0.00	7.16
					ONPG	1	20	4.76	11.76
					Growth 42°C	22	3	88.00	82.94

Table 73: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as  $n_+/(n_+ + n_-)$ , where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which shifts raw percentages towards 50% with a strength dependent on the total number of test occurrences. The four antibiotic tests at the bottom of Column 1 are sensitivity tests where a positive result indicates sensitivity to the drug.

Final Identification:	OLIGERA UR	eThRALIS	P.G. /	4-4-14
Comments: <u>Maléi</u>	: Olydle unthrelis 2.435	CONFRACT	BY	144201-TOF 2013-14 #28
Gram Morph. Gram Test Motility Wet Prep Motility Deep	12° Na 7d Ney		72 <u>48 h</u> <u>K/NC</u> <u>N</u> <u>N</u>	$\frac{7 \text{ day}}{\frac{k/k}{N}}$
<ul> <li>Oxidase</li> <li>Oxidase</li> <li>Catalase</li> <li><u>PLATES</u> 7</li> <li>Odor</li> <li>Pigment on swab</li> <li>Pigment on BAP</li> <li>Morphology on BAP</li> <li>Beta hemolysis</li> <li>Growth on Mac 13.</li> <li>DNase hydrolysis</li> <li>Starch hydrolysis</li> <li>Lecithinase</li> <li>Lipase</li> <li>Rapid PYR</li> </ul>	Pos Pos - <u>As h</u> <u>7 day</u> <u>N</u> <u>Slight</u> <u>buff</u> <u>buff</u> <u>unet</u> <u>whick overgo</u> <u>iwet round</u> <u>inst round</u> <u>N</u> <u>N</u> <u>N</u> <u>N</u> <u>N</u> <u>N</u> <u>N</u> <u>N</u> <u>N</u> <u>N</u> <u>N</u> <u>N</u> <u>N</u> <u>N</u>	<ul> <li>NO<sub>3</sub> reduced</li> <li>Gas from NO<sub>3</sub></li> <li>NO<sub>2</sub> reduced</li> <li>Gas from NO<sub>2</sub></li> <li>OF Fructose</li> <li>OF Dextrose</li> <li>OF Lactose</li> <li>OF Maltose</li> <li>OF Mannitol</li> <li>OF Xylose</li> </ul>		N Ridyk-Zn N N N So N So N So N So N N N N N N N N N N N N N
Rapid LAP Rapid ESC <u>Sensitivity to:</u> Penicillin (10 U) Vancomycin (30 u Colistin (10 mcg) Polymyxin B (300	B4.35 <u><u><u><u></u></u><u><u><u><u></u></u><u><u><u></u></u><u><u><u><u></u></u><u></u><u><u><u></u></u><u><u></u></u><u><u></u><u><u></u></u></u></u></u></u></u></u></u></u></u>	Acetamide Esculin Gelatin Indole Malonate PAD Urea <u>N</u> 2 h 6.5% NaCL 10% Lactose ONPG Growth 42 <sup>0</sup>	N.N.N.N.	

Figure 215: Oligella urethralis isolate 1-of-25.

Date Inoculated: <u>J</u> Final Identification: OLIG	Nullalit	
-	igella uniteralis 2.284	+ P.S. 12/1/14 2013-14 \$\$
Oxidase Catalase	Neg. 45° Neg. 7d V Pos. Pos	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$
PLATES Odor Pigment on swab Pigment on BAP Morphology on BAP Beta hemolysis Growth on Mac DNase hydrolysis	To chy	OF Sucrose <u>G</u> <u>G-BL</u> -
Starch hydrolysis Lecithinase Lipase Rapid PYR	<u>Neg</u> <u>Neg</u> <u>Neg</u> <u>Neg</u> <u>Neg</u> <u>Neg</u> <u>Neg</u>	$\begin{array}{c c} \begin{array}{c} \begin{array}{c} \begin{array}{c} \begin{array}{c} \\ \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} $
Rapid LAP Rapid ESC <u>Sensitivity to:</u> Penicillin (10 U) Vancomycin (30 ug) Colistin (10 mcg) Polymyxin B (300 U)	$\frac{POS-}{Neq}$ $\frac{UR}{UR}$ $\frac{UR}{US}$ $\frac{UR}{155}$ $\frac{155}{195}$ $\frac{195}{195}$	Acetamide $N$ $Neg$ Esculin $N$ $Neg$ Gelatin $N$ $Neg$ Indole $X$ $Neg$ Malonate $Pos$ $Pos$ PAD $P$ ? $Ports X$ Urea $N_2$ h $N$ $Neg$ 0.5% NaCL $N$ $Pos$ $-setty closed - Neg10%$ Lactose $N$ $NegGrowth 42^{\circ} TSA Pos Pos Pos$

Figure 216: Oligella urethralis isolate 2-of-25.

M "/17/14 Date Inoculated: DX: ; BRAIN TUMOR Final Identification: OLIgellA aRethica Lis Comments: Maldie Olifella urothralis 2.502 11/24/14 Sert ait as Oliz. in Abralis Gram Morph. 7 day <u>48 h</u> Tubes KIA HNC 41 Gram Test  $H_2S$ Nea Motility Wet Prep Pseudo P Motility Deep Neh Pseudo F Ne Oxidase Pos Catalase 105 NO3 reduced redapte Zn Gas from NO3 PLATES <u>48 h</u> Neg 7 day Pos NO2 reduced Clea Odor Neg Slight Stree Babble POS Gas from NO<sub>2</sub> KY. Pigment on swab Duft buff ek Neg 6 OF Fructose Pigment on BAP white ishite Not OF Dextrose Morphology on BAP Sm. wet OF Lactose SAURI OF Maltose Beta hemolysis Nehr NUG OF Mannitol Nec Growth on Mac OF Xylose DARK Buce OF Sucrose DNase hydrolysis -ik be Nen NEG Starch hydrolysis New Arginine Lecithinase NZA Lysine Né Ornithine Lipase Base Control Rapid PYR Rapid LAP Acetamide Esculin Rapid ESC Gelatin Sensitivity to: Indole Malonate Penicillin (10 U) Neg recithou PAD SH. 9 Vancomycin (30 ug) 6R Urea NJG2 h 1301 16 5 6.5% NaCL Colistin (10 mcg) SPI alout 10% Lactose Polymyxin B (300 U) 18 5 N New 185 ONPG Growth 42º TSA PO POS

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days.

Juze "/19/14

Figure 217: Oligella urethralis isolate 3-of-25.

2

Reference No./Name:	Maldi Snay #179	brig	ayo 200	8-56
Date Inoculated:	Nov 7/22/13			
Final Identification:	O. urotaralis	prps-en	the stray	as O. unitaralio
Comments: <u>prev 1</u> P	: B. cepacin complex			
	i: Ouverturalis by Vitch 1 of on stard agan	ns RUO, IVD	ande Bruker	2008-56
Gram Morph.	a a start again	Tubes	<u>48 h</u>	7 day
Gram Test	and	KIA	KINC	KK
Motility Wet Prep	- Jr. sp	$H_2S$	N	$\sim$
Motility Deep	NA	Pseudo P	N	N
Oxidase	Pos	Pseudo F	N	N
Catalase	Pos	NO <sub>3</sub> reduced	X	Nee pirkastrzire
PLATES	48 h 7 day	Gas from NO <sub>3</sub>	trybubble	try bubble -
Odor	NN	$NO_2$ reduced Gas from $NO_2$		<u>Pos-cleared</u> on pick rige omcele bubble to bottom
Pigment on swab	buff buff			and the
Pigment on BAP	white white	OF Fructose OF Dextrose	BC-Gr BC-Gr	Be -
Morphology on BAP	ppt wh round wh.	OF Lactose	Bl Gr	Be-
Beta hemolysis	NN	OF Maltose	Be-Gr	Be- withorton
Growth on Mac	yatikoc point N	OF Mannitol OF Xylose	Be-6- Be-6-	Be - any
DNase hydrolysis	N N-blue col.	OF Sucrose	Beter	Be - call
Starch hydrolysis	NN	Arginine	A./	per Paul
Lecithinase	NN	Lysine	N	N
Lipase	NN	Ornithine	N	<u>N</u>
Rapid PYR	N	Base Control	N	<u>N</u>
Rapid LAP	Pos	Acetamide	N	N
Rapid ESC	N	Esculin Gelatin	N	<u>N</u>
Sensitivity to:		Indole	X	N
Penicillin (10 U)	na na	Malonate	N	Blue Pos +
Vancomycin (30 ug)	R R-	PAD Urea 12 h	N	N
Colistin (10 mcg)	13 13 +	6.5% NaCL	N	Pos siti cloudy
Polymyxin B (300 U	D_16_16_F	10% Lactose ONPG	N	<u> </u>
		Growth 42 <sup>0</sup> T		Pas

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 218: Oligella urethralis isolate 4-of-25.

Date Inoculated: Man april	3	0		
Final Identification: Mon 9/22	3/13 Oligo	la grettinelis	on PS	readines.
Comments: origiab 10: More	wellasp. Mer lini	ioloji		ASHEX14 6 07 17 RIGHT. O.u.
0	. ,		-	2005-16
Maedi RyD, IV	D. Driver . Oligo	les wernisers		
Gram Morph	2	Tubes	<u>48 h</u>	7 day
Gram Test		KIA H <sub>2</sub> S	KINC.	KK
Motility Wet Prep		1125	_ <u>N</u>	
Motility Deep - N 44	N7d	Pseudo P	N	N
Oxidase (F) Strug Pas		Pseudo F	N	<u>N</u>
Catalase $(f) los$	(-	→NO <sub>3</sub> reduced	$\sim$	Pos Clien of 3rd
PLATES 48 h	7 day	Gas from NO <sub>3</sub>	N	N (F)
Odor N	N	$NO_2$ reduced Gas from $NO_2$	N	N -
Pigment on swab buff	buff.			
Pigment on BAP White	white	OF Fructose OF Dextrose	Gr	Blar -
Morphology on BAP Smint col	Smivet	OF Lactose	CV (V	Gr -
Beta hemolysis	NUHBRE	OF Maltose	Gv .	Cr -
Growth on Mac THE _N	fui smcol CTao	OF Mannitol	6	Rea -
DNase hydrolysis - <u>N-dkbeue</u>	- N-deblue	OF Sucrose	Gr Be	38-6
Starch hydrolysis —N	N-It peach as	l.	4.1	11
Lecithinase N	N	Arginine Lysine	N	N -
Lipase N	N	Ornithine	N	N
Rapid PYR — N		Base Control	N	N
Rapid LAP (+) Pos		Acetamide	N	N
Rapid ESC - N		Esculin	N	N
Sensitivity to:		Gelatin Indole	<u>– N</u>	N -
Penicillin (10 U) $- \ell_{\rm e} \ell_{\rm e}$	P	Malonate	N	sit. Plue and - h
Vancomycin (30 ug) - (e P	P_	PAD	N Po	s <u>X</u> -
Colistin (10 mcg) $(35 \text{ g})^{-1}$	BS	Urea <u>N</u> 2 h 6.5% NaCL		y <u>suf</u> down of M
Polymyxin B (300 U) $+17$ S	175	10% Lactose		
1 orjinij kin D (000 O(1)		ONPG	TSA POS	Pos +
		Growth 42°-	ISH FUS	-05 T

Note: All biochemical tests (except where noted) are incubated at 30°C and read after 48 hrs. incubation and again at 7 days. Myrat this '48' Pueble Incolni.

C48' 92.077. Morarella lincohni. 6.255 Olig. unethores

Figure 219: Oligella urethralis isolate 5-of-25.

Date Inoculated:	W 3/22/1-	7			
Final Identification:			99.993% MS	= 18,103	
Comments: lab (	0	urothrali.		.36/2.3	9
	Ulyan	1 win win	jiquari a		
				201	17-26
2					
Gram Morph.			<u>Tubes</u> KIA	<u>48 h</u> K/NC	$\frac{7 \text{ day}}{1}$
Gram Test			$H_2S$	N	NR.
Motility Wet Prep			20		
Motility Deep	N 4p	Noz Tag	Pseudo P	N	Nog
Oxidase	Pas	0.	Pseudo F	μ	_Nez_
Catalase	Pos		NO <sub>3</sub> reduced	X	Red At ZnO
PLATES	48 h	7 day	Gas from NO <sub>3</sub>	N	Neg- O
Odor	Alac	Neg	96 NO <sub>2</sub> reduced	_X	cun-fos D
Pigment on swab	Ree	Bu	[-] Gas from NO <sub>2</sub>	μ	US D
Pigment on BAP	Lugg	-sup	OF Fructose	G	Gr -
	un	wh	OF Dextrose		
Morphology on BAP	Smidwet	rd wet	OF Lactose OF Maltose		
Beta hemolysis	Nag	Ner	OF Mannitol		
Z Growth on Mac	Neg	Neg	OF Xylose		-
DNase hydrolysis	New	Ner	OF Sucrose	1	<u> </u>
Starch hydrolysis	Nen	Neg	Arginine	.1	Nar
Lecithinase	Nam	Non	Lysine	_ <u>N</u>	Neg
Lipase	Nea	Nen	Ornithine		Nor
Rapid PYR	Near		Base Control	1	Neg
Rapid LAP	Ros		Acetamide		1) ear
	10		Esculin	N	Neg
Rapid ESC	_Neg_		Gelatin	N	Neg
Sensitivity to:	12 Bee		Indole	X	Neg
Penicillin (10 U)	Turke &	6R	43, 48 Malonate	P05	X
Vancomycin (30 ug)	Lef	LOR	97 PAD Urea N2h	N	Neg
Colistin (10 mcg)	135	135	2 - 6.5% NaCL	Ň	Neg
Polymyxin B (300 U	185	185	10% Lactose	N	Nog
			9.76 ONPG 68 Growth 42°	Pos	Pos
			U GIONAI H2		-

Figure 220: Oligella urethralis isolate 6-of-25.

W4/19/17 Date Inoculated: Oligella wethralis M5: 51.283 Final Identification: Pick 99.997% 46 1D: Oligella wothralis Comments: 2.56/2.58 Maldi: 2017-40 9 7 day Gram Morph. Tubes 48 h KK KIA Gram Test  $H_2S$ New Motility Wet Prep Pseudo P Motility Deep Nehuts New Pseudo F Nez Oxidase Pinik Heredivin @ Neg P05 Catalase NO3 reduced Gas from NO3 7 day PLATES 48 h NO<sub>2</sub> reduced den Odor Nidd forto mild Gas from NO<sub>2</sub> Nes Pigment on swab OF Fructose Pigment on BAP OF Dextrose Morphology on BAP Sm wet OF Lactose Smuet 64 OF Maltose Beta hemolysis NEG OF Mannitol Growth on Mac NOG-OF Xylose Gv OF Sucrose DNase hydrolysis Neg Ner  $C_{\ell}$ Starch hydrolysis NeG Near Arginine Neg Lecithinase New Lysine Ne Ornithine Lipase NO NO/ New Base Control NE Rapid PYR Rapid LAP Acetamide Esculin Rapid ESC Gelatin Sensitivity to: Indole Malonate Penicillin (10 U) PAD + Vancomycin (30 ug) 6P Urea  $N_2$  h Nes 135 Colistin (10 mcg) 6.5% NaCL POS-with A 10% Lactose 165 Nel Polymyxin B (300 U)

ONPG

Growth 42°

3/2

os (+-)

Double zone of growth e 34+6 mm. Answer Care out to be Olig. unethoris entre why. I suggest not ordering this antibook into the data base. I called it Resistant (Negtre) for this result. K-

Figure 221: Oligella urethralis isolate 7-of-25.

Final Identification:

01. gella weethealis P.S. 7/21/06

Comments:

				_	10.1		
	Gram Morph.		48	<u>Tubes</u> KIA	48h F/NC	<u>7 day</u> ENC	
	Gram Test	72h	. 1	$-H_2S$	New		
	Motility Wet Prep	ting Rods /c	6 cocci-Ner			1.01	
-	Motility Deep	XICG	NCO	- Pseudo P - Pseudo F	Nec	NeG	
+	Oxidase	POS			Nº CO-	7	
+	Catalase	STRONG	AOS	NO <sub>3</sub> reduced		NCE	N III Y
	<b>PLATES</b>	<u>48 h</u>	7 day	- Gas from NO <sub>3</sub> + NO <sub>2</sub> reduced	Pos Ne	DOS + INY I	tribble)
	Odor	NENC	NONE	Gas from NO <sub>2</sub>	NCG	Pog	
	Pigment on swab	Flegh			Biae	Buce	
	Pigment on BAP	GREY		—OF Fructose —OF Dextrose	Drac	pecce	
	Morphology on BAP	Smeeth		OF Lactose			
	Beta hemolysis	Nee		- OF Maltose			
-	Growth on Mac	NEG	Nel- INA.	OF Xylose			
-	DNase hydrolysis	NEG	NCG-inhi	.f-OF Sucrose	$\overline{\mathbf{V}}$	$\nabla$	
-	Starch hydrolysis	NEG	Nela	-Arginine	Ne6-	NEG	
_	Lecithinase	Nec	Nela	Lysine			
	Lipase	Neb	Nea	-Ornithine Base Control			
	Rapid PYR	Nela		Base Control	_V		
-+	- Rapid LAP	Pos		- Acetamide	Ne6-	NCG	
_	_ Rapid ESC	Nel	-	Esculin Gelatin	NEG	Nea	
	Sensitivity to:			- Indole	7000	NEG	
-	Penicillin (10 U)	5-45	_5'	- Malonate	Neb	New	
-	- Vancomycin (30 ug)	R	R	- PAD - Urea <u>New</u> 2 h	Lee	NPLE	
-	Colistin (10 mcg)	5-13	_5	+ 6.5% NaCL	Pos	POS	
	Polymyxin B (300 U	5-16	5	- 10% Lactose	Nec-	Nea	
				- ONPG - Growth 42°	Pos	Nea	
				-1			

Figure 222: Oligella urethralis isolate 8-of-25.

Final Identification:

OLIGEUA URETHRALIS 10/18/08 P.S.

9-19-08

Comments:

			9/22	10/10/08 21 DAYS
Gram Morph.		Tubes	48 1 72	<u>7 day</u>
Gram Test	48hR	KIA H <sub>2</sub> S	E/NC NEG	KIK
Motility Wet Prep	New TINY CD	H <sub>2</sub> S	NCG	10 213
Motility Deep	New New	Pseudo P	New	NEG
Oxidase	STRONG POS	Pseudo F	New	New
Catalase	STRONG POS	NO <sub>3</sub> reduced		NeG
PLATES	<u>48 h</u> <u>7 day</u>	Gas from NO <sub>3</sub>	Nele (+	Dal
Odor	NONE	$NO_2$ reduced Gas from $NO_2$	Nela	POS
Pigment on swab	flegh			DARKE BLUE
Pigment on BAP	GRey	OF Fructose OF Dextrose	BLUE	JAKE DENC
Morphology on BAP	TINY GROWTH @48h	OF Lactose		
Beta hemolysis	NEG POS 21 DAYS	OF Maltose OF Mannitol		
Growth on Mac	Neb inhibited	OF Xylose		
DNase hydrolysis	Nel- Nel	OF Sucrose	$\downarrow$	
Starch hydrolysis	Nel Nel	Arginine	NEG	Nec
Lecithinase	Nelo Nelo-	Lysine		
Lipase	Neb Neb	Ornithine Base Control		
Rapid PYR	NeG	Base Control	¥	<b>V</b>
Rapid LAP	Pos!	Acetamide	Neb	Nel
Rapid ESC	New	Esculin Gelatin	NEG	New New
Sensitivity to:	A	Indole		New
Penicillin (10 U)	$\underline{R}$ $\underline{K}$	Malonate PAD	POS	Neb
Vancomycin (30 ug)	R R	Urea <i>Nele</i> 2 h	NEG	New
Colistin (10 mcg)	5-14 5	6.5% NaCL	Nele	NEW
Polymyxin B (300 U)	) <u>5-18</u> 5	10% Lactose ONPG	Nele	Neb POS
		Growth 42 <sup>°</sup>	POS	POS

Figure 223: Oligella urethralis isolate 9-of-25.

Date Inoculated: 2-12-11 (FROOT 2-4-11)	
Final Identification: OLIGeILA URETHRALIS 2/24/11	P.S.
Comments: BUTTERSCOTCL COLOR ON STARCH@12 DAYS	

						2/14	2/24	12 DA	25
Gram Mor	ph.				Tubes	48 h	<u>7 day</u>		
Gram Test		48 h			KIA H <sub>2</sub> S	K/NC NEO	E/R Nel	-	
Motility W	et Prep	Nelo -	Coeci		1125	1.00	NCO	_	
Motility D	eep	NeG	Neb		Pseudo P	Nec	NEG	_	
Oxidase		Pos			Pseudo F	Neb	Nelo	-	
Catalase		STRONG	6 POS		NO <sub>3</sub> reduced		NEG	*	
<b>PLATES</b>		<u>48 h</u>	7 day		Gas from NO <sub>3</sub>	Tiny bebbli	e <u>Ne</u> G	=	
Odor		NONE			NO <sub>2</sub> reduced Gas from NO <sub>2</sub>	Nela	Nela	-	
Pigment or	n swab	Flesh						-	
Pigment or	n BAP	GRE-			OF Fructose OF Dextrose	GRN/BLUC	DARCE	GREEN	/
Morpholog	y on BAP	Sonooth-e	Ntire		OF Dextrose OF Lactose			-	
Beta hemo	lysis	Neb			OF Maltose			_	
Growth on	Mac	NEG	SLIGHT GI	DUT	OF Mannitol OF Xylose			_	
DNase hyc	lrolysis 🖊	vec- Nbib	ted NeG		OF Sucrose		1	_	
Starch hyd		NeG					0		
Lecithinas	9	New	Neb		Arginine Lysine	Nelo	Nel		
Lipase		NEG	NEG		Ornithine			_	
Rapid PYF	۲. Electric	NEG			Base Control	V	V	-	
Rapid LAI	0	POS			Acetamide	Nec	Nele		
Rapid ESC		Nela	-		Esculin	New	NEG	- -	
Sensitivity		_			Gelatin Indole		<u>NEG</u> NEG	-	
Penicillin		5-26	S (Douge	e)	Malonate	NEG	wt	_ //	
	cin (30 ug)	R	R	t	-PAD	. C. P. c. c	POS		
Colistin (		5-14.3	5	+	– Urea № <u>~</u> 2 h –6.5% NaCL	NEW	POS	-	
	in B (300 U)	5-17.3	5	(	-10% Lactose	Nele	NEG	7	
	. ,				ONPG Growth 42 <sup>0</sup>	POS	NCG	_	
				+	-010wtll 42	100	10 9	-	

Figure 224: Oligella urethralis isolate 10-of-25.

Final Identification:

Comments:

			30,	2/24
Gram Morph.	RAN NEG- COCC' CLUST	Tubes	48 h	$\frac{7 \text{ day}}{100000000000000000000000000000000000$
Gram Test	48 h	KIA H <sub>2</sub> S	<u>E/NC</u>	NEG
Motility Wet Prep	Ne6 - Very jutter	$\gamma$ $m_2 s$	_/ Clar	nee
Motility Deep	NEG Nels	Pseudo P	Nele	Nec
Oxidase	Pos	Pseudo F	Nelo	Neb
Catalase	STRONG POS	-NO <sub>3</sub> reduced	-	Nela
PLATES	<u>48 h</u> <u>7 day</u>	- Gas from NO <sub>3</sub>	NPC	POS
Odor	None	+ NO <sub>2</sub> reduced _ Gas from NO <sub>2</sub>	Nela	NEG
Pigment on swab	Flesh			
Pigment on BAP	White	OF Fructose OF Dextrose	Blue	Buce
Morphology on BAP	SPARSE- OPAQUE	OF Lactose		DARE BLUE
Beta hemolysis	Nela	OF Maltose		Bive
Growth on Mac	NG NG 2/2	OF Mannitol OF Xylose		Blue
DNase hydrolysis	Ne6- while teal - M	Control Aylose	$\checkmark$	GRN
Starch hydrolysis	New Nels	Arginine	NO	Ne6-
Lecithinase	NEG Nel-	Lysine	i	NEG-
Lipase	Nela Nela	Ornithine		
Rapid PYR	NeG	Base Control		<u>·</u> V
Rapid LAP	POS	Acetamide	Ne6-	NEG
Rapid ESC	NeG	Esculin	Nela	NEG
Sensitivity to:		Gelatin Indole	10 200	Nelo
Penicillin (10 U)	5-27 5	Malonate	POS	POS
Vancomycin (30 ug)	RR	PAD Urea <i>Nels</i> h	NPLOS	- NEG
Colistin (10 mcg)	5-14 9	6.5% NaCL	NEG	NEG
Polymyxin B (300 U)	5-17 5	10% Lactose	Nela	Nec
		ONPG Growth 42 <sup>0</sup>	Pes	- NEG POS

2-14-12 OLigella URethRalis 2/24/12 P.S.

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 225: Oligella urethralis isolate 11-of-25.

## 29 GENUS PANDORAEA

### 29.1 Pandoraea apista

Over the course of ASHEX clinical-isolate collection, one individual isolate of Pandoraea apista was analyzed. The associated biochemical result form is NOT pictured in this subsection.

Test	+	_	Raw%	<b>W95</b> %	Test	+	_	Raw%	<b>W95</b> %
Motility	1	0	100.00	60.33	H <sub>2</sub> S	0	1	0.00	39.67
Oxidase	0	1	0.00	39.67	Pseudo P	0	1	0.00	39.67
Catalase	1	0	100.00	60.33	Pseudo F	0	1	0.00	39.67
Yellow Pigment	0	1	0.00	39.67	NO <sub>3</sub> Reduced	0	1	0.00	39.67
Pink Pigment	0	1	0.00	39.67	Gas from $NO_3$	0	1	0.00	39.67
Beta Hemolysis	0	1	0.00	39.67	NO <sub>2</sub> Reduced	0	1	0.00	39.67
Growth on Mac	1	0	100.00	60.33	Gas from $NO_2$	0	1	0.00	39.67
Dnase	0	1	0.00	39.67	OF Fructose	0	1	0.00	39.67
Starch	0	1	0.00	39.67	OF Dextrose	0	1	0.00	39.67
Lecithinase	0	1	0.00	39.67	OF Lactose	0	1	0.00	39.67
Lipase	0	1	0.00	39.67	OF Maltose	0	1	0.00	39.67
PYR	0	1	0.00	39.67	OF Mannitol	0	1	0.00	39.67
LAP	1	0	100.00	60.33	OF Xylose	0	1	0.00	39.67
ESC Spot Test	0	1	0.00	39.67	OF Sucrose	0	1	0.00	39.67
Penicillin (10U)	0	1	0.00	39.67	Arginine	0	1	0.00	39.67
Vancomycin $(30\mu g)$	0	1	0.00	39.67	Lysine	0	1	0.00	39.67
Colistin $(10\mu g)$	0	1	0.00	39.67	Ornithine	0	1	0.00	39.67
Polymyxin B (300U)	0	1	0.00	39.67	Acetamide	0	1	0.00	39.67
					Esculin	0	1	0.00	39.67
					Gelatin	0	1	0.00	39.67
					Indole	0	1	0.00	39.67
					Malonate	1	0	100.00	60.33
					PAD	0	1	0.00	39.67
					Urea 2 hrs.	0	1	0.00	39.67
					Urea 48 hrs.	1	0	100.00	60.33
					6.5% NaCl	0	1	0.00	39.67
					10% Lactose	0	1	0.00	39.67
					ONPG	0	1	0.00	39.67
					Growth 42°C	1	0	100.00	60.33

Table 74: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as  $n_+/(n_+ + n_-)$ , where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which shifts raw percentages towards 50% with a strength dependent on the total number of test occurrences. The four antibiotic tests at the bottom of Column 1 are sensitivity tests where a positive result indicates sensitivity to the drug.

#### 29.2 Pandoraea species

Over the course of ASHEX clinical-isolate collection, four individual isolates of Pandoraea species (*not identified as Pandoraea apista*) were analyzed. Zero of the four recorded results are pictured in this subsection.

Test	+	_	Raw%	<b>W95</b> %	Test	+	_	Raw%	<b>W95</b> %
Motility	4	0	100.00	75.50	H <sub>2</sub> S	0	4	0.00	24.50
Oxidase	1	3	25.00	37.25	Pseudo P	0	4	0.00	24.50
Catalase	4	0	100.00	75.50	Pseudo F	0	4	0.00	24.50
Yellow Pigment	0	4	0.00	24.50	NO <sub>3</sub> Reduced	0	4	0.00	24.50
Pink Pigment	0	4	0.00	24.50	Gas from $NO_3$	0	4	0.00	24.50
Beta Hemolysis	0	4	0.00	24.50	NO <sub>2</sub> Reduced	0	4	0.00	24.50
Growth on Mac	4	0	100.00	75.50	Gas from $NO_2$	0	4	0.00	24.50
Dnase	0	4	0.00	24.50	OF Fructose	0	4	0.00	24.50
Starch	0	4	0.00	24.50	OF Dextrose	0	4	0.00	24.50
Lecithinase	0	4	0.00	24.50	OF Lactose	0	4	0.00	24.50
Lipase	0	4	0.00	24.50	OF Maltose	0	4	0.00	24.50
PYR	0	1	0.00	39.67	OF Mannitol	0	4	0.00	24.50
LAP	1	0	100.00	60.33	OF Xylose	2	2	50.00	50.00
ESC Spot Test	0	1	0.00	39.67	OF Sucrose	0	4	0.00	24.50
Penicillin (10U)	0	4	0.00	24.50	Arginine	0	4	0.00	24.50
Vancomycin $(30\mu g)$	0	4	0.00	24.50	Lysine	0	4	0.00	24.50
Colistin $(10\mu g)$	0	4	0.00	24.50	Ornithine	0	4	0.00	24.50
Polymyxin B (300U)	0	4	0.00	24.50	Acetamide	2	2	50.00	50.00
					Esculin	0	4	0.00	24.50
					Gelatin	0	4	0.00	24.50
					Indole	0	4	0.00	24.50
					Malonate	4	0	100.00	75.50
					PAD	0	4	0.00	24.50
					Urea 2 hrs.	0	4	0.00	24.50
					Urea 48 hrs.	1	3	25.00	37.25
					6.5% NaCl	0	4	0.00	24.50
					10% Lactose	0	4	0.00	24.50
					ONPG	0	4	0.00	24.50
					Growth 42°C	0	4	0.00	24.50

Table 75: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as  $n_+/(n_+ + n_-)$ , where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which shifts raw percentages towards 50% with a strength dependent on the total number of test occurrences. The four antibiotic tests at the bottom of Column 1 are sensitivity tests where a positive result indicates sensitivity to the drug.

## 30 GENUS PSEUDOMONAS

## 30.1 Pseudomonas aeruginosa

Over the course of ASHEX clinical-isolate collection, 53 individual isolates of Pseudomonas aeruginosa were analyzed. 26 of the 53 recorded results are pictured in this subsection.

Test	+	_	Raw%	W95%	Test	+	_	Raw%	W95%
Motility	36	17	67.92	66.71	H <sub>2</sub> S	0	53	0.00	3.38
Oxidase	52	1	98.11	94.86	Pseudo P	13	40	24.53	26.25
Catalase	53	0	100.00	96.62	Pseudo F	22	31	41.51	42.08
Yellow Pigment	0	53	0.00	3.38	NO <sub>3</sub> Reduced	40	13	75.47	73.75
Pink Pigment	1	52	1.89	5.14	Gas from $NO_3$	22	26	45.83	46.14
Beta Hemolysis	34	12	73.91	72.07	NO <sub>2</sub> Reduced	35	13	72.92	71.22
Growth on Mac	53	0	100.00	96.62	Gas from $NO_2$	30	18	62.50	61.57
Dnase	5	48	9.43	12.18	OF Fructose	43	10	81.13	79.03
Starch	13	40	24.53	26.25	OF Dextrose	51	2	96.23	93.10
Lecithinase	5	41	10.87	13.89	OF Lactose	7	46	13.21	15.69
Lipase	14	32	30.43	31.94	OF Maltose	4	49	7.55	10.42
PYR	13	25	34.21	35.66	OF Mannitol	27	26	50.94	50.88
LAP	37	1	97.37	93.02	OF Xylose	43	10	81.13	79.03
ESC Spot Test	0	38	0.00	4.59	OF Sucrose	5	38	11.63	14.77
Penicillin (10U)	0	53	0.00	3.38	Arginine	52	1	98.11	94.86
Vancomycin $(30\mu g)$	0	53	0.00	3.38	Lysine	0	53	0.00	3.38
Colistin $(10\mu g)$	53	0	100.00	96.62	Ornithine	0	53	0.00	3.38
Polymyxin B (300U)	53	0	100.00	96.62	Acetamide	27	26	50.94	50.88
					Esculin	2	51	3.77	6.90
					Gelatin	26	27	49.06	49.12
					Indole	0	53	0.00	3.38
					Malonate	24	24	50.00	50.00
					PAD	0	53	0.00	3.38
					Urea 2 hrs.	0	53	0.00	3.38
					Urea 48 hrs.	32	14	69.57	68.06
					6.5% NaCl	33	20	62.26	61.44
					10% Lactose	5	43	10.42	13.35
					ONPG	4	44	8.33	11.42
					Growth $42^{\circ}C$	49	4	92.45	89.58

Table 76: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as  $n_+/(n_+ + n_-)$ , where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which shifts raw percentages towards 50% with a strength dependent on the total number of test occurrences. The four antibiotic tests at the bottom of Column 1 are sensitivity tests where a positive result indicates sensitivity to the drug.

	Date Inoculated:	Wea7/1/15		· · · · ·
	Final Identification:	Pseudoments	Actuq NOGA 7/	3/15 R.S.
	Comments:	OXIDASE Nel	ATTIVE STRAIN	
	ØX(-	3 Psaening Mala	1: Baing 2.321	2015-8
	Gram Morph. Gram Test		Tubes 48 h 7 d KIA 1414 1	ay Lik
	Motility Wet Prep			gCreen pigment
-	Motility Deep • Oxidase	Pos Pos 67.92	+ Pseudo P <u>Pos</u> + Pseudo F <u>Pos</u>	POS ~ 24. 53 POS ~ 41.51
	Catalase	Pos NC		POS + 75.47
	<u>PLATES</u> Odor	<u>48 h</u> <u>7 day</u> <u>fruity</u> <u>fruity</u>	$\begin{array}{c c} + & \text{Gas from NO}_3 & \underline{\rho}_{05} \\ + & \text{NO}_2 \text{ reduced} & \underline{\chi}_{-} & \underline{\ell}_{2} \\ + & \text{Gas from NO}_2 & \underline{\rho}_{05} &  \end{array}$	Pes + 48.83 ~ Pos + 72,92 Pos - 1 62.50
-	Pigment on swab Pigment on BAP Morphology on BAP	ut <u>silver</u> 1,85 Speady gor, sheer	+ OF Dextrose Ally upos	<u>e Nag</u> - 81,13 <u>e Pos</u> + 96,23
÷	- Beta hemolysis Growth on Mac 5	Neg-Rossi Post 73:49 D_POS Pos_NC	- OF Maltose <u>BCNet</u> + OF Mannitol <u>Use two</u> + OF Xylose <u>Allyce Pos</u>	Le Neg - 13, 2, Le Neg - 7,55 Letyo Pos + 50,94 Let Pos + 81,13
Repeat 400 New Ney	DNase hydrolysis S Starch hydrolysis S Lecithinase		<sup>3</sup> + Arginine <u>los</u>	<u>Pos</u> - 98, 11
Neg	Lipase II Rapid PYR		- Crnithine <u>Ner</u> Base Control <u>Alex</u>	Neg- / Neg-/
	→ Rapid LAP — Rapid ESC	POS 97.37 Neg	+ Acetamide <u>Pos</u> - Esculin <u>N25</u>	POS - 50.94 Neg - 3.77
	Sensitivity to:		- Gelatin <u>New</u>	NIA V 49:06 POS NEG
	<ul> <li>Penicillin (10 U)</li> <li>Vancomycin (30 ug)</li> </ul>	SD 6R 6R	$\begin{array}{c} + \text{ Malonate} \\ - \text{PAD} \\ X + \text{Urea} \frac{1}{\sqrt{a/2}} h \\ \end{array} \begin{array}{c} \rho o S \\ \rho o S \end{array}$	PUS 50 X ager pignored POS VC/69 berg
	+ Colistin (10 mcg) ≁Polymyxin B (300 t		+6.5% NaCL -10% Lactose -ONPG	<u>POS</u> wc/eq 77 <u>Pos</u> Pos 627 26 <u>New</u> 10-42 <u>New Pos</u> New 8.33
	Noto: All Land		Growth 42° TEM POS	POS 72,45
	incubation and agai	cal tests (except where no n at 7 days.	oted) are incubated at 30°C and	
			Strings of grout	h intube but proten is clear

Figure 226: Pseudomonas aeruginosa isolate 1-of-53.

	Date Inoculated:				<i></i>	
	Final Identification:	PseudomonAs	ARRUGINOSA	PS.	8/31/05	
	Comments: BRow	IN DIFFUSIBLE PIERE	ENT ON PAD. F			To LAGose
1++	Gram Morph. Gram Test Motility Wet Prep Motility Deep Oxidase Catalase	+	$\frac{\text{Tubes}}{\text{KIA}} \text{ wc/wc}$ $\frac{H_2S}{$	ALEC NEC NEC NEC	RCH + EGG. <u>7 day</u> <u>NC/NC</u> <u>NeG</u> <u>NeG</u> <u>NeG</u> <u>NeG</u> <u>NeG</u> <u>NeG</u> <u>NeG</u> <u>NeG</u> <u>Tony Bubble</u>	SIBLE
workny workny +	Odor Pigment on swab Pigment on BAP - Morphology on BAP Beta hemolysis Growth on Mac DNase hydrolysis New Starch hydrolysis New	NONE NONE BREGE BROWN CLEAR-TRANSPARENT-T WET-HUCOLD NEG GROWTH-UCR/HU GO SCANT GROWTH/NG	<ul> <li>OF Maltose QU</li> <li>OF Mannitol</li> <li>OF Xylose</li> <li>OF Sucrose</li> <li>Arginine</li> <li>Lysine</li> <li>Ornithine</li> </ul>	NEG Dev V NG	Ne6 2057 2057	+Reinauc
		<u>prowth/reamon Neg</u> <u>Neg</u> <u>Neg</u> <u>Neg</u> <u>R</u> <u>R</u> <u>R</u> <u>R</u> <u>R</u> <u>R</u>	<ul> <li>Base Control</li> <li>Acetamide</li> <li>Esculin</li> <li>Gelatin</li> <li>Indole</li> <li>Malonate</li> <li>PAD</li> <li>Urea2 h</li> <li>6.5% NaCL</li> <li>10% Lactose</li> <li>ONPG</li> <li>Growth 42°</li> </ul>	× 1 1 1 1 1 1 1 1 1 1 2 G	NEG NEG NEG NEG NEG NEG NEG NEG NEG NEG	uccus.ble den T

e.

Figure 227: Pseudomonas aeruginosa isolate 2-of-53.

	Date Inoculated:	10/26/0	5				
	Final Identification:	Reude	OMONAS	ARRUGINOSA	7 11/5	105 P.S.	
	Comments: Poe			AP @ 48. A.		Colonies	
	Final Identification: Comments: <u>Poe</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u> <u>Inuc</u>	Nel GROCE N duge PU N duge PU Nel (48) S Nel (48) S Nel (48) S Nel (48) S STRONG 48 h T NONE GLESH STRONG 48 h T NONE GLESH NONE STRONG MEG NEG	And U gut Grad Melo DOG Velo Nelo Nelo Nelo Nelo	$\begin{array}{c} \begin{array}{c} \begin{array}{c} \begin{array}{c} \begin{array}{c} \begin{array}{c} \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} $	7 72h Nelyfic Vel <u>Alsh</u> <u>New</u> <u>New</u> <u>New</u>	Colonies II/4/05 7 day NC/NC NEG NEG NEG NEG VEG Yel Yel Yel Yel Yel Yel Yel Yel	
-	Sensitivity to: - Penicillin (10 U) - Vancomycin (30 ug) - Colistin (10 mcg) - Polymyxin B (300 U)	6	R R S S	<ul> <li>Gelatin</li> <li>Indole</li> <li>Malonate</li> <li>PAD</li> <li>Urea _2 h</li> <li>+6.5% NaCL</li> <li>-10% Lactose</li> <li>-ONPG</li> <li>+ Growth 42°</li> </ul>	NEG NEG NEG POS	NEG NEG NEG NEG POS-OFORES NEG NEG	erder
				-			

Figure 228: Pseudomonas aeruginosa isolate 3-of-53.

			,			
Date Inoc	culated: $3-15$	-06			2	
Final Iden	ntification: <u>Pseu</u>	do MONAS	ACRUG; NOS	A 3/.	24/06 P.S.	
Commen	ts: IVORY COL	ones en	STARCH &	- E66	@7D	
	Sent to	ARUP 60	2 Seguenci	ing 00	NFIRMEd AS	P.A.
			1	/	3/23/06	,
Gram Mo	orph. GNB	<i>,</i>	Tubes	<u>48 h</u>	7 day	
Gram Te	st <u>24/h.R.</u>	486 70-N	CG KIA	E/NC.	E/E	
Motility V	Wet Prep Nel	NC6 4 C 6	<b>σ</b> =Π <sub>2</sub> σ	NCG	Nelo	
Motility I	Deep <u>Nels</u>	New Very j.t.	Pseudo P	Nel	NEG	
+ Oxidase	205		-Pseudo F	NeG	Nel	
+ Catalase	STRONIC	Pos	+ NO <sub>3</sub> reduced		Pos	
PLATES		7 day	-Gas from NO <sub>3</sub>	NeG	New	
Odor	Sonewhat sweet	Nela	$ O_2$ reduced $ Gas$ from $NO_2$	Nel	Nee	
Pigment	on swab <u>flesh</u> -	Lt.peach				
Pigment	on BAP Lt. GRey		OF Fructose     OF Dextrose	BLUE Yel	<u>BLUE</u> YeL	
Morphole	ogy on BAP Snoeth		OF Lactose	BLUE	BLUE	
— Beta hem	olysis Nels	NEG	OF Maltose	Bene	Blue	
+ Growth o	on Mac Pos-	COL. POS	← OF Mannitol + OF Xylose	BULC Yel	BLUE YEL	
DNase h	ydrolysis <u>NeG</u>	Nela	OF Sucrose	Bine	BLUE	
- Starch hy	drolysis New		+ Arginine	DOS	Pos	
- Lecithina	se Neb	New	Lysine	NEG	Nele	
Lipase	Nela	Neb	Ornithine	Nele	Ner	
+ Rapid PY	R POS		-Base Control	New	NCG	
+ Rapid LA			- Acetamide	NEG	Nele	
-Rapid ES	sc NeG		- Esculin	NCG	Nea	
Sensitivit			-Gelatin Indole	NeG	New	
- Penicill	· · · · · · · · · · · · · · · · · · ·	R	- Malonate	NEG	NCG	
	nycin (30 ug) $R$	R	-PAD	Nel	41211	
		5	—Urea <u>M6</u> 2 h — 6.5% NaCL	Neb	NEG NEG-	
	$x (10 \text{ m/g}) = \frac{5}{5-13}$	Ś	-10% Lactose	Nela	NCG	
( Toryiny			-ONPG	NCC	NEG	
			Growth 42°	NEW	pos	

Figure 229: Pseudomonas aeruginosa isolate 4-of-53.

	Reference No./Name:	ID 0	N Vitele.	AS A. XyLe	osoxid	ANS		
	Date Inoculated:	5-4-0	6					
	Final Identification:	Pseu	de monA	S ACRUGING	OSA 5	11/06 P.S.		
	Comments: <u>LARG</u>			on MACLEO		EUNINY LOOKING		
	PARTIALLY INAIbited, A Gtes Subculture had Typical P. Acher							
		RANCE &	odor on BA		5 A 5/8/			
	Gram Morph.	2(		<u>Tubes</u> KIA	<u>48 h</u> <u>k/k</u>	$\frac{7 \text{ day}}{4}$		
	Gram Test	24h		H <sub>2</sub> S	NEW	Nela		
	Motility Wet Prep	Morile	N			1104		
+	Motility Deep	Pos	P05-70	Pseudo P Pseudo F	Nea	NeG		
+	Oxidase	POS		- rseudo r	New	IVEG		
+	-Catalase	STRENG PE	\$	$+NO_3$ reduced	Pos			
	PLATES	<u>48 h</u>	<u>7 day</u>	- Gas from NO <sub>3</sub> - NO <sub>2</sub> reduced	POS			
	Odor	NONE		-Gas from NO <sub>2</sub>	POS			
	Pigment on swab	Babb						
	Pigment on BAP	ColorLess		+ OF Fructose	GRN YeL	Yer/GRN		
	Morphology on BAP 7	RANSLUCENS	- SMACE SPADSO - AROWTON (B) 29	OF Lactose	BLUE	BLUE		
+	Beta hemolysis	Pos	/ 0	-OF Maltose	Buce	glae.		
+	Growth on Mac	PARTIALLY INN.b. ted	620wTh	OF Mannitol OF Xylose	Yel/GRN YeL	<u>Yellow</u> N Yel		
-	- DNase hydrolysis	NEG	NEG	-OF Sucrose	BLUE	BLUE		
_	Starch hydrolysis	NEG	NEG	1				
+	Lecithinase	Nele	Pog	-Lysine	Pos New	<u>Pos</u> NeG		
+	Lipase	NRG	Pas	Ornithine	Neu	NEG		
•	Rapid PYR	WK POS		-Base Control	NEL	Nec-		
	- Rapid LAP	Pos.		+ Acetamide	pos!	Pos		
	-Rapid ESC	NEG		Esculin	NRG	Net		
	Sensitivity to:	1100		Gelatin	POS	POS		
	- Penicillin (10 U)	D		<ul> <li>→ Indole</li> <li>↓ Malonate</li> </ul>	Rele	BLUE- DOS		
_	<ul> <li>Vancomycin (30 ug)</li> </ul>	R		-PAD	New			
		5-13		Urea # <u>e6-2</u> h	Neo	NEG		
7	Colistin (10 mcg)			+6.5% NaCL - 10% Lactose	POG Nev-	NEG		
-	Polymyxin B (300 U)	5-15		-ONPG	Nel	Nea		
				- Growth 42 <sup>0</sup>	Pos	_		

Figure 230: Pseudomonas aeruginosa isolate 5-of-53.

Final Identification:

5-2-06 Pseudemants Aereleginost P.S. 5/9/06

Comments:

Gram Morph.	Tubes	<u>48 h</u>	<u>7 day</u>
Gram Test <u>24h</u>	$ \begin{array}{c} \text{KIA} \\ - \text{H}_2 \text{S} \\ \end{array} $	K/NC	Slight Hys
Motility Wet Prep Uery motile - med Robs	- 1125 54	10ht #2>	
+Motility Deep Pos Pos -70	- Pseudo P	Nea	NeG
+Oxidase $\mathcal{PES}$	- Pseudo F	NEG	NEG
+ Catalase STRONG POS	-NO <sub>3</sub> reduced		NEG
$\underline{PLATES} \qquad 24\underline{48} \text{ h} \qquad \underline{7} \text{ day}$	- Gas from NO <sub>3</sub> - NO <sub>2</sub> reduced	New	NEG
Odor None-Ationia	-Gas from NO <sub>2</sub>	NEG	NEG
Pigment on swab	LOFF	Vac	Yec
Pigment on BAP Light gizer	+OF Fructose +OF Dextrose	Yec.	YeL
Morphology on BAP Smoot	NeG-OF Lactose	BLUE	BLUE
+ Beta hemolysis $POS$	- OF Maltose	Biye	BLUE
+ Growth on Mac <u>POS</u> POS		Yel Yel	Yel Yel
DNase hydrolysis <u>Nebra</u>	OF Sucrose	Blue	BLUE
- Starch hydrolysis <u>Nele Nele</u>	<b>↓</b> ★ Arginine	Pos	Pes
-Lecithinase Neb	- Lysine	NEG	Nela
ty Lipase Pos Pos	- Ornithine	Nec	Xie6
Rapid PYR <u>NEG</u>	- Base Control	Nele	Nel
+ Rapid LAP <u>POS</u>	- Acetamide	Nec-	POS
-Rapid ESC <u>NEG</u>	← Esculin † ∳Gelatin	Nea	Nele
Sensitivity to:	- Indole	_pv>_	NeG
- Penicillin (10 U) <u>R</u>	+ Malonate	BLUE AT T	TOP POS!
$\sim$ Vancomycin (30 ug) $R$ $R$	- PAD + Urea New 2 h	NECT POS-SLANT	- POS SCANT & BUTT
+ Colistin (10 mcg) $S - IR = 5$	+ \$ 6.5% NaCL	POS	AOS!
Polymyxin B (300 U) $S = 11$	- 10% Lactose	Nela	Nela
$\frown$	- ONPG - Growth 42°	NEG POST	Neb
		10.2	1000

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 231: Pseudomonas aeruginosa isolate 6-of-53.

Final Identification:

8/3/06 Tuesday 48hr Rent \$1/10/06 7 day Rend 8/15/06 Pseudomowas ARRugiNosA A.S. 8/14/06

Comments:

Gran	n Morph. n Test	48h	·	Tubes KIA - H <sub>2</sub> S	8/10 48 h E/NC Nela	8/14 6 7 day 6/NC NCG	DAY
- Mot	ility Wet Prep ility Deep	Nelo-Tiny Nelo	New	- Pseudo P - Pseudo F	NeG NeG	Nec Yer dige	Quest-
+ Oxic + Cata <u>PLA</u> Odo	lase ATES	<u>18 h</u> Nore	I day 6 DA	$-NO_2$ reduced	San bubble	POS POS POS POS	F
Pign	nent on swab nent on BAP phology on BAP	<u>LIGHT PINK</u> ( <u>SALMON</u> ) <u>GREY</u> SMOOTLA		+ Gas from NO <sub>2</sub> + OF Fructose - OF Dextrose - OF Lactose	<u>GRN</u> <u>BLUE</u>	GRN BLUE	
se+ 3/3/1+ Gro	hemolysis wth on Mac ase hydrolysis	POS POS NEG- GROC NEG- SLIG	UTH HELY PIWE	<ul> <li>OF Maltose</li> <li>OF Mannitol</li> <li>OF Xylose</li> <li>NECOF Sucrose</li> </ul>			
- Leci	ase	NEG NEG NEG	NECO	Arginine Lysine OG-Ornithine Base Control	₽05 <u>NC6</u> <u>NC6</u> <u>NC6</u>	pos Nece Nece Nece	
+ Rap - Rap Sens	id PYR id LAP id ESC <u>sitivity to:</u> nicillin (10 U)	$\frac{+ fos}{-+ fos}$	R	Acetamide Esculin Gelatin Indole Malonate	POS New New	POS NEG NEG NEG NEG	
- Va + Co	uncomycin (30 ug) olistin (10 mcg) lymyxin B (300 U)	<u>R</u> <u>S-18</u> <u>S-19</u>	2 5	<ul> <li>PAD</li> <li>Urea <u>Ne62</u> h</li> <li>6.5% NaCL</li> <li>10% Lactose</li> <li>ONPG</li> <li>Growth 42°</li> </ul>	NEG NEG NEG NEG NEG Pos	PINE SLA WT Nec- Nec-	HNT )powr

Figure 232: Pseudomonas aeruginosa isolate 7-of-53.

	Reference No./Name:	12-1-	06					4)
	Date Inoculated: Final Identification: Comments:	12-8-06	$\wedge$	edo	MONAS A	ekiegina	ан 12/8/04 Р.S.	-
							1	_
	Grow Mornh					2/5 (4 D)	7 day	
	Gram Morph. Gram Test Motility Wet Prep	244 Nec- "	ned Rods	-	<u>Tubes</u> KIA H <sub>2</sub> S	<u>48 h</u> K/NC Nec	7 day FZ/K NEC	
++	Motility Deep Oxidase	Pos	POS		Pseudo P Pseudo F	Neb Neb	Nea Nea	
+	-Catalase <u>PLATES</u> Odor	PoS 48 h Pseudo	<u>7 day</u>	+ +	NO <sub>3</sub> reduced Gas from NO <sub>3</sub> NO <sub>2</sub> reduced Gas from NO <sub>2</sub>	Pos	NOS POS POS POS	
-	Pigment on swab Pigment on BAP Morphology on BAP Beta hemolysis Growth on Mac	<u>flesh</u> <u>Grey</u> <u>Metrucc</u> <u>POS</u> <u>POS</u> <u>NeCe</u>	Sheen pos pos Neu	+++	<ul> <li>OF Fructose</li> <li>OF Dextrose</li> <li>OF Lactose</li> <li>OF Maltose</li> <li>OF Mannitol</li> <li>OF Xylose</li> <li>OF Sucrose</li> </ul>	6 Rr/Blue Yec Blue Blue GRN/Blue Yec Blue	<u>GRN/BLWE-YEL</u> <u>YEL</u> <u>BLUE</u> <u>GRN/BLUE</u> -YEL <u>YEL</u> <u>BLUE</u>	
	- Starch hydrolysis - Lecithinase - Lipase Rapid PYR	Nec Nec Nec	NCG NCG	-	Arginine Lysine Ornithine Base Control	POS Nec Nec Nec	POS Nec- Nec- Nec-	
-	<ul> <li>Rapid LAP</li> <li>Rapid ESC</li> <li>Sensitivity to:</li> <li>Penicillin (10 U)</li> <li>Vancomycin (30 ug)</li> <li>Colistin (10 mcg)</li> <li>Polymyxin B (300 U)</li> </ul>	P05 Ne6 R R S-16 S-19	R L S		<ul> <li>Acetamide Esculin</li> <li>Gelatin</li> <li>Indole</li> <li>Malonate</li> <li>PAD</li> <li>Urea Me-2 h</li> <li>6.5% NaCL</li> <li>10% Lactose</li> <li>ONPG</li> <li>Growth 42°</li> </ul>	Nele Nele Nele Nele Nele Nele Nele Nele	Nec Nec Nec Nec Nec Nec Nec Nec Nec Nec	

Figure 233: Pseudomonas aeruginosa isolate 8-of-53.

10-20-06 Date Inoculated: 10/27/06 P.S. seudomonas Adruginosa Final Identification: en Pagudo F At 7 DAYS Comments: SLIGHT GREENISH GROW BUT NOT FLUORESCEN Gram Morph. Tubes 7 day KIA -INC K 30 Gram Test SLIGHT BLACK SLight black  $-H_2S$ Motility Wet Prep POS Med Rods NeG Pseudo P Motility Deep DOS POS NEG - Pseudo F NEG Nec -Oxidase POS Catalase POG - NO3 reduced STRENG -Gas from NO3 NEG Neia PLATES 48 h 7 day -NO2 reduced NEG NONE Odor -Gas from NO<sub>2</sub> NEG NEG Pigment on swab flesh +OF Fructose Yel GREY Pigment on BAP +-OF Dextrose YPI Morphology on BAP SHOOTH - OF Lactose BLUE - OF Maltose Beta hemolysis New ALLE Bill - OF Mannitol BLUE Blue -Growth on Mac POS - OF Xylose YEL YeL NEG NEG - OF Sucrose DNase hydrolysis Blue BLUE + Starch hydrolysis POS POS POS DOS + Arginine - Lecithinase Nilla NEG \_ Lysine NEG New - Ornithine Neu New - Lipase Nelo New Base Control New Nel - Rapid PYR NeG POS + Rapid LAP NEG - Acetamide NRG - Esculin NEG Nela - Rapid ESC N elg - Gelatin NPLE NDG Sensitivity to: Indole NCG - Malonate NEG NeG - Penicillin (10 U) PAD NEG Vancomycin (30 ug) ↓ Urea <u>Nele</u> h POG SCANT & BUTT POS-SLAN +6.5% NaCL Colistin (10 mcg) + POS POS 10% Lactose

Note: All biochemical tests (except where noted) are incubated at 30°C and read after 48 hrs. incubation and again at 7 days.

-ONPG

-Growth 42°

Polymyxin B (300 U)

NRC

POS

NEG

Figure 234: Pseudomonas aeruginosa isolate 9-of-53.

10-31-09 Date Inoculated: ACRUGINOSA Final Identification: Comments: colomies Kled 11/13/09 Tubes 7 day Gram Morph. <u>48 h</u> K/NC KIA Gram Test 48h Nea Ò H<sub>2</sub>S POS- medium DODS Motility Wet Prep Neb NeG 2 Pas P09 Pseudo P 1 25.33 Motility Deep 68.0 POS +Pseudo F Pos ! 42.55 ROS 4 Oxidase STRONG DOS 3 72.34 4 + Catalase -NO3 reduced New 47.62 -Gas from NO3 Tiny Bubble TINY Babble Î PLATES <u>48 h</u> 7 day NO2 reduced Nea 71,43 3 Odor NONE Gas from NO2 NPL Neb 64.29 2 Pigment on swab FLESh 82-28 YeL + OF Fructose Yel Pigment on BAP GREY 55  $\dot{\tau}$  OF Dextrose YEL Yel .74 Smooth - Smears 14.57 Morphology on BAP -OF Lactose BLUE BLUE - OF Maltose 8.81 BLEC BLUE Beta hemolysis Neld 48.54 Ζ -OF Mannitol BLUE Biul 4 POS -f-Growth on Mac 109 +OF Xylose Yel YeL 78,72 © 10,61 → DNase hydrolysis **OF** Sucrose Neb BLUC Buce 3.51 Arginine 127,66 - Starch hydrolysis Nelo POS Pos 99-82 H POS 0 12.5 - Lecithinase Nele NEG -Lysine NeG Nea õ 2 35 - Lipase -Ornithine Nec NeG Nec New Base Control 3 37 J Rapid PYR NEG New NEG 48.94 + Rapid LAP P05 ! NCG NEG - Acetamide ŧ. -Esculin NCG 0 4,26 NEG -Rapid ESC 0 NEG 2 - Gelatin New NEG 51.00 Sensitivity to: 0 -Indole NEL Nel 45.24 -Malonate 1 D Penicillin (10 U) New NeG PAD -Vancomycin (30 ug) Ø Urea <u>NE6-2</u> h SLANT & BUTT POS-SLAN. POS 5-10 +6.5% NaCL 4 +Colistin (10 mcg) Pos DOS 4 61,70 10% Lactose 11.9 Nea NCG +Polymyxin B (300 U) 5-REPENT 12/30 Zuy -ONPG Nela Ð NPG 10 2. - Growth 42° Posl 93.62

Figure 235: Pseudomonas aeruginosa isolate 10-of-53.

Date Inoculated: Final Identification: Rane CON Comments: Achromitacte Gram Morph. Tubes KIA Gram Test  $H_2S$ Motility Wet Prep @48h Colcor - Pseudo P Motility Deep - Pseudo F Oxidase Æ Stron 6 (+) - Catalase - NO3 reduced Gas from NO<sub>3</sub> PLATES <u>48 h</u> 7 day  $\downarrow$  NO<sub>2</sub> reduced O NONE Odor Gas from NO<sub>2</sub> E 7/29 Pigment on swab  $\Theta$ GRN BLUC OF Fructose Pigment on BAP O Lt. g. Rey Yel/GREEN Yer + OF Dextrose GRN Smooth Yeil Green Morphology on BAP OF Lactose BLUE OF Maltose BLUE V + Beta hemolysis Ŧ GREEN + OF Mannitol Yeu Giren - Growth on Mac Blue-Green yes A OF Xylose YOL GRN OF Sucrose 16Reen DNase hydrolysis YPI Starch hydrolysis  $\bigcirc$ RePe Arginine - Lecithinase E Nela Lysine Ornithine CONTAGIN - Lipase Nela Base Control Rapid PYR  $\square$ 2 (weak) Rapid LAP Acetamide POS - Esculin Rapid ESC NEG - Gelatin Sensitivity to: -Indole -Malonate Penicillin (10 U) -PAD Vancomycin (30 ug) D V -Urea \_2 h Colistin (10 mcg) +6.5% NaCL 10% Lactose G Polymyxin B (300 U) V - ONPG  $\times$  Growth 42<sup>o</sup> (-

Figure 236: Pseudomonas aeruginosa isolate 11-of-53.

		P. Gel	RUGINOSA
Comments:		P.5.	<u>20091NOSA</u> 4/20/07
Gram Morph. Gram Test $48 k$ Motility Wet Prep $po_{3}-77my Rods$	Tubes KIA H <sub>2</sub> S	48 h K/NC NEG	3/14/07 7 day K/K Nelo
Motility Deep <u>POS POS</u> Oxidase <b>POS</b>	Pseudo P Pseudo F	New	NEG- TAN diff
Catalase   STRend Pes     PLATES   48 h   7 day     Odor   None	$NO_3$ reduced Gas from $NO_3$ $NO_2$ reduced Gas from $NO_2$	Tiny Babble	Pos
Pigment on swabfleshPigment on BAPGreen Auron Auro	OF Fructose OF Dextrose OF Lactose OF Maltose OF Mannitol OF Xylose OF Sucrose	GRN Yel Bille Bille Bille GRN Bille	GRN-YEL ON TOP YEL BLUE GRN-YEL ON TOP YEL BLUE
Starch hydrolysisNel_ Weak PosLecithinaseNele NeleLipaseNele NeleRapid PYRNeleRapid LAPPos	Arginine Lysine Ornithine Base Control Acetamide	Pos Nec Nec Nec Nec	POG Nece Nece Nece Nece Nece Nece
Rapid EX $\underline{ICZ}$ Rapid ESC $\underline{NCC}$ Sensitivity to: $\underline{R}$ Penicillin (10 U) $\underline{R}$ Vancomycin (30 ug) $\underline{R}$ $\underline{R}$ $\underline{R}$ Colistin (10 mcg) $\underline{S-15}$ $\underline{S-17}$ $\underline{S}$ Polymyxin B (300 U) $\underline{S-17}$	Esculin Gelatin Indole Malonate PAD Urea Urea Urea Log Lactose ONPG Growth 42 <sup>0</sup>	NEG NEG NEG NEG NEG NEG NEG NEG	NEG NEG NEG NEG NEG NEG NEG NEG NEG NEG

Note: All biochemical tests (except where noted) are incubated at 30°C and read after 48 hrs. incubation and again at 7 days. 3/24 105 But Looks MIXED 4/20 Aos

Figure 237: Pseudomonas aeruginosa isolate 12-of-53.

Final Identification:

5-8-07 Bendomowas Alkeng, NOSA PS. 5/15/07

Comments:

Dopa	- Aula Matility			
Gram Morph.	A Athr Motility <u>24h but No</u> directional motel		$\frac{48 \text{ h}}{E/NC}$	7 day
Motility Wet Prep-	Nel Turner Reos 1	μ H <sub>2</sub> S	New	NEC
Motility Deep	NEW NEW	Pseudo P Pseudo F	Nela	Nel
Oxidase	Pos	rooddo r		
Catalase	STRONG POS	NO <sub>3</sub> reduced		POSAGER ZINC
PLATES	<u>48 h</u> <u>7 day</u>	Gas from NO <sub>3</sub> NO <sub>2</sub> reduced	Nela	-Nec- DOS
Odor	NONE	Gas from $NO_2$	POS	POS
Pigment on swab	flesh		BLUE	BLUE
Pigment on BAP	GRET	- OF Fructose + OF Dextrose	Yel	Yel
Morphology on BAP	Sonooth	- OF Lactose	BLUE	BLUC
Beta hemolysis	POE POZ	-OF Maltose -OF Mannitol	Buck	Blue
Growth on Mac	Pos POS	+OF Xylose	Yel	<u>BLUE</u> YEL
DNase hydrolysis	Neb Neb	_OF Sucrose	BLUC	Blue
Starch hydrolysis	NEG WEAK POS	Arginine	POS	Pos
Lecithinase	NEG NEG	Lysine	NeG	NEG
Lipase	Neb POS?	Ornithine	Nele	Nele
Rapid PYR	NEG	Base Control	NEG	Nea
Rapid LAP	POS	Acetamide	SLight blue	POS
Rapid ESC	NEG	Esculin Gelatin	NEG	REG
Sensitivity to:		Indole	NCO	NeG
Penicillin (10 U)	R K	Malonate	NEG	NEG
Vancomycin (30 ug)	RR	PAD Urea/////2 h	NEG	New
Colistin (10 mcg)	5-15 5	6.5% NaCL	Neb	NEG
Polymyxin B (300 U	n R-14 5	10% Lactose	New	NRG
		ONPG Growth 42 <sup>0</sup>	POG	ROS
		Growth 42		

Note: All biochemical tests (except where noted) are incubated at 30°C and read after 48 hrs. incubation and again at 7 days.

Figure 238: Pseudomonas aeruginosa isolate 13-of-53.

Date Inoculated	1:	5-8-07	
Final Identifica	tion:	Pseudomarts AerugINOSA	P.S.
Comments:		2.66 pignent on Starch & Egg 1666	5/15/07

ph.			ſ	<u>Tubes</u>	<u>48 h</u>	<u>7 day</u>	
	242		48h		KINC	<u>EIK</u>	
et Prep-Pos	NCG-S	MALL RODY	POS	1125		1000	
eep	POS	P05		Pseudo P	New	NEG	
	Pos			Pseudo F		<u>_po&gt;</u>	
	STRONG	-PO		NO3 reduced		101	VC
	<u>48 h</u>	7 day			NeG	Pog	
	Nore			$Gas from NO_2$	POS	Pes	
n swab	flegh				Di lian	( Ph)	
n BAP	GREY					GRN	
gy on BAP	Smooth		-	- OF Lactose	Buee	Blue	
olysis	Nela	weak be					
n Mac	POS	POS					
drolysis	Nec	Nelo		-OF Sucrose	V	V	
Irolysis	NEG	Nelo		Arginine	Pos	Pas	
e .	Nele	NEG		Lysine	NeG	Nec	
	Nela	NEG			NCLE		
R	Nela			Base Collitor	Neo	NEG	
Р	Pos			Acetamide	NEG	Nela	
C	Nelo				NRG	NOG	
<u>to:</u>	•	0		Indole	ALCO	Nelo	
n (10 U)	RI	K		Malonate	Neb	Neb	
ycin (30 ug)	R	12		Urea VC-2 h	NEG	Neb	
(10 mcg)	5-14	5		6.5% NaCL	NeG	Neb	
kin B (300 U)	5-16	5			Neb	NEG	
				Growth 42°	POS	POS	
	n swab n BAP gy on BAP olysis n Mac drolysis drolysis drolysis ce R P C <u>/ to:</u> n (10 U) ycin (30 ug) (10 mcg)	t $\frac{144}{100}$ Net Prep $P^{OS}$ $NCC^{-S}$ Peep $\frac{10S}{10S}$ $\frac{10S}{100}$ $\frac{100}{100}$ $\frac{144}{100}$	$\frac{144}{1000}$ $\frac{144}{1000}$ $\frac{144}{1000}$ $\frac{144}{1000}$ $\frac{144}{10000}$ $\frac{144}{100000}$ $\frac{144}{1000000000000000000000000000000000$	$\frac{1}{44}$ $\frac{1}{4}$	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	$\mathcal{H}$	$\begin{array}{c c c c c c c c c c c c c c c c c c c $

Note: All biochemical tests (except where noted) are incubated at 30°C and read after 48 hrs. incubation and again at 7 days.

Figure 239: Pseudomonas aeruginosa isolate 14-of-53.

Date Inoculated:	5-10-07
Final Identification	Bendo montes Allug, NOSA
	me Diffe pignet on STARCH @ 7.D

Gram Morph. Gram Test Motility Wet Prep Ø9	48h Very juttery some seem	<u>Tubes</u> KIA H <sub>2</sub> S	<u>48 h</u>  E/NG-  NEG-	<u>7 day</u> <u>ENC</u>
Motility Deep Oxidase	Nels Nelsin BLACE Nels Nelsing Direction ADS MOTILITY	Pseudo P Pseudo F	POS (FA NEG	NECO NECO
Catalase <u>PLATES</u> Odor	<u>STRONG POS</u> <u>48 h 7 day</u> Sticks - d. pty Sockes	NO <sub>3</sub> reduced Gas from NO <sub>3</sub> NO <sub>2</sub> reduced Gas from NO <sub>2</sub>	NEG NEG	Nec Nec Nec
Pigment on swab Pigment on BAP Morphology on BAP Beta hemolysis Growth on Mac DNase hydrolysis Starch hydrolysis	BUGG <u>GREY</u> <u>Strooth</u> <u>POS</u> <u>PooR ghowth</u> good en <u>New</u> <u>New</u> <u>New</u> <u>New</u>	OF Fructose OF Dextrose OF Lactose OF Maltose OF Mannitol OF Xylose OF Sucrose	Brue GAN Brue Dos	BLUE YEL BLUE BLUE BLUE YEL BLUE BLUE
Lecithinase Lipase Rapid PYR	Nelo Nelo Nelo	Arginine Lysine Ornithine Base Control	New New Nela	Nec Nec Nec
Rapid LAP Rapid ESC <u>Sensitivity to:</u> Penicillin (10 U) Vancomycin (30 ug) Colistin (10 mcg) Polymyxin B (300 U	$\frac{R}{R} = \frac{R}{S-16}$	Acetamide Esculin Gelatin Indole Malonate PAD Urea Urea Mee Th 6.5% NaCL 10% Lactose ONPG Growth 42°	NEG NEG NEG NEG NEG NEG NEG NEG	Neg Neg Neg Neg Neg Neg Neg Neg Neg

Note: All biochemical tests (except where noted) are incubated at 30°C and read after 48 hrs. incubation and again at 7 days.

Figure 240: Pseudomonas aeruginosa isolate 15-of-53.

Date Inoculated: <u>5-10-07</u> Final Identification: <u>Pseudo mowas Aekug, NOSA P.S. 5/17/07</u> Comments: <u>Pyocyanin on Jop of HI Droth at ZD.</u>

Gram Morph.	uni	<u>Tubes</u> KIA	<u>48 h</u> E/NC	7 day
Gram Test	48h -	-H₂S	New	FLIGHT AZS
Motility Wet Prep	PUS- Lota DE SPINNING			NEG
Motility Deep	New POS	Pseudo P Pseudo F	Nel	NEG
Oxidase	POS	Pseudo r	NEG	
Catalase	STRONG POS	NO3 reduced		P04
PLATES	<u>48 h 7 day</u>	Gas from $NO_3$ $NO_2$ reduced	POS	- POS - DOG
Odor Vel	2y GRUITY	$Gas from NO_2$	Pas	105
Pigment on swab	TAN	-		Blue
 Pigment on BAP	GRE/	OF Fructose OF Dextrose	Vel.	Yel
Morphology on BAP	SHOOTH	OF Lactose	Buel	Blue
Beta hemolysis	POS	OF Maltose	Blue	BLUE YEL 16RN
Growth on Mac	P05 P05	OF Mannitol OF Xylose	GRN	Yel lake
DNase hydrolysis	Neb Pos	OF Sucrose	Bue	Buc
Starch hydrolysis	NEG NEG	Arginine	Pos	POS
Lecithinase	NEG NEG	Lysine	Neu	Nec
Lipase	NCG NCG	Ornithine	Neb	Nela
Rapid PYR	Ne6-	Base Control	NEG	New
Rapid LAP	NEG	Acetamide	Pos	POS
Rapid ESC	Nels	Esculin Gelatin	Nela	NEG DOS
Sensitivity to:		Indole	10)	- PROCYANIN - PIGHT ON TOF
Penicillin (10 U)	$R_{R}$	Malonate	POS	105
Vancomycin (30 ug)	RR	PAD Urea <i>№e6-</i> 2 h	POS SLAN	De arous a Pritt
Colistin (10 mcg)	5-11 5	6.5% NaCL	NCG	Pos
Polymyxin B (300 U	J S-12 5	10% Lactose		Nec
		ONPG Growth 42 <sup>0</sup>	DOG	PO 3
		510wul 42	-107	

Note: All biochemical tests (except where noted) are incubated at 30°C and read after 48 hrs. incubation and again at 7 days.

Figure 241: Pseudomonas aeruginosa isolate 16-of-53.

Final Identification:

6-14-07

Comments:

Gram Morph.

Motility Deep

Polymyxin B (300 U) 5 -16

Gram Test

6-20-07 Red diffusible DIGAT ON Pseudo D PAD TSA <u>PseudomonAS Aerug</u> MosA 24h 6/20/07 <u>48h</u> F/L P.S. BROWN PIGHT AIL TUBES @ 7D Tubes KIA 486 H<sub>2</sub>S Motility Wet Prep Pos- Short Rod PYDRUBIN Pseudo P Red BROWN Pos

01

Moundy Doop	1.00 100			DR VIII III
Oxidase	Pos	Pseudo F	Nelo	BROWN
Catalase	STRANG POS	NO3 reduced		POS
<b>PLATES</b>	<u>48 h 7 day</u>	Gas from NO <sub>3</sub>	Nel	TINY bubble
Odor	NONE	NO <sub>2</sub> reduced Gas from NO <sub>2</sub>	1)PG	POS
Pigment on swab	Flesh			
Pigment on BAP	GREY	OF Fructose	GBN	62VBLUE
Morphology on BAP	SHOOTH	OF Dextrose OF Lactose	Yer BLA/LAN	Pice
Beta hemolysis	TURNE BAD	OF Maltose	BLU/GRN	BLEE
		OF Mannitol	BLL/GRN	Brue
Growth on Mac	P05 805	OF Xylose	Yec	YEL
DNase hydrolysis	New Nels	OF Sucrose	BLY/LAN	BLUE
Starch hydrolysis	New New	🗶 Arginine	205	Pos
Lecithinase	Nele Nela	Lysine	New	Nec
Lipase	New New	Ornithine	New	NCG
Rapid PYR	New	Base Control	New	Nele
Rapid LAP	Pos	Acetamide	Nele	POS
Rapid ESC	NCG	Esculin Gelatin	NEG	NeG-
Sensitivity to:		Indole	NCG	NeG
Penicillin (10 U)	$\underline{R}$ $\underline{R}$	Malonate	New	Lt. Bue
Vancomycin (30 ug)	RR	PAD Urea <i>lV2</i> 92 h	NEG	DG-GLANTONLY
Colistin (10 mcg)	<u>S-11</u> <u>S</u>	6.5% NaCL	NeG	NEG

PLOTT Note: All biochemical tests (except where noted) are incubated at 30°C and read after 48 hrs. incubation and again at 7 days.

S

10% Lactose

ONPG

Growth 42°

Figure 242: Pseudomonas aeruginosa isolate 17-of-53.

RED DIFFUSION

Date Inoculated:	6-14		
Final Identification:	6-20-07		
Comments:	Pseudomonns	ARRUGINOSA	6/20/07
		2	P.5.

	Gram Morph.			Tubes	<u>48 h</u>	<u>7 day</u>
	Gram Test	ush		KIA	E/NC	FK
	Motility Wet Prep	POS-EX	Reviely Roule	H <sub>2</sub> S	NCG	SULLEHT HES
	Motility Deep	NEG	Nec	Pseudo P	Nea	Pos-Blace
	Oxidase	PUS		Pseudo F	NEG	NEG
	Catalase	STRONG	DOS	NO <sub>3</sub> reduced		POS
	PLATES	<u>48 h</u>	7 day	Gas from NO <sub>3</sub>	pos	Pos
	Odor	Nowe		NO <sub>2</sub> reduced Gas from NO <sub>2</sub>	Pes	Pos
	Pigment on swab	flech				Maria
	Pigment on BAP	GREY		OF Fructose OF Dextrose	YEL	Yec Yec
	Morphology on BAP	Smototh - 5	heen - Like P.4	epug OF Lactose	ITINOCUL	Bine
	Beta hemolysis 205	SLIGHT BETA	POS	OF Maltose	BLUE	BLEE
+	- Growth on Mac	POS	POS	OF Mannitol OF Xylose	Yel	Yel Yel
+	DNase hydrolysis	Ne6-	POS	OF Sucrose	GRN	Blue
+	- Ŝtarch hydrolysis	New	WEAK +	Arginine	Pos	Pos
	Lecithinase	NEG	NeG	Lysine	Nec	New
	Lipase	Neb	NEG	Ornithine	Nele	Nela
	Rapid PYR	NPG		Base Control	Nela	Nela
	Rapid LAP	Pos		* Acetamide	Pos	Pos
	Rapid ESC	NeG		Esculin Gelatin	NCG NCG	NEG
	Sensitivity to:			Indole		Nel
	Penicillin (10 U)	<u>_</u>	$\underline{R}$	Malonate	NCG	ADS
	Vancomycin (30 ug)	R	R	PAD Urea <b>№</b> 2 h	NPG	NCC- DOG-SCANT
	Colistin (10 mcg)	5-12	_5_	6.5% NaCL	Neb	POS
	Polymyxin B (300 U)	5-14	<u> </u>	10% Lactose	Nec	Nec
				ONPG Growth 42 <sup>0</sup>	Pos	POS
				<i>c</i> ·	-	

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 243: Pseudomonas aeruginosa isolate 18-of-53.

Final Identification: Comments:	Pseudomina	is altruginose sick "- not- typical OkperPaul	(UR) 7-26	-0 <del>7</del>
Gram Morph. Gram Test Motility Wet Prep Motility Deep Oxidase	Aos P		48 h HNC NCC NCC NCC	7 day KJK NEG NEG NEG
Catalase PLATES Odor Pigment on swab Pigment on BAP Morphology on BAP Beta hemolysis Growth on Mac DNase hydrolysis Starch hydrolysis Lecithinase Lipase		$\begin{array}{c c} \hline & \\ \hline \\ \hline$		POS (red) NEG-(red) NEG-(red) NEG-(red) YEL-OB YEL-OB YEL-OB YEL-OB YEL-OB YEL-OB YEL-OB YEL-OB YEL-OB NEG-(sume
Rapid PYR Rapid LAP Rapid ESC <u>Sensitivity to:</u> Penicillin (10 U) Vancomycin (30 ug) Colistin (10 mcg) Polymyxin B (300 U)	$\frac{NEG}{POS}$ $\frac{R}{R}$ $\frac{R}{S}$	Base Control Acetamide Esculin Gelatin Indole., Malonate PAD Urea^@-2 h 6.5% NaCL 10% Lactose ONPG Growth 42°	New New New New New New New New New	NEG NEG NEG NEG NEG NEG NEG NEG NEG (gellow) NEG (yellow) NEG (not yellow) NEG (not yellow) NEG NEG (not yellow)

Note: All biochemical tests (except where noted) are incubated at 30°C and read after 48 hrs. incubation and again at 7 days.

Figure 244: Pseudomonas aeruginosa isolate 19-of-53.

Comments: #2-0x+-Beta-heur Pseudo monas	alytic adonies Aerug, NOSA P.S. 10/31/08
Gram Morph. $24h$ $48hR$ Gram Test $24h$ $48hR$ Motility Wet Prep $NeC$ Motility Deep $NeC$ Oxidase $05$ Catalase $STRNC_POS$ PLATES $48h$ 7 dayOdor $NoN \ell$ Pigment on swab $fLesh$ Pigment on BAP $GReY$ Morphology on BAP $Smooth-9meaRS$ Beta hemolysis $POS$ DNase hydrolysis $NeC$ Starch hydrolysis $NeC$ Lecithinase $NeC$ Lipase $POS$	Pseudo P Pseudo FNew MewFAINT Led Dicc PAINT on Pseul P 10/22 Refeat 10/22 Refeat 10/22 
Rapid PYR $w +$ Rapid LAP $5.7km6 +$ Rapid ESC $Nec-$ Sensitivity to: $R_{-}$ Penicillin (10 U) $R_{-}$ Vancomycin (30 ug) $R_{-}$ Colistin (10 mcg) $9-22$ Polymyxin B (300 U) $9-24$	Base ControlNewAcetamideNewEsculinNewGelatin $Pos f.$ IndoleNewMalonateNewPADNewUreaNeez hNew6.5% NaCLPos f.10% LactoseNewONPGNewGrowth 42°Pos f.

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days.

3

Figure 245: Pseudomonas aeruginosa isolate 20-of-53.

Date Inoculated:	4-1-09
Final Identification:	"sick" Pseudomonas ae ruginesa
Comments:	same as patient's prev isolates

				4-13-09
Gram Morph.	v.	Tubes	48 h	7 day
Gram Test	24h	KIA H <sub>2</sub> S	HNC	K/R NP/02
Motility Wet Prep	Nels OR CB		1000	1000
Motility Deep	Nels Pog-	12 DAYS Pseudo P	NeG	Nele
Oxidase	Pos	Pseudo F	NCG	Nel
Catalase	STRONG POS	NO <sub>3</sub> reduced		POS
PLATES	<u>48 h</u> <u>7 day</u>	Gas from $NO_3$ $NO_2$ reduced	Nela	Nela POS
Odor	NONE	Gas from NO <sub>2</sub>	POS	POS
Pigment on swab	E-Legh			New / Con
Pigment on BAP	GREY	<ul> <li>✓ OF Fructose</li> <li>✓ OF Dextrose</li> </ul>	GRN YEL	Yel/GRN Yel
Morphology on BAP	Sonaoth	OF Lactose	But	
Beta hemolysis	Neb	— OF Maltose OF Mannitol	Bull	BLUE
Growth on Mac	POS POS	— OF Xylose	YEL	YEL
DNase hydrolysis	NCG NCG	OF Sucrose	BLUE	Bine
Starch hydrolysis	Net Nec	- Arginine	Pos	Pos
Lecithinase	NEG NEG	Lysine	NEG	Nea
Lipase	Nel Nela	Deve Central	Nela	NEG
Rapid PYR	NEG (GAINT )	PINE) Base control	1000	Neb
Rapid LAP	POS	Acetamide	NCG	NEG
Rapid ESC	NEG	Esculin Gelatin	NeG-	NEG
Sensitivity to:	0	Indole		Nela
Penicillin (10 U)	$\underline{R}$ $\underline{R}$	— Malonate PAD	Nela	BLUE-POS
Vancomycin (30 ug)	$\frac{R}{R}$	$-$ Urea $N_{\frac{16}{2}}$ h	POS SLANT	POS SCANT & BUT
Colistin (10 mcg)	<u> </u>	6.5% NaCL	New	Pos
Polymyxin B (300 U	) 5-14 5		Neb	Nela
		Growth 42 <sup>o</sup>	POS	Pos

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 246: Pseudomonas aeruginosa isolate 21-of-53.

Final Identification:

6-10-09 6-16-09 P. ARRIGINDSA 6/19/09 D.S. 6-10-09

Comments:

Gram Morph.	Hedius	· · · · · ·		<u>Tubes</u> KIA	<u>48 h</u>	7 day		
Gram Test	6 DAY	10AY		$H_2S$		Neb		
Motility Wet Prep	Nele	Nele		-		0.0		
Motility Deep	Nels		if he	Pseudo P		POS		
Oxidase	pos	27 - <u>A</u> gentration		Pseudo F		pos		
Catalase	STROX6	Pog	-	NO <sub>3</sub> reduced		pos		
PLATES	<u>48 h</u>	7 day		Gas from NO <sub>3</sub>		Nele		
Odor Slightly	FRUity			$NO_2$ reduced Gas from $NO_2$		Pos		
Pigment on swab	TAN					102		
Pigment on BAP	GREY			OF Fructose		Yel		
Morphology on BAP	DRY			OF Dextrose OF Lactose		YeL Blue		
Beta hemolysis	POS			OF Maltose		BLUE		
Growth on Mac		Pos		OF Mannitol		Yel		
				OF Xylose		Yel Dur		
DNase hydrolysis		Nele		OF Sucrose		Brue		
Starch hydrolysis		NEG		Arginine		Pos		
Lecithinase		Neb	1¢ 1.	Lysine		Neb		
Lipase		105	202.000.00	Ornithine		Nela		
Rapid PYR	Pos	, 40 a.s.		Base Control		NEG		
Rapid LAP	Pos			Acetamide		Pos!		
Rapid ESC	New			Esculin Gelatin		NEG		
Sensitivity to:				Indole		Nelo	-	
Penicillin (10 U)		R		Malonate		POS	VIOLET	CLANT
Vancomycin (30 ug)		R		PAD Urea 2 h		NEG POS	VIOLEI	7LAN I
Colistin (10 mcg)		9-11		6.5% NaCL		POS		
Polymyxin B (300 U)		5-12		10% Lactose		Nela		
				ONPG		Neg	-	
				Growth 42 <sup>°</sup>		105		

Note: All biochemical tests (except where noted) are incubated at 30<sup>o</sup>C and read after 48 hrs. incubation and again at 7 days.

Figure 247: Pseudomonas aeruginosa isolate 22-of-53.

08/30/10

Final Identification:

Comments:

						4 DAY		
Gram Morph.				Tubes	<u>48 h</u>	7 day		
Gram Test				KIA	NC/NC	K/NC		
<sup>•</sup> Motility Wet Prep	Neg	· · · · · · · · ·		$H_2S$	neg	_NCC-		
Motility Deep	posit	ve pos		Pseudo P	neg	Nele		
Oxidase	posi	twe		Pseudo F	neg	Nec		
Catalase	very	storg		NO <sub>3</sub> reduced		POS		
<b>PLATES</b>	<u>48 h</u>	Iday 4 DAT		Gas from NO <sub>3</sub>	neg	TINY BUBBLE		
Odor	none			$NO_2$ reduced Gas from $NO_2$	HINY bubble	BIG- BUBBLE		
Pigment on swab	flesh				1			
Pigment on BAP	grey		+	OF Fructose OF Dextrose	green yellow	GRN Yel		
Morphology on BAP	Spready		+	OF Lactose	green	BLUE		
Beta hemolysis	pas	904		OF Maltose	green	BLUE		
Growth on Mac	growth	CROWTH		OF Mannitol OF Xylose	yellow	BLUC VEL		
DNase hydrolysis	neg	Nec		OF Sucrose	green	BLUE		
Starch hydrolysis	neg	Neu		A maining	200	Pos		
Lecithinase	neg	Neg		Arginine Lysine	reg	NEG		
Lipase	Ň	NEG		Ornithine	neg	Neu		
Rapid PYR	neg	WEAK	05	Base Control	neg	Nec		
Rapid LAP	Log	LIPASE	•	Acetamide	neg	Neb		
Rapid ESC	neg	9/7/10 8 DAY	~	Esculin Gelatin	ney	Nec		
Sensitivity to:	J	8 0.1		Indole	-Neg_	higil		a have
Penicillin (10 U)	R	$R_{-}$		Malonate	neg	NEG POS	AT	8DArs
Vancomycin (30 ug)	R	R		PAD Urea <u> </u> 2 h	neg	Nel		
Colistin (10 mcg)	12-5	S		6.5% NaCL	Neg	NEG		
Polymyxin B (300 U	) 15 S	Ś		10% Lactose	ned	Nel		
				ONPG Growth 42 <sup>0</sup>	neg	N2605 2		
					- wy			

endomonas AesuginosA

Note: All biochemical tests (except where noted) are incubated at 30°C and read after 48 hrs. incubation and again at 7 days.

Figure 248: Pseudomonas aeruginosa isolate 23-of-53.

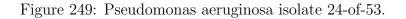
P.S. 9/3/10

Date Inoculated: 6-20-11 Final Identification: Pseudomonts Aerugewosa PS/6/24/11

Comments:

			6/24	6/29	
Gram Morph.		Tubes	<u>48 h</u>	7 day	Ha Li
Gram Test	482	KIA H <sub>2</sub> S	NEG	- ARC	A CAR
Motility Wet Prep	NEG SM Rods	1120		1.00	
Motility Deep	POS POS	Pseudo P	Pos	Pos	PYORUBIN
Oxidase	Pos	Pseudo F	POS	pos	
Catalase	STRONG POS	NO3 reduced		Pos	
<b>PLATES</b>	<u>48 h</u> <u>7 day</u>	Gas from NO <sub>3</sub>	TINY BURG	e pos Pos	
Odor	NONE	NO <sub>2</sub> reduced Gas from NO <sub>2</sub>	Pas	Pos	
Pigment on swab	FLEGH			1/-(	
Pigment on BAP	GRET_	OF Fructose OF Dextrose	GRN YEL	Yel Yel	
Morphology on BAP	South	OF Lactose	BLUE	Blue	
Beta hemolysis	New	OF Maltose	Black	Bue	
Growth on Mac	P05 P05	OF Mannitol OF Xylose	Yel	Yel Yel	
DNase hydrolysis	Nel- Nela	OF Sucrose	BLUE	Blue	
Starch hydrolysis	NEO NEG	Ameining	Pos	Pos	
Lecithinase	Nele Neb-	Arginine Lysine	NeG	Ne6-	
Lipase	NEG NEW	Ornithine	NCG	Neb	
Rapid PYR	Nele	Base Control	NCG	Nele	
Rapid LAP	POS	Acetamide	POS	POS	
Rapid ESC	NEG	Esculin	New	Nela	/
Sensitivity to:		Gelatin Indole		POS!	•
Penicillin (10 U)	$R_R$	Malonate	K ele	POS	
Vancomycin (30 ug)	RR	PAD	Pos	NEG	
Colistin (10 mcg)	5 5	Urea2 h 6.5% NaCL	AREWY	- POS	
Polymyxin B (300 U)	5 5	10% Lactose	NCG	NeG	
		ONPG Growth 42 <sup>0</sup>	POS	pos	
		Growth 42	Pos	807	

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days.



Date Inoculated: 9-15-11	
Final Identification: PseudomousAS	Alleginosa 11-4-11 P.S.
Comments: PYOCTANIN ON TOK @ 2	4 hi Prorubin Geen en Pseudo P
AND STARCH AGHR @ 24	h 244 9/27 12 days
Gram Morph. $24h$ Gram Test $24h$ Motility Wet Prep $Nec$ Motility Deep $Nec$ $Pos ?$ Oxidase $20 $ $Pos ?$ Odor $5 $ $PLATES$ $48 $ $Pigment on swab$ $Ckesh$ Pigment on BAP $Succetch - GReY$ Morphology on BAP $Succetch - Grey$ Beta hemolysis $Nec$ $Nec$ $Pos ?$ Growth on Mac $Nec$	Tubes KIA $48 \text{ fr}$ $E/NC$ $7 \text{ day}$ $E/E$ H2S $NCC$ $7 \text{ day}$ $E/E$ Pseudo P Pseudo F $NCC$ $NCC$ $NCC$ NO3 reduced Gas from NO3 $NCC$ $NCC$ $NC2$ NO2 reduced Gas from NO2 $NCC$ $POS$ $NCC$ $POS$ OF Fructose OF Dextrose $YeL$ $YeL$ OF Maltose OF Mannitol $FUC$ $YeL$ Palate YeL $FUC$ $YeL$ OF Mannitol $YeL$ $YeL$ YeL YeL $YeL$ YeL YeL $YeL$ YeL YeL $YeL$
DNase hydrolysis $Neb$ $Neb$ Starch hydrolysis $Neb$ Lecithinase $Neb$ Lipase $Neb$ Rapid PYR $Pos$ Rapid LAP $Pos$ Rapid ESC $Neb$ Sensitivity to: $Penicillin (10 U)$ Penicillin (10 U) $R$ $R$ $R$ Colistin (10 mcg) $S-10$ $S-10$ $S$	OF Sucrose $BLUC$ $BLUC$ $BLUC$ Arginine $PoS$ $PoS$ Lysine $NCC$ $NCC$ Ornithine $NCC$ $NCC$ Base Control $NCC$ $NCC$ Acetamide $PoS$ $PoS$ Esculin $NCC$ $NCC$ Gelatin $NCC$ $NCC$ Malonate $NCC$ $PoS$ PAD $NCC$ $PoS$ Urea $NCC$ $PoS$ $PoS$ 10% Lactose $NCC$ $PoS$ 0NPG $NCC$ $NCC$ $ONPG$ $NCC$ $NCC$ $Growth 42^0$ $EoS$

Note: All biochemical tests (except where noted) are incubated at  $30^{0}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 250: Pseudomonas aeruginosa isolate 25-of-53.

Final Identification:

11-29-12 Pseudo montes tezug, NOSA 121

Comments:

		-		
			12/1	12/20/12
Gram Morph.		Tubes	<u>48 h</u>	7 day
Gram Test	48h	KIA H <sub>2</sub> S	ENC	KIE
Motility Wet Prep	New- Very j. Hery	п <sub>2</sub> 5	Neb	_Nec
Motility Deep	Neb-Neb-	Pseudo P	NEG	Nela
Oxidase	pos	Pseudo F	NEG	A CO
Catalase	STRANG POS	NO <sub>3</sub> reduced		POS
PLATES	<u>48 h</u> <u>7 day</u>	Gas from NO <sub>3</sub>	Sm Bubble	Nelo-
Odor	NONE	NO <sub>2</sub> reduced Gas from NO <sub>2</sub>	NEG	NEG
Pigment on swab	GREY-TRANSLUCENT		6	Acres
Pigment on BAP	flegh	OF Fructose OF Dextrose	GRN/BLUR	BLUE Yel
Morphology on BAP	POER GROWTH - SMEARS	OF Lactose		RLUE
Beta hemolysis	NEG- POS-60TT)	OF Maltose		Bene
Growth on Mac	POOR GROWTH POS	OF Mannitol OF Xylose		BLUE Yel
DNase hydrolysis	NEG GROWTH NEG	OF Sucrose		Blue
Starch hydrolysis	Nº6 Nº6 12/20	Angining	Pos	Pos
Lecithinase	NG-INHibited Nela	Arginine Lysine	Nel	Nec
Lipase	NG-mbibited Nel	Ornithine	Nela	Nea
Rapid PYR	NEG grauth	Base Control	Neb	New
Rapid LAP	Pos	Acetamide	Neb	Nea
Rapid ESC	NEG	Esculin	NEG	Nela
Sensitivity to:		Gelatin Indole		AVEC-
Penicillin (10 U)	RR	Malonate	Nela	POS
Vancomycin (30 ug)	RR	PAD	Neb	0 G
Colistin (10 mcg)	5-16 9	Urea <u>2</u> h 6.5% NaCL	NEG-	- FO-
Polymyxin B (300 U)	5-18 9	10% Lactose	NeG-	Nec
	V	ONPG	Net	Ne6-
		Growth 42 <sup>°</sup>	pes	POS

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 251: Pseudomonas aeruginosa isolate 26-of-53.

# 30.2 Pseudomonas alcaligenes

Over the course of ASHEX clinical-isolate collection, nine individual isolates of Pseudomonas alcaligenes were analyzed. One of the nine recorded results is pictured in this subsection.

Test	+	_	Raw%	W95%	Test	+	—	Raw%	W95%
Motility	9	0	100.00	85.04	$H_2S$	0	9	0.00	14.96
Oxidase	9	0	100.00	85.04	Pseudo P	0	9	0.00	14.96
Catalase	9	0	100.00	85.04	Pseudo F	0	9	0.00	14.96
Yellow Pigment	0	9	0.00	14.96	NO <sub>3</sub> Reduced	6	3	66.67	61.68
Pink Pigment	0	9	0.00	14.96	Gas from $NO_3$	0	1	0.00	39.67
Beta Hemolysis	0	1	0.00	39.67	$NO_2$ Reduced	0	9	0.00	14.96
Growth on Mac	8	1	88.89	77.26	Gas from $NO_2$	0	3	0.00	28.08
Dnase	0	9	0.00	14.96	OF Fructose	0	9	0.00	14.96
Starch	0	9	0.00	14.96	OF Dextrose	0	9	0.00	14.96
Lecithinase	0	9	0.00	14.96	OF Lactose	0	9	0.00	14.96
Lipase	0	9	0.00	14.96	OF Maltose	0	9	0.00	14.96
PYR	9	0	100.00	85.04	OF Mannitol	0	9	0.00	14.96
LAP	9	0	100.00	85.04	OF Xylose	0	9	0.00	14.96
ESC Spot Test	1	8	11.11	22.74	OF Sucrose	0	1	0.00	39.67
Penicillin (10U)	2	7	22.22	30.53	Arginine	0	9	0.00	14.96
Vancomycin $(30\mu g)$	0	9	0.00	14.96	Lysine	0	9	0.00	14.96
Colistin $(10\mu g)$	8	1	88.89	77.26	Ornithine	0	9	0.00	14.96
Polymyxin B (300U)	4	0	100.00	75.50	Acetamide	0	9	0.00	14.96
					Esculin	0	9	0.00	14.96
					Gelatin	0	9	0.00	14.96
					Indole	0	9	0.00	14.96
					Malonate	3	6	33.33	38.32
					PAD	2	7	22.22	30.53
					Urea 2 hrs.	0	9	0.00	14.96
					Urea 48 hrs.	5	4	55.56	53.89
					6.5% NaCl	4	5	44.44	46.11
					10% Lactose	0	6	0.00	19.52
					ONPG	0	3	0.00	28.08
					Growth 42°C	5	4	55.56	53.89

Table 77: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as  $n_+/(n_+ + n_-)$ , where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which shifts raw percentages towards 50% with a strength dependent on the total number of test occurrences. The four antibiotic tests at the bottom of Column 1 are sensitivity tests where a positive result indicates sensitivity to the drug.

Date Inoculated: $10-12-06$ Final Identification: $10-20-06$ <u>fsecuedom on AS</u> <u>Alcohigenres</u> <u>AS</u> . W Comments: $10/20/06$ <u>Box</u> <u>H</u> 52 <u>Reckeck</u> <u>for Autoex</u> <u>E</u> Gram Morph. <u>Gram Test</u> <u>24L</u> Motility Wet Prep <u>Pos</u> <u>recent</u> <u>Rec5</u> + Motility Deep <u>Pos</u> <u>Pos</u> <u>Pos</u> <u>Posedo</u> <u>Posedo</u> <u>Alce</u> <u>ElAnce</u> <u>ElAnce</u> <u>ElAnce</u> + Motility Deep <u>Pos</u> <u>Pos</u> <u>Pos</u> <u>Posedo</u> <u>P</u>	Final Identification: $10 - 20 - 0.6$ fseudomovAs Alcaligenes AS. W Comments: $10/20/06$ Box 1 # 52 Rechark for AutexE Gram Morph. Gram Test 24L Motility Wet Prep $\frac{1}{205} - \frac{1}{2000} \frac{1}{1000} \frac{1}{10000} \frac{1}{1000} \frac{1}{10000} \frac{1}{10000} \frac{1}{10000} \frac{1}{10000} \frac{1}{100000} \frac{1}{10000000000000000000000000000000000$			
Comments: $\begin{array}{c c c c c c c c c c c c c c c c c c c $	$\begin{array}{c c c c c c c c c c c c c c c c c c c $	Date Inoculated:	10-12-06	
Committed S.	Continents.	Final Identification:	10-20-06 Pseudomonas Alcaligenes P.S.	N
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	$\begin{array}{c c c c c c c c c c c c c c c c c c c $	Comments:		
Gram Morph. Gram Test $24/L$ Motility Wet Prep $\frac{1}{POS} - \frac{\sqrt{eee}}{Grand L} \frac{ReDS}{ReDS}$ + Motility Deep $\frac{1}{POS} \frac{1}{POS} - \frac{1}{POS} \frac{1}{POS} - \frac{1}{PS} \frac{1}{P$	Gram Morph.Tubes $48 h$ $7 day$ Gram Test $24/h$ $KIA$ $E/NC$ $E/NC$ $E/NC$ Motility Wet Prep $pos - v^{velop}$ $Pcruce$ $BidActe C$ $Ndec E$ + Motility Deep $PO5$ $PO5$ $-Pseudo P$ $Nelce$ $Nelce$ + Oxidase $Po5$ $-Pseudo F$ $Nelce$ $Nelce$ $Nelce$ + Catalase $Streenke Po5$ $-Pseudo F$ $Nelce$ $Nelce$ PLATES $24/48 h$ $T day$ $-Os from NO_3$ $Sn.bubble S$ $Sn.buble$ OdorNorre $-Gas from NO_2$ $Nelce$ $Nelce$ Pigment on swab $Bacle F$ $-OF$ $Nelce$ $Nelce$ Morphology on BAP $Smoeth - SoetH$ $-OF$ Fuctose $Hele$ $Nelce$ - Pigment on swab $Rele'$ $-OF$ Fuctose $Hele$ $Nelce$ - Beta hemolysis $Nelc'$ $-OF$ Manitol $-OF$ Manitol- DNase hydrolysis $Nelc'$ $Nelc'$ $-OF$ Surcose- Starch hydrolysis $Nelc'$ $Nelc'$ $-OF$ Surcose- Lipase $Nelc'$ $Nelc'$ $Nelc'$ - Rapid ESC $Nelc'$ $Nelc'$ $Nelc'$ - Rapid ESC $Nelc'$ $-Acetamide$ $Nelc'$ - Nacomycin (30 ug) $R$ $L$ $-PAD$ - Vancomycin (30 ug) $R$ $L$ $-PAD$	Bo	× 1 # 52 Rechard for ArCHEXE	
- UNPU $/V C/P$ $J/C/P$		Gram Morph. Gram Test Motility Wet Prep Motility Deep Oxidase Catalase PLATES Odor Pigment on swab Pigment on BAP Morphology on BAP Beta hemolysis Growth on Mac DNase hydrolysis Starch hydrolysis Lecithinase Lipase Rapid PYR Rapid LAP Rapid ESC Sensitivity to: Penicillin (10 U) Vancomycin (30 ug) Colistin (10 mcg)	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	(e

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 252: Pseudomonas alcaligenes isolate 1-of-9.

### 30.3 Pseudomonas fluorescens

Over the course of ASHEX clinical-isolate collection, 22 individual isolates of Pseudomonas fluorescens were analyzed. 12 of the 22 recorded results are pictured in this subsection.

Test	+	_	Raw%	W95%	Test	+	_	Raw%	<b>W95</b> %
Motility	20	2	90.91	84.83	$H_2S$	0	22	0.00	7.43
Oxidase	21	1	95.45	88.70	Pseudo P	0	22	0.00	7.43
Catalase	22	0	100.00	92.57	Pseudo F	15	7	68.18	65.48
Yellow Pigment	1	21	4.55	11.30	NO <sub>3</sub> Reduced	2	20	9.09	15.17
Pink Pigment	2	20	9.09	15.17	Gas from $NO_3$	0	18	0.00	8.79
Beta Hemolysis	13	5	72.22	68.31	$NO_2$ Reduced	0	20	0.00	8.06
Growth on Mac	22	0	100.00	92.57	Gas from $NO_2$	0	20	0.00	8.06
Dnase	1	21	4.55	11.30	OF Fructose	22	0	100.00	92.57
Starch	11	11	50.00	50.00	OF Dextrose	22	0	100.00	92.57
Lecithinase	14	6	70.00	66.78	OF Lactose	2	20	9.09	15.17
Lipase	7	12	36.84	39.06	OF Maltose	2	20	9.09	15.17
PYR	3	10	23.08	29.22	OF Mannitol	18	4	81.82	77.09
LAP	13	0	100.00	88.59	OF Xylose	22	0	100.00	92.57
ESC Spot Test	0	13	0.00	11.41	OF Sucrose	3	10	23.08	29.22
Penicillin (10U)	0	22	0.00	7.43	Arginine	21	1	95.45	88.70
Vancomycin $(30\mu g)$	0	22	0.00	7.43	Lysine	0	22	0.00	7.43
Colistin $(10\mu g)$	22	0	100.00	92.57	Ornithine	0	22	0.00	7.43
Polymyxin B (300U)	18	0	100.00	91.21	Acetamide	3	19	13.64	19.04
					Esculin	0	22	0.00	7.43
					Gelatin	22	0	100.00	92.57
					Indole	0	22	0.00	7.43
					Malonate	15	7	68.18	65.48
					PAD	0	22	0.00	7.43
					Urea 2 hrs.	0	22	0.00	7.43
					Urea 48 hrs.	18	4	81.82	77.09
					6.5% NaCl	13	9	59.09	57.74
					10% Lactose	3	19	13.64	19.04
					ONPG	0	22	0.00	7.43
					Growth 42°C	0	22	0.00	7.43

Table 78: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as  $n_+/(n_+ + n_-)$ , where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which shifts raw percentages towards 50% with a strength dependent on the total number of test occurrences. The four antibiotic tests at the bottom of Column 1 are sensitivity tests where a positive result indicates sensitivity to the drug.

Final Identification:

12-11-09 Pseuchononas Fluorescens 12/28/09 J.S.

Comments:

2009 B1

				609 101
Gram Morph. Gram Test	24 h	Tubes KIA e- <sup>3</sup> H <sub>2</sub> S	12/14/09 48th 72 K/NC	±58 <u>Zday</u> <u>K/K</u>
Motility Wet Prep	Pos- VERY MOTI	Le	NEO	_Neles
3-0 Motility Deep 3.0 Oxidase 96.88	105 POS POS	0 - 3 Pseudo P 3 - 0 Pseudo F	Nec- Pos	New Pos 81.25
3-0 Catalase 96,88	STRONG POS	1-2 NO3 reduced		POS 18.75
$\begin{array}{c} \mathbf{PLATES} & (2/14) \\ \bigcirc & Odor \\ \hline & Discussion of a simple $	Nove	Gas from NO <sup>3</sup> NO <sup>2</sup> reduced Gas from NO <sup>2</sup>	Nele	<u>Nela</u> 3,70 <u>Nela</u> 6.67 <u>Nela</u> 7.41
<ul> <li>Pigment on swab 18.76</li> <li>Po-3 Pigment on BAP</li> <li>Morphology on BAP</li> <li>)-2 Beta hemolysis   5,38</li> <li>3 - 5 Growth on Mac</li> <li>5 -3 DNase hydrolysis</li> </ul>	CREY Strooth - SMEARS ROS! POS POS NEG NEG	3-0 OF Fructose 3-0 OF Dextrose 0-3 OF Lactose 0-3 OF Maltose 1-2 OF Mannitol 3-0 OF Xylose 0-3 OF Sucrose	Yec Jec Brue Drue Yec Brue	<u>Yec</u> 96.88 <u>Yec</u> 6.25 <u>Brue</u> 6.25 <u>Brue</u> 6.25 <u>Yec</u> 28.13 <u>Yec</u> 93.75 <u>Brue</u> 4.35
<ul> <li>J-C Starch hydrolysis 25</li> <li>L-C Lecithinase</li> <li>J-C Lipase 3.70</li> <li>S Rapid PYR</li> <li>G-S Rapid LAP</li> <li>Sensitivity to:</li> <li>S Penicillin (10 U)</li> <li>S Vancomycin (30 ug)</li> <li>Colistin (10 mcg)</li> <li>Polymyxin B (300 U)</li> </ul>	Nel Nel Pos! 705!! Nel 705 Nel 705	<ul> <li>3-∞ Arginine</li> <li>3 Lysine</li> <li>3 Lysine</li> <li>3 Ornithine Base Control</li> <li>1-2 Acetamide</li> <li>-3 Esculin</li> <li>1-2 Gelatin</li> <li>-3 Indole</li> <li>3-∞ Malonate</li> <li>0-&gt; PAD</li> <li>× / 3-∞ Urea2 h</li> <li>3-∞ 6.5% NaCL</li> <li>1-2 10% Lactose</li> <li>5-&gt; ONPG</li> <li>-3 Growth 42<sup>0</sup></li> </ul>	Nec Nec Nec Nec Nec Pos ! Bue fol Nec Nec Nec Nec Nec	P05/ 12.5 New New New P05/ 12.5 New P05 3.13 New P05 5 8.62 P05/ 87.50 P05/ 87.50 P05/ 87.50 P05/ 87.50 P05/ 12.5 New New New New New New New New

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 253: Pseudomonas fluorescens isolate 1-of-22.

Final Identification: P. fluorescens	PS. 9/29/05 W #13
Comments:	
Gram Morph. Gram Test	$     Tubes 24 48 h 7 day     KIA / \sqrt{k} \frac{K/K}{K} - \frac{K/K}{2} $
Motility Wet Prep	Pseudo P _ neg Pseudo F _ po s _ po s
+ Oxidase. + Catalase PLATES Odor Pigment on swab ye(low/cream ye(low/cream ye(low/cream	$ \begin{array}{c} - \text{ NO}_3 \text{ reduced } \checkmark & \longrightarrow & \text{ reg} \\ - \text{ Gas from NO}_3 & \underline{\text{ reg}} & \underline{\text{ reg}} \\ - \text{ NO}_2 \text{ reduced } \checkmark & \underline{\text{ reg}} & \underline{\text{ reg}} \\ - \text{ Gas from NO}_2 & \underline{\text{ reg}} & \underline{\text{ reg}} \\ - \text{ Gas from NO}_2 & \underline{\text{ reg}} & \underline{\text{ reg}} \\ - \text{ OF Fructose } \checkmark & \underline{\text{ reg}} & \underline{\text{ reg}} \\ -  Lorden Interval $
<ul> <li>Pigment on BAP</li> <li>Morphology on BAP</li> <li>Gray</li> <li>Heta hemolysis</li> <li>Betc</li> <li>Growth on Mac</li> <li>Growth on Mac</li> <li>March or Mac</li></ul>	+ OF Mannitol/ yellow + OF Xylose/ yellow - OF Sucrose/ yellow + OF Xylose/ yellow - OF Sucrose/ yellow - OF Sucrose/ blue - OF Sucrose/ blue
- Starch hydrolysis <u>ref</u> <u>reg</u> + Lecithinase <u>Ng</u> <u>pos</u> + Lipase <u>reg</u> <u>pos</u> - (Rapid PYR <u>reg</u>	+ Arginine pos pos - Lysine neg neg - Ornithine neg neg
$\begin{array}{c} & & & \\ & & \\ n & & \\ n & & \\ n & n$	- Acetamide/ <u>neg</u> <u>neg</u> - Esculin / <u>neg</u> <u>neg</u> - Gelatin / <u>pos</u> <u>neg</u> - Indole / <u>neg</u> <u>neg</u> - Malonate / <u>neg</u> <u>neg</u> - PAD / <u>neg</u> <u>neg</u> - Urea <u>neg</u> <u>neg</u> - 10% Lactose <u>neg</u> <u>neg</u> - ONPG <u>neg</u> <u>neg</u> - Growth 42° <u>neg</u> <u>neg</u>

Note: All biochemical tests (except where noted) are incubated at 30°C and read after 48 hrs. incubation and again at 7 days.

Figure 254: Pseudomonas fluorescens isolate 2-of-22.

Date Inoculated:

Final Identification:

4-5-08 4-8-08 Pseudo montes fluorescens PS. 4/9/08 N

Comments:

			4/8	4/13 8 DAYS
Gram Morph.		Tubes	48 h	$\frac{7 \text{ day}}{1}$
Gram Test	48h	KIA H <sub>2</sub> S	<u>K/NC</u>	RIPC NGRIO
Motility Wet Prep	106 SHALL TO Y	medium — 1120	Neo	NCO
4 Motility Deep	Pos Pos	- Pseudo P	Nela	NeG
(+-Oxidase	Pos	- Pseudo F	NEG	Nea
+ Catalase	Pog	- NO <sub>3</sub> reduced		NEG
PLATES	<u>48 h</u> <u>7 day</u>	- Gas from NC		TINY Bubble NEG
Odor	Strong AMON: A	- NO <sub>2</sub> reduced - Gas from NO		Nec-
Pigment on swab	flesh		- <u></u>	
Pigment on BAP	GREY	<ul> <li>OF Fructose</li> <li>OF Dextrose</li> </ul>		Yel Yel
Morphology on BAP	FLAT - WRINKLED	- TRANSLALEDTE I actors	- Rive	Buel
- Beta hemolysis	New	OF Maltose	Blue	Blue
+ Growth on Mac	Pos Pos	OF Mannitol	+ yec	Yel
DNase hydrolysis	NEG- LAVENBEI	2 RING OF Sucrose		BLUE
	NEG NEG	ALL BLUE	D.c	0.5
+ Lecithinase	ROS! ! POS	-// + Arginine Lysine	Pos	POSNEG
- Lipase	NPG NEG	Ornithine	Nela	NEG
- Rapid PYR	NCG	Base Contro	1 Nele	Nele
+ Rapid LAP	Pos	- Acetamide	NEle	Nela
-Rapid ESC	NCG	Esculin	Nela	Nele
Sensitivity to:		T Gelatin — Indole	Neb-	Neg
Penicillin (10 U)	R R	- Malonate	Nela	NEG
Vancomycin (30 u	R R	PAD	NEG	Aac
+ Colistin (10 mcg)	5 10.4 5	/ + Urea Ne 6.5% NaCL		NeG
- Polymyxin B (300		10% Lactos		Nec
7 101911191111 2 (500		- ONPG Growth 42 <sup>0</sup>	NEG	NEG
		Growin 42°	New	Neo

Note: All biochemical tests (except where noted) are incubated at 30°C and read after 48 hrs. incubation and again at 7 days.

Figure 255: Pseudomonas fluorescens isolate 3-of-22.

Final Identification:

Pseudomonros Aussescens P.S. 2-1-07 1-24-07 2-1-07

Comments:

\*

Gram Morph. Gram Test <u>24L</u> Motility Wet Prep <u>Pos Pos</u> Motility Deep <u>Pos Pos</u>	Tubes     48 h     F day       KIA     K/NC     K/K       -H2S     New     Scight       Pseudo P     New     New       Pseudo F     New     New
OxidasePO 5Catalase977204 C Po 5PLATES48 h877dayOdorCABBAGE	Pseudo F <u>Nele</u> NO <sub>3</sub> reduced <u>Nele</u> Gas from NO <sub>3</sub> <u>Nele</u> Gas from NO <sub>2</sub> <u>Sm. bubble</u> <u>Sa. bubble</u> Nele Gas from NO <sub>2</sub> <u>Sm. bubble</u> <u>Sm. bubble</u> Nele
Pigment on swab $flesk$ Pigment on BAP $GRef$ Morphology on BAP $Dull, 97Pinker, CAkes uP$ Beta hemolysis $Nel$ Beta hemolysis $Nel$ Growth on Mac $POS$ $POS$ $DOS$ DNase hydrolysis $Nel$ Starch hydrolysis $Nel$ Lecithinase $POS$ $POS$ $POS7$ Lipase $Nel$ Rapid PYR $POS$ (weake)	OF FructoseYeLYeLOF DextroseYeLYeLOF Lactose $BLUE$ $SLight YeL + Top$ OF Maltose $BLUE$ $SLuE$ OF MannitolYeLYeLOF XyloseYeLYeLOF Sucrose $BLuE$ YeLVelYeLYeLOF Sucrose $BLuE$ YeLWeseYeLYeLOF Sucrose $BLuE$ YeLMarginine $Po S$ $Po S$ Lysine $Nec$ $Nec$ Ornithine $Nec$ $Nec$
Rapid LAP $Pos(Girond)$ Rapid LAP $Pos(Girond)$ Rapid ESC $Ned$ Sensitivity to: Penicillin (10 U) $R$ $R$ Vancomycin (30 ug) $R$ $R$ Colistin (10 mcg) $S-12$ $S$ Polymyxin B (300 U) $S-14$ $S$ Folymyxin B (300 U) $S$ F	Acetamide $Nel_{C-}$ $Nel_{C-}$ Esculin $Nel_{C-}$ $Nel_{C-}$ $Mel_{C-}$ $Nel_{C-}$ $Mel_{C-}$ $Pos$ $Malonate$ $L_{1aht Blue} AT TOP$ $Malonate$ $Nel_{C-}$ $Mel_{C-}$ $Pos$ $Malonate$ $L_{1aht Blue} AT TOP$ $Mel_{C-}$ $Pos$ $Mel_{C-}$ $Pos$ $Mel_{C-}$ $Pos$ $Mel_{C-}$ $Nel_{C-}$ $Mel_{C-}$ $Nel_{C-}$ $Mel_{C-}$ $Nel_{C-}$ $Mel_{C-}$ $Nel_{C-}$

Note: All biochemical tests (except where noted) are incubated at 30°C and read after 48 hrs. incubation and again at 7 days.

Figure 256: Pseudomonas fluorescens isolate 4-of-22.

	Reason
Comments:Pseudoro	WAS ALUDRESCENS P.S.
	<u> </u>
Gram Morph. Gram Test <u>49 h</u> Motility Wet Prep <u>Po5 - 9 m. ked 5</u> Motility Deep <u>Po5 Po5</u>	Tubes KIA $H_2S$ 48 h $E/NC$ 7 day $E/K$ Pseudo PNewNew
Oxidase Pos (Delared) Catalase STRONG Pos	Pseudo F $\underline{POS}$ $\underline{POS}$ NO <sub>3</sub> reduced $\underline{POS}$
PLATES48 h7 dayOdorPseudo	Gas from NO <sub>3</sub> $\underline{NC}$ $\underline{NC}$ $\underline{NC}$ NO <sub>2</sub> reduced $\underline{POS}$ Gas from NO <sub>2</sub> $\underline{T_{INY}}$ Bubbles $\underline{POS}$
Pigment on swabfleshPigment on BAPGReyMorphology on BAPMacolDBeta hemolysisPo 5Growth on MacPo 5DNase hydrolysisNeco	OF FructoseYeLYeLOF DextroseYeLYeLOF Lactose $BLue$ $BLue$ OF Maltose $BLue$ $BLue$ OF MannitolYeLYeLOF XyloseYeLYeLOF Sucrose $BLue$ $BLue$
Starch hydrolysisNCGNCGLecithinaseNCGNCGLipaseNCGPOSRapid PYRNCG	ArgininePosPosLysineNecNecOrnithineNecNecBase ControlNecNec
Rapid LAP $Pos$ Rapid ESC $NCG$ Sensitivity to: $R$ Penicillin (10 U) $R$	Acetamide $PoS$ $PoS$ Esculin $NeC$ $NeC$ Gelatin $POS$ $POS$ Indole $NeC$ Malonate $PoS$ PAD $NeC$ Procession $PoS$
Vancomycin (30 ug) $\underline{R}$ $\underline{R}$ Colistin (10 mcg) $\underline{S-12}$ $\underline{5}$ Polymyxin B (300 U) $\underline{3-14}$ $\underline{5}$	Urea New h 6.5% NaCL New $ACG$ SLOWT & BUTT 6.5% NaCL New $ACG10%$ Lactose New $ACGONPG$ $NeG$ $AllowGrowth 42^0 POS Allow$
Note: All biochemical tests (excent where noted)	are incubated at $30^{\circ}$ C and read after 48 hrs.

Note: All biochemical tests (except where noted) are incubated at 30°C and read after 48 hrs. incubation and again at 7 days. 3/29 NeG NeG 4/2e NeG

Figure 257: Pseudomonas fluorescens isolate 5-of-22.

Final Identification:

Comments:

1: <u>9-20-07</u> tion: <u>Pseudomanas flueorescens</u> <u>PS. 9/28/07</u> Slight Yel d. GEus. ble figrit av Pseudo & @4D- NEG Flam

010.1

				9/24	
	Gram Morph.		Tubes	48 h	7 day
	Gram Test	48h	KIA	K/NC	i-ti-
	Motility Wet Prep	Pos- SM. Rodes	$H_2S$	New	New NO FLOOR New NO FLOOR New Sclight yel New Sclight yel
	Motility Deep	POS? POS	Pseudo P	Nela	Nela/
	Oxidase	SLOW POS	Pseudo F	New	All Sight yel
	Catalase	STRONG POS	NO <sub>3</sub> reduced		Nea
	PLATES	<u>48 h</u> <u>7 day</u>	Gas from NO <sub>3</sub>	Nec	Nela
	Odor	NONE	$NO_2$ reduced Gas from $NO_2$	NEG	Nela
	Pigment on swab	PEACH	-	NCO	New
	Pigment on BAP	GREY	OF Fructose	Yel	Yel
	Morphology on BAP	Smooth- Smears	OF Dextrose OF Lactose	Yel Blye	Yel Blue
	Beta hemolysis	Pos	OF Maltose	BLUE	BLUE
	Growth on Mac	POS LAVENDER COL	OF Mannitol OF Xylose	Blue	BLUE
	DNase hydrolysis	NEG NEG	OF Sucrose	Yel Blue	Yell Blue
	Starch hydrolysis	NEG Wt			
x	Lecithinase	Pos! Pos!	Arginine Lysine	POG	POS New
	Lipase	NEW NEW	Ornithine	Nele	New
	Rapid PYR	NeG	Base Control	New	Nel
	Rapid LAP	POS	Acetamide	New	Nea
	Rapid ESC	Nec	Esculin	Nel	Nele,
	Sensitivity to:		Gelatin Indole	pos	pog !
	Penicillin (10 U)	RR	Malonate	Neb	Nec
	Vancomycin (30 ug)	RR	PAD	Nela	
	Colistin (10 mcg)	5-10 9	Urea# <u>26</u> 2 h 6.5% NaCL	PO3 NeG	POS NEG
	Polymyxin B (300 U)	S-12 S	10% Lactose	New	Nela
			ONPG Growth 42 <sup>0</sup>	Nela	Nele
			Glowin 42	Nea	NeG

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 258: Pseudomonas fluorescens isolate 6-of-22.

1-24-07 Date Inoculated: Gendemons Fluerescens P.5. 2-1-07 Final Identification: 2/1/07 Comments:

Gram Morph. Gram Test Motility Wet Prep Motility Deep Oxidase	24 hr 48h Neld Nel- med to Long Rods Neld Neld Pos	Tubes KIA -H <sub>2</sub> S Pseudo P	48 h K/NC Nec Nec Pos !	8 <u>1 day</u> <u>14K</u> <u>549ht Hz 5 @ Merchare</u> <u>NEG</u> <u>POS</u>
Catalase <u>PLATES</u> Odor	STRONG PO5 <u>48 h 7 day</u> <u>NONC</u> <u>PLES</u>	NO3 reduced Gas from NO3 NO2 reduced Gas from NO2		Nel- Nel- Nel-
Pigment on swab Pigment on BAP Morphology on BAP Beta hemolysis Growth on Mac DNase hydrolysis	GREY Smooth-Smeases Neg Meak-48h Pos pos Pos Neg Neg	OF Fructose OF Dextrose OF Lactose OF Maltose OF Mannitol OF Xylose OF Sucrose	Yec Kec Brue Brue Yec Fec Brue	YeL YeL Blue/ben Blue YeL YeL
Starch hydrolysis Lecithinase Lipase Rapid PYR	NEG WE NEG NEG NEG NEG POS (weak)	Arginine Lysine Ornithine Base Control	POS NOCO- NOCO- NOCO-	POS Nec- AVECa Nela-
Rapid LAP Rapid ESC <u>Sensitivity to:</u> Penicillin (10 U) Vancomycin (30 ug) Colistin (10 mcg) Polymyxin B (300 U	Pos (ETRONG) Ne6- R R S-12 S S-14 S	Acetamide Esculin Gelatin Indole Malonate PAD Urea2 h 6.5% NaCL 10% Lactose ONPG Growth 42°	Nels POS ? Nels Nels Nels Nels Nels Nels Nels Nels	NCG NCG POS! FIP POS NCG NCG NCG NCG

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 259: Pseudomonas fluorescens isolate 7-of-22.

Date Inoculated	d: 8-2	5-11					
Final Identifica	tion:	Pseude	= MONAS	flue	ESCENS	PS/ 9-2	-//
Comments:	CRPAM	COLORED	ON SYM	ah & E	66 Yolk,	PINKE ON B	AP 4 SWAB

	24	9/2
	$\frac{1 \text{ bes}}{ A } \qquad \frac{48 \text{ h}}{ C /N < 1}$	7 day
Gram rest $\frac{290}{100}$ H <sub>2</sub> S		Nela
Motility Wet Prep 105 Sm Roals		1
Mounty Deep $\frac{NEG}{NEG} = \frac{ROS}{ROS} \frac{1}{10}$ is the		Nela
Oxidase <u>Po s</u> Pse	eudo F $PoS$	07
	O <sub>3</sub> reduced	Nea
	as from NO <sub>3</sub> <u>NeG</u>	Nea
	$D_2$ reduced as from NO <sub>2</sub> $\mathcal{NeG}$	Ne6
Pigment on swab <u>SALMON</u>		Nell
Digmont on BAD (AUT NAVE	F Fructose $\underline{YeL}$ F Dextrose $\underline{YeL}$	Yel- Yel
	F Lactose Blue	Bhue
	F Maltose Black	Blue
Growth on Moo	F Mannitol $\underline{YeL}$ F Xylose $\underline{YeL}$	Yel Yel
UT OT	F Sucrose $BLue$	BLUE
Starch hydrolysis NPG Neg		Dos
	rginine <u>POS</u> vsine Ne6	Nel
	mithine Nel	Nel
Rapid PYR Nela Bas	se Control Nel	Nelo
	cetamide Ne6-	Nea
Rapid ESC KI Clar Esc	culin NeG	NEW
Gel	elatin <u>Pos</u>	POS
	alonate $\lambda f \ell b$	Neg- Dos
Vancomycin (30 µg) PA	D Nel	
Out S Ure	eaN <u>CC-2 h pos-scan</u> T	DOS SCANT & BUT
	5% NaCL <u>Nele</u> % Lactose <u>Nele</u>	w t Neg
ON	NPG Nele	Net
Gro	where $M^{e}G$	NSEG

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 260: Pseudomonas fluorescens isolate 8-of-22.

Final Identification:

9-28-11 PGeudomonas Fluorescens 11/4/11 P.S

9

Comments:

			9
Gram Morph.		<u>Tubes</u> <u>48 h</u>	<u>Aday</u>
Gram Test	24h	KIA H <sub>2</sub> S	NEG
Motility Wet Prep	POS- GAST SWIMMERS	H <sub>2</sub> 5	NEG
Motility Deep	P05 - 7 DAY	Pseudo P	NEG
Oxidase	Pos	Pseudo F	Pos
Catalase	STRONG POS	NO <sub>3</sub> reduced	Nela
<b>PLATES</b>	<u>48 h</u> <u>7 day</u>	Gas from NO <sub>3</sub>	Nec
Odor	None AE	NO <sub>2</sub> reduced Gas from NO <sub>2</sub>	NEG
Pigment on swab	Bubb		
Pigment on BAP	Light GRey	OF Fructose OF Dextrose	Yel Yel
Morphology on BAP	Smooth - Smeares	OF Lactose	Yel/GRN
Beta hemolysis	NEG	OF Maltose	BLUE
Growth on Mac	POS	OF Mannitol OF Xylose	Yel/GRN Yel
DNase hydrolysis	NEG	OF Sucrose	YeL
Starch hydrolysis	weak POS	A	Pos
Lecithinase	We G	Arginine Lysine	NeG
Lipase	NEG	Ornithine	Neb
Rapid PYR	WeG	Base Control	Nele
Rapid LAP	Pos	Acetamide	Nec-
Rapid ESC	NeG	Esculin	New
Sensitivity to:		Gelatin Indole	Neg
Penicillin (10 U)	<u>R</u>	Malonate	Pos
Vancomycin (30 ug)	R (GROWT	PAD	POS SLAWT & BLETT
Colistin (10 mcg)	S-10 (IN ZON	<sup>2</sup> Urea <u>2</u> h 6.5% NaCL	Pos
Polymyxin B (300 U)	5-12	10% Lactose	NEG
		ONPG Growth 42 <sup>0</sup>	NEG
		GIOWUI 42	///

Note: All biochemical tests (except where noted) are incubated at  $30^{0}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 261: Pseudomonas fluorescens isolate 9-of-22.

Final Identification:

d: <u>1-5-10</u> ntion: <u>Pseuclo monas Auorescens P.S. 1/20/10</u> Light Apricot color on Egg Yolk & Statech Op

Comments:

Gram Morph.		Tube		7 day	
Gram Test	486	KIA	E/re	K/K	
Motility Wet Prep	POS Med Rou	H2S	Neb	New	New @ 1/18/10
Motility Deep	POS POG	Pseud	100	Nea	Yellow DIGGUSIBI
Oxidase	POS	Pseud	OF Nels-Pos	Nel-	PGAT NON-FLUDRES
Catalase	STRONG DOS	NO <sub>3</sub> r	educed	NeG	
PLATES	<u>48 h 7 day</u>			12 VCRYTINY	Bull O
Odor	Nene		reduced	NEG	
Pigment on swab	flegh				
Pigment on BAP	Lt. 6Re/		ructose $\underline{YeL}$ extrose $\underline{YeL}$	YeL Yel	
Morphology on BAP	ENTIRE	OF La		Blue	
Beta hemolysis	POS!	OF M	11000	BLUC	
Growth on Mac	POS POSLA	Wender OF M	lannitol <u>Blace</u> ylose Blace	Yer !	
DNase hydrolysis	Nel- NCG	- OF Su		Bine	
Starch hydrolysis	NEG NEG	Argin	ine Pos	Pos	
Lecithinase	Pos! Pos!	Lysine		Nel	
Lipase	NEG NEG	Ornith	nine Nec	Nele	
Rapid PYR	NEG	Base (	Control <u>NeG</u>	New	
Rapid LAP	POS	Aceta	mide New	NEG	
Rapid ESC	NCG	Esculi Gelati		New	
Sensitivity to:		Indole		Neg	
Penicillin (10 U)	RR	Malor		POS	
Vancomycin (30 ug)	<u>R</u> R	PAD Urea	New h Pos scan	- 005 5	CANT SECTI
Colistin (10 mcg)	5-10 5		NaCL Neg	New	
Polymyxin B (300 U)	5-13 5	ONPO		NEG	
		Grow	th 42 <sup>°</sup> NEG	Nela	

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 262: Pseudomonas fluorescens isolate 10-of-22.

Final Identification:

1-20-10 Pseudo MONAS FLUORESCENS 2/2/10 P.S.

Comments:

			2/1/10 10 00%5
Gram Morph.		Tubes	$\frac{2/1/10}{12} \frac{12}{12} \frac{12}{14} \frac{1}{15} 1$
Gram Test	24h	KIA	KINC KIK
Motility Wet Prep	POS - TUMBLINC HED ROD:	- H2S	NCC
Motility Deep	POS POS	- Pseudo P	Nela Nela
Oxidase	Pos	Pseudo F <sup>2</sup> Po	
Catalase	POS	- NO3 reduced	PIGHT BUT NO NEG FLUDDESCENSE
PLATES	48 h $Z day (2$	Gas from NO <sub>3</sub>	The last of the second se
Odor	NONE	NO <sup>2</sup> reduced Gas from NO <sup>2</sup>	NeG
Pigment on swab	Flesh	Gas Itolli NO2	
Pigment on BAP	GRET	OF Fructose	Brue Yd Yel 4 tel Yel
Morphology on BAP	DRY-SAREADY	OF Dextrose OF Lactose	Blue Blue
Beta hemolysis	POS NEG 22		Bue Blue
Growth on Mac	Pos pos	OF Mannitol OF Xylose	BLUY GRNJYEL BLAR YEL
DNase hydrolysis	NCG NCG		V Bue BLUE
Starch hydrolysis	New Nel	Arginine	NECTOS POS
Lecithinase	POS POS	Lysine	Nela Neu-
Lipase	New Nel	Ornithine	New New
Rapid PYR	NEG	Base Control	New
Rapid LAP	Pos	Acetamide	Nela Nela
Rapid ESC	NCG	Esculin Né Gelatin	POS POS
Sensitivity to:		Indole	Neg
Penicillin (10 U)	<u> </u>	Malonate	New POS
Vancomycin (30 ug)	R R	PAD Urea <u>Neb</u> h	POG SLANT POG SLANT & BUETT
Colistin (10 mcg)	5-10 5	6.5% NaCL	Nea Web
Polymyxin B (300 U)	5-11 5	10% Lactose ONPG	NEG NEG
		Growth $42^{\circ}$	NEG NEG

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 263: Pseudomonas fluorescens isolate 11-of-22.

Final Identification:

Comments:

VERY WET MUCOID ON ALL MEDIA

Pseudoments fluesescens P.S. 11/25/08

11-20-08

			11/24	11/25
Gram Morph.		Tubes	<u>48 h</u>	Iday 5 DAY
Gram Test		KIA	K/NC	<u>FIR</u>
Motility Wet Prep	pos- med Rods thity	H <sub>2</sub> S	Neb	Nela
Motility Deep	POS Pos	Pseudo P	Nel	Nela
Oxidase	Pos	Pseudo F	POS	Pos
Catalase	Strong Dos	NO <sub>3</sub> reduced		Nea
PLATES	<u>48 h</u> <u>7 day</u>	Gas from NO	NEG	LSCG
Odor	None Stinks	NO <sub>2</sub> reduced Gas from NO <sub>2</sub>	Neb	NeG
Pigment on swab	flesh			exclusi
Pigment on BAP	GREY	OF Fructose OF Dextrose	GRN YEL	<u>GORK/YEL</u> YEL
Morphology on BAP	Mucoid-SLIMy-Wei Looker	<sup>N</sup> 7 OF Lactose	BLUE	Bine
Beta hemolysis	Pos	/ OF Maltose	BLUE	BLUE
Growth on Mac	POS POS	OF Mannitol OF Xylose	<u>BLUE</u> Yel	BLUE YEL
DNase hydrolysis	NEG-NEG	OF Sucrose	Buc	Bive
Starch hydrolysis	NEG POS	Arginine	Pos	Pos
Lecithinase	Nele Nela	Lysine	KIPLE	Nela
Lipase	Neb Neb	Ornithine	Nele	Nele
Rapid PYR	NEG	Base Control	Nele	Nele
Rapid LAP	POS	Acetamide	NEG	KIELE
Rapid ESC	NeG	Esculin Gelatin	NC6-	POG
Sensitivity to:	<b>^</b>	Indole	102	Nelo
Penicillin (10 U)	$\underline{R}$ $\underline{R}$	Malonate	POS	POS
Vancomycin (30 ug)	R R	PAD Urea <i>Ne</i> 6-2 h	NEG	NEG
Colistin (10 mcg)	5-11 9	6.5% NaCL	Wt	POS
Polymyxin B (300 U	) <u>S-13 5</u>	10% Lactose ONPG	NEG	Nel
		Growth 42 <sup>°</sup>	Ne 6 IN HIBITEN	Neb
			1	

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 264: Pseudomonas fluorescens isolate 12-of-22.

# 30.4 Pseudomonas fulva/parafulva

Over the course of ASHEX clinical-isolate collection, one individual isolate of Pseudomonas fulva/parafulva was analyzed. The associated biochemical result form is pictured in this subsection.

Test	+	_	Raw%	W95%	Test	+	—	Raw%	W95%
Motility	1	0	100.00	60.33	$H_2S$	0	1	0.00	39.67
Oxidase	0	1	0.00	39.67	Pseudo P	0	1	0.00	39.67
Catalase	1	0	100.00	60.33	Pseudo F	0	1	0.00	39.67
Yellow Pigment	1	0	100.00	60.33	NO <sub>3</sub> Reduced	0	1	0.00	39.67
Pink Pigment	0	1	0.00	39.67	Gas from $NO_3$	0	1	0.00	39.67
Beta Hemolysis	1	0	100.00	60.33	$NO_2$ Reduced	0	1	0.00	39.67
Growth on Mac	1	0	100.00	60.33	Gas from $NO_2$	0	1	0.00	39.67
Dnase	0	1	0.00	39.67	OF Fructose	1	0	100.00	60.33
Starch	1	0	100.00	60.33	OF Dextrose	1	0	100.00	60.33
Lecithinase	0	1	0.00	39.67	OF Lactose	0	1	0.00	39.67
Lipase	0	1	0.00	39.67	OF Maltose	0	1	0.00	39.67
PYR	0	1	0.00	39.67	OF Mannitol	0	1	0.00	39.67
LAP	1	0	100.00	60.33	OF Xylose	1	0	100.00	60.33
ESC Spot Test	0	1	0.00	39.67	OF Sucrose	0	1	0.00	39.67
Penicillin (10U)	0	1	0.00	39.67	Arginine	1	0	100.00	60.33
Vancomycin $(30\mu g)$	0	1	0.00	39.67	Lysine	0	1	0.00	39.67
Colistin $(10\mu g)$	1	0	100.00	60.33	Ornithine	0	1	0.00	39.67
Polymyxin B (300U)	1	0	100.00	60.33	Acetamide	0	1	0.00	39.67
					Esculin	0	1	0.00	39.67
					Gelatin	0	1	0.00	39.67
					Indole	0	1	0.00	39.67
					Malonate	0	1	0.00	39.67
					PAD	0	1	0.00	39.67
					Urea 2 hrs.	0	1	0.00	39.67
					Urea 48 hrs.	1	0	100.00	60.33
					6.5% NaCl	1	0	100.00	60.33
					10% Lactose	0	1	0.00	39.67
					ONPG	0	1	0.00	39.67
					Growth $42^{\circ}C$	1	0	100.00	60.33

Table 79: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as  $n_+/(n_+ + n_-)$ , where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which shifts raw percentages towards 50% with a strength dependent on the total number of test occurrences. The four antibiotic tests at the bottom of Column 1 are sensitivity tests where a positive result indicates sensitivity to the drug.

Da	te Inoculated: 4-	11-11							
	nal Identification:	1	POMONAS.	Çu	LUA / PAR	AGULVA	by 16:	SRRKA-	-
Co	mments: Ligh	t yellow	5 to butter	lSC or	otch on	Egg Ya	LE 4 Si	tARCh	
	OR	ANGR	ON BLOG	D	AGTER 7	DAYS			
	beed	Yellow	LAYER IN 2	IN	DOLE BROTH	4/13 AC	cter thre	INDOLP	
Gr	am Morph.				Tubes	48 h	$\frac{7 \text{ day}}{1 \text{ day}}$	LATER	
Gr	am Test	48h			KIA H2S	K/NC NeG	ER	Due	0.0
Mo	otility Wet Prep	A05 5 m	au rods		1125	nea	Nela	Freu	
Mo	otility Deep	AOS	POS		Pseudo P	Nece	New		
Ox	tidase	Neb			Pseudo F	NEG	New		
Ca	talase	STRONG	POS		NO <sub>3</sub> reduced		Nece		
PL	ATES	<u>48 h</u>	7 day		Gas from NO <sub>3</sub>	Neb	Nec		
Od	lor	slight o	dbp		NO <sub>2</sub> reduced Gas from NO <sub>2</sub>	NeG	Nea		
Pig	gment on swab	Butterge	otch						
-			Love /or ANGe	-	OF Fructose	Yel	Yel.		
	orphology on BAP	Sucoth		•	- OF Dextrose OF Lactose	BLUE	BLUE		
	ta hemolysis		slight beta	-	OF Maltose	BLUE	Bine		
	owth on Mac	POS	POS	_	OF Mannitol	BLAC	BLEE		
	Vase hydrolysis	NeG	NeG		OF Xylose OF Sucrose	Yel Blue	Yel Blue		
	arch hydrolysis	NRG	POS	_					
•	cithinase	NEG	NEG	+	- Arginine	105	Pos		
	oase	NEG	Nel		Lysine Ornithine	NEG	Nea		
	pid PYR	NEG			Base Control	NEL	New		
	pid LAP	Pos			Acetamide	killa-	NEG		
	pid ESC	New	-		Esculin	Nel	NEG		
	nsitivity to:	1.00			Gelatin	NEG	Neb	- Yellow LAY	er
	enicillin (10 U)	R	R	-	Indole Malonate	Neb	L+ Buck	2 = NEG	
	ancomycin (30 ug)	R	$\overline{\rho}$		PAD	New	NICIO		
	Colistin (10 mcg)	5-10	<u> </u>	- +	- Urea <u>// 66</u> 2 h	POS-GLAN POS	the set of	ANT & BLETT	
	olymyxin B (300 U)	5-11	5	T	-6.5% NaCL 10% Lactose	Nea	POS Nea		
P	orymyxin B (300 U)	- 11			ONPG	NEG	1101.	114-1	
				+	Growth 42 <sup>0</sup>	Pos	105-11	vhib.ted	

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 265: Pseudomonas fulva/parafulva isolate 1-of-1.

## 30.5 Pseudomonas luteola

Over the course of ASHEX clinical-isolate collection, 13 individual isolates of Pseudomonas luteola were analyzed. One of the 13 recorded results is pictured in this subsection.

Test	+	_	Raw%	W95%	Test	+	_	Raw%	W95%
Motility	13	0	100.00	88.59	$H_2S$	0	13	0.00	11.41
Oxidase	0	13	0.00	11.41	Pseudo P	0	13	0.00	11.41
Catalase	12	1	92.31	82.66	Pseudo F	0	13	0.00	11.41
Yellow Pigment	11	2	84.62	76.72	NO <sub>3</sub> Reduced	6	7	46.15	47.03
Pink Pigment	0	13	0.00	11.41	Gas from $NO_3$	0	2	0.00	32.88
Beta Hemolysis	0	1	0.00	39.67	NO <sub>2</sub> Reduced	1	12	7.69	17.34
Growth on Mac	12	1	92.31	82.66	Gas from $NO_2$	0	2	0.00	32.88
Dnase	2	11	15.38	23.28	OF Fructose	13	0	100.00	88.59
Starch	7	6	53.85	52.97	OF Dextrose	13	0	100.00	88.59
Lecithinase	0	6	0.00	19.52	OF Lactose	3	10	23.08	29.22
Lipase	0	6	0.00	19.52	OF Maltose	13	0	100.00	88.59
PYR	0	2	0.00	32.88	OF Mannitol	13	0	100.00	88.59
LAP	2	0	100.00	67.12	OF Xylose	13	0	100.00	88.59
ESC Spot Test	2	0	100.00	67.12	OF Sucrose	0	2	0.00	32.88
Penicillin (10U)	1	12	7.69	17.34	Arginine	11	2	84.62	76.72
Vancomycin $(30\mu g)$	0	13	0.00	11.41	Lysine	0	13	0.00	11.41
Colistin $(10\mu g)$	13	0	100.00	88.59	Ornithine	0	13	0.00	11.41
Polymyxin B (300U)	2	0	100.00	67.12	Acetamide	0	13	0.00	11.41
					Esculin	12	1	92.31	82.66
					Gelatin	3	10	23.08	29.22
					Indole	0	13	0.00	11.41
					Malonate	2	4	33.33	39.84
					PAD	0	13	0.00	11.41
					Urea 2 hrs.	1	12	7.69	17.34
					Urea 48 hrs.	10	3	76.92	70.78
					6.5% NaCl	10	3	76.92	70.78
					10% Lactose	3	3	50.00	50.00
					ONPG	5	1	83.33	70.32
					Growth 42°C	7	6	53.85	52.97

Table 80: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as  $n_+/(n_+ + n_-)$ , where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which shifts raw percentages towards 50% with a strength dependent on the total number of test occurrences. The four antibiotic tests at the bottom of Column 1 are sensitivity tests where a positive result indicates sensitivity to the drug.

Final Identification:

Comments:

ion: <u>PSEUdoNINAS LuteoLA PS 7/23/08</u> Yellow on All medint

Gram Morph. Gram Test Motility Wet Prep	48h New Short PODS.	<u>Tubes</u> KIA H <sub>2</sub> S	7/23 48 h K/NC NEG-	8/8/08 7 day K/K NEG
+ Motility Deep - Oxidase	POS POS Nec	<ul><li>Pseudo P</li><li>Pseudo F</li></ul>	Nele	Nec- Neo-
92.37 + Catalase <u>PLATES</u> Odor	<u> S7Rong- Po S</u> <u>48 h 7 day</u> <u>NONC</u>	<ul> <li>+ NO<sub>3</sub> reduced</li> <li>- Gas from NO<sub>3</sub></li> <li>- NO<sub>2</sub> reduced</li> <li>- Gas from NO<sub>2</sub></li> </ul>	NE6-	Pos 46.15 <u>Nec</u> 7.69 <u>Nec</u> 7.69
Pigment on swab Yettee Pigment on BAP Morphology on BAP Beta hemolysis Q2.31 + Growth on Mac DNase hydrolysis	beep yellow Veep Yellow Dry Chunchy enBedde N AGAR     	+ OF Fructose + OF Dextrose + OF Lactose + OF Maltose + OF Mannitol + OF Xylose - OF Sucrose	Yec Yec Beae Yec Beae Yec Beae	Xel Yel ZS, 03 Yel JERN Yel JERN Yel Bure
53.45 — Starch hydrolysis — Lecithinase — Lipase — Rapid PYR	<u>NEG</u> <u>NEG</u> <u>NEG</u> <u>NEG</u> NEG	<ul> <li>Arginine</li> <li>Lysine</li> <li>Ornithine</li> <li>Base Control</li> </ul>	POS? Neu- Neu- Neu-	Pos 84,62 Nec- Nec-
<ul> <li>+ Rapid LAP</li> <li>+ Rapid ESC</li> <li><u>Sensitivity to:</u></li> <li>2 6 - Penicillin (10 U)</li> <li>- Vancomycin (30 ug</li> <li>+ Colistin (10 mcg)</li> <li>+ Polymyxin B (300 b)</li> </ul>	<u>S-14</u> <u>S</u>	- Acetamide + Esculin + Gelatin - Indole + Malonate - PAD / Urea <u><math>Ne62</math></u> h + 6.5% NaCL + 10% Lactose + ONPG + Growth 42 <sup>0</sup>	NE6 P05! W+ NE6 NE6 TNE6 P05 P05 P05	NEG ADS POS POS BLUE - POS BLUE - POS BLUE - POS BLUE - POS POS POS POS POS POS POS POS

Note: All biochemical tests (except where noted) are incubated at 30°C and read after 48 hrs. incubation and again at 7 days.

Figure 266: Pseudomonas luteola isolate 1-of-13.

### 30.6 Pseudomonas mendocina

Over the course of ASHEX clinical-isolate collection, 12 individual isolates of Pseudomonas mendocina were analyzed. Two of the 12 recorded results are pictured in this subsection.

Test	+	_	Raw%	W95%	Test	+	_	Raw%	<b>W95</b> %
Motility	12	0	100.00	87.87	$H_2S$	0	12	0.00	12.13
Oxidase	12	0	100.00	87.87	Pseudo P	0	12	0.00	12.13
Catalase	9	3	75.00	68.94	Pseudo F	0	12	0.00	12.13
Yellow Pigment	3	9	25.00	31.06	NO <sub>3</sub> Reduced	12	0	100.00	87.87
Pink Pigment	1	11	8.33	18.44	Gas from $NO_3$	3	0	100.00	71.92
Beta Hemolysis	0	3	0.00	28.08	$NO_2$ Reduced	11	1	91.67	81.56
Growth on Mac	12	0	100.00	87.87	Gas from $NO_2$	3	0	100.00	71.92
Dnase	0	12	0.00	12.13	OF Fructose	11	1	91.67	81.56
Starch	2	10	16.67	24.75	OF Dextrose	12	0	100.00	87.87
Lecithinase	0	6	0.00	19.52	OF Lactose	0	12	0.00	12.13
Lipase	2	4	33.33	39.84	OF Maltose	0	12	0.00	12.13
PYR	0	3	0.00	28.08	OF Mannitol	3	9	25.00	31.06
LAP	3	0	100.00	71.92	OF Xylose	11	1	91.67	81.56
ESC Spot Test	0	3	0.00	28.08	OF Sucrose	0	3	0.00	28.08
Penicillin (10U)	0	12	0.00	12.13	Arginine	12	0	100.00	87.87
Vancomycin $(30\mu g)$	0	12	0.00	12.13	Lysine	0	12	0.00	12.13
Colistin $(10\mu g)$	12	0	100.00	87.87	Ornithine	1	10	9.09	19.68
Polymyxin B (300U)	6	0	100.00	80.48	Acetamide	0	12	0.00	12.13
					Esculin	0	12	0.00	12.13
					Gelatin	0	12	0.00	12.13
					Indole	0	12	0.00	12.13
					Malonate	11	1	91.67	81.56
					PAD	0	12	0.00	12.13
					Urea 2 hrs.	0	12	0.00	12.13
					Urea 48 hrs.	10	2	83.33	75.25
					6.5% NaCl	12	0	100.00	87.87
					10% Lactose	0	12	0.00	12.13
					ONPG	0	9	0.00	14.96
					Growth $42^{\circ}C$	12	0	100.00	87.87

Table 81: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as  $n_+/(n_+ + n_-)$ , where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which shifts raw percentages towards 50% with a strength dependent on the total number of test occurrences. The four antibiotic tests at the bottom of Column 1 are sensitivity tests where a positive result indicates sensitivity to the drug.

Final Identification:

Comments:

i: 10-19-11 tion: <u>Pseudomonts MendocinA 11/4/11</u> P.S. <u>Send Cos Sequencing = R. mendocina</u> culture was sent out or 10/24 as Ps. fluor/putida

	churce was seen and a	10/2 - 2	10/20	11/2 14 D
Gram Morph.		<u>Tubes</u> KIA	$\frac{48 \text{ h}}{1 - (1 + 2)}$	t. 7 day
Gram Test	24h	$-H_2S$	Nela	Slight H2S
Motility Wet Prep	pos-very motile	1120		/
Motility Deep	POS POS	Pseudo P	Nela	Mec > PINK
Oxidase	By Pos	Pseudo F	NEG	NEG INTERGACE
Catalase	NEG - VERY WEAK	b b		POS
PLATES	<u>48 h</u> (4 <u>T day</u>	+ Gas from NO <sub>3</sub> + NO <sub>2</sub> reduced	Neco	POS
Odor	Gmells	$\uparrow$ Gas from NO <sub>2</sub>	NEG A	05 P05
Pigment on swab	FLeigh		Brue	YOI GRN
Pigment on BAP	GREY	↓ OF Fructose ↓ OF Dextrose	Yel	Yel GRN Yel Yel
Morphology on BAP	Swooth	- OF Lactose	Black	Bine Blue
Beta hemolysis	Nelo	- OF Maltose	Blue	Blue Blue
Growth on Mac	Pos pos	↓ OF Mannitol ↓ OF Xylose	BLOR	Yel Yel BLUE YEL
DNase hydrolysis	New Neb	- OF Sucrose	Blue	BLUE BLUE
Starch hydrolysis	NeG Pos	+ Arginine	NEG	POS POS
Lecithinase	NEG NEG	Lysine	NEG	Nele Nele
Lipase	NEG POG	Ornithine	NEG	New Nele
Rapid PYR	NeG	Base Control	Nela	14 DAYS
Rapid LAP	POS	Acetamide	Nele	NEG
Rapid ESC	Neb	Esculin Gelatin	NEG	N.el- N.el-
Sensitivity to:	2	Indole		Nee
Penicillin (10 U)	R R	Malonate	POS	POS
Vancomycin (30 ug)	<u>R</u> R	PAD Urea <b>Nℓ6</b> 2 h	Nela Nela	POS
Colistin (10 mcg)	5 5-9	6.5% NaCL	NEG	POS
Polymyxin B (300 U)	5 5-12	10% Lactose	NPC2	Neb
		ONPG Growth 42 <sup>0</sup>	NEG	POS
				7

Note: All biochemical tests (except where noted) are incubated at 30°C and read after 48 hrs. incubation and again at 7 days.

Figure 267: Pseudomonas mendocina isolate 1-of-12.

: <u>7-14-08</u> ion: <u>PSEUdoMONAS MENdoCINA PS. 7/18/08</u> Spready colonies on BAP Final Identification:

Comments:

				7/18-72h	7/23	7
Gram Morph.	,		Tubes	481	<u>7 day</u>	i.
Gram Test	24 K			E/NC	te/me!	T
Motility Wet Prep		RODS TREMELY MO		NeG	ACO	- queht Hz S
Motility Deep	POS	905	Pseudo P	Nele	Nele	PINE
Oxidase	Pos		Pseudo F	Nele	Neb	At botton
Catalase	STRONG	Pos	NO <sub>3</sub> reduced		POS	OCSLANT
<b>PLATES</b>	<u>48 h</u>	7 day	Gas from NO <sub>3</sub>	POS	Pos	
Odor 🏼 🖊	Nouge CAGE	2	$NO_2$ reduced Gas from $NO_2$	P05	POS	
Pigment on swab	flegh					
Pigment on BAP	GREY		OF Fructose OF Dextrose	Yel	Yel	
Morphology on BAP	SPREADY		OF Dextrose OF Lactose	BLUE	Yel Blue	
Beta hemolysis	NEG		OF Maltose	Bine	Blue	
Growth on Mac	Pos	POS	OF Mannitol OF Xylose	Yel Yel	Yel	
DNase hydrolysis	Neu-	NEG	OF Sucrose	Blue	Blue	
Starch hydrolysis	Nel	Nelo	A	Data		REPEAT Pos POS
Lecithinase	Neb	Ne6-	Arginine Lysine	Pos Newson	สลา/~	NEG NEU
Lipase	New	New	Ornithine		epeat	NEG NEG
Rapid PYR	Nel		Base Control	Nela		NCO NEG
Rapid LAP	POS		Acetamide	Neo	Nec	
Rapid ESC	New		Esculin	NRG	NEG	
Sensitivity to:			Gelatin Indole	NEG	NEG	
Penicillin (10 U)	$\mathbb{R}$	R	Malonate	POS	POS	
Vancomycin (30 ug)	R	R	PAD Urea∕Vℓ62 h	Nela Pos slante	NLY POS	SLANJ & BUTT
Colistin (10 mcg) S	= 9.5	5	6.5% NaCL	P05	POS	
Polymyxin B (300 U)	S = 11	5	10% Lactose	Nela	Nec-	
			ONPG Growth 42 <sup>0</sup>	Pos	POS	
				1-1	10/	

Note: All biochemical tests (except where noted) are incubated at 30°C and read after 48 hrs. incubation and again at 7 days.

Figure 268: Pseudomonas mendocina isolate 2-of-12.

# 30.7 Pseudomonas migulae

Over the course of ASHEX clinical-isolate collection, one individual isolate of Pseudomonas migulae was analyzed. The associated biochemical result form is presented here.

Test	+	_	Raw%	<b>W95</b> %	Test	+	_	Raw%	W95%
Motility	0	1	0.00	39.67	$H_2S$	0	1	0.00	39.67
Oxidase	1	0	100.00	60.33	Pseudo P	0	1	0.00	39.67
Catalase	1	0	100.00	60.33	Pseudo F	0	1	0.00	39.67
Yellow Pigment	0	1	0.00	39.67	NO <sub>3</sub> Reduced	0	1	0.00	39.67
Pink Pigment	0	1	0.00	39.67	Gas from $NO_3$	0	1	0.00	39.67
Beta Hemolysis	0	1	0.00	39.67	NO <sub>2</sub> Reduced	1	0	100.00	60.33
Growth on Mac	0	1	0.00	39.67	Gas from $NO_2$	1	0	100.00	60.33
Dnase	0	1	0.00	39.67	OF Fructose	0	1	0.00	39.67
Starch	0	1	0.00	39.67	OF Dextrose	0	1	0.00	39.67
Lecithinase	0	1	0.00	39.67	OF Lactose	0	1	0.00	39.67
Lipase	0	1	0.00	39.67	OF Maltose	0	1	0.00	39.67
PYR	0	1	0.00	39.67	OF Mannitol	0	1	0.00	39.67
LAP	1	0	100.00	60.33	OF Xylose	0	1	0.00	39.67
ESC Spot Test	0	1	0.00	39.67	OF Sucrose	0	1	0.00	39.67
Penicillin (10U)	1	0	100.00	60.33	Arginine	0	1	0.00	39.67
Vancomycin $(30\mu g)$	1	0	100.00	60.33	Lysine	0	1	0.00	39.67
Colistin $(10\mu g)$	1	0	100.00	60.33	Ornithine	0	1	0.00	39.67
Polymyxin B (300U)	1	0	100.00	60.33	Acetamide	0	1	0.00	39.67
					Esculin	0	1	0.00	39.67
					Gelatin	0	1	0.00	39.67
					Indole	0	1	0.00	39.67
					Malonate	0	1	0.00	39.67
					PAD	0	1	0.00	39.67
					Urea 2 hrs.	0	1	0.00	39.67
					Urea 48 hrs.	0	1	0.00	39.67
					6.5% NaCl	1	0	100.00	60.33
					10% Lactose	0	1	0.00	39.67
					ONPG	0	1	0.00	39.67
					Growth 42°C	1	0	100.00	60.33

Table 82: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as  $n_+/(n_+ + n_-)$ , where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which shifts raw percentages towards 50% with a strength dependent on the total number of test occurrences. The four antibiotic tests at the bottom of Column 1 are sensitivity tests where a positive result indicates sensitivity to the drug.

Date Inoculated:	W 3/29/17	2017-36	
Final Identification:	Unclear 1D 30 tube:	0/132000 urcharles 99.975% MS-0.433	
Comments: lab 1	D: PS. Augresiens and		
Comments.	D. F3. HUDRENS gra	up I I I I I I I I I I I I I I I I I I I	
Mais	ei : le times tested of re	enet of Ps. migulae 1.45 4-ENTERED AS.	
Gram Morph.		$\frac{\text{Tubes}}{\text{Tubes}} \qquad \frac{48 \text{ h}}{100000000000000000000000000000000000$	
Gram Test		KIA <u>KIK</u> H <sub>2</sub> S N <u>Neg</u>	
Motility Wet Prep	······································		
Motility Deep	Neg4r Neg7d	Pseudo P $N$ $\lambda$ Pseudo F $N$ $\lambda$ tan attact	
Oxidase	Pasi	Pseudo F N tan provent	
Catalase	Pos-slow	NO3 reduced X Red Afr Zn O	
PLATES	<u>48 h</u> <u>7 day</u>	Gas from NO3 <u>Smbulsher Shabble</u> C NO2 reduced X Clear - Pos E	
Odor	strong strong - zout	like Gas from NO2 Smlaubber Pos (+)	
Pigment on swab	Salmon dkpied	OF Fructose Gr Bl-Gr -	
Pigment on BAP	ltpend lt pund	OF Dextrose $i$ $G$	
Morphology on BAP	Smiller Smind, irre	Greating Great Gre	
Beta hemolysis	Neg_ Neg	$\begin{array}{c c} \hline & OF Maltose \\ OF Mannitol \\ \hline \\ $	
Growth on Mac	N Neg	OF Xylose Gr -	
DNase hydrolysis	N Neg	OF Sucrose <u>G</u>	
Starch hydrolysis	N Neg	Arginine V Neg	
Lecithinase	N Neg	Lysine Neg	
Lipase	Neg Neg	Ornithine <u>Neza</u> Base Control	
Rapid PYR	Neg		
Rapid LAP	pos	Acetamide $N = \sqrt{\frac{N^2 G}{M^2 G}}$	
Rapid ESC	Neg	Gelatin N New address	
Sensitivity to:		Indole X Negr Malonate N POS? was Call Very	
Penicillin (10 U)	395 395	PAD N POS? www. (New (New )	)
Vancomycin (30 ug)	295 295	Urea $N_2$ h New New	
Colistin (10 mcg)	115 115	6.5% NaCL Pos Pos	
Polymyxin B (300 U	D <u>175</u> <u>175</u>	$\frac{10\% \text{ Lactose}}{\text{ONPG}} \qquad \frac{N}{N} \qquad \frac{N}{N} \frac{2g}{M}$	
		Growth $42^{\circ}$ $\Lambda$ $\rho \sigma s$	

Figure 269: Pseudomonas migulae isolate 1-of-1.

# 30.8 Pseudomonas oryzihabitans

Over the course of ASHEX clinical-isolate collection, 17 individual isolates of Pseudomonas oryzihabitans were analyzed. Two of the 17 recorded results are pictured in this subsection.

Test	+	_	Raw%	W95%	Test	+	_	Raw%	W95%
Motility	17	0	100.00	90.78	H <sub>2</sub> S	0	17	0.00	9.22
Oxidase	0	17	0.00	9.22	Pseudo P	0	17	0.00	9.22
Catalase	17	0	100.00	90.78	Pseudo F	0	17	0.00	9.22
Yellow Pigment	15	2	88.24	81.19	NO <sub>3</sub> Reduced	0	17	0.00	9.22
Pink Pigment	0	17	0.00	9.22	Gas from $NO_3$	0	12	0.00	12.13
Beta Hemolysis	1	11	8.33	18.44	$NO_2$ Reduced	0	17	0.00	9.22
Growth on Mac	17	0	100.00	90.78	Gas from $NO_2$	0	12	0.00	12.13
Dnase	0	17	0.00	9.22	OF Fructose	17	0	100.00	90.78
Starch	11	6	64.71	62.00	OF Dextrose	17	0	100.00	90.78
Lecithinase	0	12	0.00	12.13	OF Lactose	3	14	17.65	23.61
Lipase	0	12	0.00	12.13	OF Maltose	14	3	82.35	76.39
PYR	4	7	36.36	39.89	OF Mannitol	17	0	100.00	90.78
LAP	11	0	100.00	87.06	OF Xylose	17	0	100.00	90.78
ESC Spot Test	0	11	0.00	12.94	OF Sucrose	5	8	38.46	41.09
Penicillin (10U)	0	17	0.00	9.22	Arginine	0	17	0.00	9.22
Vancomycin $(30\mu g)$	0	17	0.00	9.22	Lysine	1	16	5.88	14.01
Colistin $(10\mu g)$	17	0	100.00	90.78	Ornithine	1	16	5.88	14.01
Polymyxin B (300U)	13	0	100.00	88.59	Acetamide	1	16	5.88	14.01
					Esculin	2	15	11.76	18.81
					Gelatin	2	15	11.76	18.81
					Indole	0	17	0.00	9.22
					Malonate	8	8	50.00	50.00
					PAD	12	5	70.59	66.79
					Urea 2 hrs.	0	17	0.00	9.22
					Urea 48 hrs.	16	1	94.12	85.99
					6.5% NaCl	8	9	47.06	47.60
					10% Lactose	6	10	37.50	39.92
					ONPG	0	15	0.00	10.19
					Growth 42°C	4	13	23.53	28.41

Table 83: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as  $n_+/(n_+ + n_-)$ , where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which shifts raw percentages towards 50% with a strength dependent on the total number of test occurrences. The four antibiotic tests at the bottom of Column 1 are sensitivity tests where a positive result indicates sensitivity to the drug.

12,041> Date Inoculated: M 11/10/14 scudomonal exyziliabitions Final Identification: A. Worth: 90.53% PS. 01 y 2/habiten 7.761 Comments: Malai: PS. 0142 Thebitan 2.178 Miasion Gram Morph. <u>48 h</u> 7 day Tubes KIA KINC K Gram Test H<sub>2</sub>S Neg Motility Wet Prep Pseudo P Motility Deep P05 - die Go akgreen slant Pseudo F Ner Oxidase - Very sta Catalase Neg-rid after 2n Pos NO3 reduced tiny bubble -Neg-Gas from NO<sub>3</sub> Nely PLATES 48 h 7 day NO2 reduced Nier Odor Neg Nen Gas from NO<sub>2</sub> NEw IN et Pigment on swab bright gello OF Fructose Gr-yel Pigment on BAP Uzilow OF Dextrose Cv-yel Morphology on BAP OF Lactose Be Re 17.65 dvy, w. milled , wrinkle OF Maltose Gr-yel Beta hemolysis 82,35 OF Mannitol a-lul Growth on Mac Pos-yellowedia Pos-yelestonio OF Xylose 0. 38,46 DNase hydrolysis Now OF Sucrose  $U, \mathcal{F}$ Starch hydrolysis POS New Arginine 5.88 Lecithinase Lysine Vilon 5,88 Ornithine Lipase Ner Base Control N Rapid PYR Neg 5.88 Rapid LAP Ner Acetamide Pos Nelsy 11.76 Esculin Ner Ner Rapid ESC Nec 11,20 Gelatin New Neb Sensitivity to: Indole Veg 50 Malonate Penicillin (10 U) Neg R 70.59 PAD New Vancomycin (30 ug) R Urea <u>nld</u>2 h POSSIN X94.12 Colistin (10 mcg) 5 6.5% NaCL Neg 47. de SIt. doudy Ne 37.5 10% Lactose Nig 2 Polymyxin B (300 U) 14 5 ONPG Neg NU Growth 42º TSA .S Net

Note: All biochemical tests (except where noted) are incubated at 30°C and read after 48 hrs. incubation and again at 7 days.

Figure 270: Pseudomonas oryzihabitans isolate 1-of-17.

Gram Morph. Gram Test 744 Motility Wet Prep New Sheat Please Reds-H, S Motility Wet Prep New Sheat Please Reds-H, S Motility Deep $Postion P$ Reds $P$ New	Reference No./Name: Date Inoculated: Final Identification: <u>Decendent</u> Comments: <u>DEY WEINTLED YELLOU</u>	00 - manihebitans
Crowth 100 1100 Parister 1006	Gram Test $\frac{74h}{Nec}$ Short plant plant $Re$ Motility Wet Prep $Re$ + Motility Deep $Re+$ Catalase $Po 5PLATES 2448h 7 dayOdor NonePigment on swab YeccewYecc$	Tubes KIA $48^{\circ}h$ $7 \text{ day}$ $REALKIAt + Yet/hcNebREAL/RENebPseudo PNebNebPseudo FNebNebPseudo FNebNebNO3 reducedNebNebGas from NO3MebNebNO2 reducedNebNebGas from NO2NebNebOF FructoseYeLYeLYeLYeLYeLYeLYeLYeLOF MaltoseYeLYeLYeLYeLYeLOF SucroseGeNBubeDF SucroseGeNBubeOF SucroseGeNBubeAcetamideNebNebAcetamideNebNebHoleNebNebHoleNebNebHoleNebNebHoleNebNebHoleNebNebHoleNebNebHoleNebNebHoleNebNebHoleNebNebHoleNebNebHoleNebNebHoleNebNebHoleNebNebHoleNebNebHoleNebNebHoleNebNebHoleNebNebHoleNebNebHoleNebNebHo$

Figure 271: Pseudomonas oryzihabitans isolate 2-of-17.

# 30.9 Pseudomonas pseudoalcaligenes

Over the course of ASHEX clinical-isolate collection, 13 individual isolates of Pseudomonas pseudoalcaligenes were analyzed. Three of the 13 recorded results are pictured in this subsection.

Test	+	_	Raw%	<b>W95</b> %	Test	+	_	Raw%	W95%
Motility	9	4	69.23	64.84	H <sub>2</sub> S	0	11	0.00	12.94
Oxidase	13	0	100.00	88.59	Pseudo P	0	11	0.00	12.94
Catalase	11	2	84.62	76.72	Pseudo F	0	11	0.00	12.94
Yellow Pigment	0	13	0.00	11.41	NO <sub>3</sub> Reduced	13	0	100.00	88.59
Pink Pigment	0	13	0.00	11.41	Gas from $NO_3$	0	3	0.00	28.08
Beta Hemolysis	0	3	0.00	28.08	NO <sub>2</sub> Reduced	0	7	0.00	17.72
Growth on Mac	13	0	100.00	88.59	Gas from $NO_2$	0	3	0.00	28.08
Dnase	0	13	0.00	11.41	OF Fructose	13	0	100.00	88.59
Starch	1	12	7.69	17.34	OF Dextrose	4	9	30.77	35.16
Lecithinase	0	4	0.00	24.50	OF Lactose	0	13	0.00	11.41
Lipase	0	3	0.00	28.08	OF Maltose	2	11	15.38	23.28
PYR	0	2	0.00	32.88	OF Mannitol	1	12	7.69	17.34
LAP	2	0	100.00	67.12	OF Xylose	0	13	0.00	11.41
ESC Spot Test	0	2	0.00	32.88	OF Sucrose	0	3	0.00	28.08
Penicillin (10U)	1	12	7.69	17.34	Arginine	5	8	38.46	41.09
Vancomycin $(30\mu g)$	0	13	0.00	11.41	Lysine	0	13	0.00	11.41
Colistin $(10\mu g)$	13	0	100.00	88.59	Ornithine	0	13	0.00	11.41
Polymyxin B (300U)	3	0	100.00	71.92	Acetamide	3	10	23.08	29.22
					Esculin	0	13	0.00	11.41
					Gelatin	0	13	0.00	11.41
					Indole	0	13	0.00	11.41
					Malonate	2	5	28.57	36.16
					PAD	1	12	7.69	17.34
					Urea 2 hrs.	0	13	0.00	11.41
					Urea 48 hrs.	1	12	7.69	17.34
					6.5% NaCl	12	1	92.31	82.66
					10% Lactose	0	7	0.00	17.72
					ONPG	0	5	0.00	21.72
					Growth 42°C	13	0	100.00	88.59

Table 84: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as  $n_+/(n_+ + n_-)$ , where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which shifts raw percentages towards 50% with a strength dependent on the total number of test occurrences. The four antibiotic tests at the bottom of Column 1 are sensitivity tests where a positive result indicates sensitivity to the drug.

	Reference No./Name:			CLOSEST 1	E X		
				$\wedge$			
	Date Inoculated:	8-16-	06	Pseudomona	s pseud	OALCALIGE	eves
	Final Identification:	8/25-06	Rosee,	MONAS SP	P.	5. 9/6/00	6
	Comments: Light	pink or	SACHON	on starch	@ 10.D		
	Light	yellow of	z butterso	otch on E6	6210	D	
						10	
	Gram Morph.			Tubes	<u>48 h</u>	7 day	
	Gram Test	24L		KIA H <sub>2</sub> S	KINC	KIR	
	Motility Wet Prep	Pos-sm	Roas.	1125	Nee	11(2)	
+	Motility Deep	POS	Pos	- Pseudo P	Nelo	1000	FAINT
+	- Oxidase	Dos		Pseudo F	NCG	1.	ELLODESCONT
+	- Catalase	Strong	Pos	+ NO <sub>3</sub> reduced			12 DAYS Repert
	<b>PLATES</b>	<u>48 h</u> /	7 day 10 DAY	- Gas from NO <sub>3</sub>	New	Nec	exactly
	Odor Slightly			- NO <sub>2</sub> reduced - Gas from NO <sub>2</sub>		NEG	the same
	Pigment on swab	Flesh					
-	- Pigment on BAP	GREY		+ OF Fructose + OF Dextrose	G-RN YeL	Yel	
	Morphology on BAP	Smooth		-OF Lactose	BLac	Biue	
	Beta hemolysis	NEG	POS	-OF Maltose	Brae		
+	Growth on Mac	Pos	POS-LAVE	OF Mannitol	BLUE		19/10
-	- DNase hydrolysis	NEG	Nec - BLU	2-OF Sucrose	BLUE	- t	Never 9/6
-	Starch hydrolysis	Neb	Nea	4	Nec	105- 91R0	\$ 5/28
_	Lecithinase	Nec-	NRG	<ul> <li>Arginine</li> <li>Lysine</li> </ul>	_Neo	NEG	were
-	Lipase	Neb	Nela	- Ornithine		it. Purple	NEG
_	- Rapid PYR	NEG		- Base Control		Nel	NEG
	-Rapid LAP	Pes		- Acetamide	Neg	New	
•	- Rapid ESC	New	1.0	- Esculin	NEG	Nel	
	Sensitivity to:			- Gelatin - Indole	NEG	NEG	
-	– Penicillin (10 U)	R	R	- Malonate	Neb	NeG	
	- Vancomycin (30 ug)	R	R	- PAD	New	Neb	
-	Colistin (10 mcg)	5-11	5	$- \frac{1}{6.5\%} \text{ NaCL}$	POG	IN +	
	Polymyxin B (300 U)	5-12	5	-10% Lactose	NEG	Neco	
				- ONPG - Growth 42 <sup>o</sup>	POS	New	
				- Olonul 12			

Figure 272: Pseudomonas pseudoalcaligenes isolate 1-of-13.

Date Inoculated:

Final Identification:

3-29-11 Pseudo MONAS PSeudo ALCALIgenes P.S. 9/14/12 8-29-11

Comments:

		· ·	8/31	9/14 160	AYS
Gram Morph.		Tubes	<u>48 h</u>	7 day	
Gram Test	24h Med RODS	DB US	KINC	EX.	1
Motility Wet Prep	POS - VERY MOTILE	H <sub>2</sub> S	SLight 172	Slight Ha	27
Motility Deep	POS POS	Pseudo P	NEG	Nele	
Oxidase	NOS	Pseudo F	NEG	Nel	
Catalase	POS	+ NO <sub>3</sub> reduced		Pos	
PLATES	<u>48 h</u> <u>7 day</u>	- Gas from NO <sub>3</sub>	Tiky Buldle	Sm Bubble	
Odor	NONE	<ul> <li>NO<sub>2</sub> reduced</li> <li>Gas from NO<sub>2</sub></li> </ul>	Nela	NCG	
Pigment on swab	Bacc	0		× 14.	
Pigment on BAP	GREY PLORY	<ul> <li>+ OF Fructose</li> <li>– OF Dextrose</li> </ul>	YeL Zure	Yel/GRN GAN/BLUE	
Morphology on BAP	TRANSLUCENT 24h	- OF Lactose	FL LE	BLUE	7
Beta hemolysis	Nela	- OF Maltose	Beue	BLUE	- SATE TOURQUOISE
Growth on Mac	POS POS	<ul> <li>+ OF Mannitol</li> <li>– OF Xylose</li> </ul>	BLUR	tel/GRN GRM/BLWE	BLUE
DNase hydrolysis	NCG NCG	- OF Sucrose	Buel	BLUE	
Starch hydrolysis	Nel- Nelo	Arginine	Niele	Pos	
Lecithinase	Nela Nela	Lysine	1000	NELe	
Lipase	NEG NEG	Ornithine		Nele	
Rapid PYR	Nelo	Base Control		Nelo	
Rapid LAP	Pos	Acetamide	Nela	Pos	
Rapid ESC	Nela	Esculin Gelatin	NEG	NEG	REPEAT WEAK DOS
Sensitivity to:		Indole			RODDAT FETC
Penicillin (10 U)	RR	Malonate	NEG	Nea	Repeat these Rown Dicquesible Pignit
Vancomycin (30 ug)	RR	PAD Urea <u>Ne6</u> 2 h	NPL	NEG K	DIGNT DIGUERISCE
Colistin (10 mcg)	9 5	6.5% NaCL	W+ 3	POS	
Polymyxin B (300 U)	<u> </u>	10% Lactose	NeG-	Nece	
		ONPG Growth 42 <sup>0</sup>	Nele- POG	NEC POS	

Note: All biochemical tests (except where noted) are incubated at  $30^{0}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 273: Pseudomonas pseudoalcaligenes isolate 2-of-13.

Date Inoculated: <u>11-3-10</u> Final Identification: <u>Pseudomonas pseudoalcaligenes</u> Comments: <u>619ht parks on starch</u>

Course Marmh

Gram Morph.			Tubes	<u>48 h</u>	7 day	
Gram Test			KIA H <sub>2</sub> S	ney	4R	
Motility Wet Prep	Nelo	1	1125	-rig -	1000	
Motility Deep	neg	Nelon	Pseudo P	heg	Nela	
Oxidase	pos		Pseudo F	-reg_	NEO	
Catalase	ut pos -	- delayed	NO <sub>3</sub> reduced		POS	
PLATES	<u>48 h</u>	7 day	Gas from $NO_3$	neg	Nela	
Odor	NONE		$NO_2$ reduced Gas from $NO_2$	neg	Nelo	11-18-10
Pigment on swab	APRICAT	= Gleigh	-		10-0	15DAYS
Pigment on BAP	GREY		OF Fructose OF Dextrose	-reg_	<u>GRN</u> Yel/GRN	GRN YEL
Morphology on BAP	Smooth	Stringy - Hucon	OF Dexilose		BLUP	Blue
Beta hemolysis	New	<u> </u>	OF Maltose		BLUE	Brac
Growth on Mac	Pos	POS	OF Mannitol OF Xylose		Blue	Blue Blue
DNase hydrolysis	Ng	. Neg	OF Sucrose		Bue	PLUC
Starch hydrolysis	neg	NEG				
Lecithinase	Ng	NEG	Arginine Lysine	-rey	Nela	
Lipase	rog	NEG	Ornithine			
Rapid PYR	NEG	<u></u>	Base Control	V	¥.	
Rapid LAP	POG		Acetamide	NO	Nela	
Rapid ESC	Nela		Esculin	reg	Nel	
Sensitivity to:	1101		Gelatin	NEG	Ne6-	
Penicillin (10 U)	R	R	Indole Malonate	NeCI	NEG	
Vancomycin (30 ug)	R	R	PAD	neci.		GLANT + BUTT
•	512	5-13	Urea $2 h$		ANT ONLY 109 POB	GCANT FOUN
Colistin (10 mcg)	0.0	5-14	6.5% NaCL 10% Lactose	W <u>Rpos</u>	NEG	
Polymyxin B (300 U)	01-	5-17	ONPG	red	Nele	
			Growth 42°	P04	POS	
				+ 20%C 1		) hua

Note: All biochemical tests (except where noted) are incubated at 30°C and read after 48 hrs. incubation and again at 7 days.  $p_{cellive}: p_{sychrobacter}: p_{?}$ 

Figure 274: Pseudomonas pseudoalcaligenes isolate 3-of-13.

4/10

# 30.10 Pseudomonas putida

Over the course of ASHEX clinical-isolate collection, 32 individual isolates of Pseudomonas putida were analyzed. 11 of the 32 recorded results are pictured in this subsection.

Test	+	_	Raw%	W95%	Test	+	_	Raw%	<b>W95</b> %
Motility	32	0	100.00	94.64	$H_2S$	0	32	0.00	5.36
Oxidase	31	1	96.88	91.85	Pseudo P	0	32	0.00	5.36
Catalase	31	1	96.88	91.85	Pseudo F	26	6	81.25	77.90
Yellow Pigment	6	26	18.75	22.10	NO <sub>3</sub> Reduced	6	26	18.75	22.10
Pink Pigment	0	32	0.00	5.36	Gas from $NO_3$	1	26	3.70	9.47
Beta Hemolysis	4	22	15.38	19.84	NO <sub>2</sub> Reduced	2	28	6.67	11.59
Growth on Mac	32	0	100.00	94.64	Gas from $NO_2$	2	25	7.41	12.71
Dnase	0	32	0.00	5.36	OF Fructose	31	1	96.88	91.85
Starch	8	24	25.00	27.68	OF Dextrose	32	0	100.00	94.64
Lecithinase	1	26	3.70	9.47	OF Lactose	2	30	6.25	10.94
Lipase	1	26	3.70	9.47	OF Maltose	2	30	6.25	10.94
PYR	0	20	0.00	8.06	OF Mannitol	9	23	28.13	30.47
LAP	20	0	100.00	91.94	OF Xylose	30	2	93.75	89.06
ESC Spot Test	0	20	0.00	8.06	OF Sucrose	1	22	4.35	10.88
Penicillin (10U)	0	32	0.00	5.36	Arginine	32	0	100.00	94.64
Vancomycin $(30\mu g)$	0	32	0.00	5.36	Lysine	0	32	0.00	5.36
Colistin $(10\mu g)$	32	0	100.00	94.64	Ornithine	0	32	0.00	5.36
Polymyxin B (300U)	27	0	100.00	93.77	Acetamide	4	28	12.50	16.52
					Esculin	0	32	0.00	5.36
					Gelatin	1	31	3.13	8.15
					Indole	0	32	0.00	5.36
					Malonate	17	12	58.62	57.61
					PAD	0	32	0.00	5.36
					Urea 2 hrs.	0	32	0.00	5.36
					Urea 48 hrs.	28	4	87.50	83.48
					6.5% NaCl	23	9	71.88	69.53
					10% Lactose	7	22	24.14	27.16
					ONPG	0	28	0.00	6.03
					Growth 42°C	0	32	0.00	5.36

Table 85: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as  $n_+/(n_+ + n_-)$ , where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which shifts raw percentages towards 50% with a strength dependent on the total number of test occurrences. The four antibiotic tests at the bottom of Column 1 are sensitivity tests where a positive result indicates sensitivity to the drug.

	1	
Reference No./Name:	Study#331 ong cyclog 2005-64	
Date Inoculated:	Mon 9/16/13	
Final Identification:	Mon a/23/13 B. putida per PS resolved	
Comments:	exp. 1D: PS. stutzen Ovg is dry wrike white	
Maed	11: Puo: 77.4% Bs puble_ IVD: 99.78; Ps. puble_ Brder: 1.5+5 Ps. puble	_
Gram Morph. Gram Test	$\begin{array}{c} \underline{g_{nV}} \\ \underline{g_{nV}} \\ \underline{H_2S} \\ H_2$	۶Y
Motility Wet Prep Motility Deep Oxidase	Poseudo P N N Pseudo P Securitarias to idel Obrat (+)	
Catalase PLATES	$\frac{POS}{POS-strag} \qquad NO_3 \text{ reduced } \underbrace{\mathcal{N}}_{\mathcal{N}} \qquad \underbrace{\mathcal{N}}_{\mathcal{N}} \underbrace{\mathcal{N}} \underbrace{\mathcal{N}}$	
Odor Pigment on swab	$\frac{1}{24} \frac{1}{10} \frac$	
Pigment on BAP Morphology on BAP Beta hemolysis Growth on Mac	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	
DNase hydrolysis Starch hydrolysis Lecithinase Lipase Rapid PYR	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	
Rapid LAP Rapid ESC <u>Sensitivity to:</u>	Pos     Acetamide     N     N       N     Esculin     N     N       Gelatin     N     N	
Penicillin (10 U) Vancomycin (30 ug) Colistin (10 mcg) Polymyxin B (300 U	$\frac{105}{105} = \frac{105}{6.5\%} = 105$	

CH8' 99.944 PS. putida

#### Figure 275: Pseudomonas putida isolate 1-of-32.

Final Identification:	Pseudomon A	s putida compley P.S.	
	A COLOMON A		
Comments: (AbiD:	Psudo Dutida con	DX: ; CONGESTIVE HEART FAILURE 8/3/15	
N/IC			
Tellow	ON Stakeh &	Egg Yolf 2015-12	
Gram Morph.		<u>Tubes</u> $48 \text{ h}$ $7 \text{ Z day}$	
Gram Test		KIA KINC KIK	
Motility Wet Prep		H2S Neg thin bit live interfore E	
Motility Deep	Pos	- Pseudo P Near Near	
Oxidase	005	+ Pseudo F Neg- Pos-yellowcolar (+)	W. Cikie
Catalase	DOS	-NO3 reduced X Ryupp In -Neg-	- Chile
PLATES 4	18h 97 day	- Gas from NO3 Neg-	
Odor	Strong Pas	-NO2 reduced X. <u>Ped-Neg-</u> Gas from NO2 <u>Neh-</u> <del>Red-Neg-</del>	
Pigment on swab	ltyellow dkgued		
Pigment on BAP	yel-gray yel-gray	+ OF Fructose <u>ul top</u> + OF Dextrose <u>ul top</u> <u>ul E</u>	
Morphology on BAP fla	tirregiedge flat irreg e	$d_{\mu} = OF Lactose \underline{Re} = \underline{Re} = \underline{Re}$	
Beta hemolysis	Neg Neg-	° - OF Maltose <u>Be</u> <u>Be</u>	
Growth on Mac	Pos Pos r	- OF Mannitol <u>BL</u> <u>BL</u> + OF Xylose (kl top <u>yl</u> E)	
DNase hydrolysis	Neg- Neg-	OF Sucrose Be Be	
Starch hydrolysis	Neg Pas	Arginine POS POS	
Lecithinase	Neg Neg 1	Lysine Neg Neg	
Lipase	Neg Neg-	Ornithine Noz Noz	
Rapid PYR	Neg	Base Control <u>Noc</u> <u>Noc</u>	
Rapid LAP	Pos	Acetamide <u>New</u> New	
Rapid ESC	Neg	Esculin <u>Nez-</u> <u>Nez-</u>	
Sensitivity to:	.0	Gelatin <u>Neg Neg</u> Indole X Negr	
Penicillin (10 U)	GR GR	Malonate $POS$ $POS$	
Vancomycin (30 ug)	6R 6R	PAD Neg X	
Colistin (10 mcg)	105 105	Urea <u>old</u> 2 h <u>Pos séart</u> <u>Pos</u> V 6.5% NaCL <u>Pos</u> Pos V	
Polymyxin B (300 U)	125 125	10% Lactose Neg Neg Neg Neg	6-
		ONPG New Itel Posting Darpin	int?
		Growth 420 7574 Neg_ Meg_	
Notes All List.		oted) are incubated at 30°C and read after 48 hrs.	

Figure 276: Pseudomonas putida isolate 2-of-32.

Date Inoculated:

10-10-06

10

Final Identification:

Comments:

Gram Morph.		Tubes	48 h	10 day
Gram Test	24h	KIA	KINC	E/NC
	POG- EXTREMELT ACTI MED RODS	$V = -H_2S$	Nele	SLight black @
Motility Wet Prep			1505	NCG-
+ Motility Deep	POS POS	Pseudo P	Nela POS	DOS 1
+ Oxidase	Pos		A	A A ICRI
+ Catalase	STRONG POS	$-NO_3$ reduced	*	Topo NCla
PLATES	<u>48 h</u> <u>7 day</u>	- Gas from NO <sub>3</sub> - NO <sub>2</sub> reduced	Nela	AF-Neca NECO
Odor	Smells	Gas from NO <sub>2</sub>	NEG	NEG
Pigment on swab	Bu66		Ver	V./
- Pigment on BAP	GREY	+ OF Fructose + OF Dextrose	YEL	Yel Yel
Morphology on BAP	Sunao4h	-OF Lactose	BLUE	BLUE
-Beta hemolysis	NEG	<ul> <li>OF Maltose</li> <li>OF Mannitol</li> </ul>	Bine	Bull
+ Growth on Mac	POS- POS	+ OF Xylose	<u>Bive</u> Yel	BLUE YEL
- DNase hydrolysis	NEG NEG	- OF Sucrose	BLUR	Blue
Starch hydrolysis	NEG (POS)	+ Arginine	Nelo	Pos
- Lecithinase	Nea Nea	- Lysine	1	NECO
- Lipase	NEG NEG	- Ornithine		alla
- Rapid PYR	Nec	Base Control		NEG
+ Rapid LAP	POS	- Acetamide	Nel	NEG
- Rapid ESC	NEG	- Esculin	NEG	Nea
Sensitivity to:		<ul> <li>Gelatin</li> <li>Indole</li> </ul>	NEG	NEG
- Penicillin (10 U)	R R	- Malonate	BLUE	Bue
- Vancomycin (30 ug)		PAD	Nele	1-
Colistin (10 mcg)	5-10 3	-+Urea <b>Nel2</b> h +6.5% NaCL	POS-SLAW POS	TONLY DOS POG
Polymyxin B (300 U		-10% Lactose	Nec	NEG
- Polymyxin B (300 C		ONPG	New	NEO
		Growth 42 <sup>0</sup>	Jes .	Nele
		Kep	eat Nel	

20-06 Pseudomonors putida

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 277: Pseudomonas putida isolate 3-of-32.

106

201

Date Inoculated:	5-2-06
Final Identification:	Pseudomonas putida P.S. 5/9/06
	dillusible pignent en Elle Yoth @ 48h. Mucero on siAAch
<u> 0 48</u>	~ u/ quight yes dictusible pignt
Gram Morph. Gram Test Motility Wet Prep Motility Deep Oxidase Catalase	$\begin{array}{c c c c c c c c c c c c c c c c c c c $
	- Growth 42° <u>NCG</u> <u>NCG</u>

Figure 278: Pseudomonas putida isolate 4-of-32.

Date Inoculated: <u>5-2-06</u> Final Identification: <u>PseudoHowAS putidA</u> P.S. 5/9/06 Comments: <u>DRY</u>, WRINELED

Gram Morph. Gram Test	24h	$\begin{array}{c} \underline{\text{Tubes}}\\ \text{KIA}\\ \underline{}H_2\text{S} \end{array}$	<u>48 h</u> K/NC. NEW	<u>7 day</u> <u>κ//τ</u> _ λ θ c
Motility Wet Prep -+ Motility Deep -+ Oxidase	<u>very notice- Robs</u> <u>POS POS-7</u> 0 <u>POS</u>	- Pseudo P + Pseudo F	NeG	Neb- POS - FLOODESCEN
Odor	STRONG POS 2448h 7 day Stinks	<ul> <li>NO<sub>3</sub> reduced</li> <li>Gas from NO<sub>3</sub></li> <li>NO<sub>2</sub> reduced</li> <li>Gas from NO<sub>2</sub></li> </ul>	Nec- SH Budge	NCC2 NCC2 NCC5 e Sor Busible
1 00	<u>flesh</u> <u>hight Grey</u> P <u>dull-cakes up</u>	+ OF Fructose + OF Dextrose - OF Lactose > OF Maltose	Yel Yel Blue	Yel Yel Blue
<ul> <li>Beta hemolysis</li> <li>Growth on Mac</li> <li>DNase hydrolysis</li> </ul>	<u>New</u> <u>Pos-</u> 71 <u>Pos</u> <u>Pos</u> <u>New</u> <u>New</u>	-OF Mannitol + OF Xylose -OF Sucrose	BLUE BLUE BLUE	BLUE BLUE
<ul> <li>Starch hydrolysis</li> <li>Lecithinase</li> <li>Lipase</li> <li>Rapid PYR</li> </ul>	<u>NEC</u> <u>NEC</u> <u>NEC</u> <u>NEC</u> NEC	+ 4 Arginine — Lysine — Ornithine — Base Control	Pos Nec- Nec- Nec-	POS Nec- Nec- Nec-
-+ Rapid LAP Rapid ESC Sensitivity to: Penicillin (10 U) Vancomycin (30 u -+ Colistin (10 mcg) -+ Polymyxin B (300	$\frac{POS}{NEG}$ $\frac{R}{R} = \frac{R}{R}$ $\frac{R}{S-q} = \frac{S}{S}$	Acetamide Esculin Gelatin Indole Malonate PAD Urea <u>Ne6-2</u> h H6.5% NaCL 10% Lactose ONPG Growth 42 <sup>0</sup>	NEC NEC NEC NEC NEC POS-SUM NEC NEC NEC NEC	New New New Blue HT POS SLANT & BUTT POS ! New New New

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 279: Pseudomonas putida isolate 5-of-32.

Reference No./Name:			Pie toradio ati
	11-11-09		of papers "/a/1.th
Date Inoculated:	$\wedge$		A -
Final Identification:	1 seudomo	owal put	de 12/4/09 P-S.
Comments:	+ PINE ON STI	9.2ch @ 14 DA	45
11	early for	not marking	this et ell
		0	1113
Gram Morph.		Tubes	$\frac{48 h}{1 + 1} = \frac{7 day}{1 + 1 + 1}$
Gram Test	45h	KIA 	KINC FIR
Motility Wet Prep	Herrore	otile	
√ Motility Deep	Neb Posz	Pseudo P	Neb New Der
IT US Dividase	POS	÷-Pseudo F	<u>pos</u> <u>pos</u> 74
95, 45 TCatalase	STRONG POS	- NO3 reduced	NCG Corcis
PLATES	<u>48 h 7 day</u>	<ul> <li>Gas from NO<sup>3</sup></li> <li>NO<sup>2</sup> reduced</li> </ul>	Nec- Nec- 10
Odor	Stinky	Gas from NO <sub>2</sub>	TINY BUBOLE TINY BUBBLE U. FE
18,18 <b>Pigment on swab</b>	Flesh		
Pigment on BAP	GREY	$\stackrel{\hspace{0.1em} \leftarrow}{\leftarrow} OF Fructose$	Yec Yel or 245
Morphology on BAP	Smooth	OF Lactose	Blac Blue 9.09
NR Beta hemolysis		OF Maltose	Blue Blue 2007
Growth on Mac	P05 P05	OF Mannitol	Yel Yel 20 21
<ul> <li>DNase hydrolysis</li> </ul>	Nela Nela	- OF Sucrose	BLUE BLUE
227 Starch hydrolysis	NEG POS		pos pos
- Lecithinase	NEG NEG	<ul><li></li></ul>	New New
Lipase	NEG NEG	- Ornithine	Neb Nec
Rapid PYR	NEG	Base Control	New New
+ Rapid LAP	POS	Acetamide	NEG- NEG- 4.55
- Rapid ESC	NEG	Esculin	New New
Sensitivity to:		- Gelatin Indole	Nela Nela
Penicillin (10 U)	RR	Malonate	P05 P05 57.63
Vancomycin (30 ug)	RR	- PAD	Nelo-
Colistin (10 mcg)	5-9.8 5	$\downarrow$ Urea <u>2</u> h $\downarrow$ 6.5% NaCL	POS (SLANT) POS SLANT & BUTT POS POS ST 09
Polymyxin B (300 U)		10% Lactose	Ne6- Nec- 31.58
		- ONPG - Growth 42 <sup>o</sup>	New New
		- 010wiii 42	Nela Nela

Figure 280: Pseudomonas putida isolate 6-of-32.

Date Inoculated:

Final Identification:

Comments:

6-12-08 Elas Pseudomonas puetida P.S. 6/23/08 Yellow d. Aug. ble Right on Egg Volk at 8 DAXS

Sec. 19		6/20/08	
Gram Morph.	Tubes	<u>48 h</u> 8 7 day	
Gram Test <u>24</u> L	KIA	Elk	C
Motility Wet Prep VCRY Noi 110	e-sm Rods -H2S	slight Hz	2
Motility Deep POS	Pseudo P	NEG	
Oxidase $P_{\Theta} S$	Pseudo F	<u></u>	
Catalase SiRance	J	New	
PLATES 48 h	Image: Market day     Gas from NO		
Odor Sticks	NO <sub>2</sub> reduced Gas from NO		
Pigment on swab <u>fleg</u>			
Pigment on BAP <u>Gaey</u>	OF Fructose OF Dextrose		
Morphology on BAP Streeth	OF Lactose	Blue	
Beta hemolysis	OF Maltose	BLUE	
Growth on Mac	Pos OF Mannitol OF Xylose	<u> </u>	
DNase hydrolysis	NCG OF Sucrose	BLUE	
Starch hydrolysis	<u>NCG</u> Arginine	Pos	
Lecithinase	<u>Nec</u> Lysine	Nela	
Lipase	NCG Ornithine	NeG	
Rapid PYR <u>Nec</u>	Base Control	Nel	
Rapid LAP <u>Pos</u>	Acetamide	Nela	
Rapid ESC New	Esculin Gelatin	Nele	
Sensitivity to:	Indole	Nela	
Penicillin (10 U)	R Malonate	POS	
Vancomycin (30 ug)	PAD UreaNeb-2 h	RES POS SLA	NT & BUTT
Colistin (10 mcg)	S - 11 6.5% NaCL	POS	
Polymyxin B (300 U)	5 - 12 10% Lactose	NEG-	
	ONPG Growth 42 <sup>o</sup>	NEG-	

Note: All biochemical tests (except where noted) are incubated at 30°C and read after 48 hrs. incubation and again at 7 days.

Figure 281: Pseudomonas putida isolate 7-of-32.

Final Identification:		1			
Comments: Yet	LOW ON ALC MEDIA	Paquea	MENAS	- fal	IVA
	Pseudo monAS	DistidA	A.S.	3/10/	12
	ATHEX FAV.	prettary	1 AAXS	21.10	11 DAYS
Gram Morph.		Tubes	101/1	2/10/12 7 dby	11 2116>
	486	KIA	Elt	K/K	
Gram Test	TON LONG-RODS	$H_2S$	Nel	New	
Motility Wet Prep	105-		11.0/-		
Motility Deep	105!	Pseudo P	NEG		
Oxidase	SLOWI POS	Pseudo F	POS		
Catalase	STRONG POS	NO <sub>3</sub> reduced	NG		
PLATES	<u>48 h // 7 day</u>	Gas from $NO_3$	TINY BUBA	il	
Odor	NONE	$NO_2$ reduced	NCG		
Pigment on swab	Deep Yeurow	Gas from NO <sub>2</sub>	Nelo		
		OF Fructose	YEL/GRN		
Pigment on BAP	Yellow	OF Dextrose	Yel		
Morphology on BAP	SouceTh	OF Lactose	BLUE		
Beta hemolysis	Nele	OF Maltose	Belle		
Growth on Mac	POS	OF Mannitol OF Xylose	<u>BLUE</u> Yez		
DNase hydrolysis	Nela	OF Sucrose	BLUE		
Starch hydrolysis	HELL POS		A .		
Lecithinase	NEL	Arginine	Pos		
		Lysine Ornithine	NeG-		
Lipase	Nec	Base Control	Nela		
Rapid PYR	Nela	Dube Connor			
Rapid LAP	POS	Acetamide	Nec-		
Rapid ESC	Nec	Esculin	Neb		
Sensitivity to:		Gelatin Indole	NEG	- Veiller	» ipidale
Penicillin (10 U)	R	Malonate	NEG		made
Vancomycin (30 ug)	R	PAD	Neb		
		Urea <u>Nelo</u> 2 h	POS		
Colistin (10 mcg)	5-14	6.5% NaCL	POS		
Polymyxin B (300 U)	5-11	10% Lactose ONPG	NIPla		
		Growth 42 <sup>°</sup>	Neb		

Figure 282: Pseudomonas putida isolate 8-of-32.

Date Inoculated:

Final Identification:

Comments:

				2/20
Gram Morph. Gram Test	short + fong smr	<u>Tubes</u> KIA	3/21 48h F/NC	$\frac{7 \text{ day}}{\text{ K/E}}$
Motility Wet Prep	dating notility -	$-H_2S$	Sugat K25	Slight Hz S
Motility Deep Seture : Oxidase		Pseudo P Pseudo F	NCG Pos	Nela POS
Catalase STRON	~ positive	NO <sub>3</sub> reduced		
PLATES	48 h 7 day	Gas from NO <sub>3</sub>	Nel	NEG
Odor	NONE	NO <sub>2</sub> reduced Gas from NO <sub>2</sub>	NEG	Nelo
Pigment on swab	BUFF		1000	
Pigment on BAP	GREY	OF Fructose OF Dextrose	Yel_	Yel Yel
Morphology on BAP	Smoot (	OF Lactose	Briel	Bue
Beta hemolysis	NEG	OF Maltose	Bine	Blue
Growth on Mac	POS POS	OF Mannitol OF Xylose	Yel_	Yel Yel
DNase hydrolysis	NEG NEG	OF Sucrose	GRN	Blue
Starch hydrolysis	NEG NEG	Arginine	Pos	los
Lecithinase	Nelo Neu	Lysine	NEG	Nela
Lipase	Nels Nels	Ornithine	Nea	Neb
Rapid PYR	NeG	Base Control	NEG	Nel
Rapid LAP	POS	Acetamide	NeG	Nele
Rapid ESC	NEG	Esculin Gelatin	NEG	Nel
Sensitivity to:		Indole	NCO	NECO
Penicillin (10 U)	<u>R</u> <u>R</u>	Malonate	NeG	NEG
Vancomycin (30 ug)	R R	PAD Urea 🕗 2 h	NCG POS (SLAN	T) POS SCANTABUT
Colistin (10 mcg)	5-13 5	6.5% NaCL	POS	POS
Polymyxin B (300 U)		10% Lactose ONPG	Nele	Pos
		Growth 42 <sup>°</sup>	NEG	Ne6

3-19-07 Pitu / Pfat: Pseudomonas putida 2/29/07 P.S.

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 283: Pseudomonas putida isolate 9-of-32.

Comments:

Pseudomonas putida P.S. 4/20/07

Gram Morph. Gram Test Motility Wet Prep Motility Deep Oxidase Catalase PLATES Odor Pigment on swab Pigment on BAP Morphology on BAP Beta hemolysis Growth on Mac DNase hydrolysis Starch hydrolysis Starch hydrolysis Lecithinase Lipase Rapid PYR Rapid LAP Rapid ESC Sensitivity to: Penicillin (10 U) Vancomycin (30 ug) Colistin (10 mcg)	48h Pos-9m. Rods Neb Pos Pos(Decayed) STRONG Pos 48h 7 day NONE RLOG CREAT Chey STROTH NEG NEG NEG NEG NEG NEG NEG NEG	Tubes KIA H <sub>2</sub> S Pseudo P Pseudo F NO <sub>3</sub> reduced Gas from NO <sub>3</sub> NO <sub>2</sub> reduced Gas from NO <sub>2</sub> OF Fructose OF Dextrose OF Dextrose OF Lactose OF Maltose OF Maltose OF Maltose OF Sucrose Arginine Lysine Ornithine Base Control Acetamide Esculin Gelatin Indole Malonate PAD Urea Meg 2 h 6.5% NaCL 10% Lactose	48 h H/NC here ht H2 S Neb Neb Sm. bubble	New New Yel Pue Bue Bue Bue Bue Hec New New New New New New	- POS ANT & BUTT
Colistin (10 mcg) Polymyxin B (300 U)		Urea <u>Me62</u> h 6.5% NaCL 10% Lactose ONPG Growth 42 <sup>0</sup>	Nec Nec Nec SPORSE	<u>P05</u> <u>NºCa</u> <u>NºCa</u> <del>NºCa</del> <del>NºCa</del> <del>1</del> read after 4	$\mathbf{i}$
incubation and again	A T James	Report 42° 3/29	NeG- NeG-	NeG	Ý

Figure 284: Pseudomonas putida isolate 10-of-32.

	U U		0 0	
Date Inoculated:	Wed 7/10/13			
Final Identification:	Pseudomonias	putida	-	
Comments:		/		
	1) J. Huw / para			
Malo	ci: Vitelems RuotIVD:	Ps. putida	Bruker:	Ps: nonteilii
Gram Morph.	anr	Tubes	<u>48 h</u>	7 day
Gram Test		KIA	KINC	KK
Motility Wet Prep		$H_2S$	Neg	Nilij
Motility Deep	Pos / Pos	Pseudo P	Neg	Neg
Oxidase	Pas	Pseudo F	POS-Tellow	PCS All G A Class FONE
Catalase	Pos	NO <sub>3</sub> reduced	X	NCG After CING
PLATES	48 h 7 day	Gas from NO <sub>3</sub>	tiny bubble	
Odor	Near Pos-stinks	$NO_2$ reduced Gas from $NO_2$	 Nen	Neg-red
Pigment on swab	buff decold		Neg	- loog
Pigment on BAP	Oway itel-for	OF Fructose	yel attop	yd-a +
Morphology on BAP	round for the la wet	OF Dextrose OF Lactose	Helattop Bl-Cr	Bei -
Beta hemolysis	Near Pos	OF Maltose	BI-Gr	Be -
Growth on Mac	pos buffiret pos.	OF Mannitol OF Xylose	BI-Gr	Be -
DNase hydrolysis	Nea Nea	OF Aylose OF Sucrose	BI-G-	Be -
Starch hydrolysis	New New		0	Day
Lecithinase	Neg-Jellowpant Neg	Arginine Lysine	Hos	POS
Lipase	New New	Ornithine	Neg	NSe
Rapid PYR	Neg	Base Control	Nes	Ner
Rapid LAP	Pas	Acetamide	Near	Neg
Rapid ESC	Near	Esculin	Hebary Juli	Neg Very set. bra
Sensitivity to:		Gelatin Indole	Ner	Neg-
Penicillin (10 U)	RR	Malonate	Blue - Pe	ps Pos-dere
Vancomycin (30 ug)	R P	PAD	Neg	X
Colistin (10 mcg)	11 (-11	Urea <u>Ma</u> 2 h 6.5% NaCL		t Pos sent the H
Polymyxin B (300 U	n 13 5-13	10% Lactose		K Neg
i orymyxin B (500 U		ONPG	NEG	lt yellow + N
		Growth 42°	Ney	Nig

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 285: Pseudomonas putida isolate 11-of-32.

# 30.11 Pseudomonas sp. CDC Group 1

Over the course of ASHEX clinical-isolate collection, one individual isolate of Pseudomonas sp. CDC Group 1 was analyzed. The associated biochemical result form is NOT presented here.

Test	+	_	Raw%	W95%	Test	+	_	Raw%	<b>W95</b> %
Motility	1	0	100.00	60.33	$H_2S$	0	1	0.00	39.67
Oxidase	1	0	100.00	60.33	Pseudo P	0	1	0.00	39.67
Catalase	1	0	100.00	60.33	Pseudo F	0	1	0.00	39.67
Yellow Pigment	0	1	0.00	39.67	NO <sub>3</sub> Reduced	1	0	100.00	60.33
Pink Pigment	0	1	0.00	39.67	Gas from $NO_3$	1	0	100.00	60.33
Beta Hemolysis	0	1	0.00	39.67	NO <sub>2</sub> Reduced	1	0	100.00	60.33
Growth on Mac	1	0	100.00	60.33	Gas from $NO_2$	1	0	100.00	60.33
Dnase	0	1	0.00	39.67	OF Fructose	0	1	0.00	39.67
Starch	0	1	0.00	39.67	OF Dextrose	0	1	0.00	39.67
Lecithinase	0	1	0.00	39.67	OF Lactose	0	1	0.00	39.67
Lipase	1	0	100.00	60.33	OF Maltose	0	1	0.00	39.67
PYR	0	1	0.00	39.67	OF Mannitol	0	1	0.00	39.67
LAP	1	0	100.00	60.33	OF Xylose	0	1	0.00	39.67
ESC Spot Test	0	1	0.00	39.67	OF Sucrose	0	1	0.00	39.67
Penicillin (10U)	0	1	0.00	39.67	Arginine	1	0	100.00	60.33
Vancomycin $(30\mu g)$	0	1	0.00	39.67	Lysine	0	1	0.00	39.67
Colistin $(10\mu g)$	1	0	100.00	60.33	Ornithine	0	1	0.00	39.67
Polymyxin B (300U)	1	0	100.00	60.33	Acetamide	0	1	0.00	39.67
					Esculin	0	1	0.00	39.67
					Gelatin	0	1	0.00	39.67
					Indole	0	1	0.00	39.67
					Malonate	0	1	0.00	39.67
					PAD	0	1	0.00	39.67
					Urea 2 hrs.	0	1	0.00	39.67
					Urea 48 hrs.	0	1	0.00	39.67
					6.5% NaCl	1	0	100.00	60.33
					10% Lactose	0	1	0.00	39.67
					ONPG	0	1	0.00	39.67
					Growth 42°C	1	0	100.00	60.33

Table 86: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as  $n_+/(n_+ + n_-)$ , where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which shifts raw percentages towards 50% with a strength dependent on the total number of test occurrences. The four antibiotic tests at the bottom of Column 1 are sensitivity tests where a positive result indicates sensitivity to the drug.

# 30.12 Pseudomonas straminea

Over the course of ASHEX clinical-isolate collection, one individual isolate of Pseudomonas straminea was analyzed. The associated biochemical result form is pictured in this subsection.

Test	+	_	Raw%	W95%	Test	+	_	Raw%	<b>W95</b> %
Motility	1	0	100.00	60.33	$H_2S$	0	1	0.00	39.67
Oxidase	1	0	100.00	60.33	Pseudo P	0	1	0.00	39.67
Catalase	0	1	0.00	39.67	Pseudo F	0	1	0.00	39.67
Yellow Pigment	1	0	100.00	60.33	NO <sub>3</sub> Reduced	0	1	0.00	39.67
Pink Pigment	0	1	0.00	39.67	Gas from $NO_3$	0	1	0.00	39.67
Beta Hemolysis	0	1	0.00	39.67	$NO_2$ Reduced	0	1	0.00	39.67
Growth on Mac	1	0	100.00	60.33	Gas from $NO_2$	0	1	0.00	39.67
Dnase	0	1	0.00	39.67	OF Fructose	1	0	100.00	60.33
Starch	1	0	100.00	60.33	OF Dextrose	1	0	100.00	60.33
Lecithinase	0	1	0.00	39.67	OF Lactose	0	1	0.00	39.67
Lipase	0	1	0.00	39.67	OF Maltose	0	1	0.00	39.67
PYR	0	1	0.00	39.67	OF Mannitol	1	0	100.00	60.33
LAP	1	0	100.00	60.33	OF Xylose	1	0	100.00	60.33
ESC Spot Test	0	1	0.00	39.67	OF Sucrose	0	1	0.00	39.67
Penicillin (10U)	0	1	0.00	39.67	Arginine	0	1	0.00	39.67
Vancomycin $(30\mu g)$	0	1	0.00	39.67	Lysine	0	1	0.00	39.67
Colistin $(10\mu g)$	1	0	100.00	60.33	Ornithine	0	1	0.00	39.67
Polymyxin B (300U)	1	0	100.00	60.33	Acetamide	0	1	0.00	39.67
					Esculin	0	1	0.00	39.67
					Gelatin	0	1	0.00	39.67
					Indole	0	1	0.00	39.67
					Malonate	1	0	100.00	60.33
					PAD	0	1	0.00	39.67
					Urea 2 hrs.	0	1	0.00	39.67
					Urea 48 hrs.	0	1	0.00	39.67
					6.5% NaCl	1	0	100.00	60.33
					10% Lactose	0	1	0.00	39.67
					ONPG	0	1	0.00	39.67
					Growth $42^{\circ}C$	1	0	100.00	60.33

Table 87: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as  $n_+/(n_+ + n_-)$ , where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which shifts raw percentages towards 50% with a strength dependent on the total number of test occurrences. The four antibiotic tests at the bottom of Column 1 are sensitivity tests where a positive result indicates sensitivity to the drug.

	Date Inoculated:	W 5/18/16			-
	Final Identification:	Pseudomowas	STRAMIN	er /	5. 5/27/16
	Comments: (ab IP	· Pseudomonas sp. not	annerase	•	
	Maldi	: Pseudomonas stramina	1.994/1.984	4/1.857	Yellae on All mede
		Firmed by MALDI		/	
	Gram Morph.		Tubes	<u>48 h</u>	7 day
	Gram Test		KIA	KINC	KKK V
	Motility Wet Prep		- H <sub>2</sub> S	_ <u>N</u>	Neg V
+	Motility Deep	Pos	- Pseudo P	N	Neg v
+	Oxidase	Pos	- Pseudo F	N	Neg v
-	Catalase	Neg	- NO3 reduced	$\times$	red after Zn Neg
	PLATES	48 h 7 day	- Gas from NO <sub>3</sub>	N	Neg
	Odor	Neg Seight-	$-NO_2$ reduced $-Gas$ from $NO_2$	<u> </u>	Ore smallered blob@ bottom
	Pigment on swab	Idenyellow gold	Gas from roo <sub>2</sub>		Nog These
+	Pigment on BAP	yellow yellow	+ OF Fructose	yel top +	We go +
	Morphology on BAP		+OF Dextrose	yel top + Re-Gr -	yd-fr +
-	Beta hemolysis	Neg los. Neg	OF Maltose	Bl Gr -	B2-6
+	Growth on Mac	POS-letyellow POS V	+ OF Mannitol	yel top t	ye-on t
-	DNase hydrolysis	N Nea	+ OF Xylose — OF Sucrose	Be-Gr -	Set yellow top +1- BP Gr -
+	Starch hydrolysis	N (yellow Pos V			
_	Lecithinase	N Near	<ul> <li>Arginine</li> <li>Lysine</li> </ul>	N	Neg
_	Lipase	N Nen-	- Ornithine		Nez
-	Rapid PYR	Nez	Base Control		Ne
+	Rapid LAP	Pos	- Acetamide	41	Alen- r
	Rapid ESC	Nea	- Esculin	N	Neg
	Sensitivity to:		- Gelatin	N	Neg
	Penicillin (10 U)	GR GR V	<ul> <li>Indole</li> <li>Halonate</li> </ul>	POS(top)	Pos -
-	Vancomycin (30 ug)	UP LIL V	- PAD	N	X
L	Colistin (10 mcg)	115 115	$-$ Urea $N_2$ h	N	Neg
7	Polymyxin B (300 U)		+ 6.5% NaCL - 10% Lactose	-105 N	POS V
T	i olymyxiii B (500 0)	1-0 100	ONPG	Ň	Neg? Monet fin big
			+ Growth 42 <sup>0</sup>	fos	Pas

Figure 286: Pseudomonas straminea isolate 1-of-1.

## 30.13 Pseudomonas stutzeri

Over the course of ASHEX clinical-isolate collection, 23 individual isolates of Pseudomonas stutzeri were analyzed. Nine of the 23 recorded results are pictured in this subsection.

Test	+	_	Raw%	W95%	Test	+	_	Raw%	W95%
Motility	21	2	91.30	85.39	$H_2S$	0	23	0.00	7.16
Oxidase	23	0	100.00	92.84	Pseudo P	0	23	0.00	7.16
Catalase	22	1	95.65	89.12	Pseudo F	0	23	0.00	7.16
Yellow Pigment	15	8	65.22	63.04	NO <sub>3</sub> Reduced	23	0	100.00	92.84
Pink Pigment	0	23	0.00	7.16	Gas from $NO_3$	16	1	94.12	85.99
Beta Hemolysis	0	18	0.00	8.79	NO <sub>2</sub> Reduced	19	3	86.36	80.96
Growth on Mac	23	0	100.00	92.84	Gas from $NO_2$	15	2	88.24	81.19
Dnase	0	23	0.00	7.16	OF Fructose	22	1	95.65	89.12
Starch	20	3	86.96	81.67	OF Dextrose	23	0	100.00	92.84
Lecithinase	0	18	0.00	8.79	OF Lactose	0	23	0.00	7.16
Lipase	15	3	83.33	77.47	OF Maltose	20	3	86.96	81.67
PYR	1	15	6.25	14.72	OF Mannitol	19	4	82.61	77.94
LAP	15	1	93.75	85.28	OF Xylose	20	3	86.96	81.67
ESC Spot Test	0	16	0.00	9.68	OF Sucrose	2	16	11.11	17.95
Penicillin (10U)	1	22	4.35	10.88	Arginine	0	23	0.00	7.16
Vancomycin $(30\mu g)$	0	23	0.00	7.16	Lysine	1	22	4.35	10.88
Colistin $(10\mu g)$	22	1	95.65	89.12	Ornithine	0	23	0.00	7.16
Polymyxin B (300U)	18	0	100.00	91.21	Acetamide	3	20	13.04	18.33
					Esculin	0	23	0.00	7.16
					Gelatin	0	23	0.00	7.16
					Indole	0	23	0.00	7.16
					Malonate	23	0	100.00	92.84
					PAD	9	14	39.13	40.69
					Urea 2 hrs.	0	23	0.00	7.16
					Urea 48 hrs.	14	9	60.87	59.31
					6.5% NaCl	23	0	100.00	92.84
					10% Lactose	1	22	4.35	10.88
					ONPG	0	18	0.00	8.79
					Growth 42°C	22	1	95.65	89.12

Table 88: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as  $n_+/(n_+ + n_-)$ , where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which shifts raw percentages towards 50% with a strength dependent on the total number of test occurrences. The four antibiotic tests at the bottom of Column 1 are sensitivity tests where a positive result indicates sensitivity to the drug.

	Date Inoculated:	F10/2/15					
	Final Identification:	Pseudon	nowas stu	tzeri	P.S. 1	0/30/13	>
	Comments: Lab: M	oldi caller F	3. Stutzni 2.12	-1 but aren?	look like	typical P.	Stut zn
	Parto	Mixed block	daulture; resu	It sent out as	<u>gNR non</u> 5-19	-lactore f	enenter (D)
	Gram Morph.			Tubes	48 h	7 day	10/20/15
	Gram Test			KIA	KINC	KK	
	Motility Wet Prep			H <sub>2</sub> S	Ň	Neg von	life of br pignent
	Motility Deep Zpc 5 [91,3] Oxidase	New Pos	Neg 7day	Pseudo P Pseudo F	N	Neg-	
	Catalase 95.65	Stow POS		NO3 reduced	$\times$ (	learest-2n	2s+r
	PLATES	<u>48 h</u> 7	day	Gas from $NO_3$ $NO_2$ reduced	N	Pos_ Clear - Ros	+ 86.36
	Odor	Slight	POS	$Gas from NO_2$	N	<u>Clean - Ros</u> POS	+ 188.24
	Pigment on swab	gold	gold		6 11 11	the Colo	+ 95.65
Yellow 65.22	Pigment on BAP	yel-gray	1011 Sana	+ OF Fructose + OF Dextrose	GT Yeltyp	yee - Gr +	+'
	Morphology on BAP	spready	- Spready -	- OF Lactose	URE	Be -	- (Blue) + [86.96
nixed	Beta hemolysis	Neg	10200	<ul> <li>OF Maltose</li> <li>OF Mannitol</li> </ul>	Urel top	Gr - T	+ 86.96
1.19	Growth on Mac	Pas		- OF Xylose	Be	Be -	- (Bene/6 heer
	DNase hydrolysis	Neg	Neg V =	OF Sucrose	Be	Be -	- (Bine) Hill
Insanet	Starch hydrolysis 86.9	Pos	Pos ly 3ne	Arginine	L)	Nea	POS 28 DAKS
-	Lecithinase	Neg	Neg?	Lysine	1	Nes	NRG- 4.35
+	Lipase 83.33	Near	Neg? wet? .	Ornithine		Neg	NECE
	Rapid PYR 6.20	Neg	(POS) (28D)	Base Control (All decarb S	ingitly non pe	uper Hould	Nela-
	Rapid LAP 93,75	WE-Pos		Acetamide	N	Nieg	13.04
	Rapid ESC	NOR		Esculin Gelatin	N	Neg-	/ /
	Sensitivity to:	_		Indole	- <u>N</u>	Ner	
	Penicillin (10 U) 4-3	LIF-	Lef V	Malonate	pos	Pos!	39.13
	Vancomycin (30 ug)	LeR	6P V	PAD Urea hla 2 h	Neg Ltorik Serit	POS	× 60.87
	Colistin (10 mcg)95.6	5) 135	135 "	6.5% NaCL	POS	Pos	
	Polymyxin B (300 U		145	10% Lactose ONPG	N	Neg	4.35
				Growth 42°	Pos	POS	95.65

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 287: Pseudomonas stutzeri isolate 1-of-23.

	Date Inoculated:						
	Final Identification:	Pgeu	edomea	1AS stutzer	; (UA-	1) PS. 8	3/05
	Comments:					#	-11
+++++	Gram Morph. Gram Test Motility Wet Prep Motility Deep Oxidase Catalase PLATES Odor Pigment on swab	ARCE/48/1 Nec/48/1 POS POS + 48 h dirt pink?	/ POS	$\begin{array}{c} \hline Pseudo F \\ + NO_3 reduced \\ + Gas from NO_3 \\ + NO_2 reduced \\ + Gas from NO_2 \\ \hline OF Fructose \\ + OF Dextrose \end{array}$	48 h NC/NC Nec Nec Nec Nec Nec Nec Pos	7 day K/NC NEL NEC POS POS POS POS POS YEL YEL	My
-+	Pigment on BAPGRey Morphology on BAP Beta hemolysis Growth on Mac DNase hydrolysis	chindry 	<u>stuck to</u> <u>Neb</u> <u>Pos</u> <u>Neb</u>	- OF Lactose + OF Maltose A C M - OF Mannitol + OF Xylose + OF Sucrose - Arginine - Lysine	yel- yel- yel- yel- yel- yel- for N	, <u>BLWE</u> YeL_ YeL_ YeL_ YeL/6RN NEL_	
+	Starch hydrolysis Lecithinase Lipase	Ne6 Ne6	POS Nec Pos	- Ornithine Base Control		Light Blue	SLANST
	<ul> <li>Rapid PYR</li> <li>Rapid LAP</li> <li>Rapid ESC</li> <li>Sensitivity to:</li> <li>Penicillin (10 U)</li> <li>Vancomycin (30 ug)</li> <li>Colistin (10 mcg)</li> <li>Polymyxin B (300 U</li> </ul>	NE6 NE6 NE6 R R I I I I	R R S	<ul> <li>Esculin</li> <li>Gelatin</li> <li>Indole</li> <li>Malonate</li> <li>PAD</li> <li>Urea _2 h</li> <li>6.5% NaCL</li> <li>10% Lactose</li> <li>ONPG</li> <li>Growth 42°</li> </ul>		NECO NECO	P Blue

Figure 288: Pseudomonas stutzeri isolate 2-of-23.

Date Inoculated: <u>8-16-06</u> Final Identification: <u>Pseudo montes stutzer</u>; (Va-1) <u>B. 8/18/06</u> Comments: <u>Lt. Yel & WRINELED / DRY ON STARCH & EGG York</u>

+ Motility	rest y Wet Prep y Deep	24 k Pos - mea Pos ? Po s	120015 Dos	Tubes KIA - H <sub>2</sub> S - Pseudo P Pseudo F	<u>48 h</u> K/N C Neo- Neo- Neo-	Neo Neo Neo Neo	
+ Oxidas + Catalas <u>PLATI</u> Odor	e <u>ES</u>	POS	7 day	+ NO <sub>3</sub> reduced + Gas from NO <sub>3</sub> + NO <sub>2</sub> reduced + Gas from NO <sub>2</sub>		Pos Pos Pos Pos	
<ul> <li>Pigmer</li> <li>Morphe</li> <li>Beta he</li> <li>Growth</li> </ul>		<u>GREY</u> WRINHED NEG Pog	POS	+OF Fructose +OF Dextrose -OF Lactose +OF Maltose -OF Mannitol +OF Xylose	Yel Yel Yel Blue Yel Yel	YEL YEL YEL BLUE YEL YEL	read 9/6 d
		<u>Neo</u> <u>Pos !</u> <u>Neo</u> w+? Neo	Nec Pos!! Nec Pos	OF Sucrose Arginine Lysine Ornithine Base Control	<u>Bue</u> <u>NCo</u>	BLUE BLUE 105 - STT NEG LT. Parpu NEG	NEG
- Vance	ESC	Pos Ne6- R-20N R S-13	e 	- Acetamide - Esculin - Gelatin - Indole + Malonate - PAD - Urea $Nlle2$ h + 6.5% NaCL	Neb Neb Neb Neb Neb Neb Neb Neb	NEG NEG NEG NEG NEG NEG NEG NEG	
+ Polyn	nyxin B (300 U)	5-14		$ \begin{array}{r} - 10\% \text{ Lactose} \\ - \text{ONPG} \\ + \text{Growth } 42^{\circ} \end{array} $	Nec- Nec- Pog	NEG	

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 289: Pseudomonas stutzeri isolate 3-of-23.

Date Inoculated: <u>6-1-06</u> Final Identification: <u>Pseudorienas stutzeri (VA-1)</u> <u>P.5. 6/15/06</u> Comments: <u>Light Yellow on Starch & E666 @ 48h</u>

			-3-06	6-14-06
Gram Morph. Gram Test Motility Wet Prep	48h 24h New POS-Real	<u>Tubes</u> KIA	<u>48 h</u> <u>K/NC</u> <u>N26</u>	<u>7 day</u> <u>                                    </u>
+ Motility Deep + Oxidase	Pos Pos Pos	Pseudo P Pseudo F	NEC NEC-	Nelo
Odor	STRANG DOS 48 h 7 day TTen	+ NO <sub>3</sub> reduced + Gas from NO <sub>3</sub> + NO <sub>2</sub> reduced + Gas from NO <sub>2</sub>	NCG POS	105 105 105 105
YeL Pigment on BAP	PARCENT Yel SWOOTL New Pos Pos New New Pos Pos (huge New New	+ OF Fructose + OF Dextrose - OF Lactose + OF Maltose + OF Mannitol + OF Xylose - OF Sucrose - Arginine - Lysine	Yel Yel Yel Yel Yel Yel Biwe Nel	YeL YeL Belle YeL YeL Blue NeG
+ Lipase - Rapid PYR	POS POS Nec-	Ornithine Base Control	NEU NEG	Nec- Nec-
<ul> <li>Rapid LAP</li> <li>Rapid ESC</li> <li>Sensitivity to:</li> <li>Penicillin (10 U)</li> <li>Vancomycin (30 ug)</li> <li>Colistin (10 mcg)</li> <li>Polymyxin B (300 U)</li> </ul>	<u>POS</u> <u>NEG</u> <u>R</u> <u>R</u> <u>S-12</u> <u>S</u> <u>S-14</u> <u>S</u>	<ul> <li>Acetamide</li> <li>Esculin</li> <li>Gelatin</li> <li>Indole</li> <li>Malonate</li> <li>PAD Urea N EG2 h</li> <li>6.5% NaCL</li> <li>10% Lactose</li> <li>ONPG</li> <li>Growth 42<sup>0</sup></li> </ul>	NEG NEG NEG NEG NEG NEG NEG NEG	New New New Pog-Bune Pog-Bune Pog New New Pog Pog

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 290: Pseudomonas stutzeri isolate 4-of-23.

Date Inoculated:
Final Identification:

ion: 1-10-08 Pseudomonts stutzer: VA-1 P.S. 1110/08 Buttescotch Yollow on Starch & EGG YOLDE @ 7 DAYS - VERY ALEMALIES

1-3-08

Comments:

Gram Morph.	Tubes	24	
Gram Test <u>241, 48h</u>	KIA H <sub>2</sub> S	<u>48 h 7 day</u> <u>FC/NC</u> <u>NC</u>	E 20
Motility Wet PrepNeg.Neg.Motility DeepPo5Po5OxidasePo5			26 Yel winder
Catalase $7 \frac{1}{20}$ Catalase $5 \frac{1}{20} \frac{1}{20} \frac{1}{20}$ PLATES48 hOdor $N \circ N \in$	Cas from NO		25 REPORT NO2 SET 05 UP NO3 BY MIS. AM
Pigment on swab $\underline{Yellow}$ Pigment on BAP $\underline{Yellow}$ Morphology on BAP $\underline{Yellow}$ Beta hemolysis $\underline{Nelc-24h}$ Growth on Mac $\underline{POS}$ DNase hydrolysis $\underline{Nelc-M}$	OF Fructose OF Dextrose OF Lactose OF Maltose OF Mannitol OF Xylose OF Sucrose	GRN Ye GRN Ye GRN/Yel Ye	
Starch hydrolysis     NCG       Lecithinase     NCG	Arginine <u>C</u> <u>C</u> <u>C</u> <u>C</u> <u>C</u> <u>C</u> <u>C</u> <u>C</u>	Nec jie	6-
Rapid LAP $\not> 05$ Rapid ESC $web$ Sensitivity to:Penicillin (10 U) $\mathcal{R}$ Vancomycin (30 ug) $\mathcal{R}$ Colistin (10 mcg) $S - 13$ Polymyxin B (300 U) $S - 13$	Acetamide Esculin Gelatin Indole Malonate PAD Urea $Nee^2$ h 5 6.5% NaCL 10% Lactose ONPG Growth 42°	New New New New New PO New PO	6- 5 6- 6-

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 291: Pseudomonas stutzeri isolate 5-of-23.

		1.0.1			
Date Inoculated:	3-5-09			(V6-1)	
Final Identification:	Pseudomon A	-s stut	ZERI	(#A=+)	
Comments: <u>But</u>	ter geotel on Egg.	Ydle & STAR	ch at f	D	
	ow on Pseudo F @ 7			PS.	
			3/6	3/12/0	9
Gram Morph.		Tubes	$\frac{48 \text{ h}}{1}$	7 day	
Gram Test	24h 48h	KIA H <sub>2</sub> S	K/NC	Chick to Hand	
Motility Wet Prep	NEG SMRORS NEG	1120	reo	Scient HZD	
Motility Deep	P05-246 P05	Pseudo P	Na	NPG	
Oxidase	Pos	Pseudo F	Nela	Nela	
Catalase	STRONG DOS	NO <sub>3</sub> reduced		POS	
PLATES	48 h 3/9 7 day	Gas from NO <sub>3</sub>	NeG	POG	
Odor	BLPACK ?	$NO_2$ reduced Gas from $NO_2$	805	<u>pog</u>	
Pigment on swab	APRICOT-YELLOW	Gas Holli NO <sub>2</sub>	105	102	
Pigment on BAP	GREY , CALES UP	OF Fructose	YeL	Yec	
Morphology on BAP		OF Dextrose	Yel Blue	BLUP	
Beta hemolysis	NCG Appendi	OF Lactose	GRN	Yel	
	POS POS	OF Mannitol	GRN	Yel	
Growth on Mac		OF Xylose	BLUE	Yel	
DNase hydrolysis	NEG NEG	OF Sucrose	Brae	Brue	
Starch hydrolysis	Pos !! pog	Arginine	Nea	Mea	
Lecithinase	NEG NEG-	Lysine Ornithine			
Lipase	P07 109 (ZONE	Base Control			
Rapid PYR	Nei				
Rapid LAP	POS	Acetamide Esculin	New	Nec- Nec	
Rapid ESC	Neb	Gelatin	New	Neb	
Sensitivity to:	0	Indole		Nele	
Penicillin (10 U)	<u> </u>	Malonate PAD	Ne6 PDS	POS	
Vancomycin (30 ug)	A ( A	Urea Mar 2 h	1011	POS SLANT & BU	TT
Colistin (10 mcg)	<u>S-11</u> <u>S</u>	6.5% NaCL	New	POS!	
Polymyxin B (300 U	) 5-13	10% Lactose ONPG	NEG	AMBER	
		Growth 42 <sup>o</sup>	POS	POS	

Figure 292: Pseudomonas stutzeri isolate 6-of-23.

Date Inoculated:		~ /				-
Final Identification:	14	seedo	MONAS	stutzeri	4/8/11	A.S.
Comments: Y	ellow,	dry, w	RINKled	on Choc	Strach Eg	9

Gram Morph. Gram Test Motility Wet Prep Motility Deep	2-DAY New ? VERY j. Hery NEW NEW	<u>Tubes</u> KIA H <sub>2</sub> S Pseudo P	4/8 9 DAY 9 48 h 7 day E/NC F/K New New New New
Oxidase	POS	Pseudo F	Neb Neb
Catalase PLATES Odor	<u>Stronko Pos</u> <u>48 h 7 day</u> CABDAGE	$NO_3$ reduced Gas from $NO_3$ $NO_2$ reduced Gas from $NO_2$	Nec- Pos Pos Pos Pos
Pigment on swab Pigment on BAP Morphology on BAP Beta hemolysis	<u>ORANGE</u> YeL SPREABY NEG	OF Fructose OF Dextrose OF Lactose OF Maltose	Yel/GRN Yel/GAN Yel Yel Buel Buel Blue Yel/Gen
Growth on Mac DNase hydrolysis	POS POS NeG NeG POS !! Pos (4+)	OF Mannitol OF Xylose OF Sucrose	Yel Yalban Yel Yel Brue Blue
Starch hydrolysis Lecithinase Lipase Rapid PYR	<u>New</u> New <u>New</u> Pos <u>New</u>	Arginine Lysine Ornithine Base Control	Neb Neb
Rapid LAP Rapid ESC	POGNels	Acetamide Esculin Gelatin	NEG NEG NEG NEG
<u>Sensitivity to:</u> Penicillin (10 U) Vancomycin (30 ug) Colistin (10 mcg) Polymyxin B (300 U)	R R R R 3-14 9 S-16 5	Indole Malonate PAD Urea <u>Me</u> <sup>2</sup> 2 h 6.5% NaCL 10% Lactose ONPG Growth 42 <sup>0</sup>	New Pos New Pos Pos Pos Pos New Pos Pos Pos New New New New New New New New New New

Figure 293: Pseudomonas stutzeri isolate 7-of-23.

Date Inoculated: 9	-15-11				
Final Identification:	Pseudoment	s State	zerî		
Comments: <u>Se</u>	Not For Sequer	NCING			
Col	NFIRMEd BY 16	SRENA	SERU	ENCYNO	5
			24	9/27/11	12 DAYS
Gram Morph.		Tubes	. <u>48 h</u>	7 day	
Gram Test	24 hr	KIA	KINC	FIR	
Motility Wet Prep	Pes very motilp	$H_2S$	NCC	NEG	
Motility Deep	POS POS	Pseudo P	NeG-	Nea	
Oxidase	POS	Pseudo F	NeG	New	
Catalase	STRONG Pag	NO <sub>3</sub> reduced		POS	
PLATES	<u>48 h</u> <u>7 day</u>	Gas from NO <sub>3</sub>	NC6-	POS	
Odor	New Stalles	NO <sub>2</sub> reduced Gas from NO <sub>2</sub>	Pos	pes	
Pigment on swab	flesh			D: d	
Pigment on BAP	6Rey	OF Fructose OF Dextrose	BLUR	Bial GREEN H	_
Morphology on BAP	SPREAD-/	OF Lactose		Bue	
Beta hemolysis	NEG	OF Maltose	,	BLUC	
Growth on Mac	Whileteol GROWTH	OF Mannitol OF Xylose	GRN	BLUE YEL	
DNase hydrolysis	NEG NEG	OF Sucrose	Bue	BLUE	
Starch hydrolysis	NºCE NºCE	Angining	1. 26	Neb-	LYS REPEAT 9/27
Lecithinase	NEG NEG	Arginine Lysine	Nel	POS	POS 10/7
Lipase	NEG POS	Ornithine		Nel	
Rapid PYR	NEG	Base Control	U.	Nel	
Rapid LAP	POS	Acetamide	NeG	Nea-	
Rapid ESC	NEG	Esculin	Nel	New	
Sensitivity to:		Gelatin Indole		NEG	
Penicillin (10 U)	R R	Malonate	NeG	POS!	
Vancomycin (30 ug)	R R	₩PAD Urea <i>Ne</i> 62 h	POS	man	
Colistin (10 mcg)	5-12 5	6.5% NaCL	Ne6- Pps	POS	
Polymyxin B (300 U)	5-13 5	10% Lactose	Ne6-	Nea	
		ONPG Growth 42 <sup>0</sup>	Nel	POS	

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 294: Pseudomonas stutzeri isolate 8-of-23.

Date Inoculated: $8-15-12$		<u> </u>
Final Identification:	s stu	tzeri P.S. 8/22/12-
Comments: Yellaw DRY ON STARCH S	+ EGG Yolk	E@ 3 DAYS 8/22/12
		8/18 3DATS 8/22
Gram Morph.	Tubes	<u>48 h 7 day</u>
Gram Test 3 DAYS	KIA	ENC KIK
Motility Wet Prep Nele-	$H_2S$	Neb Neb
Motility Deep POS POS	Pseudo P	NEG NECE > Yellow
Oxidase Pos	Pseudo F	WEG NEG WERNELED
Catalase STRANG DOS	NO <sub>3</sub> reduced	POS
$\frac{65}{15} \frac{7 \text{ day}}{7 \text{ day}}$	Gas from NO <sub>3</sub>	Pos Pos
Odor Nowe	NO <sub>2</sub> reduced	ROS KG RABBUR POS
Pigment on swab ORANGE	Gas from NO <sub>2</sub>	16 Bugg12 105
Pigment on BAP Light Yellow	OF Fructose	Yel Yel
Morphology on BAP DRY WRINKLED ADHERENT	OF Dextrose OF Lactose	Yel Yel Black Black
Beta hemolysis NeG	OF Lactose OF Maltose	<u>BLOC BLOC</u> Vel Yel
Growth on Mac Po S Po S	OF Mannitol	YeL TeL
	OF Xylose OF Sucrose	<u>Yel</u> <u>Yel</u>
No / O C	OF Sucrose	BLUE BLUE
	Arginine	Nela Nela
	Lysine ) Ornithine	
	Base Control	
Rapid PYR <u>Ne6</u>		PORTACE ATTIOR
Rapid LAP <u>+05</u>	Acetamide Esculin	New New Repest Ace. AST. DR
Rapid ESC <u>Nels</u>	Gelatin	New New
Sensitivity to:	Indole	NEG
Penicillin (10 U) $\underline{k}$	Malonate PAD	POS POS
Vancomycin (30 ug) $\underline{\mathcal{R}}$	FAD Urea <u>№6</u> 2 h	POS-SLANT POS
Colistin (10 mcg) $\underline{\mathcal{G}} - \underline{\mathcal{I}} \cdot \underline{\mathcal{C}} = \underline{\mathcal{S}}$	6.5% NaCL	POS POS
Polymyxin B (300 U) $3 - 14$ 5	10% Lactose ONPG	Nela Nela
	Growth 42 <sup>0</sup>	DOS ROS

Figure 295: Pseudomonas stutzeri isolate 9-of-23.

# 30.14 Pseudomonas stutzeri (Vb-3)

Over the course of ASHEX clinical-isolate collection, six individual isolates of Pseudomonas stutzeri (Vb-3) were analyzed. Zero of the six recorded results are pictured in this subsection.

Test	+	_	Raw%	W95%	Test	+	_	Raw%	W95%
Motility	6	0	100.00	80.48	H <sub>2</sub> S	0	6	0.00	19.52
Oxidase	6	0	100.00	80.48	Pseudo P	0	6	0.00	19.52
Catalase	6	0	100.00	80.48	Pseudo F	0	6	0.00	19.52
Yellow Pigment	2	4	33.33	39.84	NO <sub>3</sub> Reduced	6	0	100.00	80.48
Pink Pigment	1	5	16.67	29.68	Gas from NO <sub>3</sub>	1	1	50.00	50.00
Beta Hemolysis	0	2	0.00	32.88	NO <sub>2</sub> Reduced	4	2	66.67	60.16
Growth on Mac	6	0	100.00	80.48	Gas from $NO_2$	1	1	50.00	50.00
Dnase	0	6	0.00	19.52	OF Fructose	6	0	100.00	80.48
Starch	6	0	100.00	80.48	OF Dextrose	6	0	100.00	80.48
Lecithinase	0	3	0.00	28.08	OF Lactose	0	6	0.00	19.52
Lipase	3	0	100.00	71.92	OF Maltose	6	0	100.00	80.48
PYR	0	0	50.00	50.00	OF Mannitol	4	2	66.67	60.16
LAP	0	0	50.00	50.00	OF Xylose	3	3	50.00	50.00
ESC Spot Test	0	0	50.00	50.00	OF Sucrose	0	2	0.00	32.88
Penicillin (10U)	0	6	0.00	19.52	Arginine	6	0	100.00	80.48
Vancomycin $(30\mu g)$	0	6	0.00	19.52	Lysine	0	6	0.00	19.52
Colistin $(10\mu g)$	6	0	100.00	80.48	Ornithine	0	6	0.00	19.52
Polymyxin B (300U)	3	0	100.00	71.92	Acetamide	0	6	0.00	19.52
					Esculin	0	6	0.00	19.52
					Gelatin	0	6	0.00	19.52
					Indole	0	6	0.00	19.52
					Malonate	4	0	100.00	75.50
					PAD	0	6	0.00	19.52
					Urea 2 hrs.	0	6	0.00	19.52
					Urea 48 hrs.	5	1	83.33	70.32
					6.5% NaCl	6	0	100.00	80.48
					10% Lactose	0	6	0.00	19.52
					ONPG	1	3	25.00	37.25
					Growth 42°C	5	1	83.33	70.32

Table 89: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as  $n_+/(n_+ + n_-)$ , where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which shifts raw percentages towards 50% with a strength dependent on the total number of test occurrences. The four antibiotic tests at the bottom of Column 1 are sensitivity tests where a positive result indicates sensitivity to the drug.

# 31 GENUS PSYCHROBACTER31.1 Psychrobacter faecalis

Over the course of ASHEX clinical-isolate collection, one individual isolate of Psychrobacter faecalis was analyzed. The associated biochemical result form is pictured in this subsection.

Test	+	_	Raw%	W95%	Test	+	-	Raw%	W95%
Motility	0	1	0.00	39.67	H <sub>2</sub> S	0	1	0.00	39.67
Oxidase	1	0	100.00	60.33	Pseudo P	0	1	0.00	39.67
Catalase	1	0	100.00	60.33	Pseudo F	0	1	0.00	39.67
Yellow Pigment	0	1	0.00	39.67	NO <sub>3</sub> Reduced	1	0	100.00	60.33
Pink Pigment	0	1	0.00	39.67	Gas from $NO_3$	0	1	0.00	39.67
Beta Hemolysis	0	1	0.00	39.67	NO <sub>2</sub> Reduced	0	1	0.00	39.67
Growth on Mac	1	0	100.00	60.33	Gas from $NO_2$	0	1	0.00	39.67
Dnase	0	1	0.00	39.67	OF Fructose	0	1	0.00	39.67
Starch	0	1	0.00	39.67	OF Dextrose	1	0	100.00	60.33
Lecithinase	0	1	0.00	39.67	OF Lactose	0	1	0.00	39.67
Lipase	0	1	0.00	39.67	OF Maltose	0	1	0.00	39.67
PYR	0	1	0.00	39.67	OF Mannitol	0	1	0.00	39.67
LAP	1	0	100.00	60.33	OF Xylose	1	0	100.00	60.33
ESC Spot Test	0	1	0.00	39.67	OF Sucrose	0	1	0.00	39.67
Penicillin (10U)	0	1	0.00	39.67	Arginine	0	1	0.00	39.67
Vancomycin $(30\mu g)$	1	0	100.00	60.33	Lysine	0	1	0.00	39.67
Colistin $(10\mu g)$	1	0	100.00	60.33	Ornithine	0	1	0.00	39.67
Polymyxin B (300U)	1	0	100.00	60.33	Acetamide	0	1	0.00	39.67
					Esculin	0	1	0.00	39.67
					Gelatin	0	1	0.00	39.67
					Indole	0	1	0.00	39.67
					Malonate	1	0	100.00	60.33
					PAD	0	1	0.00	39.67
					Urea 2 hrs.	0	1	0.00	39.67
					Urea 48 hrs.	0	1	0.00	39.67
					6.5% NaCl	1	0	100.00	60.33
					10% Lactose	0	1	0.00	39.67
					ONPG	0	1	0.00	39.67
					Growth 42°C	0	1	0.00	39.67

Table 90: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as  $n_+/(n_+ + n_-)$ , where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which shifts raw percentages towards 50% with a strength dependent on the total number of test occurrences. The four antibiotic tests at the bottom of Column 1 are sensitivity tests where a positive result indicates sensitivity to the drug.

Date Inoculated: $\int \frac{2}{j^2/j_6}$		Fa	tecalis	put moiris
Final Identification:	chiec bac	ter in	mob.	Lic
Comments: Maldi: no reliable 10 105 Squareix: Psychrobacter facereis/P. pulmonis				
		0	,	
A.S. 2023	DX points to	P. faecal	is Open	grade as ton
Gram Morph.		Tubes	72- 48 h	2016-36 7 day
Gram Test		KIA	KINC	KK
Motility Wet Prep		H <sub>2</sub> S	N	<i>N</i>
Motility Deep New 700	Neg v	Pseudo P	N	Nec
Oxidase Pos	0	Pseudo F	N	Nacr
Catalase Pos		- NO <sub>3</sub> reduced	$\times$	Rear efferting POS
PLATES 748 h	7 day	Gas from NO <sub>3</sub>	tiny public	- truy bebble
Odor Slizer	slight	$NO_2$ reduced Gas from $NO_2$	N	Rod-Neg- Neg
Pigment on swab	buff		·	28dau
Pigment on BAP white gray	-uh-gray	OF Fructose OF Dextrose	Gr-N	Gr NE Veryweek D Gr
Morphology on BAP Snrvd vaied	Maisedanter .	OF Lactose	N	Be-Gr Ng Be
Beta hemolysis <u>Neg</u>	_Ner_	OF Maltose OF Mannitol	N	Be to Not Be
Growth on Mac <u>Pos</u>	Pas - VIOLET COLONIE		N	Gr Ney Very weat Digo
DNase hydrolysis <u>Neg</u>	Nog BLUE	OF Sucrose	I. N	Be-G- Nbg Be
Starch hydrolysis Neg.	Neg	Arginine	N	Neg- V Perof XYLOSE
Lecithinase Neg-	Neg	Lysine	N	Neg breen others
Lipase Neg	Neg	Ornithine Base Control	N	Neg DARE BLUE
Rapid PYR <u>New</u>		Dase control		
Rapid LAP <u>Pos</u>		Acetamide	Nag	Neg
Rapid ESC <u>Neg</u>		Esculin Gelatin	Ner	Neg-
Sensitivity to:		Indole	X	Nag
Penicillin (10 U) $\boxed{\frac{UP}{2}}$	LOR -	Malonate PAD	POS	- ROS V
Vancomycin (30 ug) $/2 5$	125 1	Urea $N_2$ h	Neg-	Nos
Colistin (10 mcg) $115$	_115	6.5% NaCL	POS	Ras
Polymyxin B (300 U) _/& S	125 -	10% Lactose ONPG	Yeltop	yel top
		Growth 42°	Neg	Neg
			g	IJ

Note: All biochemical tests (except where noted) are incubated at 30°C and read after 48 hrs. incubation and again at 7 days.

Figure 296: Psychrobacter faecalis isolate 1-of-1.

# 31.2 Psychrobacter immobilis (asaccharolytic)

Over the course of ASHEX clinical-isolate collection, five individual isolates of Psychrobacter immobilis (asaccharolytic) were analyzed. Zero of the five recorded results are pictured in this subsection.

Test	+	_	Raw%	W95%	Test	+	_	Raw%	W95%
Motility	0	5	0.00	21.72	H <sub>2</sub> S	0	5	0.00	21.72
Oxidase	5	0	100.00	78.28	Pseudo P	0	5	0.00	21.72
Catalase	5	0	100.00	78.28	Pseudo F	0	5	0.00	21.72
Yellow Pigment	0	5	0.00	21.72	NO <sub>3</sub> Reduced	3	2	60.00	55.66
Pink Pigment	0	5	0.00	21.72	Gas from NO <sub>3</sub>	0	5	0.00	21.72
Beta Hemolysis	1	4	20.00	33.03	NO <sub>2</sub> Reduced	0	5	0.00	21.72
Growth on Mac	4	1	80.00	66.97	Gas from $NO_2$	0	5	0.00	21.72
Dnase	0	5	0.00	21.72	OF Fructose	0	5	0.00	21.72
Starch	0	5	0.00	21.72	OF Dextrose	0	5	0.00	21.72
Lecithinase	0	5	0.00	21.72	OF Lactose	0	5	0.00	21.72
Lipase	2	3	40.00	44.34	OF Maltose	0	5	0.00	21.72
PYR	0	5	0.00	21.72	OF Mannitol	0	5	0.00	21.72
LAP	4	1	80.00	66.97	OF Xylose	0	5	0.00	21.72
ESC Spot Test	0	5	0.00	21.72	OF Sucrose	0	5	0.00	21.72
Penicillin (10U)	4	1	80.00	66.97	Arginine	0	5	0.00	21.72
Vancomycin $(30\mu g)$	4	1	80.00	66.97	Lysine	0	5	0.00	21.72
Colistin $(10\mu g)$	5	0	100.00	78.28	Ornithine	0	5	0.00	21.72
Polymyxin B (300U)	5	0	100.00	78.28	Acetamide	0	5	0.00	21.72
					Esculin	0	5	0.00	21.72
					Gelatin	0	5	0.00	21.72
					Indole	0	5	0.00	21.72
					Malonate	0	5	0.00	21.72
					PAD	4	1	80.00	66.97
					Urea 2 hrs.	0	5	0.00	21.72
					Urea 48 hrs.	0	5	0.00	21.72
					6.5% NaCl	4	1	80.00	66.97
					10% Lactose	1	4	20.00	33.03
					ONPG	0	5	0.00	21.72
					Growth 42°C	1	4	20.00	33.03

Table 91: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as  $n_+/(n_+ + n_-)$ , where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which shifts raw percentages towards 50% with a strength dependent on the total number of test occurrences. The four antibiotic tests at the bottom of Column 1 are sensitivity tests where a positive result indicates sensitivity to the drug.

# 31.3 Psychrobacter immobilis (saccharolytic)

Over the course of ASHEX clinical-isolate collection, five individual isolates of Psychrobacter immobilis (saccharolytic) were analyzed. Zero of the five recorded results are pictured in this subsection.

Test	+	_	Raw%	W95%	Test	+	—	Raw%	W95%
Motility	0	5	0.00	21.72	$H_2S$	0	5	0.00	21.72
Oxidase	5	0	100.00	78.28	Pseudo P	0	5	0.00	21.72
Catalase	5	0	100.00	78.28	Pseudo F	0	5	0.00	21.72
Yellow Pigment	0	5	0.00	21.72	NO <sub>3</sub> Reduced	3	2	60.00	55.66
Pink Pigment	0	5	0.00	21.72	Gas from $NO_3$	0	5	0.00	21.72
Beta Hemolysis	1	4	20.00	33.03	NO <sub>2</sub> Reduced	0	5	0.00	21.72
Growth on Mac	5	0	100.00	78.28	Gas from $NO_2$	0	5	0.00	21.72
Dnase	0	5	0.00	21.72	OF Fructose	0	5	0.00	21.72
Starch	0	5	0.00	21.72	OF Dextrose	5	0	100.00	78.28
Lecithinase	0	5	0.00	21.72	OF Lactose	0	5	0.00	21.72
Lipase	3	2	60.00	55.66	OF Maltose	0	5	0.00	21.72
PYR	0	5	0.00	21.72	OF Mannitol	0	5	0.00	21.72
LAP	5	0	100.00	78.28	OF Xylose	5	0	100.00	78.28
ESC Spot Test	0	5	0.00	21.72	OF Sucrose	0	5	0.00	21.72
Penicillin (10U)	5	0	100.00	78.28	Arginine	0	5	0.00	21.72
Vancomycin $(30\mu g)$	5	0	100.00	78.28	Lysine	0	5	0.00	21.72
Colistin $(10\mu g)$	5	0	100.00	78.28	Ornithine	0	5	0.00	21.72
Polymyxin B (300U)	5	0	100.00	78.28	Acetamide	0	5	0.00	21.72
					Esculin	0	5	0.00	21.72
					Gelatin	0	5	0.00	21.72
					Indole	0	5	0.00	21.72
					Malonate	0	5	0.00	21.72
					PAD	3	2	60.00	55.66
					Urea 2 hrs.	0	5	0.00	21.72
					Urea 48 hrs.	0	5	0.00	21.72
					6.5% NaCl	5	0	100.00	78.28
					10% Lactose	3	2	60.00	55.66
					ONPG	0	5	0.00	21.72
					Growth $42^{\circ}C$	0	5	0.00	21.72

Table 92: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as  $n_+/(n_+ + n_-)$ , where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which shifts raw percentages towards 50% with a strength dependent on the total number of test occurrences. The four antibiotic tests at the bottom of Column 1 are sensitivity tests where a positive result indicates sensitivity to the drug.

# 31.4 Psychrobacter phenylpyruvicus

Over the course of ASHEX clinical-isolate collection, five individual isolates of Psychrobacter phenylpyruvicus were analyzed. One of the five recorded results is pictured in this subsection.

Test	+	_	Raw%	W95%	Test	+	_	Raw%	W95%
Motility	0	5	0.00	21.72	H <sub>2</sub> S	0	5	0.00	21.72
Oxidase	5	0	100.00	78.28	Pseudo P	0	5	0.00	21.72
Catalase	5	0	100.00	78.28	Pseudo F	0	5	0.00	21.72
Yellow Pigment	0	5	0.00	21.72	NO <sub>3</sub> Reduced	2	3	40.00	44.34
Pink Pigment	0	5	0.00	21.72	Gas from $NO_3$	0	2	0.00	32.88
Beta Hemolysis	0	2	0.00	32.88	$NO_2$ Reduced	1	4	20.00	33.03
Growth on Mac	4	1	80.00	66.97	Gas from $NO_2$	0	2	0.00	32.88
Dnase	0	5	0.00	21.72	OF Fructose	0	5	0.00	21.72
Starch	0	5	0.00	21.72	OF Dextrose	0	5	0.00	21.72
Lecithinase	0	3	0.00	28.08	OF Lactose	0	5	0.00	21.72
Lipase	1	2	33.33	42.69	OF Maltose	0	5	0.00	21.72
PYR	0	2	0.00	32.88	OF Mannitol	0	5	0.00	21.72
LAP	2	0	100.00	67.12	OF Xylose	0	5	0.00	21.72
ESC Spot Test	0	2	0.00	32.88	OF Sucrose	0	2	0.00	32.88
Penicillin (10U)	3	2	60.00	55.66	Arginine	0	5	0.00	21.72
Vancomycin $(30\mu g)$	3	2	60.00	55.66	Lysine	0	5	0.00	21.72
Colistin $(10\mu g)$	3	2	60.00	55.66	Ornithine	0	5	0.00	21.72
Polymyxin B (300U)	2	0	100.00	67.12	Acetamide	0	5	0.00	21.72
					Esculin	0	5	0.00	21.72
					Gelatin	0	5	0.00	21.72
					Indole	0	5	0.00	21.72
					Malonate	0	5	0.00	21.72
					PAD	5	0	100.00	78.28
					Urea 2 hrs.	2	3	40.00	44.34
					Urea 48 hrs.	5	0	100.00	78.28
					6.5% NaCl	2	3	40.00	44.34
					10% Lactose	0	5	0.00	21.72
					ONPG	0	5	0.00	21.72
					Growth 42°C	1	4	20.00	33.03

Table 93: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as  $n_+/(n_+ + n_-)$ , where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which shifts raw percentages towards 50% with a strength dependent on the total number of test occurrences. The four antibiotic tests at the bottom of Column 1 are sensitivity tests where a positive result indicates sensitivity to the drug.

10 Blood collected 3-8-10 Psycrobacter phenylpyrux ICA Date Inoculated: 5-12-10 #19 Final Identification: SERPINTINE RODS SEEN ON WET PREP Comments: COCCÍ AND Gram Morph. Tubes LONG SEPENTINE RODS KIA K Gram Test  $H_2S$ Ne6-Motility Wet Prep Nea Nea Pseudo P Motility Deep Nela NeG Pseudo F New Nec Pos Oxidase STRONG AOS NeG Catalase - NO3 reduced - Gas from NO<sub>3</sub> TINY Beble PLATES <u>48 h</u> 7 day - NO2 reduced NONE Odor Gas from NO<sub>2</sub> New NPL BUFF Pigment on swab BLUE/GAN 6RN **OF** Fructose CLEAR - SLIGHT KLAPPA here Pigment on BAP **OF** Dextrose TRANGLUCENT Morphology on BAP **OF** Lactose NeG OF Maltose Beta hemolysis **OF** Mannitol TINY distint colonies Growth on Mac NG OF Xylose NEG-NO 6 ROWT 70 OF Sucrose DNase hydrolysis NEG - Pood a low it Starch hydrolysis Nel-Arginine 7 DAYS Nea 1e6 Lecithinase Lysine New Neb Ornithine NEG Lipase Base Control Nela Rapid PYR Pos Rapid LAP Acetamide NPL Esculin NEG Rapid ESC Gelatin Sensitivity to: Indole 22 Penicillin (10 U) Malonate PAD Vancomycin (30 ug) POS SLANT & BUTT SLANTY But 16 Colistin (10 mcg) 6.5% NaCL Nel 10% Lactose Polymyxin B (300 U) 5 ONPG Growth 42<sup>0</sup> New

Note: All biochemical tests (except where noted) are incubated at 30°C and read after 48 hrs. incubation and again at 7 days.

Figure 297: Psychrobacter phenylpyruvicus isolate 1-of-5.

#### 31.5 Psychrobacter sanguinis

Over the course of ASHEX clinical-isolate collection, one individual isolate of Psychrobacter sanguinis was analyzed. The associated biochemical result form is pictured in this subsection.

Test	+	_	Raw%	<b>W95</b> %	Test	+	_	Raw%	W95%
Motility	0	1	0.00	39.67	H <sub>2</sub> S	0	1	0.00	39.67
Oxidase	1	0	100.00	60.33	Pseudo P	0	1	0.00	39.67
Catalase	1	0	100.00	60.33	Pseudo F	0	1	0.00	39.67
Yellow Pigment	0	1	0.00	39.67	NO <sub>3</sub> Reduced	1	0	100.00	60.33
Pink Pigment	0	1	0.00	39.67	Gas from NO <sub>3</sub>	0	1	0.00	39.67
Beta Hemolysis	0	1	0.00	39.67	NO <sub>2</sub> Reduced	0	1	0.00	39.67
Growth on Mac	0	1	0.00	39.67	Gas from $NO_2$	0	1	0.00	39.67
Dnase	0	1	0.00	39.67	OF Fructose	0	1	0.00	39.67
Starch	0	1	0.00	39.67	OF Dextrose	0	1	0.00	39.67
Lecithinase	0	1	0.00	39.67	OF Lactose	0	1	0.00	39.67
Lipase	0	1	0.00	39.67	OF Maltose	0	1	0.00	39.67
PYR	0	1	0.00	39.67	OF Mannitol	0	1	0.00	39.67
LAP	1	0	100.00	60.33	OF Xylose	0	1	0.00	39.67
ESC Spot Test	0	1	0.00	39.67	OF Sucrose	0	1	0.00	39.67
Penicillin (10U)	1	0	100.00	60.33	Arginine	0	1	0.00	39.67
Vancomycin $(30\mu g)$	1	0	100.00	60.33	Lysine	0	1	0.00	39.67
Colistin $(10\mu g)$	1	0	100.00	60.33	Ornithine	0	1	0.00	39.67
Polymyxin B (300U)	1	0	100.00	60.33	Acetamide	0	1	0.00	39.67
					Esculin	0	1	0.00	39.67
					Gelatin	0	1	0.00	39.67
					Indole	0	1	0.00	39.67
					Malonate	0	1	0.00	39.67
					PAD	0	1	0.00	39.67
					Urea 2 hrs.	1	0	100.00	60.33
					Urea 48 hrs.	1	0	100.00	60.33
					6.5% NaCl	1	0	100.00	60.33
					10% Lactose	0	1	0.00	39.67
					ONPG	0	1	0.00	39.67
					Growth 42°C	0	1	0.00	39.67

Table 94: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as  $n_+/(n_+ + n_-)$ , where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which shifts raw percentages towards 50% with a strength dependent on the total number of test occurrences. The four antibiotic tests at the bottom of Column 1 are sensitivity tests where a positive result indicates sensitivity to the drug.

Final Identification:	
Comments: Lab Sequencing result : P:	sychrobacter sanguinis
Maldi no reliable 10 after	repeated attempts
Gram Morph. Gram Test Motility Wet Prep Motility Deep Oxidase Catalase Slower Morph. Motility Deep Neg Neg Neg Neg Neg Neg Neg Neg	Tubes $7L$ KIA $H/L$ $7 \text{ day}$ H2S $N$ $K/L$ Pseudo P $N$ Pseudo F $N$ No3 reduced $X$ $L$ $L$
PLATES48 h7 dayOdorNegNeg	Gas from NO3 $N$ $Neq$ NO2 reduced $X$ $\underline{Pad} - Neq$ Gas from NO2 $N$ $Neq$
Pigment on swab <u>clear</u> <u>straw</u> Pigment on BAP <u>clear</u> <u>clear</u> Morphology on BAP <u>wet, 5m Sprace</u> <u>wet, 5ipread</u> Beta hemolysis <u>Nag</u> <u>Neg</u> Growth on Mac <u>ppt clear</u> <u>5m clear</u> DNase hydrolysis <u>Nag</u> <u>Neg</u>	OF Fructose     New       OF Dextrose     New       OF Lactose     New       OF Maltose     New       OF Mannitol     New       OF Xylose     New       OF Sucrose     New
Starch hydrolysis yery fairfeanth Nig Lecithinase) fairt wind the Iday Weg Lipase (while wind the Neg Rapid PYR Neg	Arginine     N     Netron       Lysine     Image: Netron     Netron       Ornithine     Image: Netron     Netron       Base Control     Image: Netron     Netron
Rapid LAP Rapid ESC failet 9, with Sensitivity to: failet 9, with Penicillin (10 U) nitsure 54 50 Vancomycin (30 ug) 145 14 50 Vancomycin (30 ug) 145 14 50 Colistin (10 mcg) 165 16 50 Colistin (10 mcg) 165 16 50 prof Polymyxin B (300 U) 175 2550 #Clear Zones ca Tdayp	Acetamide $N$ $NegrEsculinNNegrGelatinNegrIndoleNMalonateNPADNegrUreaPos6.5\% NaCLNegr10% LactoseNONPGNNegrGrowth 42^0N$

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 298: Psychrobacter sanguinis isolate 1-of-1.

# 32 GENUS RALSTONIA

# 32.1 Ralstonia insidiosa

Over the course of ASHEX clinical-isolate collection, one individual isolate of Ralstonia insidiosa was analyzed. The associated biochemical result form is presented here.

Test	+	_	Raw%	<b>W95</b> %	Test	+	-	Raw%	W95%
Motility	1	0	100.00	60.33	$H_2S$	0	1	0.00	39.67
Oxidase	1	0	100.00	60.33	Pseudo P	0	1	0.00	39.67
Catalase	0	1	0.00	39.67	Pseudo F	0	1	0.00	39.67
Yellow Pigment	1	0	100.00	60.33	NO <sub>3</sub> Reduced	0	1	0.00	39.67
Pink Pigment	0	1	0.00	39.67	Gas from $NO_3$	0	1	0.00	39.67
Beta Hemolysis	0	1	0.00	39.67	$NO_2$ Reduced	0	1	0.00	39.67
Growth on Mac	0	1	0.00	39.67	Gas from $NO_2$	0	1	0.00	39.67
Dnase	0	1	0.00	39.67	OF Fructose	0	1	0.00	39.67
Starch	0	1	0.00	39.67	OF Dextrose	1	0	100.00	60.33
Lecithinase	0	1	0.00	39.67	OF Lactose	1	0	100.00	60.33
Lipase	1	0	100.00	60.33	OF Maltose	1	0	100.00	60.33
PYR	0	1	0.00	39.67	OF Mannitol	0	1	0.00	39.67
LAP	1	0	100.00	60.33	OF Xylose	1	0	100.00	60.33
ESC Spot Test	0	1	0.00	39.67	OF Sucrose	0	1	0.00	39.67
Penicillin (10U)	0	1	0.00	39.67	Arginine	0	1	0.00	39.67
Vancomycin $(30\mu g)$	0	1	0.00	39.67	Lysine	0	1	0.00	39.67
Colistin $(10\mu g)$	0	1	0.00	39.67	Ornithine	0	1	0.00	39.67
Polymyxin B (300U)	0	1	0.00	39.67	Acetamide	0	1	0.00	39.67
					Esculin	0	1	0.00	39.67
					Gelatin	1	0	100.00	60.33
					Indole	0	1	0.00	39.67
					Malonate	1	0	100.00	60.33
					PAD	0	1	0.00	39.67
					Urea 2 hrs.	0	1	0.00	39.67
					Urea 48 hrs.	1	0	100.00	60.33
					6.5% NaCl	0	1	0.00	39.67
					10% Lactose	1	0	100.00	60.33
					ONPG	0	1	0.00	39.67
					Growth $42^{\circ}C$	0	1	0.00	39.67

Table 95: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as  $n_+/(n_+ + n_-)$ , where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which shifts raw percentages towards 50% with a strength dependent on the total number of test occurrences. The four antibiotic tests at the bottom of Column 1 are sensitivity tests where a positive result indicates sensitivity to the drug. Date Inoculated:

Comments:

F 10/0/15 RALSTONIA INSIDIOSA P.S. 10/30/15 Final Identification: Maedi: Ralstonia insidiosa 1.844

							10/30/15
	Gram Morph.			Tubes	72 48 h	7 day	. , .
	Gram Test			KIA	KINC	KK	
	Motility Wet Prep			$-H_2S$	<u>N</u>	Nez_V	
+	Motility Deep	Pos V	1	- Pseudo P	N	Neg -	
t	Oxidase	Pos		_ Pseudo F	N	Neg-	
_	Catalase	for Ne	§	- NO <sub>3</sub> reduced	19 X	Red up tor Zn-Neg	
	PLATES 72	<u>48 h</u>	7 day	<ul> <li>Gas from NO<sub>3</sub></li> <li>NO<sub>2</sub> reduced</li> </ul>	* N	Neg	
	Odor	slight	POS	- Gas from NO <sub>2</sub>	\$ N	Ney	
	Pigment on swab	et.gold	gold		11 -	Gr New GRE	ON V
	Pigment on BAP	yel-gray	yel gay	<ul> <li>OF Fructose</li> <li>OF Dextrose</li> </ul>	-N· +	UP POS	r
+	Morphology on BAP	HANDI HEA	round, wet	+ OF Lactose	t	ye pos	
-	Beta hemolysis	N	Neg	<ul> <li>+ OF Maltose</li> <li>– OF Mannitol</li> </ul>	PL-	De Ner	~
-	Growth on Mac	Mibited	nhibited-Neg	+ OF Xylose	N-	ye pos	1
-	DNase hydrolysis	Neg	Neg V	-OF Sucrose	Be -	Be Ney	V
7	Starch hydrolysis	Neg	Neg /	- Arginine	N	Neg	
	Lecithinase	Neg	Neg V	- Lysine		Neg	
+	-Lipase	Neg	Pas V	<ul> <li>Ornithine</li> <li>Base Control</li> </ul>		Neg	
	Rapid PYR	Neg					+ 28 DAYS
+	Rapid LAP	POS		<ul> <li>Acetamide</li> <li>Esculin</li> </ul>	N	Neg W	NER IN PB
_	Rapid ESC	Neg		Gelatin	N	Pos	
	Sensitivity to:			- Indole	$\mathbf{X}$	Neg	
_	Penicillin (10 U)	6R	UR V	+ Malonate - PAD	N (see	promptize) × v	
_	Vancomycin (30 ug)	6P	UP V	$-+$ Urea $\underline{n} \frac{1}{2} h$	POS	PUS	Repeat una
_	Colistin (10 mcg)	LeR_	UR V		set. cloud	1 Neg	2hr Weg
_	Polymyxin B (300 U)	6R	UR V	- ONPG	N	Neg	
				- Growth 42 <sup>0</sup>	Neg	Neg V	
	Note: All biochemica	l tests (exce	pt where note	d) are incubated	at 30°C ar	nd read after 4	8 hrs.
	incubation and again	at 7 days.					
						when	ame result 2° urea called. Neg.
							vig.

Figure 299: Ralstonia insidiosa isolate 1-of-1.

# 32.2 Ralstonia mannitolilytica

Over the course of ASHEX clinical-isolate collection, seven individual isolates of Ralstonia mannitolilytica were analyzed. Three of the seven recorded results are pictured in this subsection.

Test	+	_	Raw%	W95%	Test	+	—	Raw%	W95%
Motility	7	0	100.00	82.28	$H_2S$	0	7	0.00	17.72
Oxidase	7	0	100.00	82.28	Pseudo P	0	7	0.00	17.72
Catalase	1	6	14.29	26.94	Pseudo F	0	7	0.00	17.72
Yellow Pigment	0	7	0.00	17.72	NO <sub>3</sub> Reduced	1	6	14.29	26.94
Pink Pigment	0	7	0.00	17.72	Gas from $NO_3$	0	7	0.00	17.72
Beta Hemolysis	0	7	0.00	17.72	$NO_2$ Reduced	0	7	0.00	17.72
Growth on Mac	5	2	71.43	63.84	Gas from $NO_2$	0	7	0.00	17.72
Dnase	0	7	0.00	17.72	OF Fructose	7	0	100.00	82.28
Starch	1	6	14.29	26.94	OF Dextrose	7	0	100.00	82.28
Lecithinase	0	7	0.00	17.72	OF Lactose	7	0	100.00	82.28
Lipase	3	4	42.86	45.39	OF Maltose	7	0	100.00	82.28
PYR	2	5	28.57	36.16	OF Mannitol	7	0	100.00	82.28
LAP	7	0	100.00	82.28	OF Xylose	7	0	100.00	82.28
ESC Spot Test	0	7	0.00	17.72	OF Sucrose	2	5	28.57	36.16
Penicillin (10U)	0	7	0.00	17.72	Arginine	0	7	0.00	17.72
Vancomycin $(30\mu g)$	0	7	0.00	17.72	Lysine	0	7	0.00	17.72
Colistin $(10\mu g)$	0	7	0.00	17.72	Ornithine	0	7	0.00	17.72
Polymyxin B (300U)	0	7	0.00	17.72	Acetamide	0	7	0.00	17.72
					Esculin	0	7	0.00	17.72
					Gelatin	1	6	14.29	26.94
					Indole	0	7	0.00	17.72
					Malonate	5	2	71.43	63.84
					PAD	1	6	14.29	26.94
					Urea 2 hrs.	0	7	0.00	17.72
					Urea 48 hrs.	7	0	100.00	82.28
					6.5% NaCl	1	6	14.29	26.94
					10% Lactose	6	1	85.71	73.06
					ONPG	0	7	0.00	17.72
					Growth $42^{\circ}C$	7	0	100.00	82.28

Table 96: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as  $n_+/(n_+ + n_-)$ , where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which shifts raw percentages towards 50% with a strength dependent on the total number of test occurrences. The four antibiotic tests at the bottom of Column 1 are sensitivity tests where a positive result indicates sensitivity to the drug.

Date Inoculated:

tion: <u>RALSTONIA MANNITOLYLYTIC (UA-3)</u> P.S. Slight pink on Bendo F Final Identification:

Comments:

Gram Morph. Gram Test Motility Wet Prep	Pos		Tubes KIA ← H₂S	<u>48 h</u> ▲ NG/NC N26-	7/24/05 7 day NC/NC- Weles
+ Motility Deep + Oxidase	POS	P05	<ul> <li>Pseudo P</li> <li>Pseudo F</li> </ul>	NCG NCG	Nela- Nela-
Catalase <u>PLATES</u> Odor	<u>Nec</u> <u>48 h</u> <u>NoN C</u>	<u>- del, pjed</u> <u>7 day</u>	MO <sub>3</sub> reduced Gas from NO <sub>3</sub> NO <sub>2</sub> reduced Gas from NO <sub>2</sub>	NEG-	NEG NEG NEG NEG
Pigment on swab — Pigment on BAP Morphology on BAP — Beta hemolysis — Growth on Mac — DNase hydrolysis	<u>flesh</u> <u>Grey</u> <u>Smaeth</u> <u>Nec</u> <u>GROUTH</u> NEC	PURPLE LT	+ OF Fructose + OF Dextrose + OF Lactose + OF Maltose + OF Mannitol + OF Xylose + OF Sucrose	YeL YeL YeL YeL XeL & L	Vec GRW
<ul> <li>Starch hydrolysis</li> <li>Lecithinase</li> <li>Lipase</li> <li>Rapid PYR</li> </ul>	NEC- NEC- NEC-	<u>New</u> <u>New</u> <u>Pos</u> Werke Pos	- Arginine - Lysine Ornithine Base Control	New New New X	Nec- Nec- POS Not DONE
<ul> <li>Rapid LAP</li> <li>Rapid ESC</li> <li>Sensitivity to:</li> <li>Penicillin (10 U)</li> <li>Vancomycin (30 ug)</li> <li>Colistin (10 mcg)</li> </ul>	Pos NEG R R R R		<ul> <li>Acetamide</li> <li>Esculin</li> <li>Gelatin</li> <li>Indole</li> <li>Malonate</li> <li>PAD</li> <li>Urea _2 h</li> <li>6.5% NaCL</li> <li>10% Lactose</li> </ul>	NEG NEG NEG NEG NEG NEG NEG NEG NEG	NEG NEG NEG NEG NEG NEG ADS SLANT & BUT NEG POS

Note: All biochemical tests (except where noted) are incubated at 30°C and read after 48 hrs. incubation and again at 7 days.

Figure 300: Ralstonia mannitolilytica isolate 1-of-7.

Date Inoculated:	7-22-05				
Final Identification:	RALS FONIT	A MANN, folye	ytica (	(VA-3) P.	5
Comments: <u>Mar</u>	nge yellow on	Starch at 7	days		
Violet col	oud cols on	MAC		7/29	
, Gram Morph. Gram Test	gnrods)	<u>Tubes</u> KIA	7/25 $\frac{48 h}{10}$	$\frac{7 \text{ day}}{K(\Lambda/\zeta)}$	
Motility Wet Prep	NEG(izhr)	$ H_2S$	NEG		
↓ ★Motility Deep ↓ Oxidase	POS SLOW(7)	- Pseudo P - Pseudo F	NEG NEG	NEG NEG	
<ul> <li>Catalase</li> <li><u>PLATES</u> Odor &lt; DIRTY Pigment on Swab</li> <li>Pigment on BAP Morphology on BAP</li> <li>Beta hemolysis</li> <li>Growth on Mac</li> <li>DNase hydrolysis</li> <li>Starch hydrolysis</li> <li>Lecithinase</li> <li>Lipase</li> <li>Rapid PYR</li> </ul>	NeG 48 h 7 day SMELLY Arme SMELLY Arme SMELLY Arme Auflyellino Jame CREY, Shring → NEG NEG NEG POS	+OF Lactose +OF Maltose +OF Mannitol	NEG NEG YE YDOS YEYGRE NEG	<u>Pes</u> Nea NEC NEC NEC Vel yel yel yel yel yel yel yel yel yel y	-
<ul> <li>Rapid LAP?</li> <li>Rapid ESC 7.</li> <li>Sensitivity to:</li> <li>Penicillin (10 U)</li> <li>Vancomycin (30 ug)</li> <li>Colistin (10 mcg)</li> <li>Polymyxin B (300 U</li> </ul>	RES Com R	Acetamide Esculin Gelatin Halonate? PAD Urea _2 by 6.5% NaCL H 10% Lactose ONPG Growth 42 <sup>0</sup>	NEG NEG NEG NEG NEG NEG NEG NEG NEG NEG	NEG NEG NEG POS POS NEG NEG NEG POS	t+butt

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 301: Ralstonia mannitolilytica isolate 2-of-7.

Final Identification:	RALSTONIA	MANNIE TOLI	IsticA	PS	
		///////////////////////////////////////	- man	6/8	12
Comments:				- 1	
M	ALDI RALSTON	A MANNITE	Lilytic	A (99	9%)
			6/8	\$ 6/29	
Gram Morph.		Tubes	<u>48 h</u>	7 day	
Gram Test	48h 24h	KIA $H_2S$	KINC	EIK	
Motility Wet Prep	Nela Nela	П <sub>2</sub> 5	NEO	Nels	Duvis
Motility Deep	Pos Pos	Pseudo P	Nela	Nº6-	> INOCOC
Oxidase	POS	Pseudo F	Nelo	New	AT INTO
Catalase	Ne6 Ne6-24	h NO <sub>3</sub> reduced	Nec		
PLATES	48 h 7 day	Gas from NO <sub>3</sub>	Nea		
Odor	SHINKES_	NO <sub>2</sub> reduced Gas from NO <sub>2</sub>	Nel-		
Pigment on swab	flegh	Gas Irolli NO <sub>2</sub>	NEG		
Pigment on BAP	GREY	+ OF Fructose	GRN/Hel		
Morphology on BAP	Smooth, Smears	↓ OF Dextrose ↓ OF Lactose	Yel	Yel	
Beta hemolysis	NEG	+OF Maltose	Yer	YEL	
Growth on Mac	INDibited	✓ OF Mannitol	GRN/Yel		
DNase hydrolysis	NPG- POOR GROWT	$\mathcal{L}_{OF}^{+ \text{OF Xylose}}$	Yec Blue	Yec Bhile	
Starch hydrolysis	New		-12		
Lecithinase	Nelo	Arginine	Nel	Nela	
Lipase	Nele	Lysine Ornithine			
Rapid PYR	Nelo	Base Control		V	
Rapid LAP	POS	A	NIDI	ALR.	
	102	Acetamide Esculin	NEG-	NEG NEG	
Rapid ESC	NEG	Gelatin	Nelo	1.00	
Sensitivity to:	0 0	Indole	NEG	Doc	
Penicillin (10 U)	K K	Malonate PAD	POS Nelo	POS	
Vancomycin (30 ug)	K K	Urea <u><i>N</i></u> <sup>2</sup> h	POS	POS	
Colistin (10 mcg)	K K	6.5% NaCL	Neb	Neb	
	$\rho$ ((	10% Lactose	POS	POS	
Polymyxin B (300 U)	15	ONPG	NeG	Nel	

Note: All biochemical tests (except where noted) are incubated at 30°C and read after 48 hrs. incubation and again at 7 days.

Figure 302: Ralstonia mannitolilytica isolate 3-of-7.

# 32.3 Ralstonia pickettii (Va-1)

Over the course of ASHEX clinical-isolate collection, 14 individual isolates of Ralstonia pickettii (Va-1) were analyzed. Two of the 14 recorded results are pictured in this subsection.

Test	+	_	Raw%	W95%	Test	+	_	Raw%	W95%
Motility	11	3	78.57	72.42	H <sub>2</sub> S	0	14	0.00	10.77
Oxidase	14	0	100.00	89.23	Pseudo P	0	14	0.00	10.77
Catalase	0	14	0.00	10.77	Pseudo F	0	14	0.00	10.77
Yellow Pigment	2	12	14.29	21.98	NO <sub>3</sub> Reduced	12	2	85.71	78.02
Pink Pigment	0	14	0.00	10.77	Gas from $NO_3$	6	3	66.67	61.68
Beta Hemolysis	0	9	0.00	14.96	NO <sub>2</sub> Reduced	0	14	0.00	10.77
Growth on Mac	8	6	57.14	55.60	Gas from $NO_2$	0	9	0.00	14.96
Dnase	0	14	0.00	10.77	OF Fructose	12	2	85.71	78.02
Starch	5	9	35.71	38.79	OF Dextrose	14	0	100.00	89.23
Lecithinase	0	11	0.00	12.94	OF Lactose	14	0	100.00	89.23
Lipase	7	3	70.00	64.45	OF Maltose	14	0	100.00	89.23
PYR	5	4	55.56	53.89	OF Mannitol	0	14	0.00	10.77
LAP	10	0	100.00	86.12	OF Xylose	14	0	100.00	89.23
ESC Spot Test	1	9	10.00	21.10	OF Sucrose	0	9	0.00	14.96
Penicillin (10U)	3	11	21.43	27.58	Arginine	0	14	0.00	10.77
Vancomycin $(30\mu g)$	0	14	0.00	10.77	Lysine	0	14	0.00	10.77
Colistin $(10\mu g)$	0	14	0.00	10.77	Ornithine	0	14	0.00	10.77
Polymyxin B (300U)	0	8	0.00	16.22	Acetamide	2	12	14.29	21.98
					Esculin	0	14	0.00	10.77
					Gelatin	6	8	42.86	44.40
					Indole	0	14	0.00	10.77
					Malonate	10	4	71.43	66.81
					PAD	1	13	7.14	16.37
					Urea 2 hrs.	0	14	0.00	10.77
					Urea 48 hrs.	14	0	100.00	89.23
					6.5% NaCl	3	11	21.43	27.58
					10% Lactose	11	3	78.57	72.42
					ONPG	0	11	0.00	12.94
					Growth 42°C	1	13	7.14	16.37

Table 97: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as  $n_+/(n_+ + n_-)$ , where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which shifts raw percentages towards 50% with a strength dependent on the total number of test occurrences. The four antibiotic tests at the bottom of Column 1 are sensitivity tests where a positive result indicates sensitivity to the drug. Date Inoculated:

5-2-06

Final Identification:

Comments:

.-

	Gram Morph.			Tubes	<u>48 h</u>	7_day
	Gram Test	24h	48	k KIA	ENC	KINE
	Motility Wet Prep	NEG HED	ROOS NÉ	H <sub>2</sub> S	Nelo	New
+	Motility Deep			peno Pseudo P	Nec-	NEG
+	Oxidase	Pos	POS	Pseudo F	Nela	Neo
-	Catalase	New		+ NO <sub>3</sub> reduced		pos
	PLATES	<u>48 h</u>	7 day	$\begin{array}{c} + & \text{Gas from NO}_3 \\ - & \text{NO}_2 \text{ reduced} \end{array}$	Pos	Dag New
	Odor	NONe		-Gas from NO <sub>2</sub>	Nel	NEG
	Pigment on swab	Flesh			100/	CI DUN R
	Pigment on BAP	GREY		OF Fructose     OF Dextrose	GRN	It. BLUC VEL
	Morphology on BAP	SMEADS		- OF Lactose	Yel	Yel
-	Beta hemolysis	NeG-N	126-48h	OF Maltose	YEL	Yeh Nor Bung
-	Growth on Mac	NO GROWT	h rela	-OF Mannitol	<u>BLUE</u> YEL	DARE BLUE Vel
_	DNase hydrolysis	Nel	Ne61	of Sucrose	Blue	DARGE BLUE
_	Starch hydrolysis	Nela	NeG	- Arginine	New	New
-	Lecithinase	Nela	NEG	- Lysine	Nee	
++	Lipase	Nel	104	- Ornithine		
	Rapid PYR	NEG		- Base Control		
-+-	Rapid LAP	POG		- Acetamide	New	Nela
_	Rapid ESC	NRG		Esculin Esculin	NEG	New Pos
	Sensitivity to:			Indole	1000	Neo
	Penicillin (10 U)	_ <u>R</u>	<u> </u>	+ A Malonate	Light Blue	BLUE
-	Vancomycin (30 ug)	R	R	- PAD - 4 Urea <u>Neo2</u> h	DOS-SLANT	POS SCANT& BUT
-7	Colistin (10 mcg)	R	R	6.5% NaCL	Nela	Nela-
-	- Polymyxin B (300 U)	R	R	+ 10% Lactose	NCO	Pos:
				- ONPG - Growth 42 <sup>0</sup>	NEG	Nec
					1.00	

5-2-06 RALGTONIA pickettij (VA-1) P.S. 5/10/06

Note: All biochemical tests (except where noted) are incubated at 30°C and read after 48 hrs. incubation and again at 7 days.

Figure 303: Ralstonia pickettii (Va-1) isolate 1-of-14.

3-16-09 Date Inoculated: 3/24/08 LSTONIA Dicketti BIOVAR Va-Final Identification: Starch & Egg Yolk at Comments: colore ON 40 Gram Morph. **Tubes** 7 day KIA Neb Gram Test  $H_2S$ SM- Hear RODS Motility Wet Prep P04 7. ?? NEG Pas Pseudo P Motility Deep Pseudo F Nel AS Oxidase 05 Catalase NeG NO3 reduced Gas from NO<sub>3</sub> POS **PLATES** 7 day 4 <u>48 h</u> NO2 reduced NONE Odor Gas from NO<sub>2</sub> NEG NF Pigment on swab thegh Yel YçL OF Fructose Pigment on BAP GRET OF Dextrose Yel 41 Stooth Morphology on BAP OF Lactose 492 Yel OF Maltose Yel Beta hemolysis New OF Mannitol BLUE 5LLNe6-Growth on Mac NeG OF Xylose Yel Vel New OF Sucrose DNase hydrolysis Nel BLUE BLUE Starch hydrolysis W NEG Arginine NeG NEG NEG Nel Lecithinase Lysine POS Ornithine Nela Lipase Base Control Rapid PYR Rapid LAP Pos Acetamide Esculin Rapid ESC ) e (9 Gelatin Sensitivity to: Indole S Malonate Pod Penicillin (10 U) PAD R Vancomycin (30 ug) Urea Nelo2 h R Colistin (10 mcg) 6.5% NaCL 10% Lactose 0 Polymyxin B (300 U) R ONPG NPG Growth 42° Nela

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 304: Ralstonia pickettii (Va-1) isolate 2-of-14.

# 32.4 Ralstonia pickettii (Va-2)

Over the course of ASHEX clinical-isolate collection, five individual isolates of Ralstonia pickettii (Va-2) were analyzed. One of the five recorded results is pictured in this subsection.

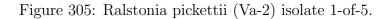
Test	+	_	Raw%	W95%	Test	+	_	Raw%	W95%
Motility	5	0	100.00	78.28	$H_2S$	0	5	0.00	21.72
Oxidase	5	0	100.00	78.28	Pseudo P	0	5	0.00	21.72
Catalase	0	5	0.00	21.72	Pseudo F	0	5	0.00	21.72
Yellow Pigment	0	5	0.00	21.72	NO <sub>3</sub> Reduced	5	0	100.00	78.28
Pink Pigment	0	5	0.00	21.72	Gas from $NO_3$	4	1	80.00	66.97
Beta Hemolysis	0	5	0.00	21.72	NO <sub>2</sub> Reduced	1	4	20.00	33.03
Growth on Mac	0	5	0.00	21.72	Gas from $NO_2$	1	4	20.00	33.03
Dnase	0	5	0.00	21.72	OF Fructose	5	0	100.00	78.28
Starch	0	5	0.00	21.72	OF Dextrose	5	0	100.00	78.28
Lecithinase	0	5	0.00	21.72	OF Lactose	1	4	20.00	33.03
Lipase	3	2	60.00	55.66	OF Maltose	1	4	20.00	33.03
PYR	1	4	20.00	33.03	OF Mannitol	0	5	0.00	21.72
LAP	5	0	100.00	78.28	OF Xylose	5	0	100.00	78.28
ESC Spot Test	0	5	0.00	21.72	OF Sucrose	0	5	0.00	21.72
Penicillin (10U)	0	5	0.00	21.72	Arginine	0	5	0.00	21.72
Vancomycin $(30\mu g)$	0	5	0.00	21.72	Lysine	0	5	0.00	21.72
Colistin $(10\mu g)$	0	5	0.00	21.72	Ornithine	0	5	0.00	21.72
Polymyxin B (300U)	0	5	0.00	21.72	Acetamide	0	5	0.00	21.72
					Esculin	0	5	0.00	21.72
					Gelatin	1	4	20.00	33.03
					Indole	0	5	0.00	21.72
					Malonate	4	1	80.00	66.97
					PAD	3	2	60.00	55.66
					Urea 2 hrs.	0	5	0.00	21.72
					Urea 48 hrs.	5	0	100.00	78.28
					6.5% NaCl	0	5	0.00	21.72
					10% Lactose	0	5	0.00	21.72
					ONPG	0	5	0.00	21.72
					Growth 42°C	3	2	60.00	55.66

Table 98: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as  $n_+/(n_+ + n_-)$ , where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which shifts raw percentages towards 50% with a strength dependent on the total number of test occurrences. The four antibiotic tests at the bottom of Column 1 are sensitivity tests where a positive result indicates sensitivity to the drug.

Date Inoculate	d:	E 8/4/17		
Final Identifica	ation:	Ralstonia pickettii (49-2)	Prob 99.997	MS = 1.01
Comments:	Lak	result: Ralstonia pickettir		
	Mal	11: 2.53 R. Dickettii		

Gram Morph. Gram Test Motility Wet Prep		<u>Tubes</u> KIA H <sub>2</sub> S	48 h <u>k/k</u> N	7 day K/K Neg
Motility Deep	N3d? whit Arg Pos	Pseudo P Pseudo F	- <u>N</u>	Neg
Oxidase	æ		~	
Catalase	Neg	NO <sub>3</sub> reduced Gas from NO <sub>3</sub>	_ <u>X</u>	Nea-Hos C
PLATES	<u>48 h</u> 7 day	NO2 reduced	X	Red - Nez-
Odor	peight seight frito	Gas from NO2	Sm. bubble	an bubble
Pigment on swab	puff tan	OF Fructose	Ul top @	ye D
Pigment on BAP	whose whose	OF Dextrose	ye top @	gel @
Morphology on BAP	son rd wet son round wet	OF Lactose OF Maltose	Be -	 BP
Beta hemolysis	N Neg	OF Mannitol	BR -	Be-
Growth on Mac	N Neg	OF Xylose	ye (E)	- year
DNase hydrolysis	N Neg	OF Sucrose	pe	
Starch hydrolysis	Neg_	Arginine	N	Neg
Lecithinase	N_ Neg	Lysine Ornithine		Neg
Lipase	N oilsid fos (D)	Base Control	_	Neg
Rapid PYR	N		1	1 Jan
Rapid LAP	Pos E	Acetamide Esculin	<u> </u>	Nea
Rapid ESC	N	Gelatin	N	Neg
Sensitivity to:		Indole	X	Nar
Penicillin (10 U)	6R 6R	Malonate PAD	Pos G	X
Vancomycin (30 ug)	LEP LER	Urea N2h	preser	TO POSE
Colistin (10 mcg)	LeR LeR	6.5% NaCL 10% Lactose	-wet	- Neg
Polymyxin B (300 U	)_6K_4K	ONPG Growth 42 <sup>o</sup>	NULE	Weak D

Note: All biochemical tests (except where noted) are incubated at 30°C and read after 48 hrs. incubation and again at 7 days.



# 33 GENUS RHIZOBIUM

#### 33.1 Rhizobium (Agrobacterium) radiobacter

Over the course of ASHEX clinical-isolate collection, 13 individual isolates of Rhizobium radiobacter were analyzed. Four of the 13 recorded results are pictured in this subsection.

Test	+	_	Raw%	W95%	Test	+	_	Raw%	<b>W95</b> %
Motility	11	2	84.62	76.72	H <sub>2</sub> S	0	13	0.00	11.41
Oxidase	12	1	92.31	82.66	Pseudo P	0	13	0.00	11.41
Catalase	13	0	100.00	88.59	Pseudo F	0	13	0.00	11.41
Yellow Pigment	0	13	0.00	11.41	NO <sub>3</sub> Reduced	12	1	92.31	82.66
Pink Pigment	0	13	0.00	11.41	Gas from $NO_3$	1	5	16.67	29.68
Beta Hemolysis	2	4	33.33	39.84	$NO_2$ Reduced	9	4	69.23	64.84
Growth on Mac	8	3	72.73	66.84	Gas from $NO_2$	0	6	0.00	19.52
Dnase	0	13	0.00	11.41	OF Fructose	13	0	100.00	88.59
Starch	0	13	0.00	11.41	OF Dextrose	13	0	100.00	88.59
Lecithinase	0	10	0.00	13.88	OF Lactose	8	5	61.54	58.91
Lipase	0	10	0.00	13.88	OF Maltose	12	0	100.00	87.87
PYR	6	0	100.00	80.48	OF Mannitol	12	1	92.31	82.66
LAP	5	1	83.33	70.32	OF Xylose	13	0	100.00	88.59
ESC Spot Test	2	4	33.33	39.84	OF Sucrose	6	0	100.00	80.48
Penicillin (10U)	1	12	7.69	17.34	Arginine	0	13	0.00	11.41
Vancomycin $(30\mu g)$	3	10	23.08	29.22	Lysine	0	13	0.00	11.41
Colistin $(10\mu g)$	8	5	61.54	58.91	Ornithine	0	13	0.00	11.41
Polymyxin B (300U)	8	0	100.00	83.78	Acetamide	0	13	0.00	11.41
					Esculin	13	0	100.00	88.59
					Gelatin	0	13	0.00	11.41
					Indole	0	13	0.00	11.41
					Malonate	1	12	7.69	17.34
					PAD	11	2	84.62	76.72
					Urea 2 hrs.	4	9	30.77	35.16
					Urea 48 hrs.	13	0	100.00	88.59
					6.5% NaCl	6	7	46.15	47.03
					10% Lactose	3	10	23.08	29.22
					ONPG	13	0	100.00	88.59
					Growth 42°C	6	7	46.15	47.03

Table 99: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as  $n_+/(n_+ + n_-)$ , where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which shifts raw percentages towards 50% with a strength dependent on the total number of test occurrences. The four antibiotic tests at the bottom of Column 1 are sensitivity tests where a positive result indicates sensitivity to the drug.

Final Identification: Comments: <u><i>Rhizobrum</i></u> (Ageobacteorum) RAdiobacteor P.S. Gram Morph. Gram Test Motility Wet Prep <u>New 48h. 24tho-bactime</u> Pseudo P Motility Deep <u>POS / POS</u> — Pseudo P Motility Deep <u>POS / POS</u> — Pseudo F Motility Deep <u>POS / POS</u> — Pseudo F Motility Deep <u>POS / POS</u> — Pseudo F Motility Deep <u>POS / POS</u> — Pseudo F Catalase <u>STRONG</u> (Acteorum) <u>New New Pos</u>
Gram Morph. Gram Test Motility Wet Prep <u>New 48h. 24thr barting</u> Pseudo P + Motility Deep <u>POS / POS</u> — Pseudo P + Motility Deep <u>POS / POS</u> — Pseudo F + NO <sub>3</sub> reduced <u>POS (Atter</u> Zime) - Gas from NO <sub>3</sub> <u>New Atter</u>
Gram Morph. Gram Test Motility Wet Prep Nee 48h. 24hr-baeting Pseudo P + Motility Deep POS / 105 - Pseudo P + Oxidase Very delayed Pos - Pseudo F + NO <sub>3</sub> reduced - Gas from NO <sub>3</sub> Nec Attac
Gram Test Motility Wet Prep $\frac{1}{1000} \frac{1}{1000} $
Motility Wet Prep New 48h. 24hr-DARTING PSeudo P + Motility Deep POS / POS - Pseudo F + Oxidase Very decayed Pos - Sourced - Nog reduced - Pos (After Zin.
+ Motility Deep POS/POS Pseudo F Net Rec. + Oxidase Vert delayed Pos Gas from NO3 Net Atter Zim.
+ Oxidase Very decayed pos + NO3 reduced Pos (Alter ZIN.
Gas from NO3 Nela ALG
- FUIL FUIL FUIL
PLATES 48 h 7 day Gas from NO <sub>2</sub> NeG- nEG
Odor None OF Fructose Vel yer
Pigment on swab BUCG BUCG OF Dextrosegrad
Pigment on BAP GREY GORT + OF Lactose vel
Morphology on BAP STEETL GROUT GF Maltose VEVEN
- Beta hemolysis - POS + OF Xylose eken
Growth on Mac + POS PINK Macoin
-DNase hydrolysis <u>New New</u> Arginine <u>New</u>
Starch hydrolysis <u>NCG NCG</u>
Lecithinase <u>Nelo</u> <u>Nelo</u> <u>Base Control</u>
Lipase <u>Nelo</u> Acetamide — Nelo
$+ Rapid PYR \qquad \qquad$
-FRapid LAP <u>POS</u> — Gelatin <u>NEG</u>
-Rapid ESC <u>Nels</u> -Indole <u>Neb</u>
Sensitivity to: +PAD -reine Dos:
- Perincillin (10 U) $\frac{R}{R}$ $\frac{R}{L}$ $t$
- Vancomycin (30 ug) $\mathbb{R}$ \mathbb
+ Colistin (10 mcg) $S$ $S$ + ONPG . +
$+$ Polymyxin B (300 U) $\underline{S}$ $\underline{S}$ $+$ Growth 42 $\underline{+}$ $\underline{GR}$ $\underline{+}$

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 306: Rhizobium radiobacter isolate 1-of-13.

	Final Identification:				-k	ADIGRACTA	>
	Comments:					AFTERMEDIEN	
		Rh.	hund	Agrobacteri	(an) At	tichaster	
		11110	opium	TIGES BACICICI	an) Ar	8/30	Via
	Gram Morph.		,	Tubes	48 h	7 day	7 N
	Gram Test			KIA	KINC	E/NC	
		VERY NOTI	LE SPIANING	H₂S	Nece	Neb	
+	Motility Deep	Pos	DART	Pseudo P	Nec	Nec	
÷	Oxidase	Pos		- Pseudo F	NEG	Nec-	
+	Catalase	SLOW	205	+ NO <sub>3</sub> reduced		POS POS	
	PLATES	48 h	7 day	+ Gas from NO <sub>3</sub>	Neu	Nee (TINY BUBBLE	5)
	Odor	Nome	NONR	- NO <sub>2</sub> reduced - Gas from NO <sub>2</sub>	Neb	NEG HAN Bibble	)
	Pigment on swab	CREAM	CREAT				
	Pigment on BAP	CREAM		+ OF Fructose	GRN	Yel	
	Morphology on BAP	SOTOCTA	Sheeth	+ OF Dextrose + OF Lactose	- <u>}</u>	- G-AN Hel/GRN	
+	Beta hemolysis	POS		+ OF Maltose	-	Yel	
·t	- Growth on Mac	Pos-	PINKE COLON	OF Mannitol		Yel Vel	
_	DNase hydrolysis	NEG	Neb	-OF Sucrose	×	Yel/GRN	
-	Starch hydrolysis	Neb	NeG	A	1.07	4121	
	Lecithinase	NECE	Nela	Arginine Lysine	New	Nec	
_	Lipase	NEG	New	- Ornithine			
+	- Rapid PYR	Pos		<ul> <li>Base Control</li> </ul>	-V-	¥	
·+	- Rapid LAP	Pos		- Acetamide	New	Nea	
_	-Rapid ESC	Ner		+ Esculin	POS	POS	
	Sensitivity to:			- Gelatin Indole	New	Neg	
	Penicillin (10 U)	R	R	Malonate +	- Nea	NEG	
-	Vancomycin (30 ug)	S tiny Za	ve S Tiny Z	ane PAD PDSh	POS	Pos	
	- Colistin (10 mcg)	BR	R	+ $ 6.5%$ NaCL	Neb	Neb	
	Polymyxin B (300 U)	S (151	m) 5	- 10% Lactose	Neb	NCo	
				+ ONPG + Growth 42°	POS	POS	
				CIOWIII TE			

Figure 307: Rhizobium radiobacter isolate 2-of-13.

	zobium RAdio bacter P.S. S/18 /00	2
Comments: White on Starch		l
Gram Morph. Gram Test $3.4h$ Motility Wet Prep $NeG^{-T_{W}\gamma}$ Hotility Deep $PoS$ $PoS$ Oxidase $PoS$ Catalase $PoS$	Tubes     40       Tubes     48h     7 day       KIA     K/NC     K/NC       -H2S     Nec     Beacle At Interface       Pseudo P     Nec     Nec       -Pseudo F     Nec     Nec       + NO2 reduced     Pos Actes Add zince	
PLATES 24 <u>48 h</u> <u>Z day</u> Odor <u>Now e</u> Pigment on swab Off white	$\begin{array}{c c} & Gas from NO_3 \\ \hline \\ & O_2 reduced \\ \hline \\ & Gas from NO_2 \\ \hline \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ &$	
<ul> <li>Pigment on Swab</li> <li>Pigment on BAP</li> <li>Greet white</li> <li>Morphology on BAP</li> <li>Beta hemolysis</li> <li>Web</li> <li>Posse hydrolysis</li> <li>Neb</li> <li>Neb</li> </ul>	+ OF Fructose     YeL     YeL     bottom of Tall       + OF Dextrose     -     -       + OF Lactose     -     -       + OF Maltose     -     -       + OF Mannitol     -     -       + OF Xylose     -     -       + OF Sucrose     -     -	02
- Starch hydrolysis $NeG$ NCG - Lecithinase $NeG$ NCG - Lipase $NeG$ NCG + Rapid PYR $Pos$	Arginine <u>Nec</u> <u>Nec</u> - Lysine <u> </u>	
+ Rapid LAP <u>Po</u> - Rapid ESC <u>NeG</u> <u>Sensitivity to:</u> - Penicillin (10 U) <u><math>R</math> <u><math>R</math></u> - Vancomycin (30 ug) <u><math>R</math> <u><math>R</math></u> + Colistin (10 mcg) <u><math>S-15</math></u> - Polymyxin B (300 U) <u><math>S-17</math></u></u></u>	Acetamide $Neb$ $Neb$ + Esculin $Pes$ $Pos$ - Gelatin $Neb$ - Indole $Neb$ - Malonate $Neb$ + PAD $Pos$ + Urea $Pos$ - Urea $Neb$ + 10% Lactose $Sele Neb$ + ONPG $Pos$ - Growth 42° $Neb$	5

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 308: Rhizobium radiobacter isolate 3-of-13.

Date Inoculated: <u>6-29-10</u> Final Identification: <u>Rhizobicem RAdiobactee</u>

Comments:	Contramed by	165 DNA	Seque	neing
6164	FT PEACH COLOR ON 9	tARCh@ 9	DAYS. B	ULG ON EGG YOLL
				7/2/10 7/8/10
Gram Morph.		Tubes	48 h	Tday KNC K/A
Gram Test	3 DAY S	KIA	KINC	RINC NEG
Motility Wet Prep	NEG	$H_2S$	Nel	1000
Motility Deep	POS POS POS	Pseudo P	Nele	NEG- NEG
Oxidase	Nels - delayed	Pseudo F	pille	NEG NEG
Catalase	STRONG POS -			Pos (Acted Zinc)
PLATES	43 0 / 41 a V (	- Gas from NO <sub>3</sub>	Nele	NEG- NEG
Odor	NONE	+ NO <sub>2</sub> reduced —Gas from NO <sub>2</sub>	Nele	Neb Neb
Pigment on swab	flegh			YeyGRN Yey/GRN
Pigment on BAP	GREY	OF Fructose OF Dextrose	Yec/GRN	Yellorn Yellorn
Morphology on BAP	Snacoth-wer	OF Lactose	Bine	GRN GRN
Beta hemolysis	NEG	OF Maltose	GRN	Yel/GRN Yel/GRN Yel- Yel/GRN
Growth on Mac	POS-LIGht DINK	OF Mannitol OF Xylose	YEL/GEN	GRN YEL/GRN
DNase hydrolysis	New New New		SLue	GRN YELGERN
Starch hydrolysis	NOG NOG NOG		Nea	NEG NEG
Lecithinase	NEG NEG NEG	Arginine Lysine	Nea	
Lipase	Neb Neb Neb	Ornithine	New	
Rapid PYR	Pos	Base Control	New	
Rapid LAP	205	Acetamide	Nec-	Neb Neb
Rapid ESC	Pas	Esculin	POS	Pos: Pos Nela Nela
Sensitivity to:		Gelatin Indole		New New
Penicillin (10 U)	$R_R$	Malonate	New	NEG Wt
Vancomycin (30 ug)	RR	PAD Urea <sup>N</sup> <sup>e</sup> 62 h	POS-SLAN	TPOST POST
Colistin (10 mcg)	5-13 5	6.5% NaCL	NeG	NEG NEG
Polymyxin B (300 U)	5-15 S	10% Lactose	Neb	NeG NeG POS POS
		ONPG Growth 42 <sup>0</sup>	Pos	<u>POS</u> POS POS

Note: All biochemical tests (except where noted) are incubated at 30°C and read after 48 hrs. incubation and again at 7 days.

Figure 309: Rhizobium radiobacter isolate 4-of-13.

# 34 GENUS ROSEOMONAS

#### 34.1 Roseomonas species

Over the course of ASHEX clinical-isolate collection, 13 individual isolates of Roseomonas species were analyzed. Three of the 13 recorded results are pictured in this subsection.

Test	+	_	Raw%	W95%	Test	+	_	Raw%	W95%
Motility	2	11	15.38	23.28	H <sub>2</sub> S	0	13	0.00	11.41
Oxidase	8	5	61.54	58.91	Pseudo P	0	13	0.00	11.41
Catalase	13	0	100.00	88.59	Pseudo F	0	13	0.00	11.41
Yellow Pigment	0	13	0.00	11.41	NO <sub>3</sub> Reduced	2	11	15.38	23.28
Pink Pigment	13	0	100.00	88.59	Gas from $NO_3$	0	13	0.00	11.41
Beta Hemolysis	0	9	0.00	14.96	$NO_2$ Reduced	0	13	0.00	11.41
Growth on Mac	1	12	7.69	17.34	Gas from $NO_2$	0	13	0.00	11.41
Dnase	0	13	0.00	11.41	OF Fructose	13	0	100.00	88.59
Starch	9	4	69.23	64.84	OF Dextrose	13	0	100.00	88.59
Lecithinase	0	9	0.00	14.96	OF Lactose	0	13	0.00	11.41
Lipase	0	9	0.00	14.96	OF Maltose	0	13	0.00	11.41
PYR	1	6	14.29	26.94	OF Mannitol	5	8	38.46	41.09
LAP	4	3	57.14	54.61	OF Xylose	2	11	15.38	23.28
ESC Spot Test	0	7	0.00	17.72	OF Sucrose	0	9	0.00	14.96
Penicillin (10U)	0	13	0.00	11.41	Arginine	0	13	0.00	11.41
Vancomycin $(30\mu g)$	0	13	0.00	11.41	Lysine	0	13	0.00	11.41
Colistin $(10\mu g)$	3	10	23.08	29.22	Ornithine	0	13	0.00	11.41
Polymyxin B (300U)	3	6	33.33	38.32	Acetamide	0	13	0.00	11.41
					Esculin	0	13	0.00	11.41
					Gelatin	0	13	0.00	11.41
					Indole	0	13	0.00	11.41
					Malonate	8	5	61.54	58.91
					PAD	1	11	8.33	18.44
					Urea 2 hrs.	1	11	8.33	18.44
					Urea 48 hrs.	12	1	92.31	82.66
					6.5% NaCl	3	10	23.08	29.22
					10% Lactose	0	13	0.00	11.41
					ONPG	0	13	0.00	11.41
					Growth $42^{\circ}C$	8	5	61.54	58.91

Table 100: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as  $n_+/(n_+ + n_-)$ , where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which shifts raw percentages towards 50% with a strength dependent on the total number of test occurrences. The four antibiotic tests at the bottom of Column 1 are sensitivity tests where a positive result indicates sensitivity to the drug.

Date Inoculated:	8-16-06	
Final Identification:	Perudomonas state	ere: ROSCOMONAS P.
Comments: $P_{\ell} N$	le on ALL MEDIA	9/4/06 P.S.
<u>Cor</u> Gram Morph. Gram Test Motility Wet Prep		48 h 7day K/NC K/K Nec Net
Motility Deep Oxidase	$\frac{NC6}{POS} + \frac{VC6}{SLOW} - \frac{2056}{2056} + \frac{VC6}{P} + \frac{VC6}{$	NEG NEG PINK
Catalase <u>PLATES</u> Odor	<u>Nerre</u> – NO <sub>2</sub> reduced – Gas from NO <sub>2</sub>	Nelo- Nelo- Nelo- Nelo- Nelo-
Pigment on swab Pigment on BAP Morphology on BAP Beta hemolysis Growth on Mac DNase hydrolysis	$\frac{\psi e_i}{\psi e_i} = 0$ F Dextrose	GRN GRN Vel Yel Blue Blue Blue Blue Blue Blue Blue Blue Blue Blue Blue Blue
<ul> <li>Lecithinase</li> <li>Lipase</li> <li>Rapid PYR</li> </ul>	<u>Neb</u> <u>Neb</u> -Arginine <u>Neb</u> <u>Neb</u> -Uysine <u>Neb</u> <u>Neb</u> -Ornithine <u>Neb</u> <u>Neb</u> Base Control	Nel Nel Nel Nel
<ul> <li>Rapid LAP</li> <li>Rapid ESC <u>Sensitivity to:</u></li> <li>Penicillin (10 U)</li> <li>Vancomycin (30 ug)</li> <li>Colistin (10 mcg)</li> <li>Polymyxin B (300 U)</li> </ul>	$\frac{ACC}{R} + \frac{C}{PWE} + \frac{C}{We} + \frac{C}{We} + Acetamide}{Esculin} + \frac{C}{Belatin} + \frac{C}{Bel$	NEW NEG NEG NEG NEG NEG NEG DOS (Lt. Blue) NEG DOS NEG DOS NEG NEG NEG NEG NEG NEG NEG NEG
	(	

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 310: Roseomonas species isolate 1-of-13.

Date Inoculated: /-	-4-11	Contraction of the second s
Final Identification:	Roseomonas	

Comments:

PINE ON STARCH & Egg Yolf @ 3 DAYS

Gram Morph. Gram Test Motility Wet Prep	24h Nec-sm Rods	<u>Tubes</u> KIA H <sub>2</sub> S	1-12-11 8 DAYS <u>48 h</u> <u>7 day</u> <u>K/K</u> <u>New</u>
Motility Deep Oxidase	New New New New After I MIN	Pseudo P ) Pseudo F	New New PINE
Catalase <u>PLATES</u> Odor Pigment on swab Pigment on BAP Morphology on BAP Beta hemolysis Growth on Mac	MUCOID-RUNNING	NO <sub>3</sub> reduced Gas from NO <sub>3</sub> NO <sub>2</sub> reduced Gas from NO <sub>2</sub> OF Fructose OF Dextrose OF Lactose OF Maltose	New New New New New New New New New New New New New Sel Brue Brue Brue Brue Scue Scue Scue
DNase hydrolysis Starch hydrolysis	New New -	<ul> <li>OF Xylose</li> <li>OF Sucrose</li> <li>Arginine</li> </ul>	BLOC BLOC BLOC BLOC NEG NEG
Lecithinase Lipase Rapid PYR	New Neb Neb Neb Pos	Lysine Ornithine Base Control	
Rapid LAP Rapid ESC <u>Sensitivity to:</u> Penicillin (10 U) Vancomycin (30 ug)	R R R R R R	Acetamide Esculin Gelatin Indole Malonate PAD	New Pos Fells turned New Pos Fells turned New Pos Fells turned New Acres Fells
Colistin (10 mcg) Polymyxin B (300 U)	R $RS - 10$ $R$	Urea Mac 2 h 6.5% NaCL 10% Lactose ONPG Growth 42 <sup>0</sup>	New

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 311: Roseomonas species isolate 2-of-13.

Final Identification:

KOSEDMONAS SPECIES 3/20/15 P.S.

Comments:

Mildi: Rosconaras Nucara 2.278 Marsen: Vibrio 5p. 81.387.

Pick on All mediA

Gram Morph. Gram Test Motility Wet Prep Motility Deep Oxidase	Neg per P.S. 12° Noz Neg 74 Pos-eo~	<u>Tubes</u> KIA H <sub>2</sub> S Pseudo P Pseudo F	72- <u>48 h</u> <u>Huc</u> <u>Neg-</u> <u>Noz</u> <u>Noz</u>	<u>Neg</u> <u>Neg</u> <u>Neg</u> <u>Neg</u> <u>Neg</u> <u>C</u>
Odor	Pos <u>48 h 7 day</u> <i>peigur fos</i>	-NO <sub>3</sub> reduced -Gas from NO <sub>2</sub> -NO <sub>2</sub> reduced -Gas from NO	×	Redeption Neg- probable Neg- <u>Red-Neg-</u> <u>Neg-</u>
Pigment on swab Pigment on BAP Morphology on BAP Beta hemolysis Growth on Mac	pik Chevryrd Stpik pik Nucoid Nucoid Neg Neg Neg ppt-Neg	+ OF Fructose + OF Dextrose OF Lactose OF Maltose + OF Mannitol OF Xylose	Gr Be Be Yel at top Benc	<u>ye-G-</u> Pos <u>H. Gun</u> Pos <u>Be</u> Neg- <u>Be</u> Neg- <u>Yee</u> Pos <u>Be Neg-</u>
DNase hydrolysis Starch hydrolysis	Neg- Pos Dik	- OF Sucrose	Neg	New V
Lecithinase	NegNeg_ /Sm	<i>h</i> Lysine		Neg
Lipase	Neg_ Neg	P Ornithine Base Contro		Neg -
Rapid PYR Rapid LAP	Pos Cetprik but becau Pos	Acetamide	Near	New /
Rapid ESC Sensitivity to:	Neg	Esculin Gelatin Indole	Nog Nog Neg	Nec-
Penicillin (10 U)	6 R GR	Malonate	Pos.	pas
Vancomycin (30 ug)	6 R GR	PAD Sur Urea Pas 2	10-	ertitlet POS
Colistin (10 mcg)	ter tor 12 S	6.5% NaC	L Weg	Set, cloudy Pos +
Polymyxin B (300 U	) <u>13/24 5 13/24 5</u> double zore dauble zore	10% Lacto ONPG Growth 42	Ng	<u>Neg</u> <u>Neg</u> <u>Neg</u> Seight gruth
				v

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 312: Roseomonas species isolate 3-of-13.

# 35 GENUS SHEWANELLA

# 35.1 Shewanella algae

Over the course of ASHEX clinical-isolate collection, six individual isolates of Shewanella algae were analyzed. Two of the six recorded results are pictured in this subsection.

Test	+	_	Raw%	<b>W95</b> %	Test	+	-	Raw%	W95%
Motility	6	0	100.00	80.48	$H_2S$	6	0	100.00	80.48
Oxidase	5	1	83.33	70.32	Pseudo P	0	6	0.00	19.52
Catalase	6	0	100.00	80.48	Pseudo F	0	6	0.00	19.52
Yellow Pigment	0	6	0.00	19.52	NO <sub>3</sub> Reduced	6	0	100.00	80.48
Pink Pigment	1	5	16.67	29.68	Gas from $NO_3$	0	4	0.00	24.50
Beta Hemolysis	1	3	25.00	37.25	NO <sub>2</sub> Reduced	5	1	83.33	70.32
Growth on Mac	6	0	100.00	80.48	Gas from $NO_2$	0	6	0.00	19.52
Dnase	6	0	100.00	80.48	OF Fructose	0	6	0.00	19.52
Starch	0	6	0.00	19.52	OF Dextrose	1	5	16.67	29.68
Lecithinase	0	4	0.00	24.50	OF Lactose	0	6	0.00	19.52
Lipase	3	1	75.00	62.75	OF Maltose	1	5	16.67	29.68
PYR	2	1	66.67	57.31	OF Mannitol	0	6	0.00	19.52
LAP	3	0	100.00	71.92	OF Xylose	1	5	16.67	29.68
ESC Spot Test	0	3	0.00	28.08	OF Sucrose	0	4	0.00	24.50
Penicillin (10U)	0	6	0.00	19.52	Arginine	0	6	0.00	19.52
Vancomycin $(30\mu g)$	0	6	0.00	19.52	Lysine	0	6	0.00	19.52
Colistin $(10\mu g)$	5	1	83.33	70.32	Ornithine	6	0	100.00	80.48
Polymyxin B (300U)	4	0	100.00	75.50	Acetamide	0	6	0.00	19.52
					Esculin	0	6	0.00	19.52
					Gelatin	6	0	100.00	80.48
					Indole	0	6	0.00	19.52
					Malonate	2	2	50.00	50.00
					PAD	0	6	0.00	19.52
					Urea 2 hrs.	0	6	0.00	19.52
					Urea 48 hrs.	6	0	100.00	80.48
					6.5% NaCl	6	0	100.00	80.48
					10% Lactose	0	4	0.00	24.50
					ONPG	0	4	0.00	24.50
					Growth 42°C	6	0	100.00	80.48

Table 101: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as  $n_+/(n_+ + n_-)$ , where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which shifts raw percentages towards 50% with a strength dependent on the total number of test occurrences. The four antibiotic tests at the bottom of Column 1 are sensitivity tests where a positive result indicates sensitivity to the drug.

Final Identification: She wanella a	lga P.S. 2/1/06 WX+18
Comments: _ Oxidax + Motel + 10/ 6	actore O Acetomide O GNR lyging O.
6.5 I-Nad+ 14A/Hz	
	2.4
Gram Morph.	Tubes KIA Stor BLACK A/A BLACK BLACK
Gram Test 24h	$H_2S$ $Pos$ $Pos$
Motility Wet Prep POS- Very DOTILE	- Pseudo P AIPle Wele-
+ Motility Deep	- Decude F 1121 - PINK INPOULA
$+$ Oxidase $\frac{105}{200}$	
	$Gas from NO_3 NRG NC NC Gas from NO_3 NRG NC NC Gas$
$\frac{\text{PLATES}}{2} \qquad \frac{48 \text{ h}}{2} \qquad \frac{7 \text{ day}}{2}$	$-Gas \text{ from NO}_3$ <u>Ne 6</u> <u>Ne 6</u> $-HO_2$ reduced <u>Pus</u>
Odor <u>Foul-Prengenet</u>	Gas from NO <sub>2</sub> New New
Pigment on swab $205C$	- OF Fructose Have BLUE
- Pigment on BAPIARE <u>GRe-1</u>	+ OF Dextrose GRW LT. GRN
Morphology on BAP heavy grow the	- OF Lactose <u>Brue</u> <u>Brue</u> + OF Maltose <u>GRN</u> $LT$ -GRN
65100	- OF Mannitol <u>Blace</u> <u>Blace</u>
	+ OF Xylose GIZN LAGRN
T Divase liguiolysis <u>PO 1</u>	-OF Sucrose <u>Blace</u> Blace
Starch hydrolysis <u>NC6-</u>	- Arginine <u>NeG</u>
Lecithinase <u>Nec</u>	- Lysine <u>Neb</u> <u>yeb</u> + Ornithine <u>Pos</u> <del>Pis</del>
+ Lipase 203	+ Ornithine <u>Pos</u> Pess — Base Control <u>New New</u>
— Rapid PYR	
- Rapid LAP	- Acetamide <u>Neb</u> <u>Neb</u>
- Rapid ESC	+ Gelatin 410 POS
Sensitivity to:	- Indole <u>Nela</u> (Cut
- Penicillin (10 U) $\underline{R}$ $\underline{K}$	- Malonate <u>NEG</u> <u>NEG</u> Phillippi
$-$ Vancomycin (30 ug) $-\frac{74}{2}$ $-\frac{12}{2}$	+ Urea Nac2 h FAINT PINK SLANT FAINT SCANE MY
+ Colistin (10 mcg) $\underline{S-14}$ $\underline{S}$	- 10% Lactose FAINT OLG CLANT NEG
f Polymyxin B (300 U) $5-74$	- ONPG New New
	Growth 42° POS POSITIVE

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 313: Shewanella algae isolate 1-of-6.

Date Inoculated: $7 - 3 - 77$	· · · · · · · · · · · · · · · · · · ·
Final Identification: Shew Amella	Algae
	OFN STARCH & Egg Yolk @ 4 DAYS
MOTILITY LOOKS LIKE	
	1-7-11 1-12-11 8 DAYS
Gram Morph.	$\frac{\text{Tubes}}{\text{KIA}} \qquad \frac{48 \text{ h}}{\text{KIA}} \qquad \frac{7 \text{ day}}{\text{KIA}}$
Gram Test 244	HAS HAS POS PUS entire
Motility Wet Prep <u>New Rods</u>	BUTTIS
Motility Deep Pos !!	Pseudo P <u>Nels</u> Nels Bitce Pseudo F Nels Nels
Oxidase <u>POS</u>	
Catalase <u>POS</u>	NO <sub>3</sub> reduced $pess$
PLATES 48 h 7 day	$\begin{array}{ccc} \text{Gas from NO}_3 & \underline{NC}_2 & \underline{NC}_2 \\ \text{NO}_2 \text{ reduced} & \underline{PC}_2 \\ \end{array}$
Odor foul ender	$\frac{1}{10000000000000000000000000000000000$
Pigment on swab PINK - SALMON	- OF Fructose BLUE Deep Blue
Pigment on BAP <u><u>CREY</u> <u>B.Rown/T</u>AN</u>	- OF Fructose <u>BLUE</u> <u>Deep BLUE</u> - OF Dextrose
Morphology on BAP LARGE Shooth	- OF Lactose
Beta hemolysis <u>NCC</u>	OF Maltose     OF Mannitol
Growth on Mac $\frac{POS}{POS}$	- OF Xylose
DNase hydrolysis $\frac{1}{105}$ $\frac{1}{105}$	- OF Sucrose
Starch hydrolysis <u>Neb Neb</u>	Arginine Nec-Nec-
Lecithinase <u>Nec Nec</u>	Lysine New New
Lipase <u>Pos</u> Pos	Ornithine <u>Pos</u> Pos
Rapid PYR $\underline{AHC}(wt)$	Base Control <u>New New</u>
Rapid LAP POS	Acetamide <u>Nec Nec</u>
Rapid ESC <u>Neb</u>	Esculin <u>POS</u> <u>NeC</u> Gelatin <u>POS</u> <del>POS</del>
Sensitivity to:	Indole NEG
Penicillin (10 U) $\underline{R}$	Malonate <u>New Pos</u>
Vancomycin (30 ug) $R$	UreaNelesh POS SCANT POS SCANT & BUTT
Colistin (10 mcg) $5-8$ $5'$	6.5% NaCL POS! POS
Polymyxin B (300 U) <u>5-10</u> <u>5</u>	10% Lactose <u>Nec</u> <u>Nec</u> ONPG <u>Nec</u> <u>Nec</u>
	Growth 42° POS POS BROWN dibbashle
Note: All biochemical tests (except where note	Pigheny

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 314: Shewanella algae isolate 2-of-6.

#### 35.2 Shewanella putrefaciens

Over the course of ASHEX clinical-isolate collection, five individual isolates of Shewanella putrefaciens were analyzed. One of the five recorded results is pictured in this subsection.

Test	+	_	Raw%	W95%	Test	+	_	Raw%	W95%
Motility	4	1	80.00	66.97	$H_2S$	4	1	80.00	66.97
Oxidase	5	0	100.00	78.28	Pseudo P	0	5	0.00	21.72
Catalase	3	2	60.00	55.66	Pseudo F	0	5	0.00	21.72
Yellow Pigment	1	4	20.00	33.03	NO <sub>3</sub> Reduced	5	0	100.00	78.28
Pink Pigment	1	4	20.00	33.03	Gas from $NO_3$	0	1	0.00	39.67
Beta Hemolysis	0	1	0.00	39.67	NO <sub>2</sub> Reduced	3	2	60.00	55.66
Growth on Mac	5	0	100.00	78.28	Gas from $NO_2$	0	1	0.00	39.67
Dnase	5	0	100.00	78.28	OF Fructose	1	4	20.00	33.03
Starch	0	5	0.00	21.72	OF Dextrose	3	2	60.00	55.66
Lecithinase	0	2	0.00	32.88	OF Lactose	0	5	0.00	21.72
Lipase	0	2	0.00	32.88	OF Maltose	2	3	40.00	44.34
PYR	0	1	0.00	39.67	OF Mannitol	0	5	0.00	21.72
LAP	1	0	100.00	60.33	OF Xylose	0	5	0.00	21.72
ESC Spot Test	0	1	0.00	39.67	OF Sucrose	0	1	0.00	39.67
Penicillin (10U)	0	5	0.00	21.72	Arginine	0	5	0.00	21.72
Vancomycin $(30\mu g)$	0	5	0.00	21.72	Lysine	0	5	0.00	21.72
Colistin $(10\mu g)$	5	0	100.00	78.28	Ornithine	3	2	60.00	55.66
Polymyxin B (300U)	1	0	100.00	60.33	Acetamide	0	5	0.00	21.72
					Esculin	0	5	0.00	21.72
					Gelatin	3	2	60.00	55.66
					Indole	0	5	0.00	21.72
					Malonate	0	5	0.00	21.72
					PAD	1	4	20.00	33.03
					Urea 2 hrs.	0	5	0.00	21.72
					Urea 48 hrs.	0	5	0.00	21.72
					6.5% NaCl	1	4	20.00	33.03
					10% Lactose	0	5	0.00	21.72
					ONPG	0	5	0.00	21.72
					Growth 42°C	0	5	0.00	21.72

Table 102: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as  $n_+/(n_+ + n_-)$ , where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which shifts raw percentages towards 50% with a strength dependent on the total number of test occurrences. The four antibiotic tests at the bottom of Column 1 are sensitivity tests where a positive result indicates sensitivity to the drug.

Date Inoculated: <u>9-28-11</u> Final Identification: <u>ShewANELLA putre FACIENS 11-4-11</u> P.S. Comments: <u>Light taw on Starech @ 7 DAYS</u>

Gram Morph.	24h 11	<u>Tubes</u> KIA	<u>48 h</u>	Aday KINC
Gram Test	N. mediun to Loing	$H_2S$		Pos
Motility Wet Prep	POS RODS - Very motil			ind light
Motility Deep	7D POS	Pseudo P		NEG PINKE
Oxidase	POS	Pseudo F		New INDER
Catalase	STRONG DOS	NO <sub>3</sub> reduced		POS
PLATES	48 h 7 day	Gas from NO <sub>3</sub>		Neb
Odor	9tinites	$NO_2$ reduced		<u></u>
Pigment on swab	Flesh	Gas from NO <sub>2</sub>		NCG
Pigment on BAP	daek Grey	OF Fructose		BLUE
0		OF Dextrose		YeL.
Morphology on BAP	Smooth'	OF Lactose OF Maltose		BLUC YEL
Beta hemolysis	Nela	OF Mannitol		BLUC
Growth on Mac	Pos	OF Xylose		BLUCE
DNase hydrolysis	Pos !!	OF Sucrose		Blue
Starch hydrolysis	NEG	Arginine		Nec
Lecithinase	Nele	Lysine		NEG
Lipase	NEG	Ornithine		
Rapid PYR	NEG	Base Control		
Rapid LAP	Pos	Acetamide		NEG
Rapid ESC	NEG	Esculin		NEG
Sensitivity to:		Gelatin Indole		New
Penicillin (10 U)	R	Malonate		NEG
Vancomycin (30 ug)	17	PAD		NEG
	5-11	Ureal len h	Nelo	Neb
Colistin (10 mcg)	<u></u>	6.5% NaCL		POS Nece
Polymyxin B (300 U)	S-12	10% Lactose ONPG		NEG
		Growth $42^{\circ}$		Nec

Note: All biochemical tests (except where noted) are incubated at 30°C and read after 48 hrs. incubation and again at 7 days.

Figure 315: Shewanella putrefaciens isolate 1-of-5.

# 36 GENUS SPHINGOBACTERIUM36.1 Sphingobacterium multivorum

Over the course of ASHEX clinical-isolate collection, six individual isolates of Sphingobacterium multivorum were analyzed. Zero of the six recorded results are pictured in this subsection.

Test	+	_	Raw%	<b>W95</b> %	Test	+	_	Raw%	<b>W95</b> %
Motility	3	3	50.00	50.00	$H_2S$	0	6	0.00	19.52
Oxidase	6	0	100.00	80.48	Pseudo P	0	6	0.00	19.52
Catalase	6	0	100.00	80.48	Pseudo F	0	6	0.00	19.52
Yellow Pigment	2	4	33.33	39.84	NO <sub>3</sub> Reduced	3	3	50.00	50.00
Pink Pigment	0	6	0.00	19.52	Gas from $NO_3$	3	2	60.00	55.66
Beta Hemolysis	1	4	20.00	33.03	NO <sub>2</sub> Reduced	3	3	50.00	50.00
Growth on Mac	6	0	100.00	80.48	Gas from $NO_2$	3	2	60.00	55.66
Dnase	1	5	16.67	29.68	OF Fructose	6	0	100.00	80.48
Starch	5	1	83.33	70.32	OF Dextrose	6	0	100.00	80.48
Lecithinase	0	5	0.00	21.72	OF Lactose	3	3	50.00	50.00
Lipase	3	2	60.00	55.66	OF Maltose	5	0	100.00	78.28
PYR	4	1	80.00	66.97	OF Mannitol	1	5	16.67	29.68
LAP	5	0	100.00	78.28	OF Xylose	6	0	100.00	80.48
ESC Spot Test	2	3	40.00	44.34	OF Sucrose	2	3	40.00	44.34
Penicillin (10U)	0	6	0.00	19.52	Arginine	0	6	0.00	19.52
Vancomycin $(30\mu g)$	1	5	16.67	29.68	Lysine	0	6	0.00	19.52
Colistin $(10\mu g)$	4	2	66.67	60.16	Ornithine	0	6	0.00	19.52
Polymyxin B (300U)	4	1	80.00	66.97	Acetamide	1	5	16.67	29.68
					Esculin	3	3	50.00	50.00
					Gelatin	0	6	0.00	19.52
					Indole	0	6	0.00	19.52
					Malonate	3	2	60.00	55.66
					PAD	3	3	50.00	50.00
					Urea 2 hrs.	1	5	16.67	29.68
					Urea 48 hrs.	6	0	100.00	80.48
					6.5% NaCl	4	2	66.67	60.16
					10% Lactose	2	3	40.00	44.34
					ONPG	2	3	40.00	44.34
					Growth 42°C	2	4	33.33	39.84

Table 103: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as  $n_+/(n_+ + n_-)$ , where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which shifts raw percentages towards 50% with a strength dependent on the total number of test occurrences. The four antibiotic tests at the bottom of Column 1 are sensitivity tests where a positive result indicates sensitivity to the drug.

# 36.2 Sphingobacterium spiritivorum

Over the course of ASHEX clinical-isolate collection, nine individual isolates of Sphingobacterium spiritivorum were analyzed. One of the nine recorded results is pictured in this subsection.

Test	+	_	Raw%	W95%	Test	+	—	Raw%	W95%
Motility	0	9	0.00	14.96	$H_2S$	0	9	0.00	14.96
Oxidase	9	0	100.00	85.04	Pseudo P	0	9	0.00	14.96
Catalase	8	1	88.89	77.26	Pseudo F	0	9	0.00	14.96
Yellow Pigment	1	8	11.11	22.74	NO <sub>3</sub> Reduced	0	9	0.00	14.96
Pink Pigment	0	9	0.00	14.96	Gas from NO <sub>3</sub>	0	2	0.00	32.88
Beta Hemolysis	0	2	0.00	32.88	$NO_2$ Reduced	0	9	0.00	14.96
Growth on Mac	0	9	0.00	14.96	Gas from $NO_2$	0	2	0.00	32.88
Dnase	9	0	100.00	85.04	OF Fructose	8	1	88.89	77.26
Starch	0	9	0.00	14.96	OF Dextrose	9	0	100.00	85.04
Lecithinase	0	2	0.00	32.88	OF Lactose	9	0	100.00	85.04
Lipase	0	2	0.00	32.88	OF Maltose	9	0	100.00	85.04
PYR	0	1	0.00	39.67	OF Mannitol	9	0	100.00	85.04
LAP	1	0	100.00	60.33	OF Xylose	9	0	100.00	85.04
ESC Spot Test	1	0	100.00	60.33	OF Sucrose	2	0	100.00	67.12
Penicillin (10U)	1	8	11.11	22.74	Arginine	0	9	0.00	14.96
Vancomycin $(30\mu g)$	5	4	55.56	53.89	Lysine	0	9	0.00	14.96
Colistin $(10\mu g)$	0	9	0.00	14.96	Ornithine	0	9	0.00	14.96
Polymyxin B (300U)	0	2	0.00	32.88	Acetamide	0	9	0.00	14.96
					Esculin	9	0	100.00	85.04
					Gelatin	0	9	0.00	14.96
					Indole	0	9	0.00	14.96
					Malonate	0	3	0.00	28.08
					PAD	9	0	100.00	85.04
					Urea 2 hrs.	7	2	77.78	69.47
					Urea 48 hrs.	8	1	88.89	77.26
					6.5% NaCl	0	9	0.00	14.96
					10% Lactose	2	1	66.67	57.31
					ONPG	3	0	100.00	71.92
					Growth $42^{\circ}C$	2	7	22.22	30.53

Table 104: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as  $n_+/(n_+ + n_-)$ , where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which shifts raw percentages towards 50% with a strength dependent on the total number of test occurrences. The four antibiotic tests at the bottom of Column 1 are sensitivity tests where a positive result indicates sensitivity to the drug. Date Inoculated:

Final Identification:

Comments:

8-6-12 Sphingobacterium spiritiverum CREAM PIGHENT ON BAP @ 12 DAYS

12 DAT S 72h 48 h Gram Morph. Tubes KIA KNC Medium Robs Gram Test Nea  $H_2S$ Nº6 - 726 Motility Wet Prep KIEG Pseudo P Neb Motility Deep Pos Pseudo F NeG Pos Oxidase STRONG. POS Catalase NO3 reduced Ne Gas from NO3 NeG PLATES 48 h 7 day FINT BUBACE NEL NO<sub>2</sub> reduced 2 TONY BUBBLE AMMONIA Odor Gas from NO<sub>2</sub> V Nec flech Pigment on swab Yel **OF** Fructose YéL GREY Pigment on BAP OF Dextrose YeL Morphology on BAP Sphanth-SMRARS OF Lactose YeL OF Maltose GRN Beta hemolysis NeG NO Yel OF Mannitol Growth on Mac Nea Neb 6 Routh OF Xylose Yel Pos POS DNase hydrolysis OF Sucrose Y-C 1 Starch hydrolysis NeG NEG 8/22 REPERT S/18 25 NeG Arginine Lecithinase NeG NEG NEE Neb Lysine Ornithine Nec Lipase Nel NEG Base Control NEG Rapid PYR NEG Nec POS Rapid LAP NeG Acetamide Pos POS Esculin ROS Rapid ESC Gelatin NEG Sensitivity to: Indole R Penicillin (10 U) Malonate Niel PAD >05-12 Vancomycin (30 ug) UreaN262 h R Colistin (10 mcg) 6.5% NaCL R 10% Lactose Polymyxin B (300 U) Neb ONPG POS Growth 42<sup>0</sup> Nel Nela

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 316: Sphingobacterium spiritivorum isolate 1-of-9.

# 36.3 Sphingobacterium thalopophilum

Over the course of ASHEX clinical-isolate collection, two individual isolates of Sphingobacterium thalopophilum were analyzed. Zero of the two recorded results are pictured in this subsection.

Test	+	_	Raw%	W95%	Test	+	_	Raw%	<b>W95</b> %
Motility	0	2	0.00	32.88	H <sub>2</sub> S	0	2	0.00	32.88
Oxidase	2	0	100.00	67.12	Pseudo P	0	2	0.00	32.88
Catalase	2	0	100.00	67.12	Pseudo F	0	2	0.00	32.88
Yellow Pigment	0	2	0.00	32.88	NO <sub>3</sub> Reduced	2	0	100.00	67.12
Pink Pigment	0	2	0.00	32.88	Gas from $NO_3$	0	0	50.00	50.00
Beta Hemolysis	0	0	50.00	50.00	$NO_2$ Reduced	0	2	0.00	32.88
Growth on Mac	2	0	100.00	67.12	Gas from $NO_2$	0	0	50.00	50.00
Dnase	2	0	100.00	67.12	OF Fructose	2	0	100.00	67.12
Starch	2	0	100.00	67.12	OF Dextrose	2	0	100.00	67.12
Lecithinase	0	0	50.00	50.00	OF Lactose	2	0	100.00	67.12
Lipase	0	0	50.00	50.00	OF Maltose	2	0	100.00	67.12
PYR	0	0	50.00	50.00	OF Mannitol	0	2	0.00	32.88
LAP	0	0	50.00	50.00	OF Xylose	2	0	100.00	67.12
ESC Spot Test	0	0	50.00	50.00	OF Sucrose	0	0	50.00	50.00
Penicillin (10U)	0	2	0.00	32.88	Arginine	0	2	0.00	32.88
Vancomycin $(30\mu g)$	2	0	100.00	67.12	Lysine	0	2	0.00	32.88
Colistin $(10\mu g)$	0	2	0.00	32.88	Ornithine	0	2	0.00	32.88
Polymyxin B (300U)	0	0	50.00	50.00	Acetamide	0	2	0.00	32.88
					Esculin	2	0	100.00	67.12
					Gelatin	0	2	0.00	32.88
					Indole	0	2	0.00	32.88
					Malonate	0	2	0.00	32.88
					PAD	2	0	100.00	67.12
					Urea 2 hrs.	2	0	100.00	67.12
					Urea 48 hrs.	2	0	100.00	67.12
					6.5% NaCl	0	2	0.00	32.88
					10% Lactose	2	0	100.00	67.12
					ONPG	0	0	50.00	50.00
					Growth 42°C	2	0	100.00	67.12

Table 105: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as  $n_+/(n_+ + n_-)$ , where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which shifts raw percentages towards 50% with a strength dependent on the total number of test occurrences. The four antibiotic tests at the bottom of Column 1 are sensitivity tests where a positive result indicates sensitivity to the drug.

# 37 GENUS SPHINGOMONAS

#### 37.1 Sphingomonas mucosissima

Over the course of ASHEX clinical-isolate collection, one individual isolate of Sphingomonas mucosissima was analyzed. The associated biochemical result form is pictured in this subsection.

Test	+	_	Raw%	<b>W95</b> %	Test	+	_	Raw%	<b>W95</b> %
Motility	0	1	0.00	39.67	H <sub>2</sub> S	0	1	0.00	39.67
Oxidase	0	1	0.00	39.67	Pseudo P	0	1	0.00	39.67
Catalase	1	0	100.00	60.33	Pseudo F	0	1	0.00	39.67
Yellow Pigment	1	0	100.00	60.33	NO <sub>3</sub> Reduced	1	0	100.00	60.33
Pink Pigment	0	1	0.00	39.67	Gas from $NO_3$	0	1	0.00	39.67
Beta Hemolysis	0	1	0.00	39.67	NO <sub>2</sub> Reduced	0	1	0.00	39.67
Growth on Mac	0	1	0.00	39.67	Gas from $NO_2$	0	1	0.00	39.67
Dnase	0	1	0.00	39.67	OF Fructose	0	1	0.00	39.67
Starch	1	0	100.00	60.33	OF Dextrose	0	1	0.00	39.67
Lecithinase	0	1	0.00	39.67	OF Lactose	0	1	0.00	39.67
Lipase	0	1	0.00	39.67	OF Maltose	0	1	0.00	39.67
PYR	0	1	0.00	39.67	OF Mannitol	0	1	0.00	39.67
LAP	1	0	100.00	60.33	OF Xylose	0	1	0.00	39.67
ESC Spot Test	0	1	0.00	39.67	OF Sucrose	0	1	0.00	39.67
Penicillin (10U)	0	1	0.00	39.67	Arginine	0	1	0.00	39.67
Vancomycin $(30\mu g)$	1	0	100.00	60.33	Lysine	0	1	0.00	39.67
Colistin $(10\mu g)$	0	1	0.00	39.67	Ornithine	0	1	0.00	39.67
Polymyxin B (300U)	1	0	100.00	60.33	Acetamide	0	1	0.00	39.67
					Esculin	1	0	100.00	60.33
					Gelatin	0	1	0.00	39.67
					Indole	0	1	0.00	39.67
					Malonate	1	0	100.00	60.33
					PAD	0	1	0.00	39.67
					Urea 2 hrs.	0	1	0.00	39.67
					Urea 48 hrs.	0	1	0.00	39.67
					6.5% NaCl	0	1	0.00	39.67
					10% Lactose	0	1	0.00	39.67
					ONPG	0	1	0.00	39.67
					Growth 42°C	0	1	0.00	39.67

Table 106: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as  $n_+/(n_+ + n_-)$ , where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which shifts raw percentages towards 50% with a strength dependent on the total number of test occurrences. The four antibiotic tests at the bottom of Column 1 are sensitivity tests where a positive result indicates sensitivity to the drug.

	Date Inoculated:	W 3/20/17		2017-35
	Final Identification:	Sequencing: Shingsmore	as mucosissima	
	Comments: Mulai	NO 10 Rapia Microsca	n: Brevindimons version	lans 60.75 %
	Sent	to Quest for sequencing	Final labyopart: 5	phingpinonas sp.
	Gram Morph.		Tubes 48 h	7 day
	Gram Test		KIA Wark KINC H2S Nug	K/K
	Motility Wet Prep		П <sub>2</sub> 5 _ <u>Ми</u>	N23
	Motility Deep	Neg-45" Neg-7d	Pseudo P Neg	Neg
	Oxidase	New Repeat Neg	Pseudo F Nog-	Nag
	Catalase	Pos	$NO_3$ reduced $X$	Red - Pos (+)
	PLATES	48 h 7 day	Gas from NO3 Neg	NEE
	Odor	Neg Neg	$NO_2$ reduced $\bigvee$ Gas from $NO_2$ New	Ng ()
	Pigment on swab	righty-ellow burghtyala		
	Pigment on BAP	night yellow (yellow)	OF Fructose OF Dextrose	Be-Gr-
	Morphology on BAP	tiny dry dry withhed	OF Lactose	Bl Gr -
	Beta hemolysis	Neg- Neg	OF Maltose	
	Growth on Mac	Neg Neg	OF Mannitol OF Xylose	
Starch	DNase hydrolysis	New New	OF Sucrose	
faintzure	Starch hydrolysis	Neg Neg? funt	Anaining	«1 -
caelt	Lecithinase	Near Neg (1)	Arginine <u>N</u> Lysine I	Neg
	Lipase	Neg Neg-	Ornithine	Not
	Rapid PYR	Near	Base Control	Neg
	Rapid LAP	Pos D	Acetamide N	Neg
	Rapid ESC	Nerr	Esculin <u>POS</u>	PUS D
	Sensitivity to:	double zoe	Gelatin <u>Neg</u> Indole X	Nee_
	Penicillin (10 U)	185/CA GR	Malonate Nur	Pus (F)
	Vancomycin (30 ug)	145 14 5 1	PAD NAY	_X_
	Colistin (10 mcg)	GR IR	Urea $\mu^2 h$ $Nage 6.5\%$ NaCL Nee	Neg
	Polymyxin B (300 U)	105 105 (P)	10% Lactose Nev	Neg
			ONPG <u>Neg</u> Growth 42 <sup>0</sup> Neg	Net
			StowardNMY	

Figure 317: Sphingomonas mucosissima isolate 1-of-1.

## 37.2 Sphingomonas paucimobilis

Over the course of ASHEX clinical-isolate collection, 20 individual isolates of Sphingomonas paucimobilis were analyzed. Three of the 20 recorded results are pictured in this subsection.

Test	+	_	Raw%	W95%	Test	+	_	Raw%	W95%
Motility	10	10	50.00	50.00	H <sub>2</sub> S	0	20	0.00	8.06
Oxidase	11	9	55.00	54.19	Pseudo P	0	20	0.00	8.06
Catalase	17	3	85.00	79.36	Pseudo F	0	20	0.00	8.06
Yellow Pigment	20	0	100.00	91.94	NO <sub>3</sub> Reduced	1	19	5.00	12.25
Pink Pigment	0	20	0.00	8.06	Gas from $NO_3$	0	11	0.00	12.94
Beta Hemolysis	5	7	41.67	43.69	NO <sub>2</sub> Reduced	0	20	0.00	8.06
Growth on Mac	1	19	5.00	12.25	Gas from $NO_2$	0	11	0.00	12.94
Dnase	5	15	25.00	29.03	OF Fructose	17	3	85.00	79.36
Starch	15	5	75.00	70.97	OF Dextrose	19	1	95.00	87.75
Lecithinase	0	11	0.00	12.94	OF Lactose	17	3	85.00	79.36
Lipase	0	11	0.00	12.94	OF Maltose	18	2	90.00	83.55
PYR	0	5	0.00	21.72	OF Mannitol	0	20	0.00	8.06
LAP	5	0	100.00	78.28	OF Xylose	18	2	90.00	83.55
ESC Spot Test	5	0	100.00	78.28	OF Sucrose	8	1	88.89	77.26
Penicillin (10U)	9	11	45.00	45.81	Arginine	0	20	0.00	8.06
Vancomycin $(30\mu g)$	20	0	100.00	91.94	Lysine	0	20	0.00	8.06
Colistin $(10\mu g)$	8	12	40.00	41.61	Ornithine	0	20	0.00	8.06
Polymyxin B (300U)	6	5	54.55	53.37	Acetamide	0	20	0.00	8.06
					Esculin	20	0	100.00	91.94
					Gelatin	1	19	5.00	12.25
					Indole	0	20	0.00	8.06
					Malonate	0	20	0.00	8.06
					PAD	3	17	15.00	20.64
					Urea 2 hrs.	0	20	0.00	8.06
					Urea 48 hrs.	1	19	5.00	12.25
					6.5% NaCl	3	17	15.00	20.64
					10% Lactose	7	13	35.00	37.42
					ONPG	16	0	100.00	90.32
					Growth 42°C	4	16	20.00	24.83

Table 107: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as  $n_+/(n_+ + n_-)$ , where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which shifts raw percentages towards 50% with a strength dependent on the total number of test occurrences. The four antibiotic tests at the bottom of Column 1 are sensitivity tests where a positive result indicates sensitivity to the drug.

Date Inoculated: Final Identification:	- S. pauci Phingoron	0	- 1/18 - im-b		WY
Gram Morph. Gram Test Motility Wet Prep — Motility Deep	relo-Q.48 h.	Tubes KIA - H <sub>2</sub> S - Pseudo P - Pseudo F	<u>48 h</u> <u>₭/к</u> 	<u>Pseudo PAT</u> <u>7 day</u> <u>F/NC</u>	
- Oxidase Nec - Catalase POS <u>PLATES</u> Odor Pigment on swab XCL + Pigment on BAP BRGG	<u>very weak</u> <u>48 h</u> <u>7 day</u> <u>odor (Skunke)</u> <u>yellow</u>	<ul> <li>NO<sub>3</sub> reduced</li> <li>Gas from NO<sub>3</sub></li> <li>NO<sub>2</sub> reduced</li> <li>Gas from NO<sub>2</sub></li> <li>+ OF Fructose</li> </ul>	Nela Nela	Nelo Nelo Nelo Nelo	
<ul> <li>Pigment on BAP Using Morphology on BAP</li> <li>Beta hemolysis</li> <li>Growth on Mac</li> <li>DNase hydrolysis</li> <li>Starch hydrolysis</li> </ul>	None Nec None Nec Neg-INSh, bited N	+ OF Dextrose + OF Lactose + OF Maltose - OF Mannitol + OF Xylose & OF Sucrose	green areen areen yellow yellow	Yec Yec Yec Yec Yec Yec	
<ul> <li>Lecithinase</li> <li>Lipase</li> <li>Rapid PYR</li> <li>Rapid LAP</li> </ul>	Nele Nele Nele Nele Nele Nele O	Arginine     Lysine     Ornithine     Base Control     Acetamide			
Rapid ESC <u>Sensitivity to:</u> Penicillin (10 U) Vancomycin (30 ug) Colistin (10 mcg) Polymyxin B (300 U)	S S S R S S S S	+ Esculin - Gelatin - Indole - Malonate - PAD - Urea _2 h - 6.5% NaCL - 10% Lactose + ONPG - Growth 42°	Nec Nec O O Nec O O Nec	Hang + O Neb D D D D D D D D D D D D D D D D D D D	

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 318: Sphingomonas paucimobilis isolate 1-of-20.

Date Inoculated: 2-3-1/	
Final Identification: Sphingo HONAS BALECIMODILIS	2/14/11
Comments: # Bright Yellow on All media	<u> </u>

		215	2/14 11 DAXS
Gram Morph.	Tubes	<u>48 h</u>	$\frac{7 \text{ day}}{1}$
Gram Test 48h	KIA	KINC	K/K
Motility Wet Prep New Less the Reals	$H_2S$	Neb	NEG
Motility Deep Pos Pos	Pseudo P	Nee	Nele
Oxidase NeG	Pseudo F	NCO	Neb
Catalase Stow W+	NO <sub>3</sub> reduced		NeG
PLATES 48 h 7 day	Gas from NO <sub>3</sub>	Nele	Neb
Odor NCG	NO <sub>2</sub> reduced	1.26	Nec
	Gas from NO <sub>2</sub>	Nela	NED
Pigment on swab 1745TARD Yeupus	OF Fructose	Y21	Yel
Pigment on BAP Musika Jellow	OF Dextrose	Yel	Yel
Morphology on BAP Smeath	OF Lactose	Yel	Yel
Beta hemolysis Nele-	OF Maltose	Yel	Yec
Growth on Mac Nels Nels	OF Mannitol	BLUE	Bulle
	OF Xylose	Yel	Yel
DNase hydrolysis Nec - INhihited Nel	OF Sucrose	Yel	Yer
Starch hydrolysis <u>NeG POS</u>	Arginine	New	Nec
Lecithinase New	Lysine	1	
Lipase N Clar	Ornithine		
Rapid PYR NCC	Base Control		
Rapid LAP <u>Pos</u> (	Acetamide	NCG	Neb
Rapid ESC <u>POS</u>	Esculin	POS	<u>P05</u>
Sensitivity to:	Gelatin Indole	Nebr	NEG
Penicillin (10 U) $R$	Malonate	Nel-	NEG
	PAD	POS	
Vancomycin (30 ug) $5 - 10, 5 - 3$	Urea <i>Ne</i> 62 h	NeG	NEG
Colistin (10 mcg) $\underline{\mathcal{R}}$ $\underline{\mathcal{R}}$	6.5% NaCL	NCCO	Nel
Polymyxin B (300 U) {< (<	10% Lactose	NCG POS	Nelo
	ONPG Growth 42 <sup>0</sup>	NEG	Neb
	010wul +2	1000	IV CC

Figure 319: Sphingomonas paucimobilis isolate 2-of-20.

	11/18/2008
Comments: BRIGHT Yellow 19	IC MEDIA
Sphingo MONAS L	Sauci mobilis PS. 11/25/08
	11/20 11/25 7Day
Gram Morph.	Tubes 48 h 7 day
Gram Test	KIA KINC KIKC H <sub>2</sub> S Nec Nec
Motility Wet Prep <u>Neb</u>	H25 NEC NEC
Motility Deep + 7 Ne6	Pseudo P Nels Nels
Oxidase Neb	Pseudo F NeG NeG
Catalase StRonic POS	NO3 reduced Nec-
PLATES <u>48 h</u> <u>7 day</u>	Gas from NO3 NEG Nela
Odor	NO <sub>2</sub> reduced $NeG$ Gas from NO <sub>2</sub> $NeG$ $NeG$
Pigment on swab must apol yellow	
Pigment on BAP bright rellace	OF Fructose <u>GRN</u> <u>Ye(</u> OF Dextrose <u>GRN</u> <u>Ye(</u>
Morphology on BAP greath-ghing	OF Dextrose <u>GRN</u> <u>YeL</u> OF Lactose <u>GRN</u> <u>YeL</u>
Beta hemolysis Nela	OF Maltose GRN YeL
Growth on Mac Neb Neb	OF Mannitol <u>Blue</u> OF Xylose <u>GRN</u> <u>Ye</u> L
DNase hydrolysis	OF Sucrose GRN YeL
Starch hydrolysis	
Lecithinase Neb Neb	Arginine <u>Net Net</u> Lysine
Lipase Nels Nels	Ornithine
Rapid PYR NeG	Base Control
Rapid LAP Pos	Acetamide Neb Neb
Rapid ESC Pos	Esculin Pos Pos
Sensitivity to:	Gelatin <u>New</u> Indole <u>New</u>
Penicillin (10 U) $R$ $R$	Maloñate <u>Neb</u> <u>Neb</u>
Vancomycin (30 ug) $5-13$ $9$	PAD Urea Nebezh Ales Nebe
Colistin (10 mcg) $R$ $R$	Urea $\frac{1162}{162}$ h $\frac{1166}{166}$ $\frac{1166}{166}$ 6.5% NaCL w 4 $1166$
Polymyxin B (300 U) R R	10% Lactose Neo- Neo-
	ONPG $POS$ $POS$ $POS$ $POS$

Figure 320: Sphingomonas paucimobilis isolate 3-of-20.

## 38 GENUS STENOTROPHOMONAS38.1 Stenotrophomonas maltophilia

Over the course of ASHEX clinical-isolate collection, 50 individual isolates of Stenotrophomonas maltophilia were analyzed. 31 of the 50 recorded results are pictured in this subsection.

Test	+	_	Raw%	<b>W95</b> %	Test	+	_	Raw%	W95%
Motility	44	6	88.00	85.29	H <sub>2</sub> S	0	50	0.00	3.57
Oxidase	14	36	28.00	29.57	Pseudo P	0	50	0.00	3.57
Catalase	47	3	94.00	90.86	Pseudo F	0	50	0.00	3.57
Yellow Pigment	18	32	36.00	37.00	NO <sub>3</sub> Reduced	25	25	50.00	50.00
Pink Pigment	0	50	0.00	3.57	Gas from $NO_3$	0	43	0.00	4.10
Beta Hemolysis	9	31	22.50	24.91	NO <sub>2</sub> Reduced	2	48	4.00	7.28
Growth on Mac	48	2	96.00	92.72	Gas from $NO_2$	0	43	0.00	4.10
Dnase	41	9	82.00	79.72	OF Fructose	44	6	88.00	85.29
Starch	0	50	0.00	3.57	OF Dextrose	43	7	86.00	83.43
Lecithinase	0	50	0.00	3.57	OF Lactose	21	29	42.00	42.57
Lipase	32	13	71.11	69.45	OF Maltose	46	4	92.00	89.00
PYR	0	40	0.00	4.38	OF Mannitol	0	50	0.00	3.57
LAP	37	2	94.87	90.85	OF Xylose	14	36	28.00	29.57
ESC Spot Test	38	1	97.44	93.18	OF Sucrose	18	23	43.90	44.42
Penicillin (10U)	0	50	0.00	3.57	Arginine	0	50	0.00	3.57
Vancomycin $(30\mu g)$	4	46	8.00	11.00	Lysine	49	1	98.00	94.58
Colistin $(10\mu g)$	37	13	74.00	72.29	Ornithine	0	50	0.00	3.57
Polymyxin B (300U)	38	5	88.37	85.23	Acetamide	0	50	0.00	3.57
					Esculin	47	3	94.00	90.86
					Gelatin	43	7	86.00	83.43
					Indole	0	50	0.00	3.57
					Malonate	29	19	60.42	59.64
					PAD	19	31	38.00	38.86
					Urea 2 hrs.	0	50	0.00	3.57
					Urea 48 hrs.	5	45	10.00	12.85
					6.5% NaCl	20	30	40.00	40.71
					10% Lactose	1	47	2.08	5.63
					ONPG	20	27	42.55	43.12
					Growth 42°C	25	25	50.00	50.00

Table 108: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as  $n_+/(n_+ + n_-)$ , where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which shifts raw percentages towards 50% with a strength dependent on the total number of test occurrences. The four antibiotic tests at the bottom of Column 1 are sensitivity tests where a positive result indicates sensitivity to the drug.

Reference No./Name: Muldi Hudy #178	aris aux 2008-6
Reference No./Name: <u>Maldi Judy #178</u>	ang ago aus +
Date Inoculated: $M_{00} = \frac{1}{22} \frac{13}{13}$	No. N. L. Al
Final Identification: 5. Maltophilia	prPS rus-TD'a by let
Comments: previd: B. apacia completion	
	Vitems IVD, RUO and Bruker 2008-6
gold color on Starch+ Mills Gram Morph.	Tubes 48 h 7 day
	KIA KINC KIK
Motility Wet Prep	H2S NN smant of dk point
5-0 Motility Deep 88 Pos	Pseudo P N N
4-1 Oxidase 28 Show that	0-5 Pseudo F N N
5-0 Catalase 94 Pos	5.0 NO3 reduced X Pos-up bythe zite 50
$\frac{105}{105}$	$Gas from NO_3$ $N_{III}$ $N_{IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII$
Odor Possetannew Sticks	$MO_2$ reduced $X_1 = N - N - N - N - N - N - N - N - N - N$
Bigment on swab	
Po-5 Pigment on BAP get gave yel gave	5-0 OF Fructose yet-typ yet-typ + 88
Morphology on BAP wind wind	0.5 OF Lactose Be yet top + 86 be - 42
4-1 Beta hemolysis 22.5 N Pos	50 OF Maltose yet top yet top
5-0 Growth on Mac 96 Poscelar round POS	o-T OF Mannitol Be be - 28
5-° DNase hydrolysis & Pos Pos	$1-4$ OF Sucrose $\underline{BC}$ $\underline{DC}$ $\underline{43,9}$
0.5 Starch hydrolysis $N$ $N$	
0-5 Lecithinase N N	$\delta \rightarrow 5$ Arginine $N$ $N$ $N$ $\delta \rightarrow 0$ Lysine $Pos$ $Pos$ $Pos$ $98$
1-4 Lipase 71.11 N N	Ornithine
€-5 Rapid PYR	Base Control $N$ $N$
5-0 Rapid LAP 94.87 Pos	0-5 Acetamide N N
5-0 Rapid ESC 97.44 105	5-0 Esculin <u>Pos-blestent</u> <u>Pos-aec blk</u> 94 3-2 Gelatin N N 86
Sensitivity to:	$0 \rightarrow S Indole$ $X N$
0-5 Penicillin (10 U) Na Na	5-0 Malonate N he fost 60.42
0-5 Vancomycin (30 ug) 8 _ R P	1-4 PAD N X 38 Styles Urea 1/2 h setpered set pink - x/10
3-2 Colistin (10 mcg) 74 0 2nd 3ref 9.8 0-	47 6.5% NaCL POS POS 40
5-0 Polymyxin B (300 U) 10 10 +	0.510% Lactose $N$ $N$ $Z.88$
88.37-	$\frac{1}{3-2} \text{ Growth } 42^{\circ} \frac{N}{154} \frac{N}{165} \frac{N}{165} \frac{1}{165} \frac{1}{$
	tan slant

Figure 321: Stenotrophomonas maltophilia isolate 1-of-50.

Final Identification:	TEND TROP	homowas mulphilin prission
Comments: prev 12	): B. cupacia environ	nentral. No 30-tubes done; Nuc 57 B. april 99.998
<u>Mala</u> ASHEX	1: Smalto by Vite	alto. 3
Gram Morph. Gram Test Motility Wet Prep Motility Deep Oxidase Catalase PLATES Odor Pigment on swab Pigment on BAP Morphology on BAP Beta hemolysis Growth on Mac DNase hydrolysis Starch hydrolysis Starch hydrolysis Lecithinase Lipase Rapid LAP Rapid LAP Rapid ESC Sensitivity to: Penicillin (10 U) Vancomycin (30 ug) Colistin (10 mcg) Polymyxin B (300 U)	Gor Pos / pos Heg slow + Pos 48 h 7 day Neg Neg buff ak green gray yel grang sm rd rond Neg Pos? Pos mrddar Pos Pos Pos Neg Neg Neg Neg Neg Neg Neg Neg Neg Neg Neg Neg Neg Neg Neg Neg Neg Neg Reg Reg	Induces48 h7 dayKIA $\frac{F/NC}{Neg}$ $\frac{K/K}{KL}$ $-M_2S$ NegPseudo PNegPseudo FNegPseudo FNeg $Mag$ Neg $Mag$ Neg $Mo_3$ reduced $\chi$ $Mag$ Neg $Mo_2$ reduced $\chi$ $Mag$ Neg

Figure 322: Stenotrophomonas maltophilia isolate 2-of-50.

Date In	noculated: U	18/00/14					
Final I	dentification:	Stenota	ophom	ONAS MA	Hophili	A/AS	9/22/
Comm	ients: Labrepor	+ : Steno maltophi	ilia	Maedi: 5 n	reltophiliz	2.184	114
	· · · · · · · · · · · · · · · · · · ·				2013	-14#37	
Gram		· · · · · · · · · · · · · · · · · · ·			<u>8h</u> <u>7d</u> <u>UNC</u> <u>k</u> Neg <u>k</u>	av Ik	
-	ty Wet Prep ty Deep se	Pos / Near		Pseudo P Pseudo F	Nez I	Veg Veg	
Catala <u>PLAT</u> Odor		POS <u>48 h</u> 7 day New List	t_	NO <sub>3</sub> reduced Gas from NO <sub>3</sub> NO <sub>2</sub> reduced Gas from NO <sub>2</sub>	X red b Nrr 1 X A tiny bubble	the zn Pos + Veg- Veg- Neg-ned -	
Pigme Morp Beta l Grow	ent on swab ent on BAP hology on BAP hemolysis th on Mac se hydrolysis	<u>ltycnow</u> <u>alive</u> <u>gr</u> <u>yd</u> <u>yd</u> <u>rownd,wet</u> <u>rody</u> <u>Neg</u> <u>Ne</u> <u>Pos</u> <u>tryice</u> <u>f</u> <u>Ros</u> <u>po</u>	gray affect, wet	+OF Fructose +OF Dextrose -OF Lactose +OF Maltose -OF Mannitol -OF Xylose -OF Sucrose	ycity c liei top c cir Be - ycity - Be-cr - Cr	<u>pl</u> + <u>fel</u> + <u>Be-Gr</u> - BLU <u>ghl</u> + <u>Be-Gr</u> - BLU <u>Gr</u>	E
repeat Starc repeat Lecit Lipas	h hydrolysis hinase Clearwrike	Neg fe	NEC NEC Nec APPOS	Arginine Lysine Ornithine Base Control	-feskig Pos Neg- Neg-	Neg - Neg - Neg -	
Rapi Rapi <u>Sens</u> Per Va Co	d LAP d ESC <u>itivity to:</u> nicillin (10 U) ncomycin (30 ug) listin (10 mcg) lymyxin B (300 U	Pos Pos 4 P 115	R R S	Acetamide Esculin Gelatin Indole Malonate PAD Urea 2 h 6.5% NaCL 10% Lactose ONPG Growth 42° 7	Set cloudy Noz- Neg-	Negr POS + V POS + V Negr Negr Negr Negr Negr Negr Negr	

Figure 323: Stenotrophomonas maltophilia isolate 3-of-50.

Reference No./Name: Maldi Shdy#181	arig anyo 2008-13
Date Inoculated: $Max 7/3 = 1/3$	
Final Identification:	pro PS-ento stray as 5. matter. misto by lat
Comments: Drev 12: B. upacia qv 1	mails of an
maedi: S.maetophilia b	VITUEMS ROO, IVD are Bruker 2008-13
Gram Morph.	<u>Tubes</u> <u>48 h</u> <u>7 day</u>
Gram Test	KIA <u>K/NC</u> <u>R/K</u> H <sub>2</sub> S <u>No</u> <u>N</u> try area of dk pont
Motility Wet Prep Motility Deep $\rho_{CS}$	Pseudo P N N
Oxidase Week Slow Pos	Pseudo F $N$ $V$
Catalase <u>Pos</u>	NO3 reduced X for - pixk hyper 3the
PLATES 48 h 7 day	Gas from NO <sub>3</sub> <u>try bubble</u> <u>try bubble</u> NO <sub>2</sub> reduced <u>X</u> <u>NG</u> prike
Odor <u>yo-petaminin</u>	Gas from NO2 tiny bubble high high
Pigment on swab Mu quer-	
Pigment on BAP yel-gray yel-gray	OF Fructose <u>yel-top</u> + OF Dextrose <u>yel-top</u> +
Morphology on BAP round wound	OF Lactose BL R
Beta hemolysis No 4	OF Maltose <u>yet</u> +
Growth on Mac $\int \partial s = \int \partial s$	OF Xylose BI PL -
DNase hydrolysis fos fos	OF Sucrose BI DLOV -
Starch hydrolysis Neg N	
Lecithinase N N	Arginine <u>N</u> <u>N</u> Lysine Pos <u>Pos</u>
Lipase N N	Ornithine $N$ $N$
Rapid PYR $\mathcal{N}$	Base Control N N
	A cotomido Al
	Acetamide <u>N</u> Esculin <u>Pos - blk-skat</u> <u>Pos - zeeklaak</u>
Rapid ESC <u>POS</u>	Gelatin N N
Sensitivity to: for 1243	Indole <u>X</u> <u>N</u>
(No pen in hb) Penicillin (10 U) Wring disainer <u>Na</u>	PAD N X
Vancomycin (30 ug) <u>L</u> <u>L</u>	Urea na 2 h N stt. pera- N set pera
Colistin (10 mcg) 8.5	6.5% NaCL <u>P05 P05</u>
Polymyxin B (300 U) _/O/O/O	10% Lactose $N$ $N$
	$\frac{\text{ONPG}}{\text{Growth } 42^{\circ} \text{TSA}} = \frac{N}{\rho \text{OS}} = \frac{N}{\rho \text{OS}}$
	tanslant

Figure 324: Stenotrophomonas maltophilia isolate 4-of-50.

## Final Identification:

Comments:

ion: <u>Stenotrophotronas MALtophilia pros-wrogby sind</u> <u>prev.1D O.internedium 30-tube</u> <u>Nucsi R.p. detti. 61.26/0. anthopi</u> 35.74 <u>preedi: S.naetophilia by Vitalmis RAO, IVDace Bruker</u> 2009-15

Gram Morph. Gram Test Motility Wet Prep	gnr	Tubes KIA —H <sub>2</sub> S	<u>48 h</u> <u>K/NC.</u> <u>NCG</u>	7 day Hu Neg
Motility Deep Oxidase	Pas show Pos	– Pseudo P – Pseudo F	Neg-	Nez_
Catalase PLATES Odor 5	<u>48 h 7 day</u> 514. ammonia Neg	<ul> <li>NO<sub>3</sub> reduced</li> <li>Gas from NO<sub>3</sub></li> <li>-NO<sub>2</sub> reduced</li> <li>- Gas from NO<sub>2</sub></li> </ul>	X Nerr X try bundle	Pos-not hepre zive Meg- Neg-net try bubble
Pigment on swab Pigment on BAP Morphology on BAP Beta hemolysis Growth on Mac DNase hydrolysis	<u>gold</u> <u>dhi gun</u> <u>gray-yellow</u> <u>gray-yellow</u> <u>vd</u> <u>rouk</u> <u>Neg</u> <u>fos</u> <u>Pos clear nt</u> <u>Smichien</u> <u>Pos</u> <u>fos</u>	<ul> <li>DF Fructose</li> <li>OF Dextrose</li> <li>OF Lactose</li> <li>OF Maltose</li> <li>OF Mannitol</li> <li>OF Xylose</li> <li>OF Sucrose</li> </ul>	Gr Gr Be Be Bl Bl Bl	yel top yel top bare Yello Be Be Be
Starch hydrolysis Lecithinase Lipase Rapid PYR	Neg Neg Neg Neg Neg Neg Neg	-Arginine PLysine -Ornithine -Base Control	Neg Pos Neg Neg	Naz POS Nag- Nez-
Rapid LAP Rapid ESC <u>Sensitivity to:</u> Penicillin (10 U) Vancomycin (30 ug) Colistin (10 mcg) Polymyxin B (300 U)	<u>Pos</u> <u>Pos</u> <u>R</u> <u>R</u> <u>8.5</u> <u>8.5</u> <u>R</u> <u>11.5</u> <u>11.5</u> <u>5</u> <u>14</u> <u>14</u> <u>5</u>	<ul> <li>Acetamide</li> <li>Esculin</li> <li>Gelatin</li> <li>Indole</li> <li>Malonate</li> <li>PAD</li> <li>Urea 12 h</li> <li>6.5% NaCL</li> <li>-10% Lactose</li> <li>ONPG</li> <li>Growth 42° m</li> </ul>	Nep Pos-bros Neg X Bl-a- Neg West-stert Pos Neg Neg Neg	Ng Ht <u>C britet</u> +butt <u>AS</u> <u>Ng</u> <u>Belue</u> -Pur <u>X</u> <u>wkCSLat</u> <u>Pos</u> <u>Neg</u> <u>Neg</u> <u>Neg</u>

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 325: Stenotrophomonas maltophilia isolate 5-of-50.

Date Inoculated: Final Identification: Comments:	5-2-06 Sten <i>o</i> tirop	Korroas MX	1140ph,	Lin P.S.	5/9/0C
Gram Morph. Gram Test Motility Wet Prep - Motility Deep - Oxidase + Catalase PLATES Odor Pigment on swab Pigment on BAP Morphology on BAP + Beta hemolysis + Growth on Mac + DNase hydrolysis - Starch hydrolysis - Lecithinase + Lipase - Rapid PYR + Rapid LAP + Rapid ESC Sensitivity to: - Penicillin (10 U) - Vancomycin (30 ug) + Olymyxin B (300 U	<u>S-11</u> <u>S</u>	TubesKIA $H_2S$ Pseudo P-Pseudo F+NO3 reduced-Gas from NO3-NO2 reduced-Gas from NO2+OF Fructose+OF Dextrose+OF Maltose-OF Maltose-OF Mannitol-OF SucroseArginine++Esculin+	48 h F/NC NEG NEG NEG NEG NEG YEL YEL BLOE BLOE BLOE BLOE POS NEG NEG NEG NEG NEG NEG NEG NEG	7 day F/K NEG NEG POS NEG NEG YeL YeL YeL BLUE YeL BLUE YeL BLUE NEG NEG NEG NEG NEG NEG NEG NE	юн Diffasilie it @ 7D

Note: All biochemical tests (except where noted) are incubated at 30°C and read after 48 hrs. incubation and again at 7 days.

Figure 326: Stenotrophomonas maltophilia isolate 6-of-50.

/

StenotRophomonas MALtophilia P.S. 8/18/06 Date Inoculated: Final Identification: Comments:

Lt. Yellow And CREATY IN Appearance on Starch@ 4D

Gram Morph. Gram Test <u>246</u> Motility Wet Prep <u>Pos Real</u> Motility Deep <u>Pos Pos</u>	Tubes KIA48 h $F/N \in$ 7 day $K/K$ - H2SNewK/K- Pseudo P - Pseudo FNewNewNew
- Oxidase Neb-Grow POS - Catalase <u>POS</u> <u>PLATES</u> 24/ <u>48 h</u> 7 day Odor <u>None Arrow</u> A Pigment on swab White	+ NO <sub>3</sub> reduced - Gas from NO <sub>3</sub> $\frac{New}{New}$ + NO <sub>2</sub> reduced - Gas from NO <sub>2</sub> $\frac{New}{New}$
Pigment on BAP $\underline{6de4}$ Morphology on BAP $\underline{Smoth-ball}$ - Beta hemolysis $\underline{Neb}$ + Growth on Mac $\underline{Pos}$ + DNase hydrolysis $\underline{Pos}$ $\underline{Pos}$ $\underline{Pos}$	$+$ OF Fructose $\underline{YeL}$ $\underline{YeL}$ $\underline{YeL}$ $+$ OF Dextrose $\underline{YeL}$ $\underline{YeL}$ $-$ OF Lactose $\underline{BLue}$ $\underline{SLue}$ $+$ OF Maltose $\underline{YeL}$ $\underline{YeL}$ $-$ OF Mannitol $\underline{BLue}$ $\underline{BLue}$ $-$ OF Xylose $\underline{BLue}$ $\underline{BLue}$ $-$ OF Sucrose $\underline{BLue}$ $\underline{BLue}$
— Starch hydrolysisNewNew— LecithinaseNewNew+ LipasePOSPOS— Rapid PYRNew	ArginineNec-Nec-+ LysinePocPoc- OrnithineNec-Nec Base ControlNec-Nec-
+ Rapid LAP $\underline{Pos}$ + Rapid ESC $\underline{Pos}$ Sensitivity to: - Penicillin (10 U) $\underline{R}$ $\underline{R}$ - Vancomycin (30 ug) $\underline{R}$ $\underline{R}$	Acetamide $Nec$ $Nec$ $+$ Esculin $Pos$ $Pos$ $+$ Gelatin $Nec$ $Pos$ $-$ Indole $Wec$ $+$ Malonate $Arec$ $+$ PAD $Pos$
$+ \text{Colistin (10 mcg)} \qquad \underline{3-8} \qquad \underline{5-9} \\ + \text{Polymyxin B (300 U)} \qquad \underline{5-9} \qquad \underline{5-9} \\ \end{array}$	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$

Note: All biochemical tests (except where noted) are incubated at 30°C and read after 48 hrs. incubation and again at 7 days.

Figure 327: Stenotrophomonas maltophilia isolate 7-of-50.

2-5-07

Final Identification:

Comments:

	am Morph.	486		<u>Tubes</u> KIA	48 h	$\frac{7 \text{ day}}{4}$	
	am Test		edg	H <sub>2</sub> S	NEG	Nele	
Mo	otility Wet Prep	POS- VERY	motile				
Mo	otility Deep	Pos Tun	POS	Pseudo P	Nela	Neb	
Ox	cidase	NeG		Pseudo F	NCG	Neb	
Ca	italase	STRONG	POS	NO <sub>3</sub> reduced		Nela	
PL	LATES	<u>48 h</u>	7 day	Gas from NO <sub>3</sub>	Nea	Nela	
Od	lor	None-9	cight Ation, A	NO <sub>2</sub> reduced Gas from NO <sub>2</sub>	Nela	Nelo	
Pi	gment on swab	Buff					
Pi	gment on BAP	De <u>ep 6 key</u>		OF Fructose OF Dextrose	Yel	Yel Yel	
M	orphology on BAP	Smooth		OF Lactose	GRN	BLUE	
Be	eta hemolysis	Neb		OF Maltose	Yel	Yel	
G	rowth on Mac	POS	Pos	OF Mannitol OF Xylose	BLUE	Blue	
D	Nase hydrolysis	POS	POS	OF Sucrose	GRN	GRN	
Ŝt	arch hydrolysis	NEG	Neb	Arginine	Nea	Neb	
Le	ecithinase	Nea	Neb	Lysine	Pos	POS	
Li	ipase	NCG	POS	Ornithine	New	Nela	
R	apid PYR	New		Base Control	Nela	Nel	
R	apid LAP	POS		Acetamide	Nela	Nela	
R	apid ESC	POS		Esculin Gelatin	Neg	POS	
Se	ensitivity to:			Indole	108	Nela	, 10
]	Penicillin (10 U)	R	_R	Malonate	Nela	POS	
	Vancomycin (30 ug	) <u>Ř</u>	Ŕ	PAD Urea <b>Ne</b> 2 h	NEG	Neb	
	Colistin (10 mcg)	5-10	5	6.5% NaCL	NEG	Nelo	
	Polymyxin B (300 I	U) 5-12	_ <u>S</u>	10% Lactose	POS	POS	
				ONPG Growth 42 <sup>0</sup>	Pes	POS	BROW Drac.
				510 mul 42	1.*	1-0	PIGHT

2-14-07 Stevetrophomowns maltophilia 2/14/07

P.S.

\_\_\_\_\_

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 328: Stenotrophomonas maltophilia isolate 8-of-50.

Date Inoculated: 12-29-10

Final Identification:

Comments:

tion: <u>Stenotrophotronas</u> MALtophilia P.S. 12/30/10 Light peach on Starch & Egg Yelk @ 10 DAYS

1 1

			24	1/7/11 9 DAYS
Gram Morph.		Tubes	<u>48 h</u>	<u>7 day</u>
Gram Test	24h	KIA	E/NC	<u>FIR</u>
Motility Wet Prep	Pos	$H_2S$	New	NEG
Motility Deep	POS POS	Pseudo P	Nea	Nela
Oxidase	SLOW AS (15 BBB)	Pseudo F	Neb	Nele
Catalase	Strong DOS	NO <sub>3</sub> reduced		NEG
<b>PLATES</b>	<u>48 h</u> <u>7 day</u>	Gas from NO <sub>3</sub>	NEG	NEG
Odor	Nowe	NO <sub>2</sub> reduced Gas from NO <sub>2</sub>	New	Nel
Pigment on swab	6 of den	1	0.	YEL/GRN
Pigment on BAP	GREY	+ OF Fructose + OF Dextrose	Blue	Yel/GRN GRN
Morphology on BAP	Smooth	+ OF Lactose	BLUC	GRN
Beta hemolysis	Nelo	+ OF Maltose	Yer	Yeh
Growth on Mac	SPARSE 6 DORETH POS	—OF Mannitol + OF Xylose	BLUEC	BLUE BRN
DNase hydrolysis	Pos Pos	-+ OF Sucrose	BLUE	GRN
Starch hydrolysis	NEG NEG	Arginine	NeG	Ne6-
Lecithinase	NEG NEG	Lysine	fex;	POS
Lipase	New Pos	Ornithine	NeG	Neb
Rapid PYR	Nelo	Base Control	NeG	NEG
Rapid LAP	POS	Acetamide	Nele	NeG 1
Rapid ESC	POS	Esculin Gelatin	New	Pos!
Sensitivity to:		Indole	New	Neg '
Penicillin (10 U)	R R	Malonate	Neb	pos
Vancomycin (30 ug)	RR	PAD	POS	WE SLANT ONLY
Colistin (10 mcg)	5-9.5 5	Urea≁ <u>@</u> 2 h 6.5% NaCL	NEG	POS POS
Polymyxin B (300 U)	5-10.6 9	10% Lactose	NEG	Nele
		ONPG Growth 42 <sup>0</sup>	Pos	PIS!
		Growin 42	10>	

Note: All biochemical tests (except where noted) are incubated at 30°C and read after 48 hrs. incubation and again at 7 days.

Figure 329: Stenotrophomonas maltophilia isolate 9-of-50.

Final Identification:

10-21-08 10-21-08 Stenetrophomonas Maltophilia A 4.5. 10/31/08 \_\_\_\_\_

Comments:

				10/31/08
Gram Morph.		Tubes	<u>48 h</u>	7 day 10 DA
Gram Test	48hR.	KIA H <sub>2</sub> S		ELICHT II
Motility Wet Prep	Pog - med Rods	1120		SLIGHT HZ
Motility Deep	POS	Pseudo P		Nea
Oxidase	SLOW POG (35 gec)	Pseudo F		New
Catalase	STRONG POS	NO <sub>3</sub> reduced		POS
PLATES	48 h 7 day	Gas from NO <sub>3</sub>		New
Odor	NONE	$NO_2$ reduced Gas from $NO_2$		NEG
Pigment on swab	TAN	Clas Holli NO <sub>2</sub>	3	NEO
Pigment on BAP	Yellowish - GRE-1	OF Fructose		Yel GRN
		OF Dextrose		Yec/GRN
Morphology on BAP	SMOOTH-STRINGY	OF Lactose OF Maltose		YEL/GRN
Beta hemolysis	Nº6	OF Mannitol		Yei/GRN BLUE
Growth on Mac	Pog	OF Xylose		BLUE
DNase hydrolysis	Pos .	OF Sucrose		YEL/GRN
Starch hydrolysis	NEG	Augining		Nec
Lecithinase	NeG	Arginine		Pes
Lipase	Pos	Ornithine		Nel
Rapid PYR	Pos Web	Base Control		New
Rapid LAP	POS POS	Acetamide		Nec
Rapid ESC	GODDE POS	Esculin		Pes
-	12-1-1	Gelatin		POS
Sensitivity to:	A	Indole		BLUE-POS
Penicillin (10 U)		Malonate PAD		POSI
Vancomycin (30 ug)	<u>R</u>	Urea Nece-2 h	NEG	Neg
Colistin (10 mcg)	<u> </u>	6.5% NaCL		Pos Cut
Polymyxin B (300 U)	9-10	10% Lactose		Nec
		ONPG Growth 42 <sup>0</sup>		POS
		Growin 42		103

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 330: Stenotrophomonas maltophilia isolate 10-of-50.

		2 11 00				
	Date Inoculated:	3-16-09	21. 4	/	11 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
	Final Identification:				MALTAPhiliA	
	Comments: <u>SLI</u>	ht Yellow diffusib	le pigner	IT ON F	seud = P.S.	,
	$\propto h$	remolatic on BAP	CONFIR	ned B	1 Lipuria La	
		4DAY	0		3/23 (see ATTACH	2)
	Gram Morph.	Very hotile	Tubes	$\frac{48 \text{ h}}{1}$	7 day	/
	Gram Test	246 POG TUHBLING	KIA H <sub>2</sub> S	K/NC Nele	NR ALPE	
	Motility Wet Prep	Nele Hed Rods	тп <sub>2</sub> 5	NCO	TV Car	
+	Motility Deep	POS? POGMENE	Pseudo P	Nea	Nec-	
_	Oxidase	Nela	Pseudo F	Nelo	NEG	
+	Catalase	AOS	NO <sub>3</sub> reduced		Nea	
· ·	PLATES 3/20	<u>48'h</u> 40 <u>7 day</u>	Gas from NO <sub>3</sub>	NCG	NECE	
	Odor	SLIGHT MOUSEY	$NO_2$ reduced Gas from $NO_2$	NEG	NCO NEC	
	Pigment on swab	Bubb	-	N	Dette	
	Pigment on BAP	EREY	OF Fructose OF Dextrose	Blue	BLUC	
	Morphology on BAP	TRANGLULONT	OF Lactose			
	Beta hemolysis	Neb	OF Maltose			
	Growth on Mac	POS POS	OF Mannitol OF Xylose			
	DNase hydrolysis	NEG NEG	OF Sucrose	V		
	Starch hydrolysis	Nelo Nelo	Arginine	mp/	Nece Reset 3/2	0
	Lecithinase	Nele Neo	Lysine	Pog	POS POS	
	Lipase	POS POS	Ornithine	NeG	Nece Nece	
	Rapid PYR	NEG	Base Control	NCG	Nelo Nelo	
	Rapid LAP	POS	Acetamide	Nea	NEG	
	Rapid ESC	POS	Esculin Gelatin	POS NRG-	NOS WEG	
	Sensitivity to:	· · · · · ·	Indole	1000	NEG	
	Penicillin (10 U)	RR	Malonate	Nele	NEG (GRN/BLUE)	
	Vancomycin (30 ug)	R R	PAD Urea <u>n 26</u> 2 h	POS NeG	Nea	
	Colistin (10 mcg)	R R	6.5% NaCL	NCG	NEG	
	Polymyxin B (300 U)	5-10 9	10% Lactose ONPG	NEG	Nele_ NPG	
			Growth 42 <sup>°</sup>	Nela	NEG	

Figure 331: Stenotrophomonas maltophilia isolate 11-of-50.

Date Inoculated:	4-16-09		Paul	kes conpects set of papers "Inte
Final Identification:	Steno teophor	YAS MALY	optilin	- ATYPICAL
Comments: <u>Ye</u>	low on Starch,	PRODUCES	BLACK	discolopation on BAD
BAR	> MIKED@ 7D.	\$ e ·	,	
Gram Morph. Gram Test Motility Wet Prep Motility Deep Oxidase Catalase PLATES Odor Ye O + Pigment on swab Look - Pigment on BAP MIYED - Pigment on BAP MIYED - Pigment on BAP MIYED - Pigment on BAP Beta hemolysis Growth on Mac DNase hydrolysis Starch hydrolysis Lecithinase Lipase Rapid PYR Rapid LAP Rapid ESC Sensitivity to: Penicillin (10 U)	48h Nel medium tolong Nel Robs- Some we Nel Nels - Some we Nels Nels STRONG POS 48h 7 day NON E Yellow CREY - SPARSE @ 48h SMOOTH NON E POS POS POS POS POS POS NEL NELS NELS NELS NEL	$\frac{\text{Tubes}}{\text{KIA}}$ $H_2S$ $\frac{27}{27}$ Pseudo P	HIS 48 h Kelo Nelo	4/23 7 day K/K NEG NEG NEG NEG NEG NEG NEG NEG
	5-13 5	- Urea/ <u>U62</u> h - 6.5% NaCL - 10% Lactose - ONPG - Growth 42°Ger	NEG NEG NEG NEG	NEG NEG NEG SCANT GROWTH

Figure 332: Stenotrophomonas maltophilia isolate 12-of-50.

	Date Inoculated:	4-16-09				
	Final Identification:	Sterro tropho.	MONAS M	Altopha	Lin P.S	
	Comments: Buf	E color on 9th	ech.		5/15/0	9
	TAN	COLOR ON BA	P@ 7DAY	9		
	Gram Morph.	ter transformer	Tubes	4/ <i>18</i> 48 h	4/23 7 dav	
	Gram Test	486	KIA	K/NC	FIK	
	Motility Wet Prep	NEG MERIUM PODS NEG VERY GITTERY	H <sub>2</sub> S	New	Neb	
~	-Motility Deep	Hels Nels	Pseudo P	Nea	Nela	
-	Oxidase	Nels (Very delayed por	5) Pseudo F	Nela	NEG TAN DIG PIQ MEN	vt@7b
t	-Catalase	STRONG POS	-NO <sub>3</sub> reduced		Nele	
,	PLATES	<u>48 h</u> <u>7 day</u>	-Gas from NO <sub>3</sub> -NO <sub>2</sub> reduced	NeG	NeG	
	Odor	NONE	$Gas \text{ from NO}_2$	Nela	TINY BUBBLE	
	Pigment on swab	CREAT		Nuc	GRN/BLUE	
	Pigment on BAP	GRey_	<ul> <li>OF Fructose</li> <li>OF Dextrose</li> </ul>	BLUE	GRN/BLUC	
	Morphology on BAP	Smeoth-Good Growth	OF Lactose		DARKE BLUC	
	Beta hemolysis	NEW NEG	+OF Maltose		yel_	
+	Growth on Mac	105- SPARSE POS	S -OF Mannitol OF Xylose		DARE BLUE	
_	DNase hydrolysis	Neg white halo		V	DARK BLUE	
	Starch hydrolysis	Net Neb	-Arginine	Ne6-	Nea	
	Lecithinase	NeG NEG	-{ Lysine	Pos	Pos	
	Lipase	NEG NEG	Ornithine	Nea	New	
	Rapid PYR	Nec	Base Control	Nec	Nela	
	Rapid LAP	Pos	Acetamide	Nele	Nec	
	Rapid ESC	POS	-{- Esculin	POS	Nec	
	Sensitivity to:	•	<ul> <li>Gelatin</li> <li>Indole</li> </ul>	NeG	Nea	
	Penicillin (10 U)	R	Malonate	NeG	Nea	
-	Vancomycin (30 ug)	STO SLight TON Q	-+PAD 	POS	Nea	
- *	Colistin (10 mcg)	5-18 R R	-6.5% NaCL	NeG	Nela	
~ Á	Polymyxin B (300 U)	5-10 S-11 R	-10% Lactose	Nel	Nea	
1			-ONPG	Ne6 NTAOS	SEANT GROWTH	L
			- 30			

Figure 333: Stenotrophomonas maltophilia isolate 13-of-50.

Reference No./Name:	Destant
	4-16-09 Paul has complete set of papers ability the
Date Inoculated:	
Final Identification:	Sterro trophoment MALLOPHILIA V.S. STIS/09
Comments: PooR	GROWTH ON STARCH, TURNS BAP BLACK
Very	
Gram Morph. Gram Test Motility Wet Prep Motility Deep Oxidase Catalase PLATES Odor Yec of Pigment on swab Pigment on BAP Morphology on BAP Beta hemolysis Growth on Mac DNase hydrolysis Starch hydrolysis Lecithinase Lipase Rapid PYR Rapid LAP Rapid ESC Sensitivity to:	$\begin{array}{c c c c c c c c c c c c c c c c c c c $
Penicillin (10 U) Vancomycin (30 ug) 	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$

Figure 334: Stenotrophomonas maltophilia isolate 14-of-50.

Final Identification:

Comments:

6-9-09 ion: 6-16-09 S. MALTOPHILIA 6/19/09 P.S. SPARSE 9 Rometh ON BAD IN 24h.

Gram Morph.		Tubes	<u>48 h</u>	7 day
Gram Test	71 1D	KIA		KK
Motility Wet Prep	New New	$H_2S$		Nel
Motility Deep	Nel - Staderman a, e	Pseudo P		Nea
Oxidase	Neb	Pseudo F		Nel
Catalase	STRONG Pas	NO <sub>3</sub> reduced		Nela
PLATES	<u>48 h 7 day</u>	Gas from NO <sub>3</sub>		Nela
Odor	NONE	$NO_2$ reduced Gas from $NO_2$		NEG
Pigment on swab	BUFF			Juce
Pigment on BAP	GREY	OF Fructose		Yec/GRN
Morphology on BAP	Smooth	OF Dextrose OF Lactose		YEL/GRN
	NCG	OF Lactose OF Maltose		Yel
Beta hemolysis	NCC	JOF Mannitol		Bue
Growth on Mac	<del>\$03</del> /N Hibiled	OF Xylose		YeL
DNase hydrolysis	POS DARKE Bin	07.0		Bue
Starch hydrolysis	New	A nainina		101
Lecithinase	NEG SCANT	Arginine Lysine		Neb
	NCG / FRaut	Cornithine		Nela
Lipase		Base Control		Nela
Rapid PYR	Nela			
Rapid LAP	Neb	Acetamide		Nea
Rapid ESC	Nela	Esculin		POS
Sensitivity to:		Gelatin Indole		NEG
	R	Malonate		w+
Penicillin (10 U)		PAD		Nela
Vancomycin (30 ug)	> 6 -15	Urea2 h		Neb
Colistin (10 mcg)	R	6.5% NaCL		Neb
Polymyxin B (300 U)	R	10% Lactose		NCG
		ONPG		New
		Growth 42 <sup>°</sup>		NeG

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 335: Stenotrophomonas maltophilia isolate 15-of-50.

Final Identification:

6-9-09 6-16-09 S. MALTophikiA 6/19/09 P.S.

Comments:

Gram Morph. Gram Test	Medini 1 XOAY	r Rods	Tubes KIA H <sub>2</sub> S	<u>48 h</u>	7 day HK Nelo
Motility Wet Prep	P05				
Motility Deep	NEG	144440 014515 1.7 st	Pseudo P Pseudo F		Nece
Oxidase	Nela		I seddo I		Nela
Catalase	Stronlo	POS	NO <sub>3</sub> reduced		Nel- RILLA
PLATES	<u>48 h</u>	7 day	Gas from $NO_3$ $NO_2$ reduced		HEC TINY Bubble
Odor	NONE	an a	$Gas from NO_2$		New
Pigment on swab	Buch				
Pigment on BAP	GREY		OF Fructose OF Dextrose		Yel Yel
Morphology on BAP	Smaoth		OF Lactose		Bue
Beta hemolysis	Neb		OF Maltose		Yer
Growth on Mac		POS	OF Mannitol OF Xylose		BLUE
DNase hydrolysis		Pos yellow	OF Sucrose		BLUE
Starch hydrolysis		NEG	Arcinino		NeG
Lecithinase		Nele	Arginine Lysine		Pes
Lipase		POS	Ornithine		New
Rapid PYR	New		Base Control		Nele
Rapid LAP	pos		Acetamide		Nela
Rapid ESC	POG		Esculin Gelatin		<u>105</u>
Sensitivity to:			Indole		Nº6-
Penicillin (10 U)		R	Malonate		POS
Vancomycin (30 ug)		R	PAD Urea 2 h		NEG
Colistin (10 mcg)		R	6.5% NaCL		New
Polymyxin B (300 U)	)	5-13	10% Lactose		Nea
			ONPG Growth 42 <sup>0</sup>	A	POS
			010wul +2	-12	10.5

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 336: Stenotrophomonas maltophilia isolate 16-of-50.

Final Identification:

6-9-09 6-16-09 S. MALtophilia 6/19/04 A.S.

Comments:

Gram Morph. Gram Test	#DAY	r Rods	<u>Tubes</u> KIA H <sub>2</sub> S	<u>48 h</u>	7 day KIK Hz 5 Dos AT INTERFACE
Motility Wet Prep Motility Deep Oxidase	POS POS NeG	<u>RY MOTILE</u>	Pseudo P Pseudo F		Nele
Catalase <u>PLATES</u> Odor	STRONG 48h NONE	<u>5 P@S</u> <u>7 day</u>	NO <sub>3</sub> reduced Gas from NO <sub>3</sub> NO <sub>2</sub> reduced Gas from NO <sub>2</sub>		POS <u>+idy Bubble</u> <u>NeC</u> <u>Tiny Bubble</u> - NeC
Pigment on swab Pigment on BAP Morphology on BAP Beta hemolysis Growth on Mac DNase hydrolysis	Light Yel Grey Sunooth NEW	POS POS Yealow			Yel Yel Bive Bive Bive Bive Bive
Starch hydrolysis Lecithinase Lipase Rapid PYR	Neb	NEG NCG POS	Arginine Lysine Ornithine Base Control		Nec- POS Nec- Nec-
Rapid LAP Rapid ESC <u>Sensitivity to:</u> Penicillin (10 U) Vancomycin (30 ug) Colistin (10 mcg) Polymyxin B (300 U)	<u>P09</u> <u>P09</u>	R R S-12	Acetamide Esculin Gelatin Indole Malonate PAD Urea2 h 6.5% NaCL 10% Lactose ONPG Growth 42 <sup>0</sup>		Neb Pos Neb Neb Neb Neb Neb Neb Neb
			010 wul +2		1 WI WI COU

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 337: Stenotrophomonas maltophilia isolate 17-of-50.

Final Identification:

9-8-09 Steno trophorowas MALTOPHILIA 1 5. 91 109 0

Comments:

		0.11	2		9/10/09	9/14/09
	Gram Morph.	24h		Tubes	<u>48 h</u>	7 day
	Gram Test	-	2005- POS	KIA H <sub>2</sub> S	K/Ne Nelo	Slight H2S
	Motility Wet Prep	Nele sm	ALC ROAS	1125	1000	Scigni H22
+	Motility Deep	Pos	Pos	Pseudo P	NEG	Nela
	Oxidase	NEG (VC	Ry delayed	Pseudo F	NEG	Neo
	Catalase	STRONG	Pos	NO <sub>3</sub> reduced		
	PLATES	<u>48 h</u>	7 day	Gas from $NO_3$ NO <sub>2</sub> reduced	Nea	Ne6
	Odor	None		$Gas from NO_2$	Nela	Nela
	Pigment on swab	BUFF			0	N. /
	Pigment on BAP	Light 61	ley	+ OF Fructose + OF Dextrose	Buc	Yel TERN
	Morphology on BAP	Smooth	entire	MegOF Lactose	Bue	BLAC
	Beta hemolysis	Neb		+ OF Maltose	Yel/6RN	Yer
	Growth on Mac	P05 (5P	ARSE) POS	NEG-OF Mannitol	BLUE	BLUE
	DNase hydrolysis	POS	Pos!	rec-OF Sucrose	Brue	BLUE
	Starch hydrolysis	Neb	Nece	Arginine	NEG	Neb
	Lecithinase	Ne6-	Neb	Lysine	805	Pos
	Lipase	New	Neb	Ornithine	New	Nec
	Rapid PYR	Nele		Base Control	Nelo	NEG
	Rapid LAP	Pos		Acetamide	Nec	NEG
	Rapid ESC	POS		Esculin Gelatin	POS NEG	109
	Sensitivity to:			Indole	1100	
	Penicillin (10 U)	R	R	Malonate	Neb	Hets Pos
	Vancomycin (30 ug)	R	R	PAD Urea <i>Nℓω</i> 2 h	POS (a	NPla
	Colistin (10 mcg)	R	R	6.5% NaCL	New	Pos
	Polymyxin B (300 U)	R	R	10% Lactose	Nea	Nele
				ONPG Growth 42 <sup>0</sup>	Neo- Pog	Pas
				010wul +2	10/	100

Note: All biochemical tests (except where noted) are incubated at 30°C and read after 48 hrs. incubation and again at 7 days.

Figure 338: Stenotrophomonas maltophilia isolate 18-of-50.

Date Inoculated:	9-22-09				
Final Identification:	STENO TROPHO	MONAS	MALto	shilin	10/6/09
Comments:	ATYPICAL - ITH		/		AS.
sta	enotrophomonas me	etophilia	per t	oNA se	quencing by
	U	0	24	10/6	ARUE
Gram Morph.		<b>Tubes</b> KIA	<b>48 h</b> t <td>7 day</td> <td>LABS</td>	7 day	LABS
Gram Test	24h Long medicer	H2S	NEG	Neb	
Motility Wet Prep	POS AND Short RODS				
Motility Deep	Nela Pos	Pseudo P Pseudo F	Nea	NEG	
Oxidase	Nel	i soudo i	Nel		
Catalase	Pes	NO <sub>3</sub> reduced	1101	Nee	
PLATES 24	48th 7.day	Gas from NO <sub>3</sub> NO <sub>2</sub> reduced	Nela	Nela	-
Odor	NONE	Gas from NO <sub>2</sub>	NEG	Nela	
Pigment on swab	off white	OF Fructose	BLUC	Bruce	
Pigment on BAP	Light GREY	OF Dextrose	pur	1	
Morphology on BAP	CLEAR TRASLUCENT	OF Lactose			
Beta hemolysis	NCG Day LAVENDER	OF Maltose OF Mannitol			
Growth on Mac	SPARSE POS COLONIES	OF Xylose			
DNase hydrolysis	Neb Pos	OF Sucrose	$\neg \checkmark$		
Starch hydrolysis	Nel Nel	Arginine	Nela	NEG	
Lecithinase	Nele Nele	Lysine	Wt?	Pos	
Lipase	New Pos!	Ornithine Base Control	NEG	Neb	
Rapid PYR	Nela	Base Control	NCO	Neb	
Rapid LAP	Pos	Acetamide	NEG	NEG	1
Rapid ESC	pos	Esculin Gelatin	NEG	POS	
Sensitivity to:	- ^	Indole	NEG	Nela	1
Penicillin (10 U)	R R	Malonate	NLG	Pos!	
Vancomycin (30 ug)	RR	PAD Urea <i>Nele</i> h	Nela	NEG	
Colistin (10 mcg)	<u>5</u> <u>S-10</u>	6.5% NaCL	Nela	Nelo	
Polymyxin B (300 U)	5 5-11	10% Lactose ONPG	NeG	NEG	
		Growth $42^{\circ}$	New	New	

Figure 339: Stenotrophomonas maltophilia isolate 19-of-50.

Date Inoculated: $6 - 2l - 10$	
Final Identification: Steno trophonoNAS MALTOPHILIA	P.S/
Comments: Yellow on BAP @ 4 DAYS	6/29/,0

		1	4 DAX	
Gram Morph.		Tubes	48 n 7 day	
Gram Test	24h	KIA	<u> </u>	
Motility Wet Prep	Pos- med Rods Very motile	$H_2S$	Nelo	_
Motility Deep	pos	Pseudo P	Nea	_ Diffusible Boo
Oxidase	SLOW DOS- IMIN	Pseudo F	NCG	_ \$7'
Catalase	Nea	NO <sub>3</sub> reduced		
PLATES	<u>48 h 7 day</u>	Gas from NO <sub>3</sub>	Nec	
Odor	AHONIA	NO <sub>2</sub> reduced		
	Bull-creat	Gas from NO <sub>2</sub>	Nev	
Pigment on swab	GREY - Yellow 4D	OF Fructose	Yel_	_
Pigment on BAP		OF Dextrose	Yer	r
Morphology on BAP	Schooth	OF Lactose OF Maltose	Yel	
Beta hemolysis	Neb-	OF Manose OF Mannitol	BLUE	-
Growth on Mac	Pos pos	OF Xylose	BLae/CRN	
DNase hydrolysis	Neb	OF Sucrose	YeL	/
Starch hydrolysis	NCG-	Arginine	k Co-	
Lecithinase	Neb	Lysine	Pes	
Lipase	POS	Ornithine	Nec	
Rapid PYR	Nela	Base Control	Nel	
Rapid LAP	POS!	Acetamide	NCG	
Rapid ESC	POS!	Esculin	Pos	
Sensitivity to:		Gelatin Indole	105 (WK)	
Penicillin (10 U)	R	Malonate	fo 5	
Vancomycin (30 ug)	$\overrightarrow{R}$	PAD	NeG	
Colistin (10 mcg)	<u>S-11</u>	Urea <i>Nele</i> 2 h	SLIGHT PINK	
		6.5% NaCL 10% Lactose	NEG	
Polymyxin B (300 U)	5-14	ONPG	Ne6-	
		Growth 42 <sup>0</sup>	NEG	

Figure 340: Stenotrophomonas maltophilia isolate 20-of-50.

Final Identification: Steno FROMONAS MALTOPHILIA		1: <u>7-19-10</u>
	Final Identificat	tion: Stenofkomowas MALtophiling
Comments: Light Britten Scotch on Starch @ 48 h		Light Buttenscotch on Strech@48h

Gram Morph.		Tubes	48h E/NC	<u>7 day</u>
Gram Test	24hr med Rods	KIA H <sub>2</sub> S	NEG	
Motility Wet Prep	POS- BATRENely Motil	$\mathcal{L}^{\mathbf{H}_{2}\mathbf{S}}$		
Motility Deep	Pas	Pseudo P	NeG	
Oxidase	SLOW POS - 15 See	Pseudo F	NCG	
Catalase	Strong Pos	NO <sub>3</sub> reduced		
PLATES	<u>48 h 7 day</u>	Gas from NO <sub>3</sub>	NEG	
Odor		NO <sub>2</sub> reduced Gas from NO <sub>2</sub>	Nele	
Pigment on swab	CREAT_		N. C	
Pigment on BAP	ARE GREY	OF Fructose	Yel	
Morphology on BAP	Smaoth-Shinny	OF Dextrose OF Lactose	GRN	t;
Beta hemolysis	NeG	OF Maltose	yel	Ø
Growth on Mac	Pos	OF Mannitol	Blue.	
	Pos	OF Xylose OF Sucrose	BLUE	
DNase hydrolysis	10/2/	OF Sucrose	plue	
Starch hydrolysis	<u>Neo-</u>	Arginine	NEG	
Lecithinase.	NPG	Lysine		
Lipase	POS	Ornithine Base Control	-10	
Rapid PYR	Nele	Base Control	V	
Rapid LAP	Pos	Acetamide	NEG	
Rapid ESC	POS	Esculin	PPG	
Sensitivity to:		Gelatin Indole	105	
Penicillin (10 U)	R	Malonate	Pos	
Vancomycin (30 ug)	R	PAD	POS	
Colistin (10 mcg)	9-13	Urea <u>/VCG</u> 2 h 6.5% NaCL	SLIGHT PIN W+	К
Polymyxin B (300 U)	9-14	10% Lactose	New	
FOIYIIIYXIII D (500 U)		ONPG	NEG	
		Growth 42 <sup>0</sup>	NEG	

Figure 341: Stenotrophomonas maltophilia isolate 21-of-50.

	Date Inoculated:	8-13-1	10	-			
	Final Identification:	Ste	ENO TROPHE	MONAS	Malto	philim	<u>PS</u> 8/20/10
	Comments:	CONGI	Rmed AS	S. MA	1toph.	LIA	9/20/10
		hul	1. L. Pur		RNA		
		- Py J	n, rinn	11 10 31	72h		4
	Gram Morph.			Tubes	<u>48-11</u>	7 day	
	Gram Test	TZhas		KIA	EINC	KK	
	Motility Wet Prep	POS-1	red RODS	$H_2S^*$	Nel	Nel	· · · · ·
	Motility Deep	POS	P0 7	Pseudo P	Nea	Neb	RED diffusible
	Oxidase	POS (	BO sec)	Pseudo F	NEW	New	pignent pyoBuBIN?
	Catalase	STRONG	e Pos	NO <sub>3</sub> reduced		Pos	<i>pycological</i>
	PLATES	<u>48 h</u>	7 day	Gas from $NO_3$ $NO_2$ reduced	New	NEG	
	Odor	None		$Gas from NO_2$	Nele	NEG	
	Pigment on swab	CREAM			001	CON G	A
	Pigment on BAP	Y <u>ellow-C</u>	ner	OF Fructose OF Dextrose	GRN	GRN G	
	Morphology on BAP	SMOOTH		OF Lactose	GRN	GRN (	
	Beta hemolysis	Neb		OF Maltose OF Mannitol	Blue	Yel (	)
	Growth on Mac	POS	Pos	OF Xylose	BLEE	Bue	
	DNase hydrolysis	Pos	Pos	OF Sucrose	GRN	GRN (	Ŧ
	Starch hydrolysis	NEG	Nela	Arginine	New	Ne6-	
	Lecithinase	Nele	Neb	Lysine	Pos	Pos	
	Lipase	POS	POS	Ornithine Base Control	New	Nec-	
	Rapid PYR	Neb		Duse control			
	Rapid LAP	POS		Acetamide Esculin	Nec- Pos	POSI	
	Rapid ESC	POS		Gelatin	NeG	POS	/
	Sensitivity to:	D	P	Indole	-	NEG	-
	Penicillin (10 U)			Malonate PAD	POS	POS	
۰.	Vancomycin (30 ug)	R	<u> </u>	– Urea <u>Ne</u> 62 h	SLIGHT PIN		NeG-
	Colistin (10 mcg)	5-12	5	6.5% NaCL 10% Lactose	POS Nele	POS	
	Polymyxin B (300 U)	5-14		ONPG N <		\$ POS !	<i>i</i>
				Growth 42 <sup>o</sup>	NEG	New	

Figure 342: Stenotrophomonas maltophilia isolate 22-of-50.

Final Identification:

11-16-11

Comments:

BROWN DIFFUSIOLE PICITENT IN GELATIN, MOTILITY, PSEUDOF

				12/1/11 15 DAXS
Gram Morph.	÷ .	Tubes	<u>48 h</u>	7 day
Gram Test	24h.	KIA		FIR
Motility Wet Prep	New	$H_2S$		NEO
Motility Deep	POS	Pseudo P		Nela
Oxidase	SLOW DOS (IMIN)	Pseudo F		Neb
Catalase	GTRONG POSMAMUNK	NO <sub>3</sub> reduced		NEG
PLATES	<u>48 h 7 day</u>	Gas from NO <sub>3</sub>		Nele
Odor	NONE	NO <sub>2</sub> reduced Gas from NO <sub>2</sub>		NEG
Pigment on swab	Yellow	Gas from NO <sub>2</sub>		Nela
Pigment on BAP	GREY	OF Fructose		GRN-LIGHT
Morphology on BAP	SLOW G. DUTH @ 24h	OF Dextrose OF Lactose		6RN/BLUE* SATE
Beta hemolysis	NCG	OF Maltose		YeL
		OF Mannitol		DARKE BLUE C
Growth on Mac	NCG POS	OF Xylose		DARK BURC
DNase hydrolysis	7. POS	OF Sucrose		GRN/ALLE + SAME
Starch hydrolysis	NeG NeG	Arginine		NPG
Lecithinase	NeG NeG	Lysine		105
Lipase	NEG Neb	Ornithine		Ne6-
Rapid PYR	NEG	Base Control		Nela
Rapid LAP	Wt	Acetamide		NEG
Rapid ESC	POS	Esculin		POS DOS
Sensitivity to:		Gelatin Indole		NPG
Penicillin (10 U)	R	Malonate		POS
Vancomycin (30 ug)	R	PAD		NEG
Colistin (10 mcg)	5-15.8	Urea/ <u>/</u> 2 h 6.5% NaCL	Nelo	NEG
Polymyxin B (300 U)		10% Lactose		wec
1 olymyxii D (500 0)	v 10.	ONPG		Nela
		Growth 42 <sup>0</sup>		POS

Note: All biochemical tests (except where noted) are incubated at  $30^{0}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 343: Stenotrophomonas maltophilia isolate 23-of-50.

Date Inoculated: <u>9-9-12</u> Final Identification: <u>Steve frephilips</u> MALtophilip <u>J.S</u> Comments: <u>LIGHT Yellow on Starch @ 72 h</u> 12/22/11

9-9-12

			12/12	12/22/1)	13DAYS
Gram Morph.	\$		48 h	7 day	
Gram Test 72 L		KIA H2S	K/NC New	- C/PC	
Motility Wet Prep Pos	med Rods	<b>H</b> <sub>2</sub> <b>S</b>	////	100	
Motility Deep <u>POS</u>	Pos	Pseudo P	Nele	Nela	
Oxidase Pos	(lo gec)	Pseudo F	NCG	Nel	
Catalase STRON	6 PO 5	NO <sub>3</sub> reduced		POS	
PLATES 48 h	7 day	Gas from NO <sub>3</sub>	Nea	Nela	
Odor <u>Slight</u> to		NO <sub>2</sub> reduced	T. 10 111	NEC	
Pigment on swab $TAPV$		Gas from NO <sub>2</sub>	TINY BUBLE	TINY Bug	ILE
	Yellowig	OF Fructose	Yel	Yel	
-	-entire	OF Dextrose	Tel	Yel	
		OF Lactose OF Maltose	BLUE	YeL YeL	
Beta hemolysis <u>NCG</u>	Dos	OF Mannitol	Blue	Blue	
Growth on Mac $Po \leq$	- <u>pe</u>	OF Xylose	BLUC	BLUE	
DNase hydrolysis <u>NCC</u>	Nela	OF Sucrose	Yel	Yel/GRN	
Starch hydrolysis NCG	Nel	Arginine	Nea	NEG	
Lecithinase <u>Nec</u>		Lysine	Pos	Pos	
Lipase Nelo	- POS	Ornithine	New	Nec	
Rapid PYR <u>Neb</u>		Base Control	Niela	New	
Rapid LAP Pos	_	Acetamide	Ne6-	Nele	
Rapid ESC $PO \leq$	>	Esculin	POG	P09	
Sensitivity to:	0	Gelatin Indole	NeG	40)	
Penicillin (10 U)	R	Malonate	205	POS	
Vancomycin (30 ug)	R	PAD	POS		
Colistin (10 mcg) $\underline{\mathcal{R}}$	R- SMALLZONE	Urea# <u>@</u> 2 h 6.5% NaCL	NEG	Nela	
Polymyxin B (300 U) $S - 12$	S	10% Lactose	NEG	NEG	
1 olymyxin D (500 O)		ONPG	Nel	POS	
		Growth 42 <sup>0</sup>	Pos	P03	

Note: All biochemical tests (except where noted) are incubated at 30°C and read after 48 hrs. incubation and again at 7 days.

Figure 344: Stenotrophomonas maltophilia isolate 24-of-50.

Final Identification:

1-25-12 Stenotrophomonas MALtophilia P.S. 2/17/12

Comments:

	Gram Morph.		Tubes	<u>48 h</u>	7 day
	Gram Test	48 h	KIA	K/NC New	FIR
	Motility Wet Prep	Ne6- JITTERY - HEDRODS	$H_2S$	New	NCLE
	Motility Deep	P05	Pseudo P	Nele	Nela
	Oxidase	Pos	Pseudo F	New	Nel
	Catalase	STRENG POS	NO reduced		905
			NO <sub>3</sub> reduced Gas from NO <sub>3</sub>	TINY Bubble	
	<b>PLATES</b>	<u>48 h</u> <u>7 day</u>	$NO_2$ reduced	INT DUJAC	Nec
	Odor	NONE	Gas from NO <sub>2</sub>	Nel	Neb
	Pigment on swab	Butterscotch C48		BLE/GRA	Yec
	Pigment on BAP	Yellow STRINGT	OF Fructose	Yel	Yel
1. 11	Morphology on BAP		-OF Lactose	BLE/GRN	Yel/GRIY
2/24	Beta hemolysis	Neo	OF Maltose	Yer	Yel
eler .	7 Growth on Mac		-OF Mannitol	BLUE Yec/GEN	BLUE (DARE)
	DNase hydrolysis	Dec (all) 7	-OF Xylose -OF Sucrose	Bine	Vel/GRN GRN/BLUC
	Starch hydrolysis	NC6 NC6 2/24	or success		2/17/12
reset (	Lecithinase 2/14 NEC	AFG-NEG NEG-2/24	Arginine	Nec	NEC- NEG POS POS
Pesilo			Lysine Ornithine	POS_ Nel-	Nele NEG
2/16	(Lipase :		Base Control	NEG-	NEG Nels
	Rapid PYR	Nela	Buse control	1000	
	Rapid LAP	POS STRONG	Acetamide	Neco	NEG
	Rapid ESC	Pos	Esculin	POS	109
	Sensitivity to:		Gelatin Indole	Nelo	NPG
	Penicillin (10 U)	RR	Malonate	Nec	NEG 2/17 Wt
	Vancomycin (30 ug)	RR	PAD	Pos	
	Colistin (10 mcg)	R (TINY TONE) R	Urea <u>Nec</u> 2 h	New	POS NeG
		0	6.5% NaCL 10% Lactose	NeG	NCG
	Polymyxin B (300 U)	<u> </u>	ONPG	POS	Pog
			Growth 42 <sup>°</sup>	Nelor	1
	Nata, All biaskanda	l tests (excent where noted)	and incubated	at 30 <sup>0</sup> C and	No TUBE

Note: All biochemical tests (except where noted) are incubated at 30°C and read after 48 hrs. incubation and again at 7 days.

Figure 345: Stenotrophomonas maltophilia isolate 25-of-50.

Date Inoculated: Final Identification:

Comments:

1-9-12 On: Stewe Frepherionas Maltophilia 1/26/12 Yellow ON STARCH + BAP

		1
		1/11/12 1/18/12
Gram Morph.	44	$\frac{\text{Tubes}}{\text{KIA}} \qquad \frac{48 \text{ h}}{\text{K/NC}} \qquad \frac{7 \text{ dav}}{\text{K/K}}$
Gram Test	Pos-Real g	H <sub>2</sub> S <u>Nelo</u> <u>Nelo</u>
Motility Wet Prep	POS POS	
Motility Deep		Pseudo P $\frac{Nele}{Nele}$ $\frac{Nele}{Nele}$
Oxidase	Nela	
Catalase	POS	NO <sub>3</sub> reduced New
PLATES	<u>48 h</u> <u>7 day</u>	Gas from NO <sub>3</sub> <u>Ne6</u> <u>Ne6</u> NO <sub>2</sub> reduced <u>Ne6</u>
Odor	SUGHTODON	Gas from NO <sub>2</sub> <u>NeC-</u> <u>NeC-</u>
Pigment on swab	CREAM	day yy (1 a)
Pigment on BAP	Yellow	4 OF Fructose <u>HeL</u> <u>YeL/GRN</u> 4 OF Dextrose <u>YeL/GRN</u> <u>YeL/GRN</u>
Morphology on BAP	SMOOTH	+ OF Lactose $6RN - 6RN$
Beta hemolysis	NEF	+ OF Maltose <u>YeL</u> <u>YeL</u>
Growth on Mac	POS POS	- OF Mannitol <u>Bill</u> + OF Xylose <u>GRM</u> <u>Yel/GRN</u>
DNase hydrolysis	NeG NeG	$\neq$ OF Sucrose $QRN$ $GAN$
Starch hydrolysis	NEG NEG	Arginine NeG Nelo
Lecithinase	NeG NeG	$\begin{array}{ccc} \text{Arginine} & \underline{\text{Ne} \text{ G}} & \underline{\text{Ne} \text{ G}} \\ \text{Lysine} & \underline{\text{No} \text{ S}} & \underline{\text{No} \text{ S}} \end{array}$
Lipase	Pos Pog	Ornithine NCG- Nec-
Rapid PYR	NEG	Base Control <u>New New</u>
Rapid LAP	POS	Acetamide Nel- Nel-
Rapid ESC	POS	Esculin POS POS
Sensitivity to:		Gelatin <u>POS</u> <u>PCS</u> Indole <u>NEG</u>
Penicillin (10 U)	R R	Malonate $PO5$ $Po5$
Vancomycin (30 ug)	R	PAD POS
Colistin (10 mcg)	5-11 5	Urea $Nec_2$ h <u>Nec_</u> 6.5% NaCL W + $PO5$
Polymyxin B (300 U	5 - 12 - 5	$\begin{array}{cccccccccccccccccccccccccccccccccccc$
r olymyxin B (300 U		ONPG NEG POS
		Growth $42^{\circ}$ $\boxed{205}$ $\boxed{205}$ $0, ff cs; i$

BROWN PIEDRENT

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 346: Stenotrophomonas maltophilia isolate 26-of-50.

	Date Inoculated:	W 8/12/15					
	Final Identification:	Quest: 3	Stenatrophama	nas sp.	Q. 9,	128/15	
		647 Ye		STARCH&	£66	Yolly A	12 DAY
				BYNG S. MA	Ltoph	LiA -	
	Gram Morph.	sent f	Por seq	uencing	40 h	9	8/24
	Gram Test		<u>.</u>	<u>Tubes</u> KIA	48 h KING	7 day	
				H <sub>2</sub> S	N	Neg	
	Motility Wet Prep	0	· · · · · · · · · · · · · · · · · · ·				
	Motility Deep	Pos? weat	Pos	Pseudo P Pseudo F	N	Neg	
	Oxidase	Neg		1 2000 1.		Tecop	
	Catalase	Neg		NO3 reduced	<u>×</u>	redapto Zn Ner	7
	PLATES	<u>48 h</u> 9	7 day	Gas from NO <sub>3</sub> NO <sub>2</sub> reduced	<u></u>	tiny bubble -Neg	r
	Odor	Neg	Pos	$Gas$ from $NO_2$	- <u>×</u>	ped-Neg- try bubble-Ne	24
	Pigment on swab $\mu$	min yillow	dkgold			1 Dubba /	0
	Pigment on BAP	yel-gray	Ull Cru	OF Fructose	BC	Be-Neg	
	Morphology on BAP	Smrdiet	In rdiwet	OF Dextrose OF Lactose	Be	Be-Neg-	
	Beta hemolysis	Near	Neb1	OF Maltose	Uel top	yelton - E	0
	Growth on Mac	NIA	inhibited - Col	OF Mannitol	Be	Be-Neg	
	DNase hydrolysis	Neg	Dhamle-Neg	OF Xylose OF Sucrose	BL	Be-Neg-	
W-	Starch hydrolysis	Near	Ner Po	5 12 DAY Arginine			
	Lecithinase	Nen	Near	<b>DAY</b> Arginine	N	Neg	
	Lipase	Nen		Lysine Ornithine	_Pos	New	
	Rapid PYR	_ Nor	-Neg-	Base Control	N	Nez	
	-	_N			1		
	Rapid LAP	_At Pos		Acetamide Esculin	N	Neg	
	Rapid ESC	N		Peatra Gelatin Indole	Net	broch Near NEG	-
	Sensitivity to:		Re	Indole	X	Neg	
	Penicillin (10 U)	145	14 5 E	double Malonate	N	Neg	
	Vancomycin (30 ug)	135	13 5	< PAD	N	<u>X</u>	k
	Colistin (10 mcg)	13 5	13 5	5 Urea <u>M42</u> h 5 6.5% NaCL	N-veyset	pink Neg	very set. pick
	Polymyxin B (300 U		13 5	5 10% Lactose	N	Neg	
	, , ,	/	15	ONPG	P	Neg	
				Growth 42° 7	STA POS	Pas	

Figure 347: Stenotrophomonas maltophilia isolate 27-of-50.

Final Identification:

8-19-09 Sterro Trophoronias MALtophilia 8/26/09 PS

Comments:

Gram Morph. Gram Test	48h	<u>Tubes</u> KIA H <sub>2</sub> S	$\frac{48 \text{ h}}{NC/NC} \xrightarrow{7 \text{ day}}{V/V}$	
Motility Wet Prep Motility Deep Oxidase	<u>Nelo - 541. Rod4 4</u> Cb <u>Nelo Nelo</u> Nelo	Pseudo P Pseudo F	NEG NEG NEG NEG	
Catalase <u>PLATES</u> Odor	<u>βως</u> <u>48 h 7 day</u> <u>NoN C</u>	$NO_3$ reduced Gas from $NO_3$ $NO_2$ reduced Gas from $NO_2$	New New New New New New	
Pigment on swab Pigment on BAP Morphology on BAP Beta hemolysis Growth on Mac	<u>Light Yellow</u> <u>GREY</u> <u>Smooth, ENTRE</u> <u>NEG</u> <u>POS</u> <u>POS</u> <u>POS</u> <u>POS</u> <u>POS</u>	OF Fructose OF Dextrose OF Lactose OF Maltose OF Mannitol OF Xylose OF Sucrose	<u>GRN</u> <u>GRN</u> <u>GRN</u> <u>GRN</u> <u>BLUE</u> <u>YEL</u> <u>YEL</u> <u>BLUE</u> <u>BLUE</u> <u>BLUE</u> <u>BLUE</u> <u>BLUE</u>	
DNase hydrolysis Starch hydrolysis Lecithinase Lipase Rapid PYR	<u>POS</u> <u>POS</u> <u>NEG</u> <u>NEG</u> <u>NEG</u> <u>NEG</u> <u>NEG</u> <u>POS</u> <u>NEG</u>	Arginine Lysine Ornithine Base Control	RUC BLUC NEG NEG NEG NEG NEG NEG	
Rapid LAP Rapid ESC <u>Sensitivity to:</u> Penicillin (10 U) Vancomycin (30 ug) Colistin (10 mcg) Polymyxin B (300 U	$\frac{R}{R} = \frac{R}{R}$ $\frac{R}{S-13} = \frac{S}{S}$	Acetamide Esculin Gelatin Indole Malonate PAD Urea <u>Mc</u> 2 h 6.5% NaCL 10% Lactose ONPG Growth 42 <sup>0</sup>	Nec Nec Brown Nec Nec Brown Nec Nec Brown Nec Nec Pos Nec Nec Wt Wt Nec Nec Nec Nec Nec Nec Nec Nec	Pignen T

Note: All biochemical tests (except where noted) are incubated at 30°C and read after 48 hrs. incubation and again at 7 days.

Figure 348: Stenotrophomonas maltophilia isolate 28-of-50.

		0					
Date Inoculated:	1-7-10	» S. MA	Ltoph.	LIA			
Final Identification:		le Burkhol		pecies			
Comments: Po	OR GR	oath on Bo	P TURNS	> AGAR	slightly Green		
Yel-ORANGE diffusible provit on Ascudo PAF@ IIDAYS							
Gram Morph.	nal		AND A Tubes KIA	48.h	1/18 11 DAYS Iday FIL		
Gram Test	48h	ied to Larg	H2S		Nela		
Motility Wet Prep	Ne6-m	RODS					
Motility Deep	Nela	P05 ?.	Pseudo P · Pseudo F		NPC-		
Oxidase	VERY del	1 1 1 1 1 2			NEG		
Catalase	Pos	EVENTICACY Becosten STRA Pos	ANO3 reduced		Nel		
PLATES	<u>48 h</u>	7 day	Gas from NO <sub>3</sub> NO <sub>2</sub> reduced		Nec		
Odor	NONE		Gas from NO <sub>2</sub>		Nele		
Pigment on swab	Yellow						
Pigment on BAP	MEAR		OF Fructose OF Dextrose		BLUC		
Morphology on BAP	TRANGLO	UCENT-	OF Dextrose OF Lactose				
Beta hemolysis	NEG		OF Maltose				
Growth on Mac		POS- CORDWILL	OF Mannitol OF Xylose				
DNase hydrolysis	NEG	white hutlo	OF Sucrose				
Starch hydrolysis		NeG					
Lecithinase		Nec	Arginine Lysine		Nec- Pos		
Lipase		Pos	Ornithine		New		
Rapid PYR	NRG		Base Control		NELE		
Rapid LAP	wt		Acetamide		NPG		
Rapid ESC	w+		Esculin		POS		
Sensitivity to:			Gelatin		POS!		
Penicillin (10 U)		R	Indole Malonate		Nea		
		R	PAD		NEG		
Vancomycin (30 ug)		R	Urea <u>Neloz</u> h	Nec	NEG		
Colistin (10 mcg)		R	6.5% NaCL 10% Lactose		NPO-		
Polymyxin B (300 U)			ONPG		NEG		
			Growth 42 <sup>°</sup>		POS - AppRicott		
					diffingble pignt		

Figure 349: Stenotrophomonas maltophilia isolate 29-of-50.

Date Inoculated:	2-5-07				
Final Identification:	2-14-07	Stenet	Tophomonas	MALTO philia	2/14/07
Comments:	-	$\sim$			P.S.
	1/5	R			

Gram Morph.		<u>48 h</u>	<u>7 day</u>
Gram Test 48L	KIA /	ENC	KK_
Motility Wet Prep PS- Neduch 2005	H <sub>2</sub> S Sc	ight H2.5	NEG
Motility Deep DS PS	Pseudo P	Nec	Neo
Oxidase Nec-	Pseudo F	New	Neb
Catalase STRONG POS	NO3 reduced		Nele
PLATES 48 h 7 day		pea	NEG
Odor Slight-Allon, A	NO <sub>2</sub> reduced Gas from NO <sub>2</sub>	Nela	New
Pigment on swab BUFF-SLIGHTLY SPERY	(		
Pigment on BAP GREY	OF Fructose OF Dextrose	Yel (DA)	Yel
Morphology on BAP Streath SLIGHTLY SARADY	OF Lactose	BLUL	GRN/BLUE
Beta hemolysis NEG	OF Maltose	Yel!	Yer
Growth on Mac Pos Pos	OF Mannitol	BLUE	Bue
	OF Xylose	Blue	BLUE GRN/BLUE
DNase hydrolysis <u>Pos</u> Pos	OF Sucrose	BLUE	GRN/DUCE
Starch hydrolysis Neb Neb	Arginine	New	Nea
Lecithinase Nele Nel-	Lysine	Pos	POS
Lipase Nels POS	Ornithine	New	Nela
Rapid PYR MeG	Base Control	Nelo	Neb
Rapid LAP Pos	Acetamide	Nelo	Nele
Rapid ESC Pes	Esculin Gelatin	POS NEG	POS
Sensitivity to:	Indole	NEG	New
Penicillin (10 U) $R$	Malonate	Neo	POS
Vancomycin (30 ug) $R$ $R$	PAD Urea <b>N€6</b> 2 h	New	NED
Colistin (10 mcg) $S - 10$ $S$	6.5% NaCL	NEG	Neb
Polymyxin B (300 U) $S - (2 - 3)$	10% Lactose	New	Neb
	ONPG	Nela	POS
	Growth 42 <sup>0</sup>	709	pos

Figure 350: Stenotrophomonas maltophilia isolate 30-of-50.

Date Inoculated:

5-10-07

ion: <u>StenotRophomonAS</u> Light Yellow on Starch, Yell Final Identification:

Comments:

Gram Morph. Gram Test Motility Wet Prep	48/12 Pos-med Rods	Tubes4KIA4H2S4	18 h Helve Nec	7 day K/IZ SUGht Hz S
Motility Deep Oxidase	NOS POS NEG (dalayeae)	Pseudo P Pseudo F	NEG	NEC
Catalase <u>PLATES</u> Odor	<u>POS</u> <u>48 h 7 day</u> <u>Atronica</u>	NO <sub>2</sub> reduced	NEG NEG	POS Neco Neco
Pigment on swab Pigment on BAP Morphology on BAP Beta hemolysis Growth on Mac DNase hydrolysis	<u>TAN</u> <u>Yel-GRN - Like</u> <u>Strooth-Shinny</u> <u>POS</u> <u>DOS</u> <u>POS</u> <u>POS</u> <u>DOS</u>	OF Fructose OF Dextrose OF Lactose OF Maltose OF Mannitol OF Xylose OF Sucrose	Yel <u>Yel</u> <u>GRN</u> Yel <u>Buie</u> <u>Buie</u> <u>Yel</u>	Yel Yel/GRN Yel Blue Yel/GRN
Starch hydrolysis Lecithinase Lipase Rapid PYR	NEG NEG NEG NEG POS POS! NEG	Arginine Lysine Ornithine Base Control	Neb Pos Neb Neb	POS - NEGAT 48h POS NEG NEG
Rapid LAP Rapid ESC	New POS	Acetamide Esculin Gelatin	New Pos Pos	Nec- Pos Pos
<u>Sensitivity to:</u> Penicillin (10 U) Vancomycin (30 ug Colistin (10 mcg) Polymyxin B (300 V	5-10 5	Indole Malonate PAD Urea 5% NaCL 10% Lactose ONPG Growth 42 <sup>0</sup>	NEG NEG Pos NEG NEG NEG NEG	H. BIOUR Nec POS Nec POS POS

MALTOPHILIA

Yellow ON DNAS

07

71 C

Note: All biochemical tests (except where noted) are incubated at 30°C and read after 48 hrs. incubation and again at 7 days.

Figure 351: Stenotrophomonas maltophilia isolate 31-of-50.

## **39 GENUS WEEKSELLA**

#### **39.1** Weeksella virosa

Over the course of ASHEX clinical-isolate collection, 23 individual isolates of Weeksella virosa were analyzed. Three of the 23 recorded results are pictured in this subsection.

Test	+	_	Raw%	<b>W95</b> %	Test	+	_	Raw%	W95%
Motility	0	23	0.00	7.16	H <sub>2</sub> S	0	23	0.00	7.16
Oxidase	23	0	100.00	92.84	Pseudo P	0	23	0.00	7.16
Catalase	22	1	95.65	89.12	Pseudo F	0	23	0.00	7.16
Yellow Pigment	11	12	47.83	48.14	NO <sub>3</sub> Reduced	1	22	4.35	10.88
Pink Pigment	0	23	0.00	7.16	Gas from $NO_3$	0	5	0.00	21.72
Beta Hemolysis	2	3	40.00	44.34	NO <sub>2</sub> Reduced	1	21	4.55	11.30
Growth on Mac	0	23	0.00	7.16	Gas from $NO_2$	0	5	0.00	21.72
Dnase	12	11	52.17	51.86	OF Fructose	0	23	0.00	7.16
Starch	0	23	0.00	7.16	OF Dextrose	0	23	0.00	7.16
Lecithinase	0	5	0.00	21.72	OF Lactose	0	23	0.00	7.16
Lipase	0	5	0.00	21.72	OF Maltose	0	23	0.00	7.16
PYR	0	3	0.00	28.08	OF Mannitol	0	23	0.00	7.16
LAP	3	0	100.00	71.92	OF Xylose	0	23	0.00	7.16
ESC Spot Test	0	3	0.00	28.08	OF Sucrose	0	3	0.00	28.08
Penicillin (10U)	21	2	91.30	85.39	Arginine	0	23	0.00	7.16
Vancomycin $(30\mu g)$	23	0	100.00	92.84	Lysine	0	23	0.00	7.16
Colistin $(10\mu g)$	18	4	81.82	77.09	Ornithine	0	23	0.00	7.16
Polymyxin B (300U)	5	0	100.00	78.28	Acetamide	0	23	0.00	7.16
					Esculin	0	23	0.00	7.16
					Gelatin	23	0	100.00	92.84
					Indole	23	0	100.00	92.84
					Malonate	3	9	25.00	31.06
					PAD	20	3	86.96	81.67
					Urea 2 hrs.	0	23	0.00	7.16
					Urea 48 hrs.	0	23	0.00	7.16
					6.5% NaCl	0	23	0.00	7.16
					10% Lactose	0	13	0.00	11.41
					ONPG	0	6	0.00	19.52
					Growth 42°C	22	1	95.65	89.12

Table 109: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as  $n_+/(n_+ + n_-)$ , where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which shifts raw percentages towards 50% with a strength dependent on the total number of test occurrences. The four antibiotic tests at the bottom of Column 1 are sensitivity tests where a positive result indicates sensitivity to the drug.

Date Inoculated:	m 3/17/14		laz: SmDGS	PARB-
Final Identification:	Weeksella	VIROSA	CarGarweal by MA	Di
Comments: Maide	: Weckseler word 2.19		N. [3/24]	14
<u>Eproven</u>	color on Starth		2013-7014-26	ж.,
Gram Morph. Gram Test Motility Wet Prep Motility Deep + Oxidase 75.45 + Catalase PLATES Odor Pigment on swab Pigment on BAP Morphology on BAP 50 Beta hemolysis Growth on Mac DNase hydrolysis Starch hydrolysis Starch hydrolysis Lecithinase Lipase Rapid PYR Rapid ESC Sensitivity to: 90.91 Penicillin (10 U) Vancomycin (30 ug) 80.95 Colistin (10 mcg) Polymyxin B (300 U	10 5 5	Tubes KIA H <sub>2</sub> S Pseudo P Pseudo F - NO <sub>3</sub> reduced Gas from NO <sub>3</sub> - NO <sub>2</sub> reduced - Gas from NO <sub>2</sub> OF Fructose OF Dextrose OF Dextrose OF Maltose OF Maltose OF Maltose OF Maltose OF Maltose OF Sucrose Arginine Lysine Ornithine Base Control Acetamide Esculin Gelatin Indole Malonate PAD Urea/Jeg-2 F 6.5% NaCL 10% Lactose ONPG	X Acd - Neg tiny bubble the bubble Be G BE G N BLOCH G BE G N BC BE G N BC BE G N BC BE G N BC BE G N N N N N N N N N N N N N N N	56
		Growth 42 <sup>0</sup>	TSA POS DOS 95	. 40

Figure 352: Weeksella virosa isolate 1-of-23.

W 4/19/17 Date Inoculated: Pub 10070 MS-1.059 22.22 Final Identification: Weersella Vivosa Weeksellar NOSa 222/2.23 Comments: Lab ID: 2017-42 9 A day Gram Morph. Tubes 48 h KIA Gram Test  $H_2S$ Motility Wet Prep Motility Deep Pseudo P New 480 Neh Go Pseudo F Oxidase Pos 95.65 Catalase NO3 reduced POS-SLOW Gas from NO PLATES 9 7 day 48 h  $NO_2$  reduced Odor Still Seice Gas from NO<sub>2</sub> Pigment on swab all Den gree-**OF** Fructose 47.83 Pigment on BAP gray dk. peagree OF Dextrose Morphology on BAP OF Lactose OF Maltose 40 Beta hemolysis Neg OF Mannitol Growth on Mac OF Xylose DNase hydrolysis OF Sucrose Starch hydrolysis New Arginine Lecithinase Lysine Né Ornithine Lipase Ni Base Control N Rapid PYR Rapid LAP Acetamide Esculin Rapid ESC Gelatin Sensitivity to: Indole 91,3° Penicillin (10 U) **20** Malonate **№**PAD WK Vancomycin (30 ug) 195 9 Urea N2h Colistin (10 mcg) Lof-85 6.5% NaCL 10% Lactose 5 Polymyxin B (300 U) 14 ONPG N Growth 42<sup>0</sup> 205 Note: All biochemical tests (except where noted) are incubated at 30°C and read after 48 hrs. incubation and again at 7 days. Double zone - Calling 9mm Susciphble (Positie) because of kenny mowhim in the plate causing smith who the zone of-

Figure 353: Weeksella virosa isolate 2-of-23.

Date Inoculated: 1-12 - 11							
Final Identification:	Weele sellA VII	RosA	P.5.	1/24/11			
Comments: <u>46</u>	Comments: 46HT offere (SQUASH) on Granch AFfer 12 days						
Buti	Tescorch on Egg You	k At 12	days	1/24/11 12 DAYS			
Gram Morph. Gram Test Motility Wet Prep	24hR Neb SM-mere Reps	<u>Tubes</u> KIA H <sub>2</sub> S	<u>48 h</u> K/NC NEG	7 day			
Motility Deep Oxidase	NEG NEG Pos	Pseudo P Pseudo F	Nec	New New			
Catalase <u>PLATES</u> Odor	<u>Po S</u> <u>48 h 7 day</u> NON C	NO <sub>3</sub> reduced Gas from NO <sub>3</sub> NO <sub>2</sub> reduced Gas from NO <sub>2</sub>	Nelo Nelo	NEG NEG NEG			
Pigment on swab Pigment on BAP Morphology on BAP	<u>LIGHT BUTTER SCOTCH</u> <u>GREY</u> STOOTH	OF Fructose OF Dextrose	Bue	Deep Brue			
Beta hemolysis Growth on Mac	Neb Neb	OF Lactose OF Maltose OF Mannitol QF Xylose					
DNase hydrolysis Starch hydrolysis	New New New	OF Sucrose	NeG	Neb-			
Lecithinase Lipase Rapid PYR	NEG NEG NEG NEG	Arginine Lysine Ornithine Base Control		- V			
Rapid LAP Rapid ESC	POS Ne6	Acetamide Esculin Gelatin	New New	Aselo Neco			
Sensitivity to: Penicillin (10 U) Vancomycin (30 ug) Colistin (10 mcg) Polymyxin B (300 U)	<u>R-double-zone</u> same <u>S-24</u> <u>S-9</u> <u>S-16</u>	PAD Urea <mark>\22</mark> h 6.5% NaCL 10% Lactose ONPG	NEG NEG NEG NEG NEG	POS POS POS NEG NEG NEG			
		Growth 42 <sup>0</sup>	105	POS			

Figure 354: Weeksella virosa isolate 3-of-23.

# 40 PROJECT SUMMARY

Before gene-sequencing and MALDI-TOF (*matrix-assisted laser desorption ionization time-of-flight mass spectrometry*) methods became readily available to identify glucose - nonfermenting Gram-negative bacilli, Dr. Paul C. Schreckenberger's "Practical Approach to the Identification of Glucose-Nonfermenting Gram-Negative Bacilli, a Guide to Identification" stood on many bookshelves as the definitive guide to assist technologists and supervisors when cultures involved these pesky bugs.

The SCHNF ASHEX Project arose as the computer-based successor to that outstanding text. Adam's Simple Helper Experiment, ASHEX, emerged as a joint research endeavor between a father and son, and between us, we successfully merged decades of clinical microbiology experience with more modernized systems and a transparency mindset.

Species	Isolates	Species	Isolates
Achromobacter denitrificans	12	Burkholderia multivorans (II)	21
Achromobacter piechaudii	14	Burkholderia pseudomallei	1
Achromobacter spanius	1	Burkholderia stabilis (IV)	2
Achromobacter xylosoxidans	64	Burkholderia thailandensis	1
Acidovorax delafieldii	1	CDC Group EO-2	5
Acidovorax oryzae	1	CDC Group EO-3	1
Acidovorax temperans	1	CDC Group Ic	4
Acinetobacter baumannii complex	24	CDC Group II c	6
Acinetobacter haemolyticus	3	CDC Group II e	6
Acinetobacter johnsii	1	CDC Group II g	5
Acinetobacter lwoffii	23	CDC Group II i	5
Acinetobacter species saccharolytic	2	CDC Group NO-1	1
Acinetobacter ursingii	4	Chryseobacterium culicis	1
Alcaligenes faecalis	15	Chryseobacterium gleum	4
Azospirillium species	1	Chryseobacterium hominis	9
Bergeyella zoohelcum	6	Chryseobacterium indologenes	35
Blastomonas natatoria	1	Chyrseobacterium oranimense	1
Bordetella avium	1	Comamonas kerstersii	9
Bordetella bronchiseptica	19	Comamonas testosteroni	3
Bordetella hinzii	2	Cupriavidus campinensis	1
Bordetella holmesii	8	Cupriavidus gilardii	2
Bordetella parapertusis	5	Cupriavidus metallidurans	1
Bordetella trematum	5	Cupriavidus pauculus	11
Brevundimonas diminuta	14	Delftia acidovorans	21
Brevundimonas vesicularis	15	Elizabethkingia meningoseptica	28
Burkholderia cenocepacia (III)	6	Empedobacter brevis	1
Burkholderia cepacia (I)	28	Inquilinus limosus	1
Burkholderia gladioli	11		

Table 110: Number of isolates for taxa (A–I) covered by the ASHEX23X matrix.

Species	Isolates	Species	Isolates
Kerstersia gyiorum	6	Pseudomonas oryzihabitans	17
Laribacter hongkongensis	2	Pseudomonas pseudoalcaligenes	13
Methylobacterium species	13	Pseudomonas putida	32
Moraxella atlantae	1	Pseudomonas sp CDC Group 1	1
Moraxella lacunata	5	Pseudomonas straminea	1
Moraxella lincolnii	1	Pseudomonas stutzeri	23
Moraxella nonliquefaciens	7	Pseudomonas stutzeri (Vb-3)	6
Moraxella osloensis	4	Psychrobacter faecalis	1
Myroides odoratus	19	Psychrobacter immobilis (asaccharolytic)	5
Neisseria elongata ss. elongata	3	Psychrobacter immobilis (saccharolytic)	5
Neisseria elongata ss. glycolitica	2	Psychrobacter phenylpyruvicus	5
Neisseria elongata ss. nitroreducens	9	Psychrobacter sanguinis	1
Neisseria weaveri	4	Ralstonia insidiosa	1
Neisseria zoodegmatis	1	Ralstonia mannitolilytica	7
Ochrobactrum anthropi	10	Ralstonia pickettii (Va-1)	14
Ochrobactrum intermedium	11	Ralstonia pickettii (Va-2)	5
Oligella ureolytica	3	Rhizobium (Agrobacterium) radiobacter	13
Oligella urethralis	25	Roseomonas species	13
Pandoraea apista	1	Shewanella algae	6
Pandoraea species	4	Shewanella putrefaciens	5
Pseudomonas aeruginosa	53	Sphingobacterium multivorum	6
Pseudomonas alcaligenes	9	Sphingobacterium spiritivorum	9
Pseudomonas fluorescens	22	Sphingobacterium thalopophilum	2
Pseudomonas fulva/parafulva	1	Sphingomonas mucosissima	1
Pseudomonas luteola	13	Sphingomonas paucimobilis	20
Pseudomonas mendocina	12	Stenotrophomonas maltophilia	50
Pseudomonas migulae	1	Weeksella virosa	23
		TOTAL (A-Z)	1001

Table 111: Number of isolates for taxa (K-Z) covered by the ASHEX23X matrix.

Tables 110 and 111 show the number of isolates for all of the taxa represented in the ASHEX23X matrix. Technologists at UIC and LUMC performed biochemical tests on these 1,001 isolates over a span of several decades. Dr. Paul C. Schreckenberger performed final identification approvals, and Dr. Adam P. Schreckenberger recorded results, organized the ASHEX table, and developed the WIP code to perform web-based identification.

This encyclopedia is the ultimate achievement of this project, which started in my dad's office on a winter day twenty years ago. 35.26% of the original biochemical records (Figs. 2-354) that went into the construction of the ASHEX matrix have been preserved in this document. Many in the field knew of my dad's dedication, and it is my hope that this text and the still-running WIP applications serve as a testament to that truth. He let me into his world. He even got me to present at ASM in 2008, and while this entire project has been tedious, it is a labor of love—and it is the least I could do for a man who gave the world his all.

#### 41 **REFERENCES**

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#### A CREDITS & DATA INFORMATION

Dr. Paul C. Schreckenberger performed data analysis and quality assurance on the biochemical results that formed the backbone of the ASHEX matrix. Data were collected during his employment at both Loyola University Medical Center in Maywood, IL and the University of Illinois at Chicago in Chicago, IL. Dr. Paul suddenly passed away in November 2016.

Dr. Adam P. Schreckenberger curated all versions of the ASHEX matrix, wrote the code for the online Web Identification Programs, performed quality assurance on project deliverables, and wrote this manuscript. Dr. Adam remains in charge of the SCHNF ASHEX Project.

Special thanks are undoubtedly reserved for Brent Barrett, retired microbiologist from the Indiana State Department of Health, who planted a seed in my dad's mind that inevitably led to this project. He has also remained a great supporter of the project and would often have update notices sent to email lists before anyone else, including us.

Special thanks are also expressed to Dr. Trevor Bryant, whose PIBWin program powered probabilistic identification on Windows XP systems during the early years of the SCHNF ASHEX Project.

Dr. Amanda Harrington, Director of the Clinical Microbiology Laboratory at the Loyola University Medical Center cannot be thanked enough. She entertained and facilitated my dream to see 1,000 recorded isolates and spearheaded the initiative that produced the raw data records pictured in this document. My dad was tremendously excited when you came to Loyola. He couldn't have found a better successor.

<sup>[A]</sup>Most isolates recorded in the ASHEX matrix stemmed from human clinical cases received in Chicago-area hospitals – and from one dolphin. Several rare and unusual isolates from the CDC non-fermenter collection were kindly furnished by Maryam Daneshvar and Dannie Hollis for analysis, and the project thanks both, as well as the CDC, for assisting the growth of the ASHEX matrix.

Kathleen McKinley and Joyce Tjhio performed numerous biochemical tests on organisms over the years, and Kathleen was a key contributor to the comprehensive comparison of biochemical, MALDI-TOF, and gene-sequencing techniques that was ongoing in 2016. Again, not enough thanks can be given here. They made all of this happen.

To the staff and families of the laboratories at Loyola University Medical Center and the University of Illinois at Chicago, thank you for the camaraderie and companionship you gave my father. Thank you for allowing me into your world. And to the users of the ASHEX WIP and project materials, thank you for keeping his spirit alive.

## **B** ASHEX WIP OUTPUT INTERPRETATION

As mentioned, we have used the combination of  $P_{query,Q} > 95\%$  and  $MS_{query,Q} > 1$  to declare "Taxon Q" (the presumed organism) as the final identification for an unknown isolate. The vast majority of isolates represented by the ASHEX matrix were identified through these criteria, and those results were backed with gene sequencing or MALDI-TOF when applicable. The scope of the ASHEX matrix is not infinite, however, and rare species yielded low statistics. Instances in which the ASHEX matrix does not yield a definitive identification can be difficult to interpret, but they do appear given the aforementioned realities.

Generally, outputs that yield top candidates with low  $P_{query,Q}$  values are likely to stem from either an input error or unrepresented species. Likewise, instances in which  $P_{query,Q}$  meets the 95% condition but the modal score does not hit 1 are likely due to an unrepresented species. The math is incredibly useful, but multiplication does not come with intuition. The project has received clinical isolates that contained outlier biochemical results that made identification with the WIP practically impossible. This effect becomes exacerbated when the outlier impacts a species with a relatively large sample size – as a tiny shift in one percentage is unlikely to drastically change the likelihood calculation. It has long been a policy of the SCHNF ASHEX Project to stress that the WIP is not a replacement for expertise – and that other tools should be utilized to corroborate evidence.

One tool already provided in the WIP is the Wilson Binomial Value matrix. This can be used to weight results given the sample sizes of the represented taxa. However, that is not an end-all-be-all solution. In fact, using it can completely obscure an identification if the unknown isolate is actually a rare species. In other words, try it, but use with care.

Another tool simply arises from the listing of three top candidates. Perhaps an outlier result is preventing the true genus from rising to the top of the list. This is where intuition in the laboratory matters. Of course, the final tools extend beyond the scope of the project. If a user has doubts about a particular identification – if that intuitive sense is activated – call in expert opinions and scrutinize the isolate with other techniques. To illustrate, the cross-referencing study between the WIP, gene-sequencing, and MALDI-TOF methods yielded approximately 20 inconsistencies that needed resolution. Those discrepancies were rectified in ASHEX, Version 17, but each new unknown poses a question to the average. The only certainty the universe offers is that uncertainty is always a thing. There will always be another discrepancy.

Perhaps this appendix is a bit philosophical, but I hope it has driven home the narrative that the WIP is just one tool, and it does not have perfect vision. (Though, I did the best I could.)

### C TRANSPARENCY STATEMENT & POLICY

Historically, this project (*referred to as either the SCHNF ASHEX Project or ASHEX Project*) has used 'open-source' terminology in a literal way to designate the scope of data to be freely published for public consumption. When ASHEX functioned solely as a table to be ingested by other calculator programs, such statements were sensible. However, with the creation of the Web ID Programs (WIPs), there arises a conflict with the standards enacted by the Open Source Initiative (OSI), and as such, clarification is important.

The ASHEX Project is committed to the following initiatives:

- The ASHEX matrix and WIPs shall be freely available to all users capable of connecting to the website for as long as the ASHEX Project operates.
- Source information, namely the biochemical results, shall remain preserved in tabular form through the ASHEX matrix, and read-only access to this document shall remain unrestricted and free for as long as the ASHEX Project operates. (*This item is the basis for the literal application of open-source.*)
- When available, source information shall remain preserved in both tabular and visual forms through this document. The actual biochemical result pages are the root primary sources for the construction of the ASHEX matrix. This document is freely available to the public.
- Additional WIPs, beyond the ASHEX GNNFB scope, have been constructed in collaboration with other professionals. The project remains open to potential non-commercial partnerships to develop biochemical-based, free online tools.

Policies that conflict with the OSI (or the spirit of the OSI) include:

- The WIP source code has copyright protection and has not been made publicly accessible. Though, this text details the mathematical fundamentals of the operation.
- The ASHEX Project reserves the right to distribute the ASHEX matrix, this document, the WIPs, and any supplemental project materials. Various copyrights apply.

Instances in which unaffiliated individuals redistributed documents with undeclared modifications, *which were later improperly attributed to the original authors*, led to this restrictive policy.

To briefly summarize, SCHNF ASHEX Project policies focused on making the underlying scientific results accessible to the public. Instead of having a table that is a mystery box of percentages, users know exactly how many isolates of a particular species were analyzed and the results of those studies. In other words, the core information that drives the ASHEX WIP is an open source. The divergence with the OSI policies more common in the realms of programming and computer science rests with our decisions to not post the full calculator code and to reserve our distribution rights. To avoid possible confusion, transparency terminology was adopted in the other chapters of this manuscript.

# D ADAM'S CASUAL COMMENTARY

The rise of MALDI-TOF mass spec brings me great amusement since, in a way, it is a reversal of my arc. Whereas I am a physicist who utilized tools I learned to enter the microbiology world, mass spectrometry offered a fundamental shift in identification by injecting biological materials into the world of physics. I ingested biochemical data and made it work. MALDI-TOF ingests basic physics principles and makes it work. Reference [4] provides a fantastic overview, in my opinion, and it made me smirk seeing  $h\nu$  in a micro publication.

Several interesting cases appeared over the years, especially during the resolution phase of the ASHEX/sequencing/MALDI comparison study. The isolate shown in Fig. 2 posed quite a challenge to my father. Originally, it was identified as Alcaligenes faecalis by ASHEX, but something about the organism triggered my dad's intuition. The identifications cycled through P. alcaligenes, C. testosteroni, and Cupriavidus gilardii before the isolate was sent off for gene sequencing. That result, which arrived around the time of my dad's passing, reported an identification of Achromobacter xylosoxidans. To me, that made absolutely zero sense – as even a particle physicist can look at the blue OF Xylose result and say, "This thing is not having it with sugars." I hunkered down in the office of Dr. Paul Schreckenberger, asked Kathleen if I could see the full gene-sequencing report, and unraveled the mystery of the identification apparatus. The sequencing did not ID Achromobacter xylosoxidans. It strongly ID'd an Achromobacter xylosoxidans group, and wouldn't you have it that exactly one member of that group trended OF Xylose negative... Achromobacter denitrificans. This organism causes trouble for the ASHEX matrix to this day, which again highlights the position I shared in Appendix B.

The Stenotrophomonas maltophilia isolate described in Fig. 322 swings the pendulum in the completely opposite direction. This was an instance in which the first identification, made with pre-ASHEX tools and insight, pointed to B. cepacia. MALDI inevitably pointed to S. malto, but I found that the first version of the ASHEX WIP, from 2012, labelled this isolate as S. malto, as well. Perhaps ASHEX12 served as the nudge for more investigation.

Another set of intriguing trends emerged as I was sorting through the binders of results. My dad used to provide me with annotated copies of the biochemical sheets that did not include the extra research notes shared by the lab team. Figure 326 represents a typical case where each test got an easily understood +/- label. The binders I received to complete this project included everything – from the sheets presented here to sequencing readouts. Notes about ASHEX outputs were common in the margins, and it became apparent that my dad, Kathleen, Joyce, and others had been using my tool in exactly the way I had intended. ASHEX became an augmentation device in the decision-making process – and not necessarily the decision-maker.

Another find included a set of study isolates, which had not necessarily received final identifications. These studies were not part of the dataset that populated the ASHEX table. However, I was curious to see how ASHEX, Version 23 would handle such things. Figures 355-363 show these results.

In many ways, writing the ASHEX Encyclopedia has been cathartic. It has given me new insight into my dad's work. It has reaffirmed my love for the SCHNF ASHEX Project, and that is an effort that has stretched across two decades of my life. My dad and I sought to develop a better identification tool – something transparent, open, and free – that could help him in his lab and aid agencies around the world. I'll sign things off with a trio of figures that readers can find on the final three pages. Figure 364 shows an unidentified isolate from 2007 that was given an identification of Pseudomonas fulva using ASHEX23. Staring at a 99.97% probability and 1.01 modal score, my dad would have likely signed off on P. fulva as the final ID. Here, the matrix functioned in its primary capacity. Its reach extended into unknown territory. This is exactly what we hoped ASHEX would do. Figure 365 shows the last nonfermenter my father identified. With both MALDI and ASHEX pointing to Rhizobium radiobacter, he signed off on the final ID on November 21, 2016. Neither of these isolates was entered into the ASHEX tables, but they both represent the project mission. And finally, Fig. D contains the scan of the biochemical result form. I found it in one of the isolate binders – inside a plastic sheet – with a note that said it was the original and that copies should be made. It's the true beginning and end. All the biochemical sheets came from that page, and there will always be more bugs to identify.

Keep identifying. We are not going anywhere. Sincerely, Dr. Adam Schreckenberger, PhD

Reference No./Name: 5	
Date Inoculated: $6-17-05$	
Final Identification: RALGtoNIA PI	ckettij biovar 2
Comments: (TEST AGAINS	T OF LACTOSE (0% pos) MAC(10070+)
ASHEXZ3 99, SGS	7. D.694 R. picketti Va-2
Gram Morph. thin Straight gub	
11 of 27 h	$\frac{\text{Tubes}}{\text{KIA}} = \frac{48 \text{ h}}{\text{KIA}} \frac{7 \text{ day}}{\text{KIA}}$
Gram Test	H2S New New
Motility Wet Prep Motility Deep $\frac{Ne_6 - 48h}{POS} - POS$	Pseudo P Nela Nela
	Pseudo F Nele Nele
Oxidase Pos	lovo i i Apro
Catalase * <u>NeG</u>	f NO <sub>3</sub> reduced $f$ Gas from NO <sub>3</sub> $pos$ $fos$
PLATES 48 h 7 day	NO <sub>2</sub> reduced <u>Nela</u>
Odor <u>None</u>	Gas from NO <sub>2</sub> <u>New New</u>
Pigment on swab <u>flesh</u>	+OF Fructose YeL <u>GRN</u>
Pigment on BAP GREY amean when	V #OF Dextrose Yel Yel
	OF Maltose <u>YeL</u> <u>YeL</u> OF Maltose <u>BLUE</u> <u>BLUE</u>
100	- OF Mannitol BLUE BLUE
Growth on Mac <u>NO 6 Rowith NEG</u>	APF Xylose <u>YeL</u> YeL Me OF Sucrose BILLE BLUE
	MeeOF Sucrose <u>Blue</u> <u>Blue</u>
Starch hydrolysis <u>Ne6 Ne6</u>	Arginine <u>New Neb</u>
Lecithinase <u>Ne6 Ne6</u>	Drnithine New New
Lipase <u>New New</u>	Base Control <u>New</u> <u>New</u>
Rapid PYR POS Neb LIGHT PINK	
Rapid LAP <u>Po9</u>	Acetamide <u>New New</u> Esculin <u>New New</u>
Rapid ESC <u>NCG</u>	Felatin NCG POS
Sensitivity to:	Indole $\frac{Ne_{6}}{1000}$
Penicillin (10 U) $\underline{K}$ $\underline{R}$	PAD Nele
Vancomycin (30 ug) $\underline{\mathcal{K}}$ $\underline{\mathcal{K}}$	$\pm$ Urea 2 h $\overline{POS}$ $\overline{POS}$
Colistin (10 mcg) $\underline{K}$ $\underline{K}$	6.5% NaCL <u>Nele</u> 10% Lactose <u>Nele</u> <u>Nele</u>
Polymyxin B (300 U) <u>K</u>	ONPG New New
	Growth $42^{\circ}$ POS

Figure 355: 2005 Study Isolate #5, identified as Ralstonia pickettii (Va-2). Under normal ASHEX23 operation, the modal score was below one and did not cross the criterion threshold. Utilizing the Wilson Binomial Matrix to apply statistical weights, the modal score improved significantly, lending credence to the 2005 ID. Note that this isolate is not included in the ASHEX matrix.

Reference No./Name:	8	
Date Inoculated:	6-17-05	
Final Identification:	Pseudomonas	FLuorescens
Comments:		

VIA PARA	lay -//
Gram Test $H_2S$ $Neb $	1 PIN
Motility Wet Prep Motile Robs - 48h	<u>CD</u>
Motility Deep <u>Po5 Po5</u> Pseudo P <u>Nelo</u>	Neb
Oxidase $\bigcirc \bigcirc \bigcirc$	09
	196
PLATES 40 II / Uav	100
	106-
Pigment on swab Buff	
Digment on BAD (DOAM	el_
OF Dexinose <u>rec</u>	<u>len</u> Bhul
Beta hemolysis NP.69 OF Maltose BLUE	BLUE
Count of Man (Now-1 Deg OF Mannitol Yel	Yel
DNase hydrolysis $6Row Th - have - n C OF Sucrose - 4C$	YEL YEL
Starch hydrolysis Nelse 11147	
Argninic <u>103</u>	05
	126-
Thipase 100 100	Vec-
Rapid PYR NEG	0000
	Vec-
Rapid ESC <u>Neb</u> Esculin <u>Neb</u>	DOG!
Sensitivity to:	NEG
Penicillin (10 U) $R$ $R$ $Malonate Pos I$	05
Vancomycin (30 ug) $R$ $R$ PAD $NCG$ $POS$ $H$ Urea $2 h$ $POS$ $R$	005
Colistin (10 mcg) $S$ $S$ $6.5\%$ NaCL <u>NeG</u> $\Lambda$	IEL
Polymyxin B (300 U) B 10% Lactose NeC	100
$\begin{array}{c} \text{ONPG} \\ \text{Growth } 42^{\circ} \\ \end{array} \\ \begin{array}{c} \text{Ne} \\ \text{Me} \\ \text{Me} \\ \end{array} \\ \begin{array}{c} \text{Me} \\ \text{Me} \\ \text{Me} \\ \end{array} \\ \begin{array}{c} \text{Me} \\ \text{Me} \\ \text{Me} \\ \end{array} \\ \begin{array}{c} \text{Me} \\ \text{Me} \\ \text{Me} \\ \text{Me} \\ \end{array} \\ \begin{array}{c} \text{Me} \\ \text{Me} \\ \text{Me} \\ \text{Me} \\ \text{Me} \\ \text{Me} \\ \end{array} \\ \begin{array}{c} \text{Me} \\ M$	Vec

Figure 356: 2005 Study Isolate #8, identified as Pseudomonas fluorescens. ASHEX23 verified this identification. Note that this isolate is not included in the ASHEX matrix.

Reference No./Name:	10
Date Inoculated:	6-17-05
Final Identification:	OLIGella arethrafis - good fit
Comments:	· · · · · · · · · · · · · · · · · · ·

	Gram Morph. Gram Test Motility Wet Prep	Jnc Neb 246 Neb 486	cb	<u>Tubes</u> KIA H <sub>2</sub> S	<u>48 h</u> NC/NC Neo-	<u>7 day</u> <u>k c/N</u> C
	Motility Deep Oxidase	New Pos	-Net	Pseudo P Pseudo F	Nele NEC	NeG NeG
	Catalase <u>PLATES</u> Odor	Silaava <u>48 h</u> <u>Nonse</u>	₽0 5 7 day	NO <sub>3</sub> reduced Gas from NO <sub>3</sub> $\neq$ NO <sub>2</sub> reduced $\neq$ Gas from NO <sub>2</sub>		New New MPOS POS
	Pigment on swab Pigment on BAP Morphology on BAP Beta hemolysis	<u>flesh</u> Light GR Sunooth Neco	e¥	OF Fructose OF Dextrose OF Lactose OF Maltose	Bue	BLAC
	Growth on Mac DNase hydrolysis	SPADESC No GROW	<u>SPARG</u> e Th <u>- NO G</u> ROW	OF Mannitol OF Xylose 760F Sucrose	$\overline{\mathbf{v}}$	
	Starch hydrolysis Lecithinase Lipase Rapid PYR	<u>Neb</u> <u>Neb</u> Neb	<u>NCC</u> <u>NCC</u> NCC	Arginine Lysine Ornithine Base Control	NCG NCG NCG NCO	NEC- NEC- NEC- NEC-
	Rapid LAP Rapid ESC Sensitivity to:	POS NEG	C	Acetamide Esculin Gelatin Indole	Neb- Neb- Neb-	New New New New
2	Penicillin (10 U) Vancomycin (30 ug) Colistin (10 mcg) Polymyxin B (300 U	R	e <u>Zone 3</u> 5mn <u>R</u> <u>S</u> S		NEG POS NEG NEG NEG NEG NEG	NEG W+ SLIGHT PINK SLANT NEG (ORANGE SLANT NEG 4 BUTT

Figure 357: 2005 Study Isolate #10, identified as Oligella urethralis. ASHEX23 verified this identification. Note that this isolate is not included in the ASHEX matrix.

Reference No./Name:	11	· · · ·	
Date Inoculated:	6-17-05		
Final Identification:	MORAYella	NowLique Faciens	(Best Fit)
Comments:		V	

(NO + ap (fat)	
Gram Morph. $GNR \neq CB(+at)$ <u>Tubes</u> <u>48 h</u> <u>7 day</u> KIA <u>NCINC</u> <u>NIAFC</u>	
Gram Test Nele-24 h	
Motility Wet Prep $N_{\ell_0} - 48h_{\ell_0} \frac{c_{\ell_0}}{\rho_{\ell_0} + q_{\ell_0}} \frac{n_2}{\rho_{\ell_0}} \frac{n_2}{\rho_{\ell_0}} \frac{n_2}{\rho_{\ell_0}}$	
Motility Deep <u>New New Pseudo P</u>	
Oxidase Pos Pseudo F <u>New New</u>	
Catalase <u>STRONG POS</u> NO3 reduced <u>POS</u>	
PLATES 48 h 7 day Gas from NO <sub>3</sub> <u>New New</u> NO <sub>2</sub> reduced <u>NP6</u>	
Odor <u>NONE</u> Gas from NO <sub>2</sub> <u>Neb</u> <u>Neb</u>	
Pigment on swab <u>Bacc</u> OF Fructose <u>Blue</u> <u>Blue</u>	
Pigment on BAP Right Grey other OF Fructose BLUE	
Morphology on BAP Gmooth - Diet w/ SwAb OF Lactose	
Beta hemolysis <u>NCC</u> OF Maltose OF Manitol	
Growth on Mac <u>Neb Neb</u> OF Xylose	
DNase hydrolysis No GROWTL Nels- No GROOF Sucrose	
Starch hydrolysis New New Arginine New New	
Lecithinase <u>New New New New</u>	
Lipase <u>Nels</u> <u>Nels</u> Ornithine <u>New Neb</u>	
Rapid PYR <u>Nele</u> Base Control <u>Nele</u>	
Rapid LAP <u>POS</u> Acetamide <u>Nelo</u>	
Rapid ESC <u>Ne6</u> Esculin <u>Ne6</u> <u>Ne6</u> Gelatin <u>Ne6</u> <u>Ne6</u>	
Sensitivity to: Indole NeG	
Penicillin (10 U) <u>S-9mm-smacc</u> <u>S</u> Malonate <u>New New</u>	
Vancomycin (30 ug) S S PAD New New New	
	NGR- DRD
Polymyxin B (300 U) <u>S</u> <u>5</u> <u>10% Lactose</u> <u>New</u> <u>New</u> <u>9</u>	ANGE-RED ANT & BUTT
Growth $42^{\circ}$ <u>New Sparse</u> Growth	owth

Figure 358: 2005 Study Isolate #11, identified as Moraxella nonliquefaciens. ASHEX23 verified this identification. Note that this isolate is not included in the ASHEX matrix.

	Reference No./Name:	13			
	Date Inoculated:	6-17-05			
	Final Identification:	Best Rit ACIN	etobacter	AP .	
	Comments: Ac	INETOBACTER BI	AUMANNI	COMPLI	×
			16770 ( 3.40	77	AS 4/22/24
	Gram Morph.	gnc	Tubes	<u>48 h</u>	7 day
	Gram Test	NC10-24/2	KIA	Yel/NC	Yel ORANGE
	Motility Wet Prep 7	INY RODS Nelo-48h.	$H_2S$	Neo	NCO
	Motility Deep	NEG-NEG GA	Pseudo P	Neb	Nea
	Oxidase	Neg	Pseudo F	New	New
	Catalase	STRONG POS	NO <sub>3</sub> reduced		Neb
	<b>PLATES</b>	48 h 7 day	Gas from NO <sub>3</sub>	Rec	Neo
	Odor	None	- $        -$	TINY BUBBLE	<u>NEG</u> e <u>TINY BUBBLE</u>
	Pigment on swab	BUGG- VERY LIGHT			
	Pigment on BAP	Lt. 6 Rey	OF Fructose	BLUE	BLWE
	Morphology on BAP	Smooth- Spready	★ OF Lactose	Yel	Yel
	Beta hemolysis	New	OF Maltose	Brue	Blue
	Growth on Mac	GROWTH DOG	OF Mannitol	BLUE C	<u>BUIL</u>
	DNase hydrolysis	GROWTH-NEG BLUE	NeGOF Sucrose	BLUE	Blue
	Starch hydrolysis	Neb Neb	Arginine	Neb	Neo
	Lecithinase	Nela Nela	Lysine	NEG	NEG
A	- Lipase	POS POS	Ornithine	New	Neb
	Rapid PYR	New	Base Control	Nel	Nela
	Rapid LAP	POS	Acetamide	Nea	Net
	Rapid ESC	NEG	Esculin Gelatin	NED	NEG
	Sensitivity to:		Indole	Nea	New
	Penicillin (10 U)	R R	Malonate	NEG	New
	Vancomycin (30 ug)	RR	PAD Urea $2 h$	NEG	Neb
	Colistin (10 mcg)	9 9	6.5% NaCL	Nea	NEG POS-YEL SLANT & BUT
	Polymyxin B (300 U)	S S	↓10% Lactose ONPG	POS! NEG	NCG
			Growth 42 <sup>o</sup>	NEG	NCG

Figure 359: 2005 Study Isolate #13, identified as Acinetobacter baumannii complex. ASHEX23 verified this identification and improved the more generalized, original assignment. Note that this isolate is not included in the ASHEX matrix.

Reference No./Name:	19
Date Inoculated:	6-17-05
Final Identification:	SteNotocophomonas Mactophilin (peefect fit)
Comments:	

Gram Morph. Hin <u>small</u> <u>Straight</u> gn Gram Test Motility Wet Prep <u>Robs Hotile@48</u> h Motility Deep <u>Pos - Pos</u> Oxidase <u>Neb- we pog After In</u>	$\begin{array}{ccc} \begin{array}{c} \textbf{Iubes} & \textbf{48 h} \\ \text{KIA} & \underline{f \sim / N c} \\ -H_2 S & \underline{s \leftarrow i_q \land f \not \not B \leftarrow h c} \\ Pseudo P & \underline{N e G \leftarrow f} \\ Pseudo F & \underline{N e G \leftarrow f} \\ N \\ \end{array}$	<u>7 day</u> <u>K/K</u> <u>Kent InterGace</u> <u>NeG</u> NeG
Catalase CTTONG POS	NO <sub>3</sub> reduced	Pos
PLATES <u>48 h</u> <u>7 day</u>	Gas from NO <sub>3</sub> <u><math>NC_6</math></u> NO <sub>2</sub> reduced	tiny Bubble
Odor Arowin	Gas from NO <sub>2</sub> $\underline{NeG}$	NCO
Pigment on swab dirty TAN	OF Fructose YeL	Vel
Pigment on BAP GREY-YeL STEND	OF Dextrose YeL	YEL
Morphology on BAP Smeeth	OF Lactose Blue	Blue
Beta hemolysis <u>NeG</u>	OF Maltose <u>Yeb</u> OF Mannitol Bcul	Yel Dine
Growth on Mac <u>GROWTH</u> POS	OF Xylose BLUE	Blue
DNase hydrolysis 🗶 <u>POS</u> ! <u>POS</u>	OF Sucrose 📉	
Starch hydrolysis <u>Ne6</u> <u>Ne6</u>	Arginine Nea	Neo
Lecithinase <u>Nels</u> <u>Nels</u>	Lysine Pos	Pos !
Lipase <u>POS</u> POS	Ornithine <u>Neb</u> Base Control <u>Neb</u>	New New
Rapid PYR <u>NeG</u>		
Rapid LAP POS	Acetamide <u>Neb-</u>	Neu- Pos-oke
Rapid ESC <u>POS</u>	Esculin <u>P09</u> Gelatin D09	DOST
Sensitivity to:	Indole	NeG
Penicillin (10 U) $\underline{K}$ $\underline{K}$	Malonate Pos!	P05
Vancomycin (30 ug) R	Urea $\bigcirc 2 h$ Neo	NEG
Colistin (10 mcg) $5$ $5$	6.5% NaCL Area	P09
Polymyxin B (300 U)	10% Lactose $NCG$	DOS!
	Growth $42^{\circ}$ Pos	

Figure 360: 2005 Study Isolate #19, identified as Stenotrophomonas maltophilia. ASHEX23 verified this identification. Note that this isolate is not included in the ASHEX matrix.

Reference No./Name:	24
Date Inoculated:	6-17-05
Final Identification:	Pseudomonas AevergINDER (Perfect Git)
Comments:	

	Gram Morph. Gram Test Motility Wet Prep Motility Deep	Hed Rods Very Har POS - POS	$ \frac{\text{Tubes}}{\text{KIA}} \\ \text{H}_2S \\ \text$	<u>48 h</u> К/NC 5464Т В Раб	7 day K/K CACHE AT INTERFACE POS TUNGOISE BLUE
+	Oxidase	205	+Pseudo F	pos	New
+	Catalase <u>PLATES</u> Odor	<u>STRONG POS</u> <u>48 h 7 day</u> fputy-P.aerug	<ul> <li>+ NO<sub>3</sub> reduced Gas from NO<sub>3</sub></li> <li>→ NO<sub>2</sub> reduced</li> <li>+ Gas from NO<sub>2</sub></li> </ul>	Neo- Pog	POS AGGER ZINC NEU- POS POS
++	Pigment on swab Pigment on BAP Morphology on BA Beta hemolysis Growth on Mac DNase hydrolysis	PCesh-TAN GREY PSMooth METTALICSh POS GROWTH-PURPLE GROWTH-NEG-N	- OF Maltose PO 5 - OF Mannitol - OF Xylose	Yel Yel Blue Blue, Green Blue X	Yel Yel Blue Blue Blue X
+ +	Starch hydrolysis Lecithinase Lipase Rapid PYR	NEG NEG NEG NEG WK POS POS POS	+ Arginine Lysine Ornithine Base Control	Pos New New	New- New- New- New-
++	Rapid LAP Rapid ESC <u>Sensitivity to:</u> Penicillin (10 U) Vancomycin (30 u Colistin (10 mcg)	9 9	<ul> <li>Acetamide Esculin</li> <li>Gelatin Indole</li> <li>Malonate</li> <li>PAD Urea 2 h</li> <li>↑6.5% NaCL</li> <li>10% Lactose</li> <li>ONPG</li> <li>Growth 42°</li> </ul>	BLUE NEG POS! BLUE NEG NEG NEG NEG NEG NEG	<u>BLUE</u> NCG <u>POS</u> <u>NEG</u> <u>BLUE</u> <u>BLUE</u> <u>DUE</u> <u>C</u> <u>C</u> <u>C</u> <u>NEG</u> <u>NEG</u>

Figure 361: 2005 Study Isolate #24, identified as Pseudomonas aeruginosa. ASHEX23 verified this identification. Note that this isolate is not included in the ASHEX matrix.

Reference No./Name:	27	
	6-17-05	
Final Identification:	Pseudomonas Aereginosa	
Comments:	/	

			0			
	Gram Morph.	mall 9	jnch	<u>Tubes</u> KIA	<u>48 h</u> F/NC	7 day
	Gram Test			$H_2S$	PINC	MA
	Motility Wet Prep	P05-4	8h.	п <sub>2</sub> 5	<u>DEACE A</u>	TINTERFACE
	Motility Deep	P85-1	POS	Pseudo P	Nea	Nea
	Oxidase	Pos		Pseudo F	pos	POSI
	Catalase	STRONG	POS	NO <sub>3</sub> reduced		Jos After ZINC
	PLATES	<b>48 h</b>	7 day	Gas from NO <sub>3</sub>	109	POS
	Odor	AUTORICA		NO <sub>2</sub> reduced Gas from NO <sub>2</sub>	POS	P05
	Pigment on swab	SALMON				
	Pigment on BAP	GREY		OF Fructose OF Dextrose	Yellorn Vel	Yel !
	Morphology on BAP	SPROOTH		OF Lactose	BLUE	BLAC
	Beta hemolysis	Pos		OF Maltose	Bene	BLUE
	Growth on Mac	GROWTH	P05	OF Mannitol OF Xylose	Blue Yel !	<u>Blue</u> Xel (
	DNase hydrolysis	6 ROWTH - NO	CG BLUE CEN	TER OF Sucrose	×	
	Starch hydrolysis	NeG	New N	eo Arginine	SL. Parpue	Pos
	Lecithinase	NEG	Nele	Lysine	Neg	Neu-
×	Lipase	POS	pog	Ornithine	New	NCG-
-	Rapid PYR	Nea		Base Control	SL. Parple	E <u>NEO</u>
	Rapid LAP	Pos		Acetamide	Pos	P05.
	Rapid ESC	NEG		Esculin Gelatin	NCG	Neo Dos I
	Sensitivity to:		•	Indole	100 :	Nelo
	Penicillin (10 U)	R	R	AMalonate	Lt. Blue	POS
	Vancomycin (30 ug)	R	R	PAD Urea 2 h	New	05 00S
	Colistin (10 mcg)	5	S	6.5% NaCL	Nelo	ADS
	Polymyxin B (300 U	5	5	10% Lactose	NEG	New
	1 Olymyxin D (500 O			ONPG	Neo	NEG
				$\bigstar$ Growth 42 <sup>o</sup>	POS	BROWN DIFFUSIBLE PIGDENT 4 DAYS
						PIGDENT 4 DAYS

Figure 362: 2005 Study Isolate #27, also identified as Pseudomonas aeruginosa. ASHEX23 verified this identification. Note that this isolate is not included in the ASHEX matrix.

Reference No./Name:	28
Date Inoculated:	6-17-05
Final Identification:	Achromo bacter denitri GicANS
Comments: As	SHER 23 A deni 96.90790 39.9 MS

	0		
Gram Morph.	Small gncb	Tubes	<u>48 h 7 day</u>
Gram Test	0	KIA H <sub>2</sub> S	KINC K/K BACK AT INTERFACE
Motility Wet Prep	TINY RODS - MOTILE 48	11 <sub>2</sub> 5	BLACK AT INTERFACE
Motility Deep	P05- P05	Pseudo P	NGG NEG
Oxidase	POS	Pseudo F	Nelo Nelo
Catalase	STRONG POS	NO <sub>3</sub> reduced	POS AFTER ZINC
<b>PLATES</b>	<u>48 h</u> <u>7 day</u>	Gas from $NO_3$ $NO_2$ reduced	NEG POS
Odor	NONE	$Gas from NO_2$	POS POS
Pigment on swab	Bubb		Con Bring
Pigment on BAP	white	OF Fructose OF Dextrose	Bene Bene
Morphology on BAI	Smooth	OF Lactose	BLEC
Beta hemolysis	NEG	OF Maltose OF Mannitol	Baue
Growth on Mac	GROWTH POS	OF Xylose	BLUE V AREEN GREEN
DNase hydrolysis	GROWTH - New Neb	OF Sucrose	× ×
Starch hydrolysis	NEG NEG	Arginine	NEG- NEG
Lecithinase	NEG Neb	Lysine	Neu- Neu-
Lipase	New New	Ornithine Base Control	New New
Rapid PYR	Neb	Base Control	NEW NEW TIP SCANT
Rapid LAP	POS	Acetamide	NEG NEG- SUCHT BLUE
Rapid ESC	NeG	Esculin Gelatin	Nelo Nelo TIP
Sensitivity to:		Indole	Neg
Penicillin (10 U)	BR R	A Malonate	Due Blue!
Vancomycin (30 ug	g) <u>\$R R</u>	PAD Urea $2 h$	Nelo Nelo
Colistin (10 mcg)	9 5	6.5% NaCL	NEO POS
Polymyxin B (300	U) <u>S</u> <u>S</u>	10% Lactose ONPG	NEG NEG
		Growth 42 <sup>o</sup>	AOS

Figure 363: 2005 Study Isolate #28, also identified as Achromobacter denitrificans. ASHEX23 verified this identification with a strong modal score and sufficient probability. Note that this isolate is not included in the ASHEX matrix.

Date Inoculated:	10-22-07				_
Final Identification:	UNIDENTIFIED	NFB	AS.	11/12/07	·
Comments: <u>Yell</u>	ous on ALC Mea	ICA			
Ps	endo fulva -	ASHEX 23	99.97	2% 1.0/m	S
				10/29	
Gram Morph.		Tubes	<u>48 h</u>	$\frac{7 \text{ day}}{1}$	
Gram Test	40 Dec med RODS	KIA H <sub>2</sub> S	KINC	KIR	
Motility Wet Prep	POG- SpINNINg dARting	1120	1000	_NCG	
Motility Deep	POS POS	Pseudo P	New	Neo	
Oxidase	+05 NEG-	Pseudo F	NeG	NEG	
Catalase	STRONG POS	NO <sub>3</sub> reduced		Nela	
PLATES	<u>48 h</u> <u>7 day</u>	Gas from NO <sub>3</sub>	Nela	Nea	
Odor	None	NO <sub>2</sub> reduced Gas from NO <sub>2</sub>	NCG	NEW	
Pigment on swab	BRANCE BRIGHT Yellow	_		Yer	
Pigment on BAP	Deep Yellow	OF Fructose OF Dextrose	Yel Yel	Yer	
Morphology on BAP	Shirny - Songoth	OF Lactose	Buce	Rue	
Beta hemolysis	POS (4 DAYS) POS	OF Maltose	BLUE	bue	
Growth on Mac	POS POS	OF Mannitol OF Xylose	Yel	BLUE YEL	
DNase hydrolysis	NEG NEG	OF Sucrose	Blue	BLUE	
Starch hydrolysis	New POS	d	Doc	0-c	
Lecithinase	Nela Nela	Arginine Lysine	DOS NRG	POS_	
Lipase	NEG NEG	Ornithine	NRO	New	
Rapid PYR	Nela	Base Control	NEG	NCC	
Rapid LAP	POS	Acetamide	Nea	New	
Rapid ESC	Nel	Esculin	New	NEG	
Sensitivity to:		Gelatin Indole		Nel	
Penicillin (10 U)	RP	Malonate	NeG	New	
Vancomycin (30 ug)	RR	PAD		NEG	OG SUM
Colistin (10 mcg)	5-13 5	₩Urea <u>№ℓω</u> 2 h ₩6.5% NaCL	POS-SCON POS!		@ 16 h
Polymyxin B (300 U	n S-14 S	10% Lactose	Nea	New	
i olymyxin b (500 C		ONPG	Neg	Nea	
		Growth 42 <sup>0</sup>	NeG	NEG	

Figure 364: 2007 Unidentified Isolate, finally identified by ASHEX23 as Pseudomonas fulva. Note that this isolate is not included in the ASHEX matrix, but it does exemplify the project's goal to provide identification power through biochemical tests.

Date Inoculated:

Final Identification:

Comments:

Lab 1D: Phizobactorium radiobacter; Maldi 2.42

Rhizobium Rhalio bacter P.S. 11/21/16

W. 11/9/16

	Gram Morph.			Tubes	48 h	7 day	11/21 12 DATS
	Gram Test			KIA	KINC	KIK	11
	Motility Wet Prep			$H_2S$	Ng	Neg V	
	Motility Deep	Nac	No. 74	Pseudo P	Ner	Near	
	Oxidase	los	Nig In	Pseudo F	Nex	Neg Yel	di Chesible
	Catalase	the (	205	+ NO <sub>3</sub> reduced	V	and Pos	pight Pseado F
	PLATES	48 h		-Gas from NO <sub>3</sub>	tiny pubble	- trybubble -	
	Odor	-10 II	A	$+ NO_2$ reduced	X	dia Pos	
$\frown$	Pigment on swab	Sagar	buff	Gas from NO <sub>2</sub>	Nez	Neg -	
	Pigment on BAP	-puff	Dati	OF Fructose	yel top	+ Postop, et	ir bottoms
	Morphology on BAP	Wing	un-gr	OF Dextrose	yel top	±	
		round, wet	round nuc	OF Lactose OF Maltose	byll top	t t	
Looks like -	Beta hemolysis	Ner	Neg	OF Mannitol	yel top	+	
Acinetobacter	⇒Growth on Mac	Pos-wet/n	ucoid	OF Xylose	yel top	+	
	DNase hydrolysis	Neg	Neg-	OF Sucrose	yel top	<u>+</u> V	
	Starch hydrolysis	Neg	Neg_	Arginine	Neen	Ner	
	Lecithinase	Neg	Neg V	Lysine	Neg	Near -	
	Lipase	Neg	Nea	Ornithine		Neg -	
	Rapid PYR	Pos	0	Base Control		_Neg_	
	Rapid LAP	Pos		Acetamide	New	Neg V	
	Rapid ESC	Pos		Esculin	POS	Pos	
	Sensitivity to:			Gelatin Indole	- Nez	NOS	
	Penicillin (10 U)	6 R	LeR	Malonate	Nes	Pos	
	Vancomycin (30 ug)	68-	Le P-	PAD Urea <u>Po<sup>5</sup></u> 2 h	Pos	-X-V	
	Colistin (10 mcg)	135	135	Urea <u>1°</u> 2 h 6.5% NaCL	<u>Pos</u> Pos	P05 V	
	Polymyxin B (300 U)		145	10% Lactose	Nex	Nor	
$\frown$	1 Olymyxin B (300 U)			ONPG	POS	POSV	
				Growth 42 <sup>0</sup>	Pos	Pas V	

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days.

Figure 365: 2016 Isolate, identified by Dr. Paul Schreckenberger as Rhizobium radiobacter – backed both by MALDI and ASHEX methods.

<b>Reference Bacterial Identification - Nonfer</b>	menting Gram-Negative Rods
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Rev. April 2005

Reference No./Name:		
Date Inoculated:		
Final Identification:		
Comments:		

Gram Morph.			Tubes	<u>48 h</u>	7 day
Gram Test			KIA		
Motility Wet Prep			$H_2S$		
Motility Deep			Pseudo P		
Oxidase			Pseudo F		
Catalase			$NO_3$ reduced		
PLATES	<u>48 h</u>	7 day	Gas from $NO_3$ $NO_2$ reduced		
Odor			$Gas from NO_2$	`	
Pigment on swab			-		
Pigment on BAP			OF Fructose		
			OF Dextrose		
Morphology on BAP			OF Lactose		
Beta hemolysis			OF Maltose		
Growth on Mac			OF Mannitol OF Xylose		
DNase hydrolysis			OF Sucrose		
Starch hydrolysis					
			Arginine		
Lecithinase			Lysine		
Lipase			Ornithine		
Rapid PYR			Base Control		
Rapid LAP			Acetamide		
Rapid ESC			Esculin		
-			Gelatin		
Sensitivity to:			Indole		
Penicillin (10 U)			Malonate		
Vancomycin (30 ug)			PAD Urea 2 h		
Colistin (10 mcg)			6.5% NaCL		
Polymyxin B (300 U)			10% Lactose		
			ONPG		
			Growth 42 <sup>0</sup>		

Note: All biochemical tests (except where noted) are incubated at  $30^{\circ}$ C and read after 48 hrs. incubation and again at 7 days.