Schreckenberger's Non-Fermenters

The ASHEX Encyclopedia

Adam's Simple Helper Experiment

1st Edition

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1st Edition

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SCHNF ASHEX Project

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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[A] 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.[A] 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:

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

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:

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

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.[B]

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.

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

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.

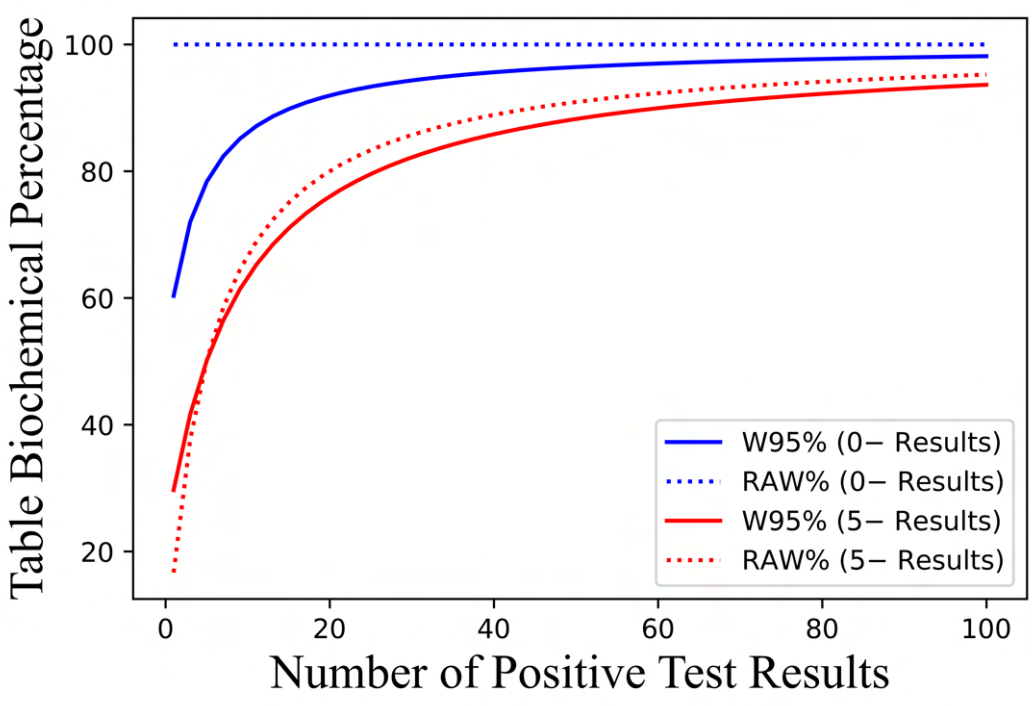


Figure 1: Demonstration of the impact of applying the mean from the 95% Wilson Binomial Confidence Interval. The dotted curves represent Raw% values in cases where zero (*blue*) or five (*red*) negative results appeared. The horizontal axis indicates the number of positive test results, and the vertical 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. Typi-

cally, 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 ACHROMOBACTER

3.1 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_2S	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_3 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_2 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 (30μg)	0	12	0.00	12.13	Lysine	0	12	0.00	12.13
Colistin (10μg)	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.

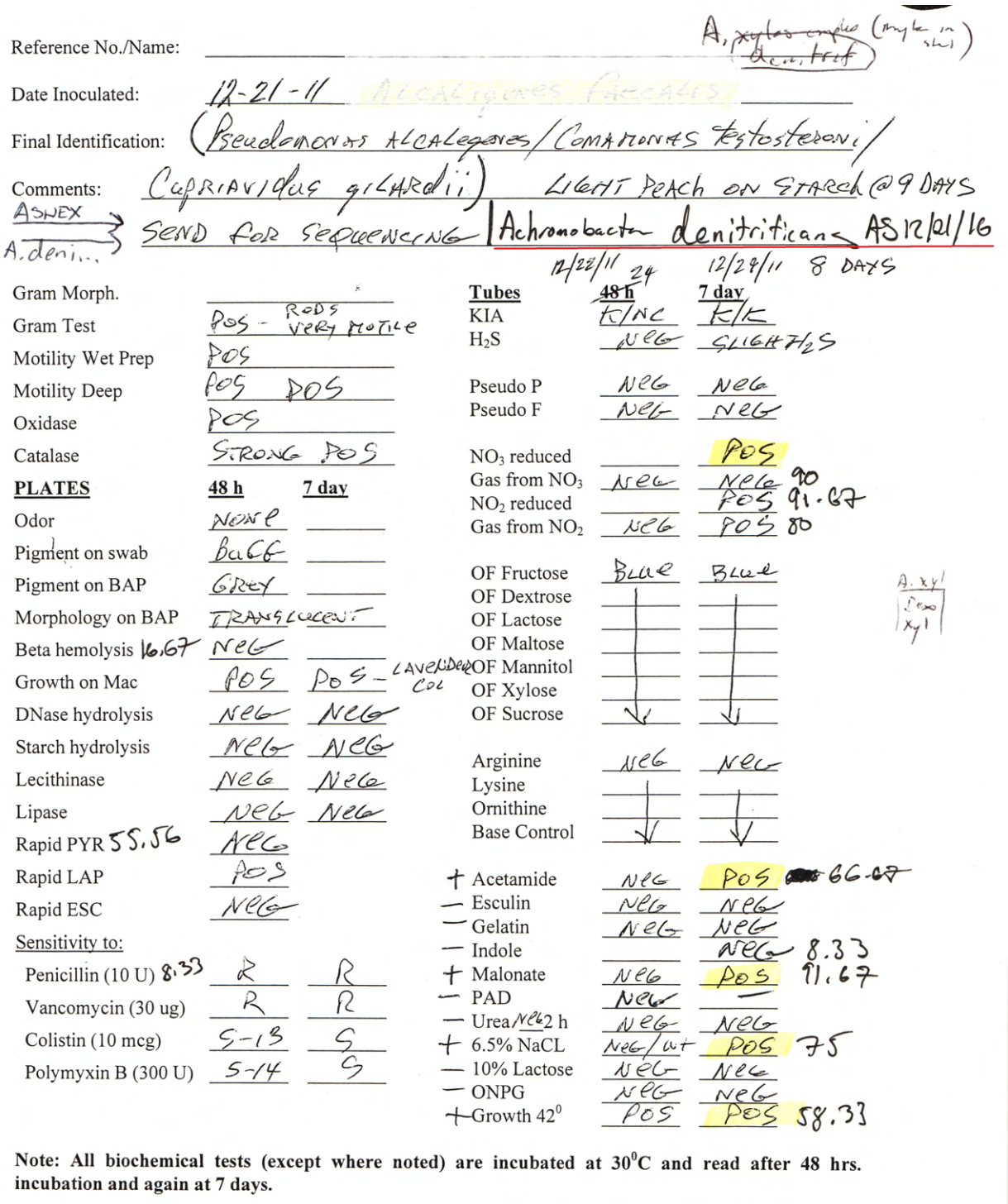


Figure 2: Achromobacter denitrificans isolate 1-of-12.

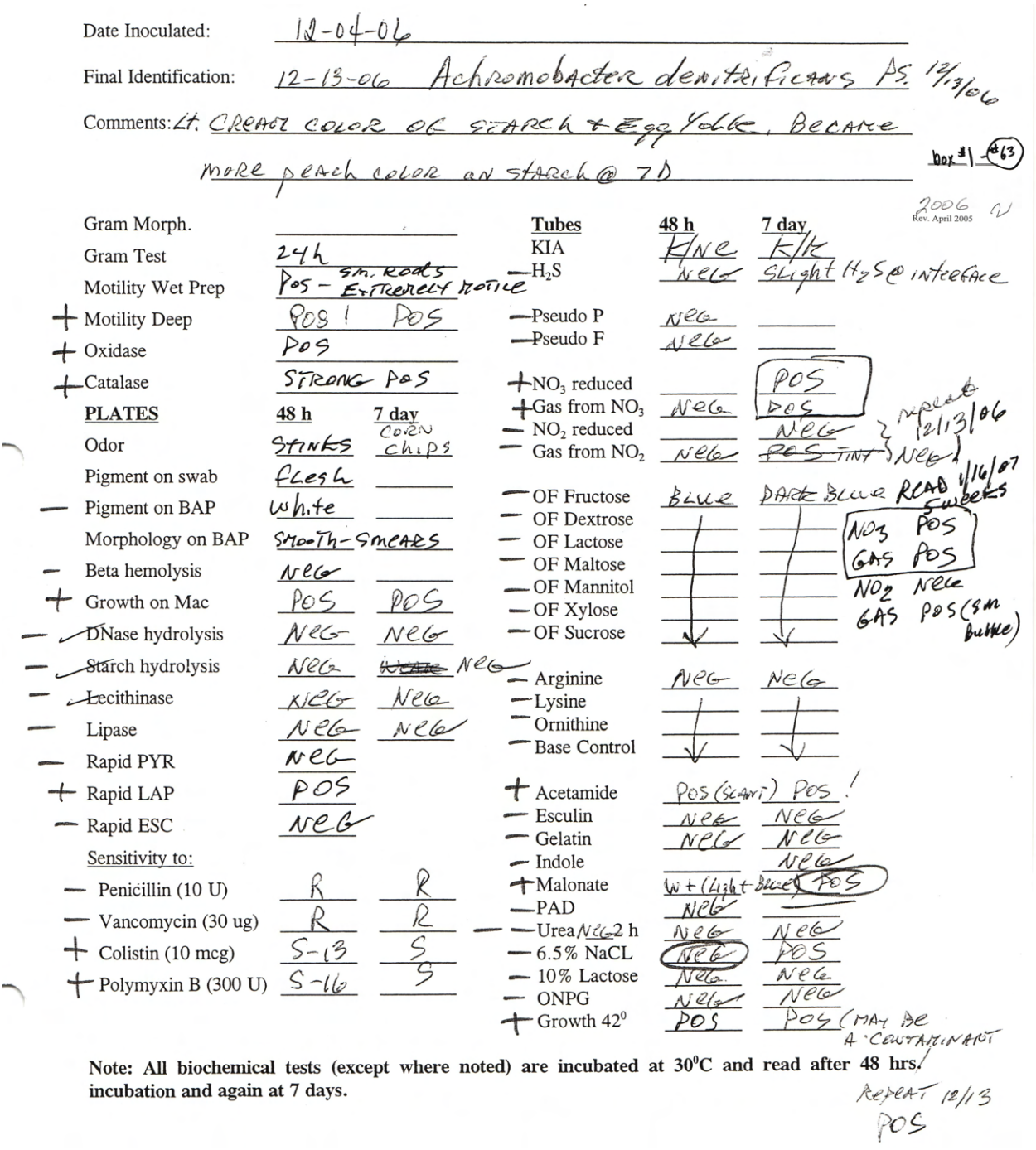


Figure 3: Achromobacter denitrificans isolate 2-of-12.

Date Inoculated: 4-23-07

Final Identification: Achromobacter denitrificans A.S.

Comments: 4/30/07

Gram Morph.		
Gram Test	24h	
Motility Wet Prep	POS- medium RODS very ACTIVE	
Motility Deep	POS	POS
Oxidase	POS	
Catalase	STRONG	POS
PLATES	**48 h**	**7 day**
Odor	NONE	
Pigment on swab	BUFF	
Pigment on BAP	GREY	
Morphology on BAP	Smooth	
Beta hemolysis	NEG	POS
Growth on Mac	POS	POS-LAVENDER
DNase hydrolysis	NEG	NEG
Starch hydrolysis	NEG	NEG
Lecithinase	NEG	NEG
Lipase	NEG	NEG
Rapid PYR	W+ (POS)	
Rapid LAP	POS	
Rapid ESC	NEG	
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

Tubes	**48 h**	**7 day**
KIA	K/NC	K/K
H_2S	NEG	slight H_2S
Pseudo P	NEG	NEG
Pseudo F	NEG	NEG
NO_3 reduced		POS
Gas from NO_3	NEG	POS
NO_2 reduced		POS
Gas from NO_2	NEG	POS (LARGE BUBBLE)
OF Fructose	BLUE	BLUE
OF Dextrose	↓	↓
OF Lactose	↓	↓
OF Maltose	↓	↓
OF Mannitol	↓	↓
OF Xylose	↓	↓
OF Sucrose	↓	↓
Arginine	NEG	NEG
Lysine	↓	↓
Ornithine	↓	↓
Base Control	↓	↓
Acetamide	POS!	POS
Esculin	NEG	NEG
Gelatin	NEG	
Indole		
Malonate	NEG	NEG (WEAK)?
PAD	NEG	—
Urea NEG2 h	NEG	NEG
6.5% NaCL	NEG	POS!
10% Lactose	NEG	NEG
ONPG	NEG	NEG
Growth 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 4: Achromobacter denitrificans isolate 3-of-12.

Final Identification: Achromobacter denitrificans P.S. 10/5/07

Comments:

Gram Morph.			**Tubes**	**48 h**	**7 day**
Gram Test	24hr		KIA	K/NC	K/K
Motility Wet Prep	POS - EXTREMELY MOTILE		H_2S	slight H_2S	slight H_2S
Motility Deep	POS	POS	Pseudo P	Neg	Neg
Oxidase	POS		Pseudo F	Neg	Neg
Catalase	STRONG POS		NO_3 reduced		POS
PLATES	**48 h**	**7 day**	Gas from NO_3	POS	POS
Odor	None		NO_2 reduced		POS
Pigment on swab	Buff		Gas from NO_2	POS	POS
Pigment on BAP	White		OF Fructose	Blue	Blue
Morphology on BAP	Skinny		OF Dextrose	↓	↓
Beta hemolysis	Neg		OF Lactose	↓	↓
Growth on Mac	POS	POS	OF Maltose	↓	↓
DNase hydrolysis	Neg	Neg	OF Mannitol	↓	↓
Starch hydrolysis	Neg	Neg	OF Xylose	↓	↓
Lecithinase	Neg	Neg	OF Sucrose	↓	↓
Lipase	Neg	Neg	Arginine	Neg	Neg
Rapid PYR	Neg		Lysine	↓	↓
Rapid LAP	POS!		Ornithine	↓	↓
Rapid ESC	Neg		Base Control	↓	↓
Sensitivity to:			Acetamide	POS	POS
Penicillin (10 U)	R	R	Esculin	Neg	Neg
Vancomycin (30 ug)	R	R	Gelatin	Neg	Neg
Colistin (10 mcg)	S -13	S	Indole		Neg
Polymyxin B (300 U)	S -14	S	Malonate	Neg	weak +
			PAD	Neg	—
			Urea Neg 2 h	Neg	Neg
			6.5% NaCL	W+	POS
			10% Lactose	Neg	Neg
			ONPG	Neg	Neg
			Growth 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 5: Achromobacter denitrificans isolate 4-of-12.

Date Inoculated: 8-25-09

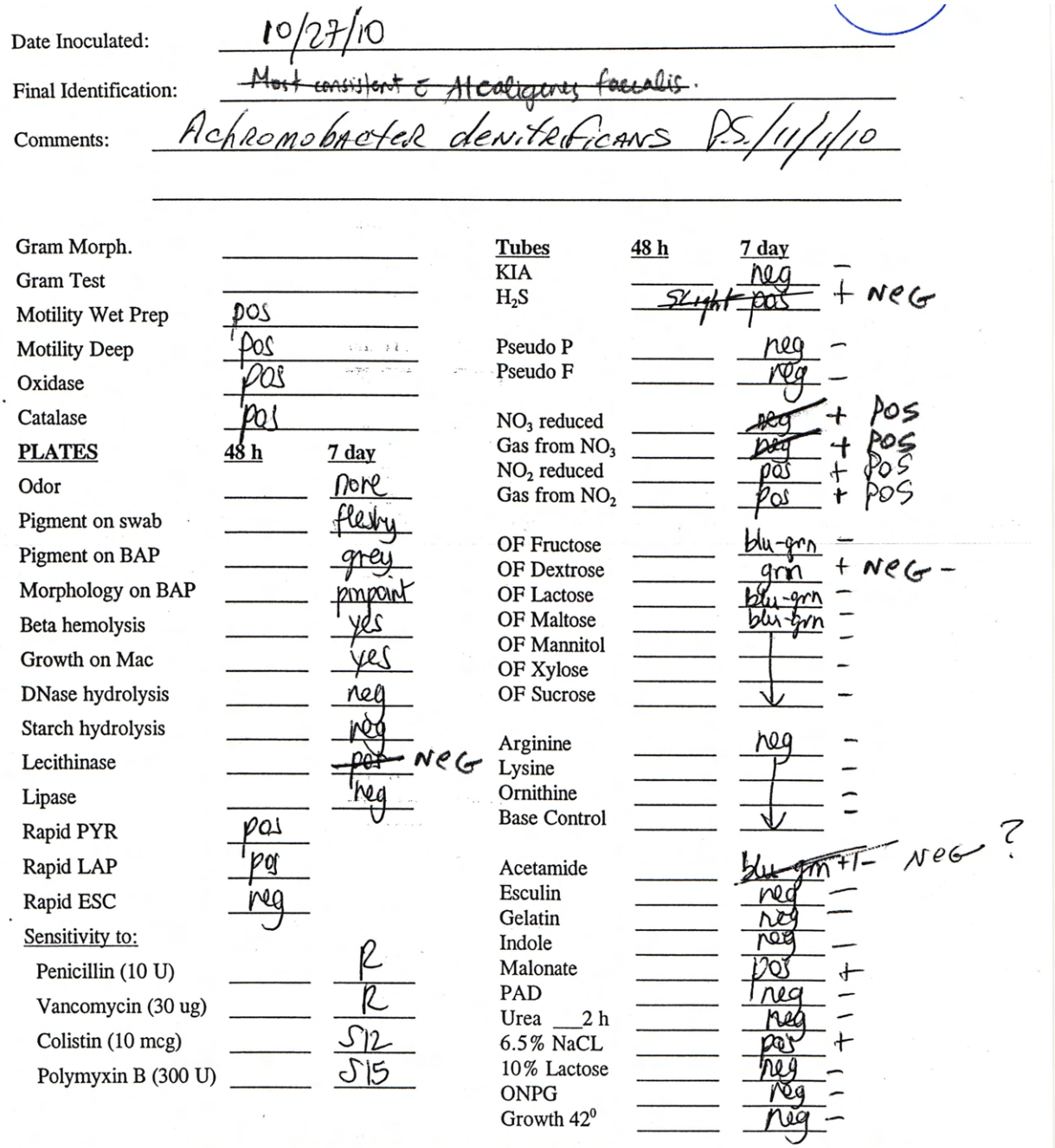
Final Identification: Achromobacter denitrificans P.S.

Comments: 9/10/09

				8/27	9/2
Gram Morph.			**Tubes**	**48 h**	**7 day**
Gram Test			KIA	K/Nc	K/K
Motility Wet Prep	Pos		H_2S	Neg	slight H_2S
Motility Deep	Pos		Pseudo P	Neg	Neg
Oxidase	Pos	Pos	Pseudo F	Neg	Neg
Catalase	STRONG Pos		NO_3 reduced		Pos
PLATES	**48 h**	**7 day**	Gas from NO_3	Neg	Pos
Odor	None		NO_2 reduced		Pos
Pigment on swab	Flesh		Gas from NO_2	Pos	Pos
Pigment on BAP	Grey		OF Fructose	Blue	Blue
Morphology on BAP	Skinny	slightly mucoid	OF Dextrose	↓	↓
Beta hemolysis	Neg		OF Lactose	↓	↓
Growth on Mac	Pos	Pos	OF Maltose	↓	↓
DNase hydrolysis	Neg	Neg v	OF Mannitol	↓	↓
Starch hydrolysis	Neg	Neg	OF Xylose	↓	↓
Lecithinase	Neg	Neg	OF Sucrose	↓	↓
Lipase	Neg	Neg	Arginine	Neg	Neg
Rapid PYR	~~Neg~~ -	w+	Lysine	↓	↓
Rapid LAP	Pos		Ornithine	↓	↓
Rapid ESC	Neg		Base Control	↓	↓
Sensitivity to:			Acetamide	Neg	Pos !
Penicillin (10 U)	R	R	Esculin	Neg	Neg
Vancomycin (30 ug)	R	R	Gelatin	Neg	Neg
Colistin (10 mcg)	S-12	S	Indole		Neg
Polymyxin B (300 U)	S-13	S	Malonate	Neg	Pos
			PAD	Neg	—
			Urea Neg 2 h	Neg	Neg
			6.5% NaCL	w+	Pos
			10% Lactose	Neg	Neg
			ONPG	Neg	Neg
			Growth 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 6: Achromobacter denitrificans isolate 5-of-12.


Date Inoculated: 10/27/10

Final Identification: ~~Most consistent c Alcaligenes faecalis~~.

Comments: Achromobacter denitrificans D.S. 11/4/10

Gram Morph.		
Gram Test		
Motility Wet Prep	pos	
Motility Deep	pos	
Oxidase	pos	
Catalase	pos	
PLATES	**48 h**	**7 day**
Odor		none
Pigment on swab		fleshy
Pigment on BAP		grey
Morphology on BAP		pinpoint
Beta hemolysis		yes
Growth on Mac		yes
DNase hydrolysis		neg
Starch hydrolysis		neg
Lecithinase		~~pos~~ NEG
Lipase		neg
Rapid PYR	pos	
Rapid LAP	pos	
Rapid ESC	neg	
Sensitivity to:		
Penicillin (10 U)		R
Vancomycin (30 ug)		R
Colistin (10 mcg)		S12
Polymyxin B (300 U)		S15

Tubes	**48 h**	**7 day**
KIA		neg –
H_2S		~~Slight pos~~ + NEG
Pseudo P		neg –
Pseudo F		neg –
NO_3 reduced		~~neg~~ + POS
Gas from NO_3		~~neg~~ + POS
NO_2 reduced		pos + POS
Gas from NO_2		pos + POS
OF Fructose		blu-grn –
OF Dextrose		grn + NEG –
OF Lactose		~~blu-grn~~ –
OF Maltose		blu-grn –
OF Mannitol		↓ –
OF Xylose		↓ –
OF Sucrose		↓ –
Arginine		neg –
Lysine		↓ –
Ornithine		↓ –
Base Control		↓ –
Acetamide		~~blu-grn~~ +/– NEG ?
Esculin		neg –
Gelatin		neg –
Indole		neg –
Malonate		pos +
PAD		neg –
Urea ___2 h		neg –
6.5% NaCL		pos +
10% Lactose		neg –
ONPG		neg –
Growth 42°		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 7: Achromobacter denitrificans isolate 6-of-12.

Date Inoculated: 12-12-12

Final Identification: Achromobacter denitrificans P.S.

Comments: Salmon/Peach colored on starch 12/20/12

					12/20/12
Gram Morph.			**Tubes**	**48 h**	**7 day**
Gram Test	7 DAYS		KIA		K/NC
Motility Wet Prep	POS - SM. Rods		H_2S		Slight H_2S
Motility Deep	POS		Pseudo P		NEG
Oxidase	POS		Pseudo F		NEG
Catalase	STRONG POS		NO_3 reduced		POS
PLATES	**48 h**	**7 day**	Gas from NO_3		POS
Odor		None	NO_2 reduced		POS
Pigment on swab		Cream	Gas from NO_2		POS
Pigment on BAP		Grey	OF Fructose		Blue
Morphology on BAP		Smooth	OF Dextrose		Blue
Beta hemolysis		NEG	OF Lactose		Blue
Growth on Mac		POS - LAVENDER	OF Maltose		Blue
DNase hydrolysis		NEG	OF Mannitol		Blue
Starch hydrolysis		NEG	OF Xylose		Blue
Lecithinase		NEG	OF Sucrose		Blue
Lipase		NEG	Arginine		NEG
Rapid PYR	NEG		Lysine		
Rapid LAP	POS		Ornithine		
Rapid ESC	NEG		Base Control		V
Sensitivity to:			Acetamide		POS
Penicillin (10 U)	R		Esculin		NEG
Vancomycin (30 ug)	R		Gelatin		NEG
Colistin (10 mcg)	S-12		Indole		NEG
Polymyxin B (300 U)	S-14		Malonate		POS
			PAD		NEG
			Urea NEG 2 h	NEG	NEG
			6.5% NaCL		POS
			10% Lactose		NEG
			ONPG		NEG
			Growth 42^0	NEG	NEG

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

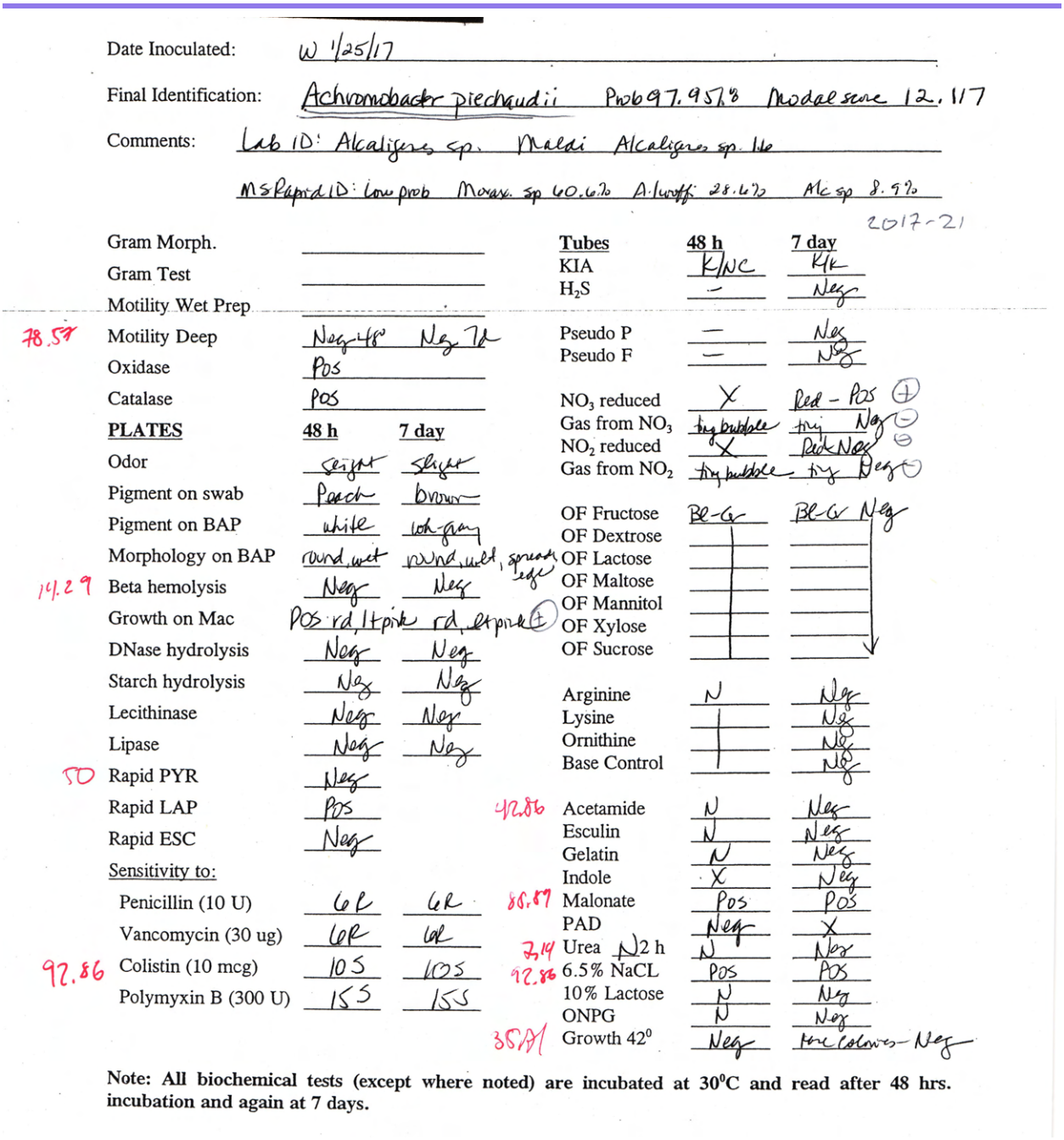
Figure 8: Achromobacter denitrificans isolate 7-of-12.

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_3 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 (30μg)	0	14	0.00	10.77	Lysine	0	14	0.00	10.77
Colistin (10μg)	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: Achromobacter piechaudii Prob 97.95% Modal score 12.117

Comments: Lab ID: Alcaligenes sp. Maldi Alcaligenes sp. Ue

MS Rapid ID: Low prob Moraxella sp 60.6% A. lwoffi 28.6% Mc sp 8.9%

2017-21

	Gram Morph.			**Tubes**	**48 h**	**7 day**
	Gram Test			KIA	K/NC	K/K
	Motility Wet Prep			H_2S	–	Neg
78.57	Motility Deep	Neg 48°	Neg 7d	Pseudo P	–	Neg
	Oxidase	Pos		Pseudo F	–	Neg
	Catalase	Pos		NO_3 reduced	X	Red – Pos (+)
	PLATES	**48 h**	**7 day**	Gas from NO_3	tiny bubbles	tiny Neg (−)
	Odor	slight	slight	NO_2 reduced	X	Red Neg (−)
	Pigment on swab	Peach	brown	Gas from NO_2	tiny bubble	tiny Neg (−)
	Pigment on BAP	white	lt gray	OF Fructose	Be-Gr	Be-Gr Neg
	Morphology on BAP	round, wet	round, wet, spread edge	OF Dextrose		
14.29	Beta hemolysis	Neg	Neg	OF Lactose		
	Growth on Mac	Pos rd, lt pink	rd, lt pink (+)	OF Maltose		
	DNase hydrolysis	Neg	Neg	OF Mannitol		
	Starch hydrolysis	Neg	Neg	OF Xylose		
	Lecithinase	Neg	Neg	OF Sucrose		
	Lipase	Neg	Neg	Arginine	N	Neg
50	Rapid PYR	Neg		Lysine		Neg
	Rapid LAP	Pos		Ornithine		Neg
	Rapid ESC	Neg		Base Control		Neg
	Sensitivity to:			42.86 Acetamide	N	Neg
	Penicillin (10 U)	GR	GR	Esculin	N	Neg
	Vancomycin (30 ug)	GR	GR	Gelatin	N	Neg
				Indole	X	Neg
92.86	Colistin (10 mcg)	IOS	IOS	88.89 Malonate	Pos	Pos
	Polymyxin B (300 U)	ISS	ISS	PAD	Neg	X
				7.14 Urea ~~N~~ 2 h	N	Neg
				92.86 6.5% NaCL	Pos	Pos
				10% Lactose	N	Neg
				ONPG	N	Neg
				35.71 Growth 42°	Neg	few colonies – 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 9: Achromobacter piechaudii isolate 1-of-14.

Date Inoculated: Apiech

Final Identification: ALCALIGENES Piechaudii PS. / 7/1/11

Comments: LIGHT PEACH ON STARCH

Gram Morph.		
Gram Test	48 hr	
Motility Wet Prep	NEG - very jittery hard to tell IG POS.	
Motility Deep	NEG ?	
Oxidase	POS	
Catalase	STRONG POS	
PLATES	**48 h**	**7 day**
Odor	None	
Pigment on swab	flesh	
Pigment on BAP	GREY	
Morphology on BAP	Smooth	
Beta hemolysis	NEG	
Growth on Mac	POS	POS LAVENDER
DNase hydrolysis	NEG	NEG
Starch hydrolysis	NEG	NEG
Lecithinase	NEG	NEG
Lipase	NEG	NEG
Rapid PYR	NEG	
Rapid LAP	POS	
Rapid ESC	NEG	
Sensitivity to:		
Penicillin (10 U)	R	R
Vancomycin (30 ug)	R	R
Colistin (10 mcg)	S-9.8	S
Polymyxin B (300 U)	S-13.8	S

Tubes	6/20 **48 h**	6/29 **7 day**
KIA	E/NC	~~E/E~~ E/NC
H_2S	NEG	NEG
Pseudo P	NEG	~~POS~~ NEG
Pseudo F	NEG	~~POS~~ NEG
NO_3 reduced		POS
Gas from NO_3	NEG	NEG
NO_2 reduced		NEG
Gas from NO_2	NEG	NEG
OF Fructose	BLUE	BLUE
OF Dextrose	↓	↓
OF Lactose	↓	↓
OF Maltose	↓	↓
OF Mannitol	↓	↓
OF Xylose	↓	↓
OF Sucrose	↓	↓
Arginine	NEG	NEG
Lysine	↓	↓
Ornithine	↓	↓
Base Control	↓	↓
Acetamide	NEG	NEG
Esculin	NEG	NEG
Gelatin	NEG	~~POS~~ NEG
Indole		NEG
Malonate	W+	POS
PAD	NEG	—
Urea NEG 2 h	NEG	NEG
6.5% NaCL	POS	POS
10% Lactose	NEG	NEG
ONPG	NEG	NEG
Growth 42^0	POS	POS

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

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

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%**	**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_3 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	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 (30μg)	0	1	0.00	39.67	Lysine	0	1	0.00	39.67
Colistin (10μg)	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.

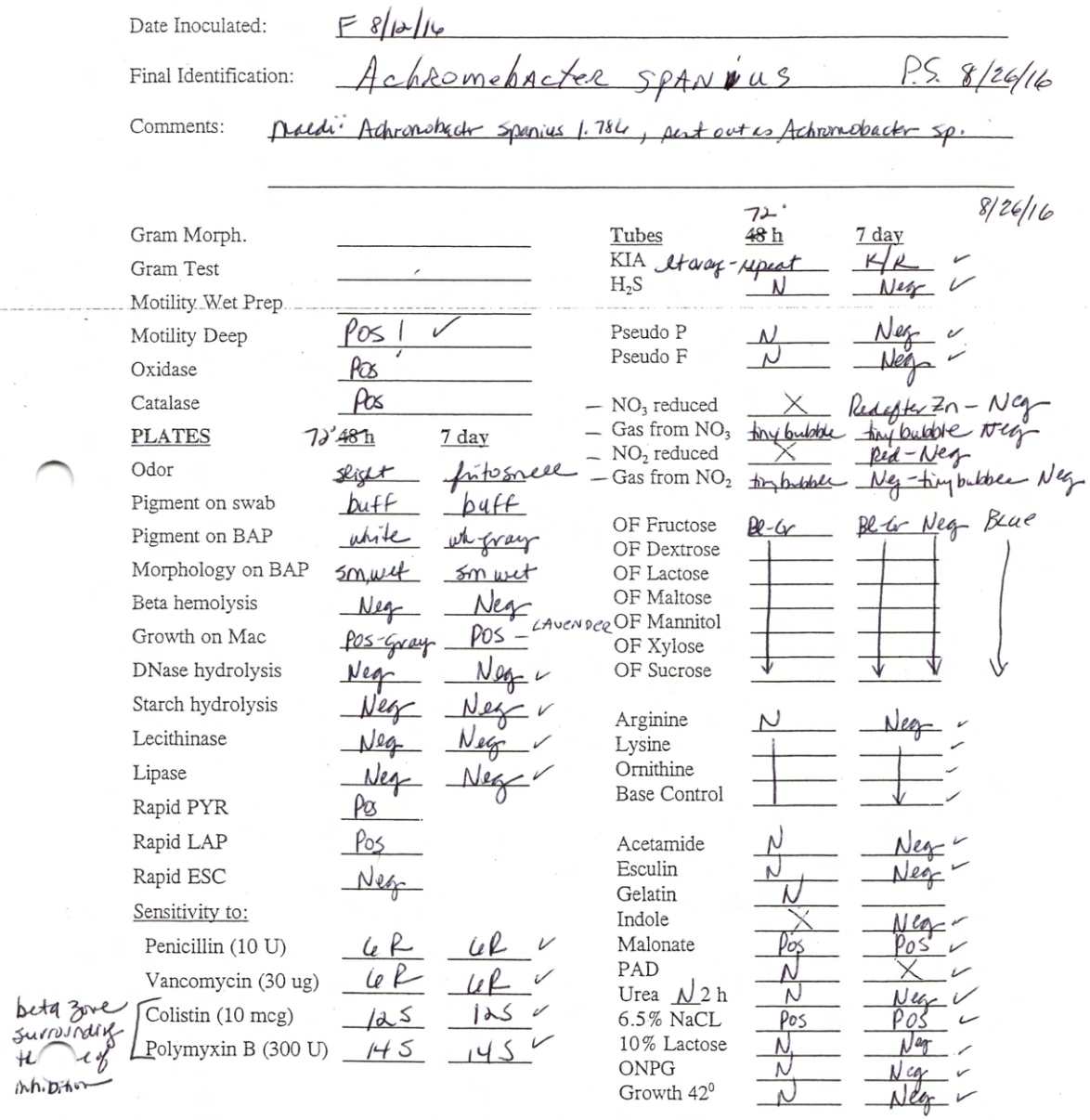


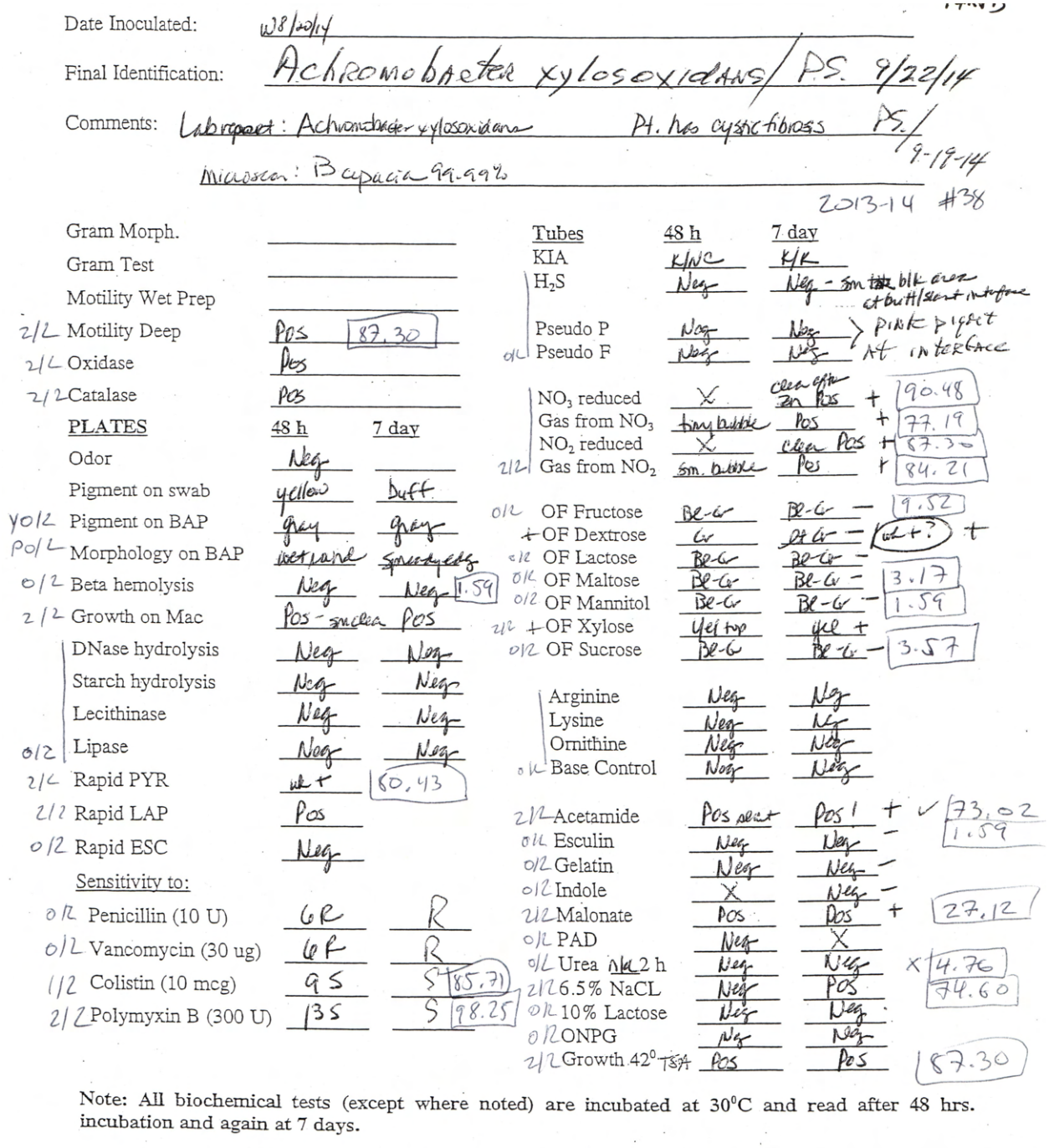
Figure 11: Achromobacter spanius isolate 1-of-1.

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%**	**W95%**
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_3 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 (30μg)	0	64	0.00	2.83	Lysine	0	64	0.00	2.83
Colistin (10μg)	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: 8/20/14

Final Identification: Achromobacter xylosoxidans / P.S. 9/22/14

Comments: Lab report: Achromobacter xylosoxidans Pt. has cystic fibrosis P.S. / 9-18-14

Microscan: B cepacia 99.99%

2013-14 #38

		48 h	7 day
	Gram Morph.		
	Gram Test		
	Motility Wet Prep		
2/2	Motility Deep	Pos [87.30]	
2/2	Oxidase	Pos	
2/2	Catalase	Pos	
	PLATES	48 h	7 day
	Odor	Neg	
	Pigment on swab	yellow	buff
y o/2	Pigment on BAP	gray	gray
P o/2	Morphology on BAP	wet rare	smooth edge
0/2	Beta hemolysis	Neg	Neg [1.59]
2/2	Growth on Mac	Pos - sm clear	Pos
	DNase hydrolysis	Neg	Neg
	Starch hydrolysis	Neg	Neg
	Lecithinase	Neg	Neg
0/2	Lipase	Neg	Neg
2/2	Rapid PYR	wk +	[80.43]
2/2	Rapid LAP	Pos	
0/2	Rapid ESC	Neg	
	Sensitivity to:		
0 R	Penicillin (10 U)	GR	R
0/2	Vancomycin (30 ug)	GR	R
1/2	Colistin (10 mcg)	9 S	S [85.71]
2/2	Polymyxin B (300 U)	13 S	S [98.25]

	Tubes	48 h	7 day
	KIA	K/NC	K/K
	H_2S	Neg	Neg - sm blk area at butt/slant interface
	Pseudo P	Neg	Neg > PINK pigment at INTERFACE
0/2	Pseudo F	Neg	Neg
	NO_3 reduced	X	clear after Zn Pos + [90.48]
	Gas from NO_3	tiny bubble	Pos + [77.19]
	NO_2 reduced	X	clear Pos + [87.30]
2/2	Gas from NO_2	sm. bubble	Pos + [84.21]
0/2	OF Fructose	Be-G	Be-G - [9.52]
+	OF Dextrose	G	Bt G - (wk+?) +
0/2	OF Lactose	Be-G	Be-G -
0/2	OF Maltose	Be-G	Be-G - [3.17]
0/2	OF Mannitol	Be-G	Be-G - [1.59]
2/2	+ OF Xylose	Yel top	yel +
0/2	OF Sucrose	Be-G	Be-G - [3.57]
	Arginine	Neg	Neg
	Lysine	Neg	Neg
	Ornithine	Neg	Neg
0/2	Base Control	Neg	Neg
2/2	Acetamide	Pos slow+	Pos 1 + ✓ [73.02]
0/2	Esculin	Neg	Neg - [1.59]
0/2	Gelatin	Neg	Neg -
0/2	Indole	X	Neg -
2/2	Malonate	Pos	Pos + [27.12]
0/2	PAD	Neg	X
0/2	Urea wk 2 h	Neg	Neg x [4.76]
2/2	6.5% NaCL	Neg	Pos [74.60]
0/2	10% Lactose	Neg	Neg
0/2	ONPG	Neg	Neg
2/2	Growth 42° TSA	Pos	Pos [87.30]

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

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

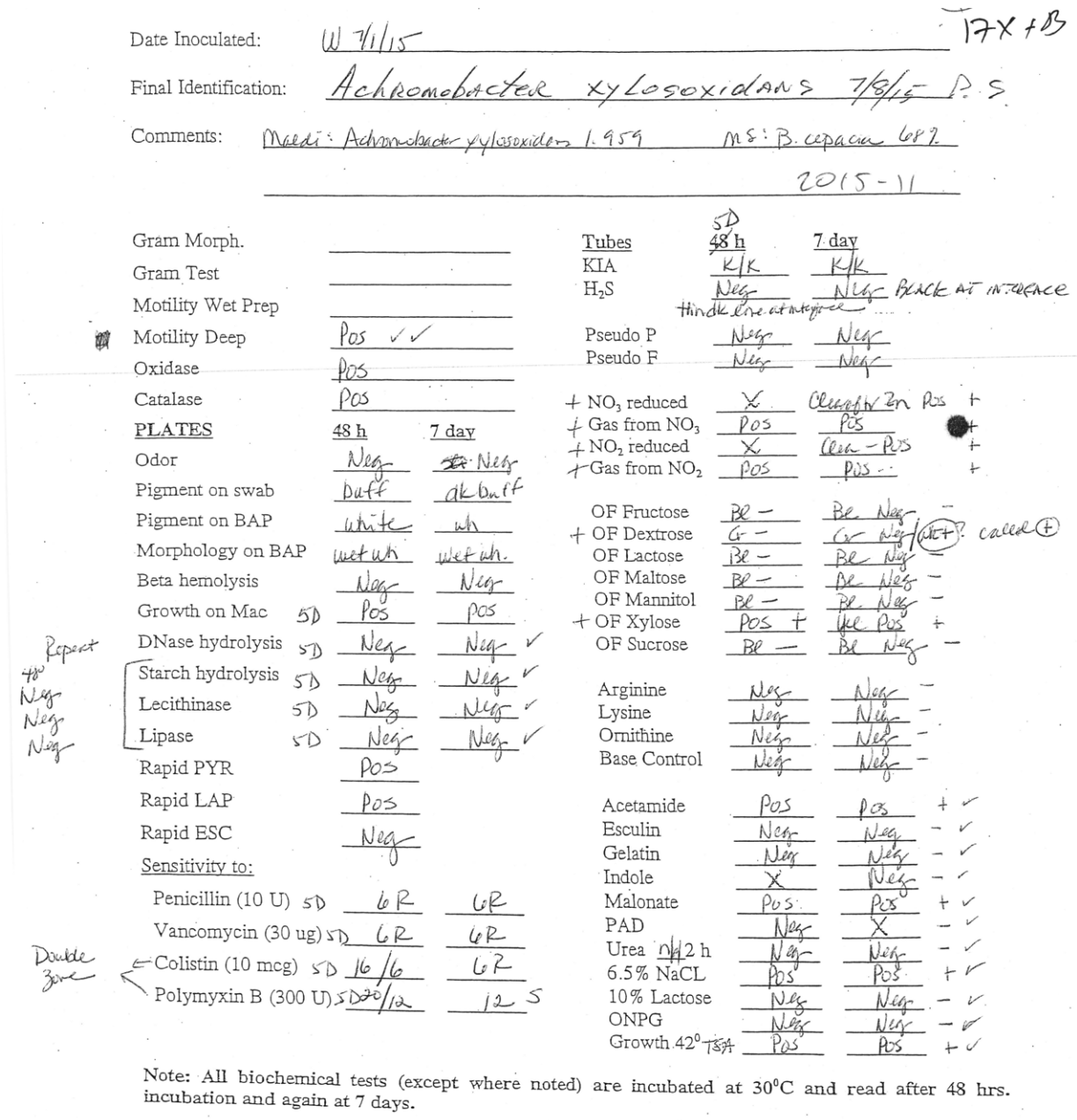
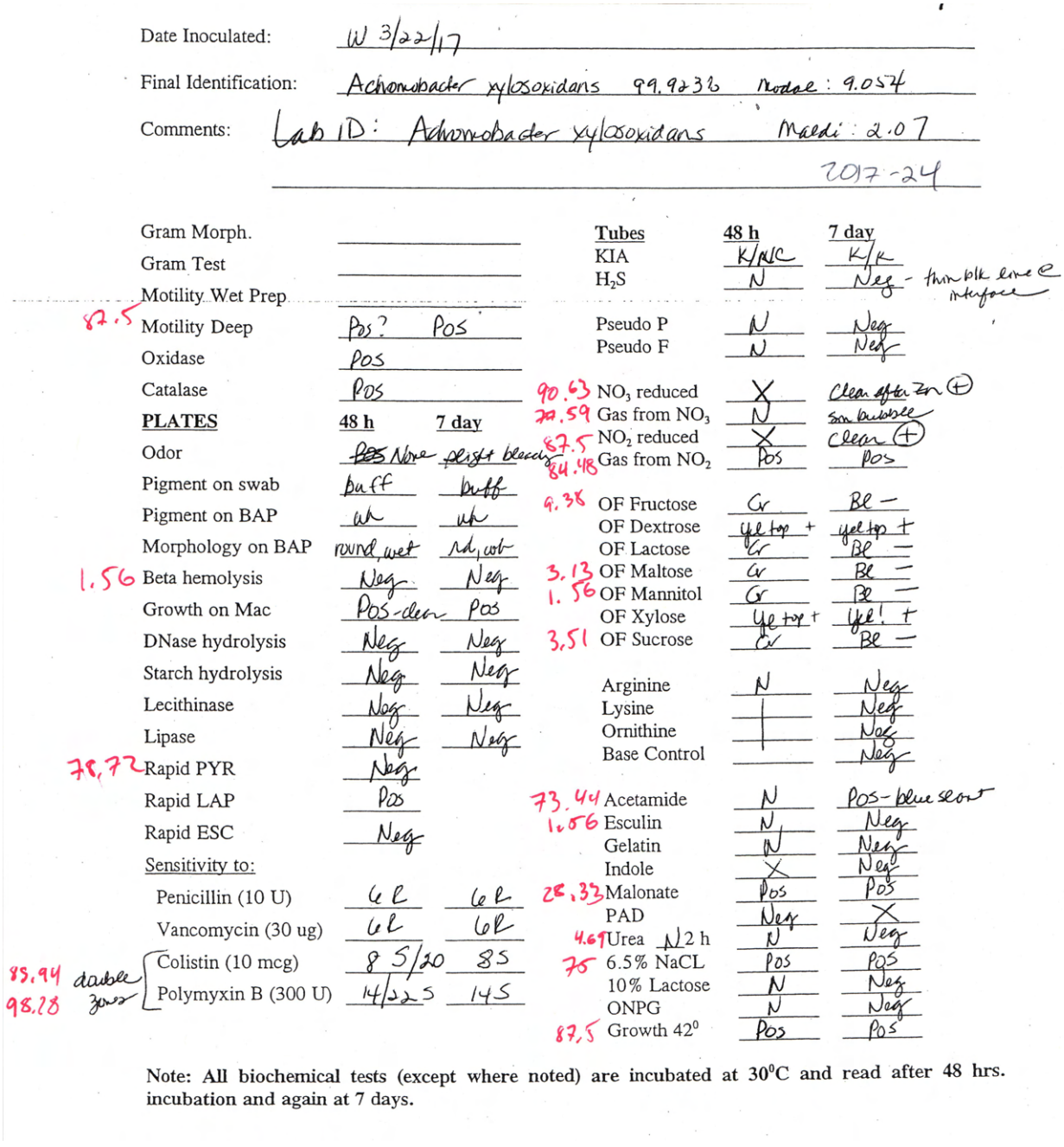


Figure 13: Achromobacter xylosoxidans isolate 2-of-64.



Date Inoculated: W 3/22/17

Final Identification: Achromobacter xylosoxidans 99.92% Biotype: 9.054

Comments: Lab ID: Achromobacter xylosoxidans Maldi: 2.07

2017-24

Gram Morph.		
Gram Test		
Motility Wet Prep		
87.5 Motility Deep	Pos? Pos	
Oxidase	Pos	
Catalase	Pos	
PLATES	**48 h**	**7 day**
Odor	~~Pos~~ None	~~slight bleach~~
Pigment on swab	buff	buff
Pigment on BAP	wh	wh
Morphology on BAP	round, wet	rd, wh
1.56 Beta hemolysis	Neg	Neg
Growth on Mac	Pos-clear	Pos
DNase hydrolysis	Neg	Neg
Starch hydrolysis	Neg	Neg
Lecithinase	Neg	Neg
Lipase	Neg	Neg
78.72 Rapid PYR	Neg	
Rapid LAP	Pos	
Rapid ESC	Neg	
Sensitivity to:		
Penicillin (10 U)	6 R	6 R
Vancomycin (30 ug)	6 R	6 R
85.94 double 98.28 Colistin (10 mcg)	8 S/20	8S
98.28 Polymyxin B (300 U)	14/22 S	14S

Tubes	**48 h**	**7 day**
KIA	K/NC	K/K
H_2S	N	Neg - thin blk line @ interface
Pseudo P	N	Neg
Pseudo F	N	Neg
90.63 NO_3 reduced	X	Clear after Zn ⊕
78.59 Gas from NO_3	N	sm bubbles
87.5 NO_2 reduced	X	clear ⊕
84.18 Gas from NO_2	Pos	Pos
9.38 OF Fructose	Gr	Bl –
OF Dextrose	yel top +	yel top +
OF Lactose	Gr	Bl –
3.13 OF Maltose	Gr	Bl –
1.56 OF Mannitol	Gr	Bl –
OF Xylose	yel top +	yel! +
3.51 OF Sucrose	Gr	Bl –
Arginine	N	Neg
Lysine		Neg
Ornithine		Neg
Base Control		Neg
73.44 Acetamide	N	Pos-blue soon
1.056 Esculin	N	Neg
Gelatin	N	Neg
Indole	X	Neg
25.33 Malonate	Pos	Pos
PAD	Neg	X
4.69 Urea N 2 h	N	Neg
75 6.5% NaCL	Pos	Pos
10% Lactose	N	Neg
ONPG	N	Neg
87.5 Growth 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 14: Achromobacter xylosoxidans isolate 3-of-64.

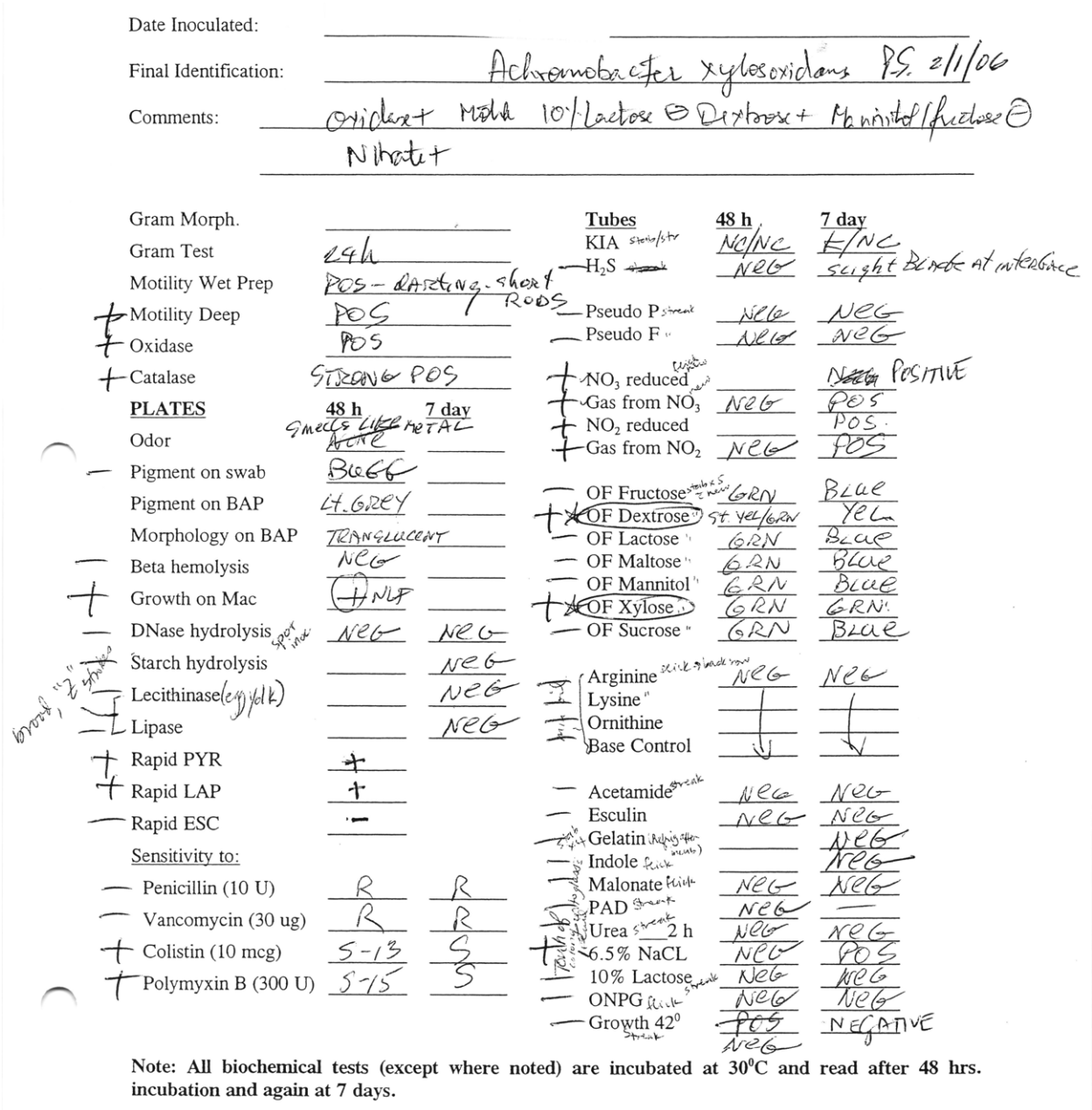
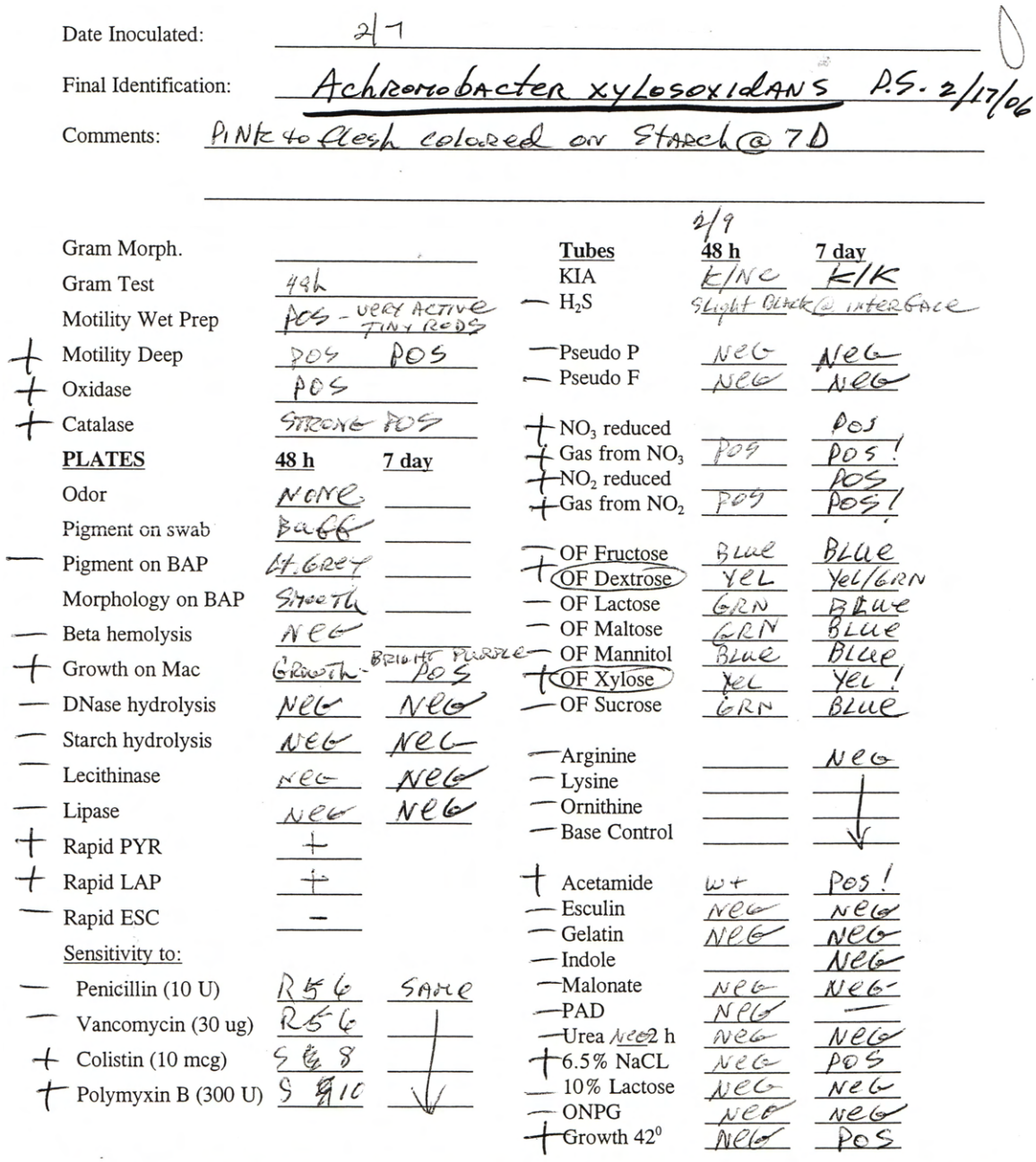


Figure 15: Achromobacter xylosoxidans isolate 4-of-64.



Date Inoculated: 2/7

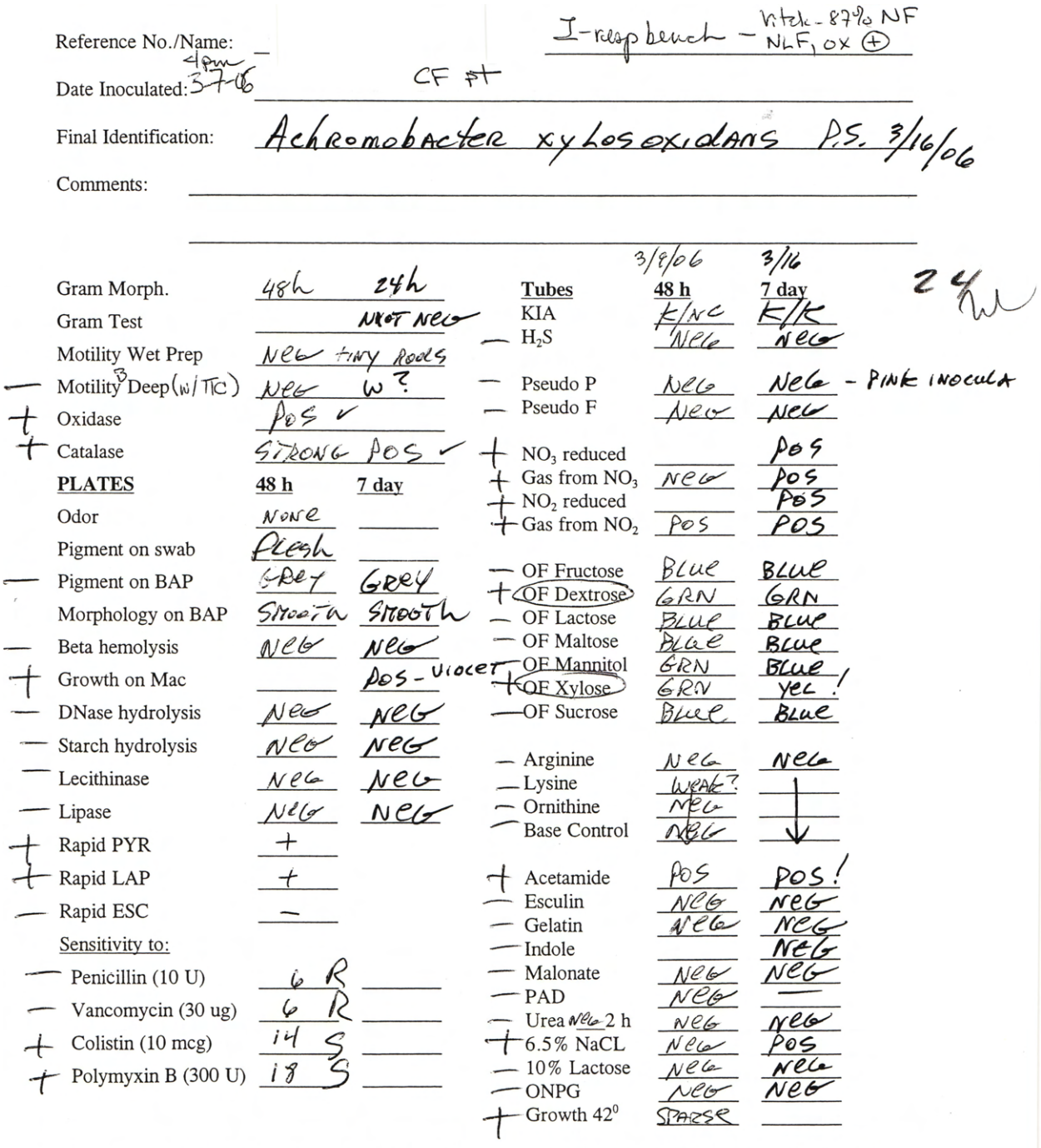
Final Identification: Achromobacter xylosoxidans P.S. 2/17/06

Comments: PINK to flesh colored on Starch @ 7D

				Tubes	48 h (2/9)	7 day
	Gram Morph.			KIA	K/NC	K/K
	Gram Test	48h		— H_2S	Slight black @ interface	
	Motility Wet Prep	POS - VERY ACTIVE TINY RODS				
+	Motility Deep	POS	POS	— Pseudo P	Neg	Neg
+	Oxidase	POS		— Pseudo F	Neg	Neg
+	Catalase	STRONG POS		+ NO_3 reduced		POS
	PLATES	**48 h**	**7 day**	+ Gas from NO_3	POS	POS!
	Odor	None		+ NO_2 reduced		POS
	Pigment on swab	Buff		+ Gas from NO_2	POS	POS!
—	Pigment on BAP	Lt. Grey		— OF Fructose	Blue	Blue
	Morphology on BAP	Smooth		+ OF Dextrose	Yel	Yel/GRN
—	Beta hemolysis	Neg		— OF Lactose	GRN	Blue
+	Growth on Mac	Growth	BRIGHT PURPLE POS	— OF Maltose	GRN	Blue
—	DNase hydrolysis	Neg	Neg	— OF Mannitol	Blue	Blue
—	Starch hydrolysis	Neg	Neg	+ OF Xylose	Yel	Yel!
—	Lecithinase	Neg	Neg	— OF Sucrose	GRN	Blue
—	Lipase	Neg	Neg	— Arginine		Neg
+	Rapid PYR	+		— Lysine		↓
+	Rapid LAP	+		— Ornithine		↓
—	Rapid ESC	—		— Base Control		↓
	Sensitivity to:			+ Acetamide	w+	Pos!
—	Penicillin (10 U)	R 5 6	SAME	— Esculin	Neg	Neg
—	Vancomycin (30 ug)	R 5 6	↓	— Gelatin	Neg	Neg
+	Colistin (10 mcg)	S 6 8	↓	— Indole		Neg
+	Polymyxin B (300 U)	S 9 10	↓	— Malonate	Neg	Neg
				— PAD	Neg	—
				— Urea Neg 2 h	Neg	Neg
				+ 6.5% NaCL	Neg	Pos
				— 10% Lactose	Neg	Neg
				— ONPG	Neg	Neg
				+ 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 16: Achromobacter xylosoxidans isolate 5-of-64.



Reference No./Name: I-resp bench – Vitek - 87% NF NLF, ox (+)

Date Inoculated: 4pm 3-7-06 CF pt

Final Identification: Achromobacter xylosoxidans P.S. 3/16/06

Comments:

	Gram Morph.	48h	24h
	Gram Test		NOT NEG
	Motility Wet Prep	NEG tiny rods	
—	Motility 3 Deep (w/ TTC)	NEG	W?
+	Oxidase	POS ✓	
+	Catalase	STRONG POS ✓	
	PLATES	**48 h**	**7 day**
	Odor	NONE	
	Pigment on swab	Flesh	
—	Pigment on BAP	GREY	GREY
	Morphology on BAP	SMOOTH	SMOOTH
—	Beta hemolysis	NEG	NEG
+	Growth on Mac		POS - VIOLET
—	DNase hydrolysis	NEG	NEG
—	Starch hydrolysis	NEG	NEG
—	Lecithinase	NEG	NEG
—	Lipase	NEG	NEG
+	Rapid PYR	+	
+	Rapid LAP	+	
—	Rapid ESC	—	
	Sensitivity to:		
—	Penicillin (10 U)	6 R	
—	Vancomycin (30 ug)	6 R	
+	Colistin (10 mcg)	14 S	
+	Polymyxin B (300 U)	18 S	

24 W

		3/8/06	3/16
	Tubes	**48 h**	**7 day**
	KIA	K/NC	K/K
—	H_2S	NEG	NEG
—	Pseudo P	NEG	NEG - PINK INOCULA
—	Pseudo F	NEG	NEG
+	NO_3 reduced		POS
+	Gas from NO_3	NEG	POS
+	NO_2 reduced		POS
+	Gas from NO_2	POS	POS
—	OF Fructose	BLUE	BLUE
+	OF Dextrose	GRN	GRN
—	OF Lactose	BLUE	BLUE
—	OF Maltose	BLUE	BLUE
—	OF Mannitol	GRN	BLUE
+	OF Xylose	GRN	YEL!
—	OF Sucrose	BLUE	BLUE
—	Arginine	NEG	NEG
—	Lysine	WEAK?	↓
—	Ornithine	NEG	↓
—	Base Control	NEG	↓
+	Acetamide	POS	POS!
—	Esculin	NEG	NEG
—	Gelatin	NEG	NEG
—	Indole		NEG
—	Malonate	NEG	NEG
—	PAD	NEG	—
—	Urea NEG 2 h	NEG	NEG
+	6.5% NaCL	NEG	POS
—	10% Lactose	NEG	NEG
—	ONPG	NEG	NEG
+	Growth 42°	SPARSE	

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

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

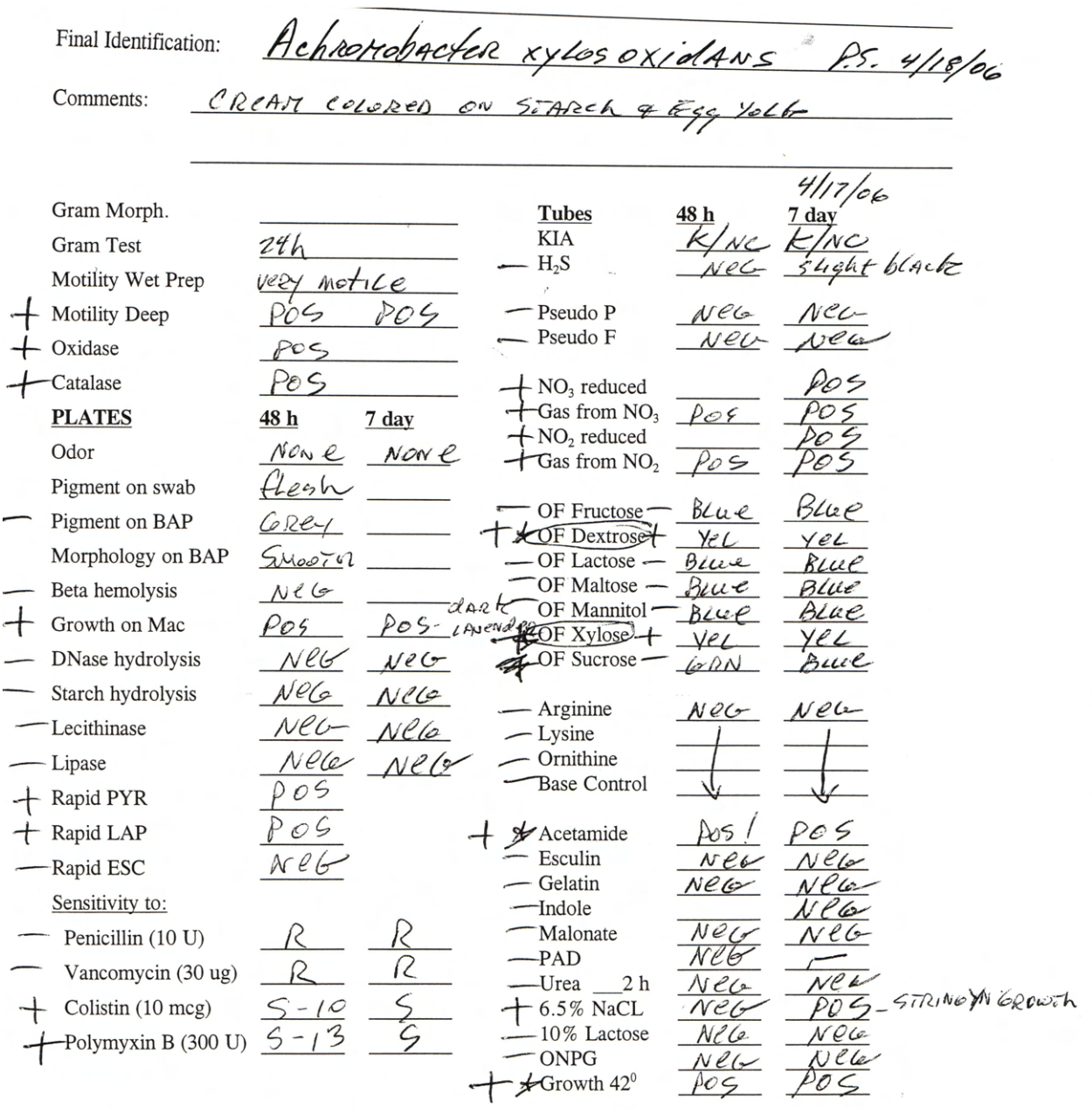


Figure 18: Achromobacter xylosoxidans isolate 7-of-64.

Date Inoculated: 5-2-06

Final Identification: Achromobacter xylosoxidans P.S. 5/9/06

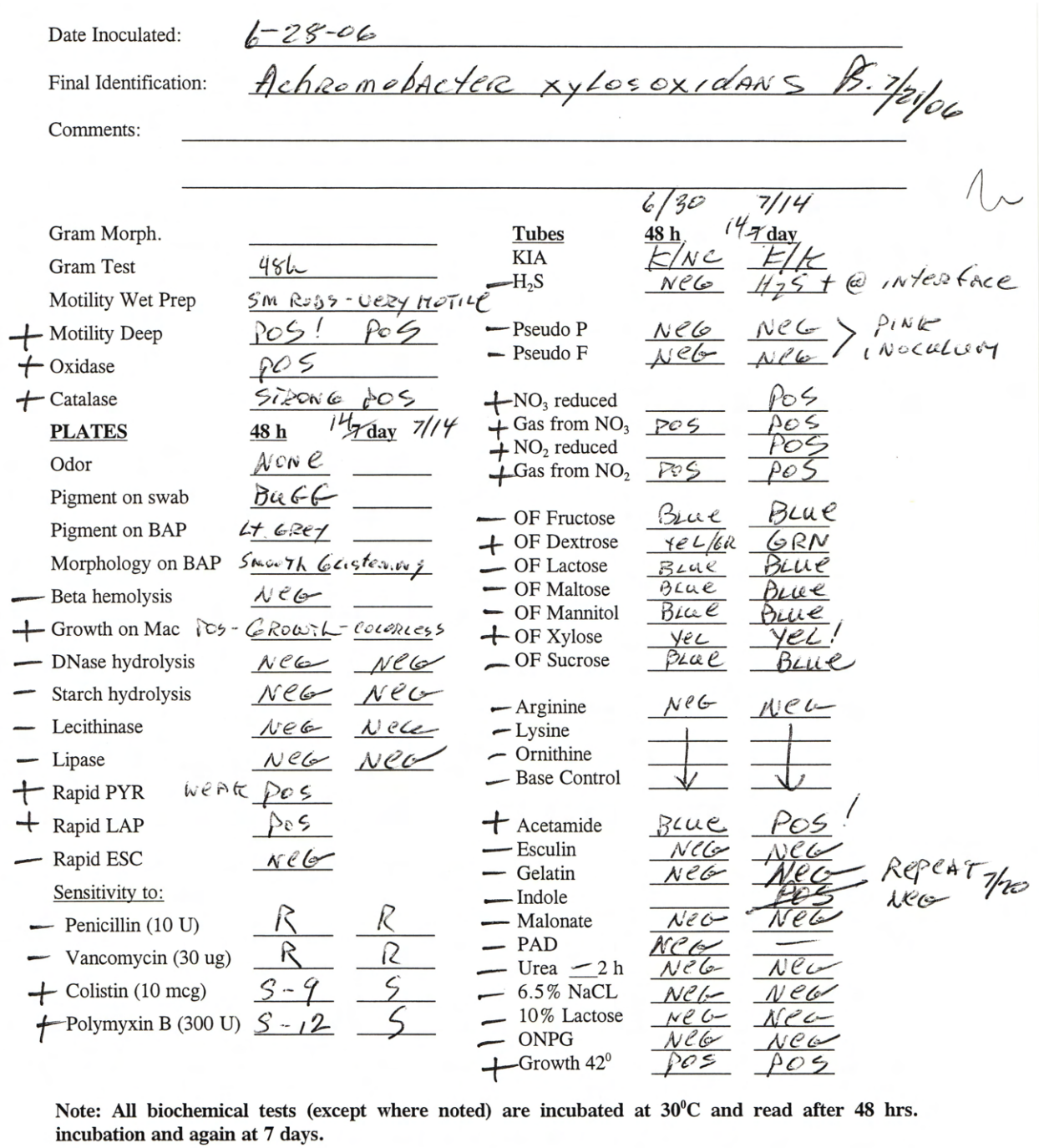
Comments: DULL-PASTY LOOKING ON BAP @ 48h

5-9-06

	Gram Morph.			**Tubes**	**48 h**	**7 day**
	Gram Test	24hr		KIA	K/NC	K/NC
	Motility Wet Prep	VERY motile- tiny rods		H_2S	Neg	Neg
+	Motility Deep	POS	Pos-7D	— Pseudo P	Neg	Neg
+	Oxidase	POS		— Pseudo F	Neg	Neg
+	Catalase	STRONG POS		+ NO_3 reduced		POS
	PLATES	**48 h**	**7 day**	+ Gas from NO_3	Pos	Pos
	Odor	NONE	NONE	+ NO_2 reduced		POS
	Pigment on swab	flesh		+ Gas from NO_2	POS	Pos
—	Pigment on BAP	Light Grey		— OF Fructose	Blue	Blue
	Morphology on BAP	DULL-STRINGY		+ OF Dextrose	YEL/GRN	BRIGHT GRN
—	Beta hemolysis	Neg	-Neg 48h	— OF Lactose	Blue	Blue
+	Growth on Mac	POS	Pos	— OF Maltose	Blue	Blue
—	DNase hydrolysis	Neg	Neg	— OF Mannitol	Blue	Blue
—	Starch hydrolysis	Neg	Neg	+ OF Xylose	Yel	Yel
—	Lecithinase	Neg	Neg	— OF Sucrose	Blue	Blue
—	Lipase	Neg	Neg	— Arginine	Neg	Neg
+	Rapid PYR	POS		— Lysine		
+	Rapid LAP	POS		— Ornithine		
—	Rapid ESC	NEG		— Base Control		
	Sensitivity to:			+ ☆Acetamide	Blue	Blue
—	Penicillin (10 U)	R	R	— Esculin	Neg	Neg
—	Vancomycin (30 ug)	R	R	— Gelatin	Neg	Neg
+	Colistin (10 mcg)	S-11	S	— Indole		Neg
+	Polymyxin B (300 U)	S-13	S	— Malonate	Neg	Neg
				— PAD	Neg	—
				— Urea Neg 2 h	Neg	Neg
				+ 6.5% NaCL	Neg	POS
				— 10% Lactose	Neg	Neg
				— ONPG	Neg	Neg
				+ Growth 42°	POS	PARTLY 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 19: Achromobacter xylosoxidans isolate 8-of-64.



Date Inoculated: 6-28-06

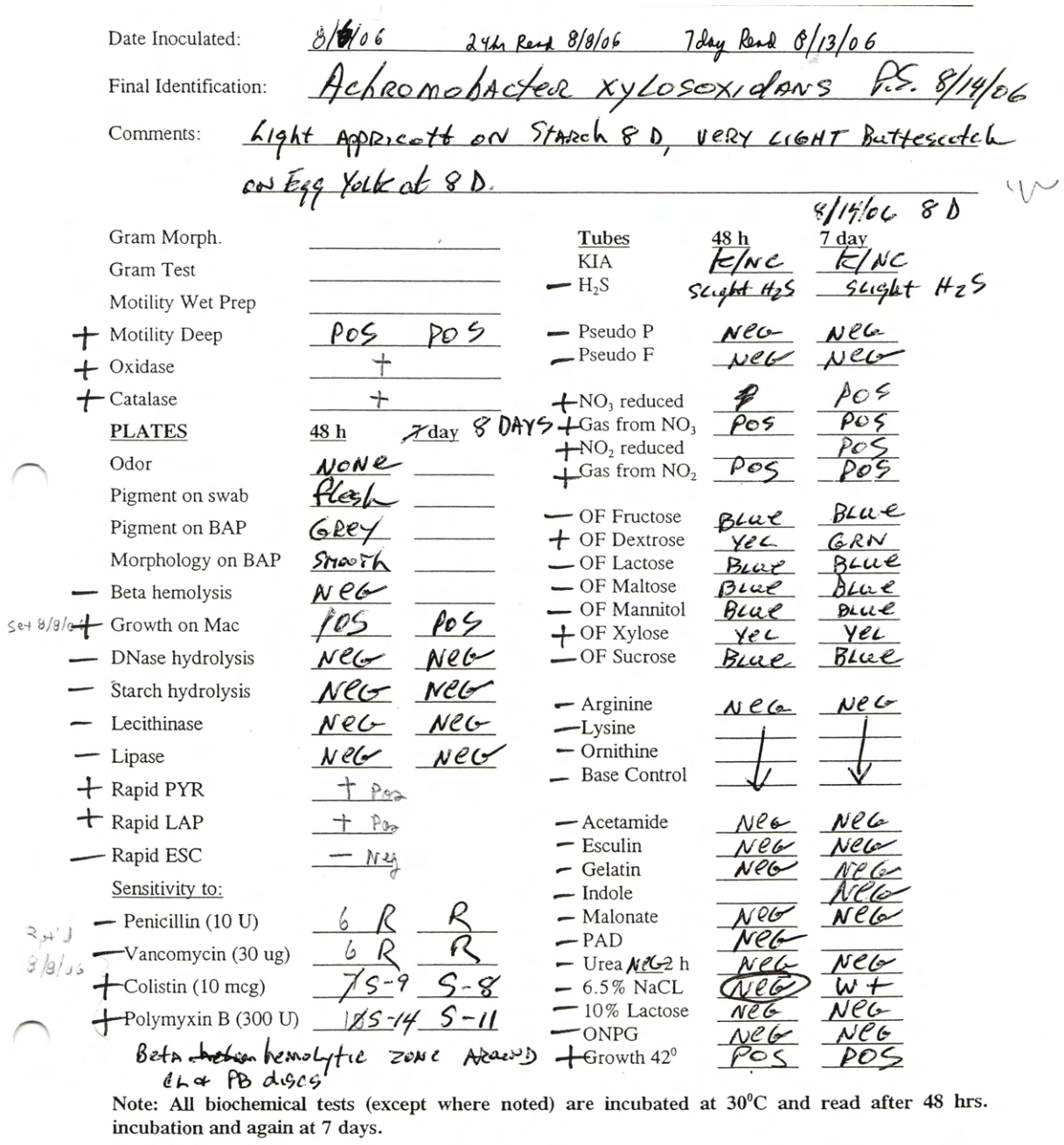
Final Identification: Achromobacter xylosoxidans B. 7/21/06

Comments:

				6/30 48 h	7/14 14 day
Gram Morph.			**Tubes**		
Gram Test	48h		KIA	K/NC	K/K
			— H_2S	Neg	H_2S + @ interface
Motility Wet Prep	SM Rods - very motile				
+ Motility Deep	POS!	POS	— Pseudo P	Neg	Neg > Pink
+ Oxidase	POS		— Pseudo F	Neg	Neg (inoculum)
+ Catalase	Strong POS		+ NO_3 reduced		POS
PLATES	**48 h**	**14 day** 7/14	+ Gas from NO_3	POS	POS
			+ NO_2 reduced		POS
Odor	None		+ Gas from NO_2	POS	POS
Pigment on swab	Buff				
Pigment on BAP	Lt. Grey		— OF Fructose	Blue	Blue
Morphology on BAP	Smooth Glistening		+ OF Dextrose	Yel/Gr	GRN
			— OF Lactose	Blue	Blue
— Beta hemolysis	Neg		— OF Maltose	Blue	Blue
+ Growth on Mac	POS - Growth - colorless		— OF Mannitol	Blue	Blue
			+ OF Xylose	Yel	Yel!
— DNase hydrolysis	Neg	Neg	— OF Sucrose	Blue	Blue
— Starch hydrolysis	Neg	Neg			
— Lecithinase	Neg	Neg	— Arginine	Neg	Neg
— Lipase	Neg	Neg	— Lysine		
			— Ornithine		
+ Rapid PYR	weak POS		— Base Control		
+ Rapid LAP	POS				
— Rapid ESC	Neg		+ Acetamide	Blue	POS!
			— Esculin	Neg	Neg
Sensitivity to:			— Gelatin	Neg	Neg Repeat 7/20 Neg
			— Indole		POS
— Penicillin (10 U)	R	R	— Malonate	Neg	Neg
— Vancomycin (30 ug)	R	R	— PAD	Neg	—
+ Colistin (10 mcg)	S - 9	S	— Urea — 2 h	Neg	Neg
+ Polymyxin B (300 U)	S - 12	S	— 6.5% NaCL	Neg	Neg
			— 10% Lactose	Neg	Neg
			— ONPG	Neg	Neg
			+ Growth 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 20: Achromobacter xylosoxidans isolate 9-of-64.



Date Inoculated: 8/6/06 24hr Read 8/8/06 7day Read 8/13/06

Final Identification: Achromobacter xylosoxidans P.S. 8/14/06

Comments: Light Appricott on Starch 8 D, very light Buttescotch on Egg Yolk at 8 D.

	Gram Morph.		
	Gram Test		
	Motility Wet Prep		
+	Motility Deep	POS	POS
+	Oxidase	+	
+	Catalase	+	
	PLATES	**48 h**	~~7~~ day 8 DAYS
	Odor	NONE	
	Pigment on swab	flesh	
	Pigment on BAP	Grey	
	Morphology on BAP	Smooth	
—	Beta hemolysis	NEG	
Set 8/8/06 +	Growth on Mac	POS	POS
—	DNase hydrolysis	NEG	NEG
—	Starch hydrolysis	NEG	NEG
—	Lecithinase	NEG	NEG
—	Lipase	NEG	NEG
+	Rapid PYR	+ Pos	
+	Rapid LAP	+ Pos	
—	Rapid ESC	— Neg	
	Sensitivity to:		
—	Penicillin (10 U)	6 R	R
Rpt'd 8/8/06 —	Vancomycin (30 ug)	6 R	R
+	Colistin (10 mcg)	~~7~~ S-9	S-8
+	Polymyxin B (300 U)	~~10~~ S-14	S-11

Beta ~~[illegible]~~ hemolytic zone around CL & PB discs

	Tubes	48 h	7 day (8/14/06 8 D)
	KIA	K/NC	K/NC
—	H_2S	Slight H_2S	Slight H_2S
—	Pseudo P	NEG	NEG
—	Pseudo F	NEG	NEG
+	NO_3 reduced	~~[illegible]~~	POS
+	Gas from NO_3	POS	POS
+	NO_2 reduced		POS
+	Gas from NO_2	POS	POS
—	OF Fructose	Blue	Blue
+	OF Dextrose	Yel	GRN
—	OF Lactose	Blue	Blue
—	OF Maltose	Blue	Blue
—	OF Mannitol	Blue	Blue
+	OF Xylose	Yel	Yel
—	OF Sucrose	Blue	Blue
—	Arginine	NEG	NEG
—	Lysine	↓	↓
—	Ornithine	↓	↓
—	Base Control	↓	↓
—	Acetamide	NEG	NEG
—	Esculin	NEG	NEG
—	Gelatin	NEG	NEG
—	Indole		NEG
—	Malonate	NEG	NEG
—	PAD	NEG	
—	Urea NEG 2 h	NEG	NEG
—	6.5% NaCL	NEG	W+
—	10% Lactose	NEG	NEG
—	ONPG	NEG	NEG
+	Growth 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 21: Achromobacter xylosoxidans isolate 10-of-64.

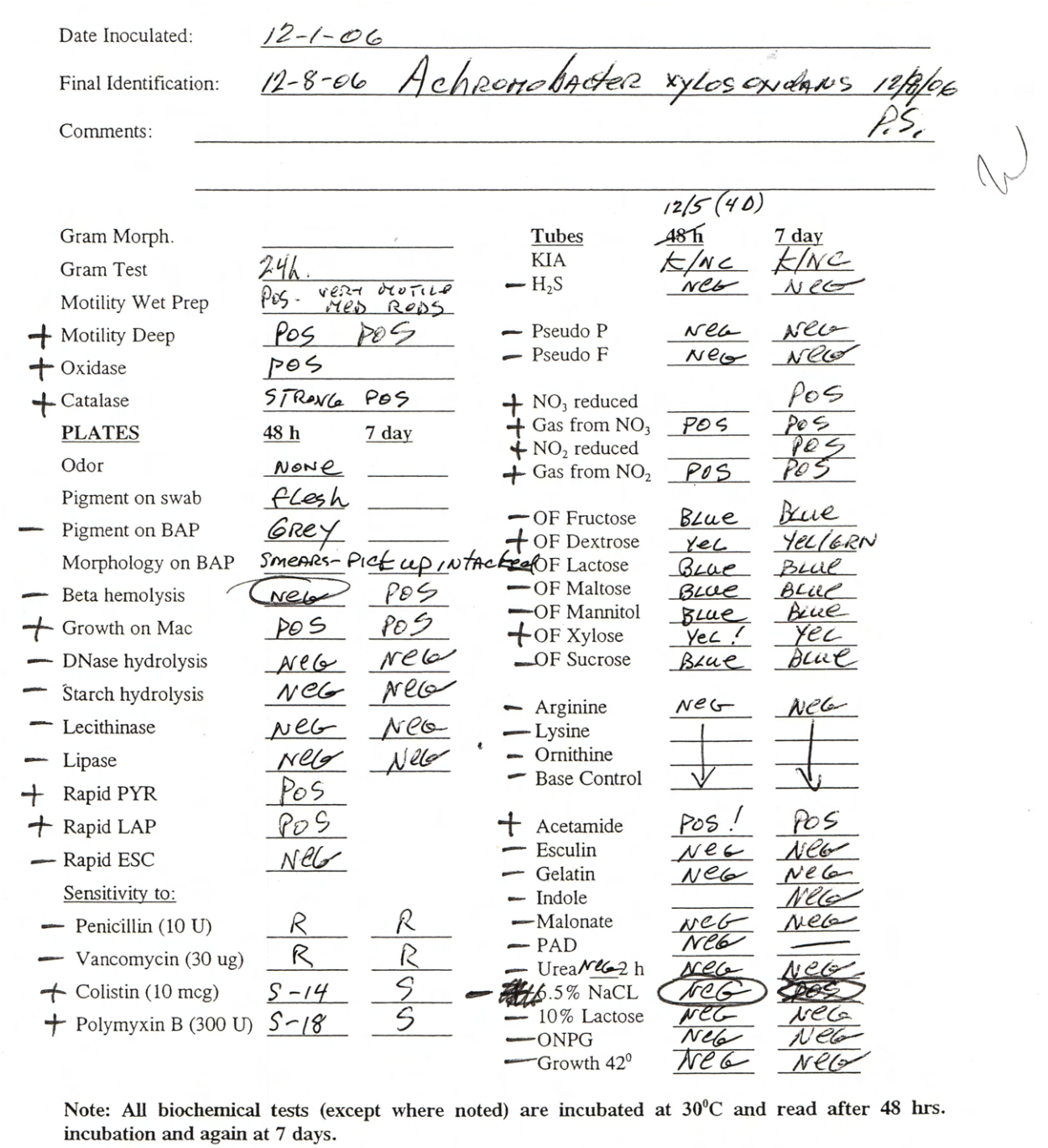
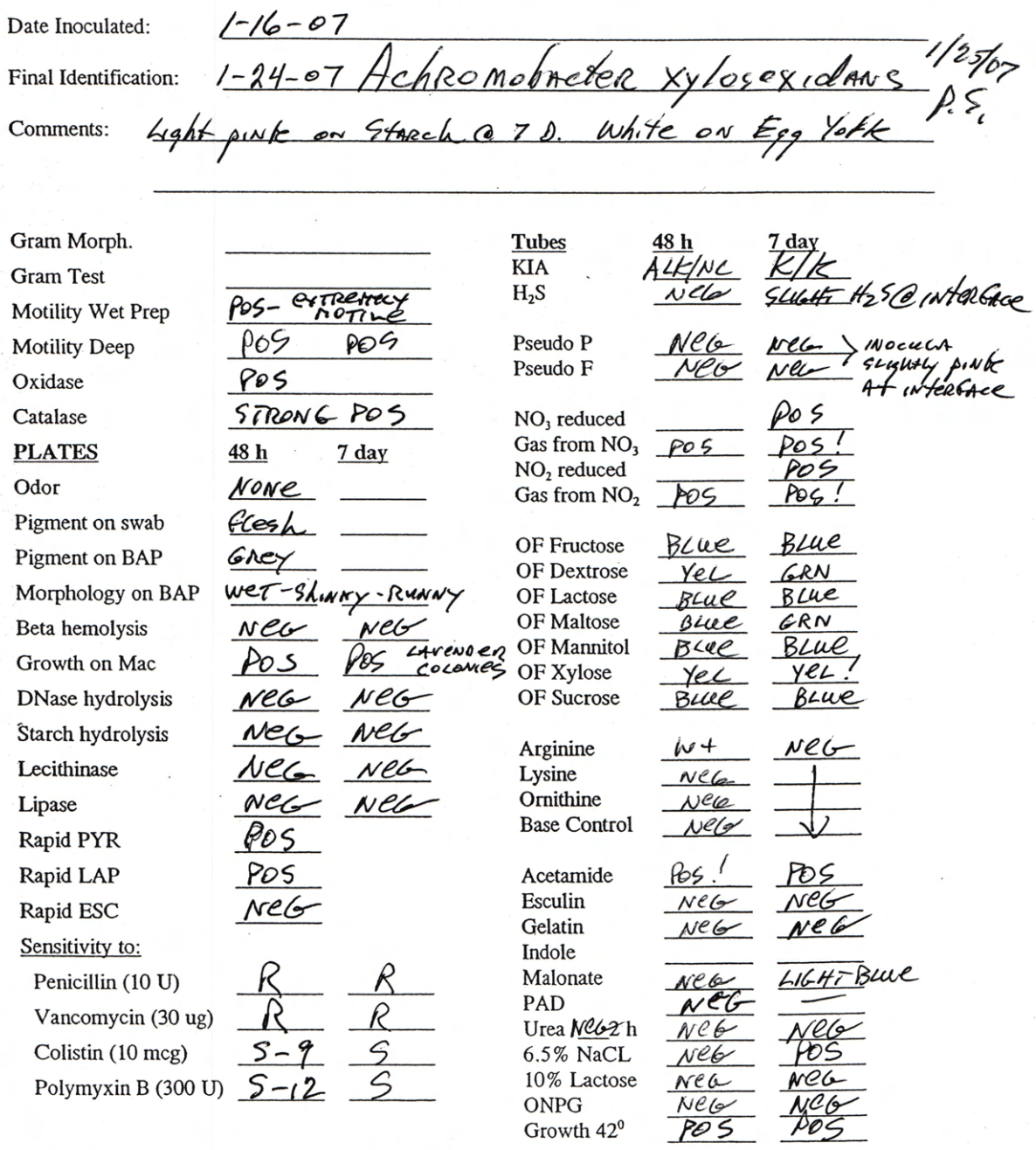


Figure 22: Achromobacter xylosoxidans isolate 11-of-64.



Date Inoculated: 1-16-07

Final Identification: 1-24-07 Achromobacter Xylosoxidans 1/25/07 P.S.

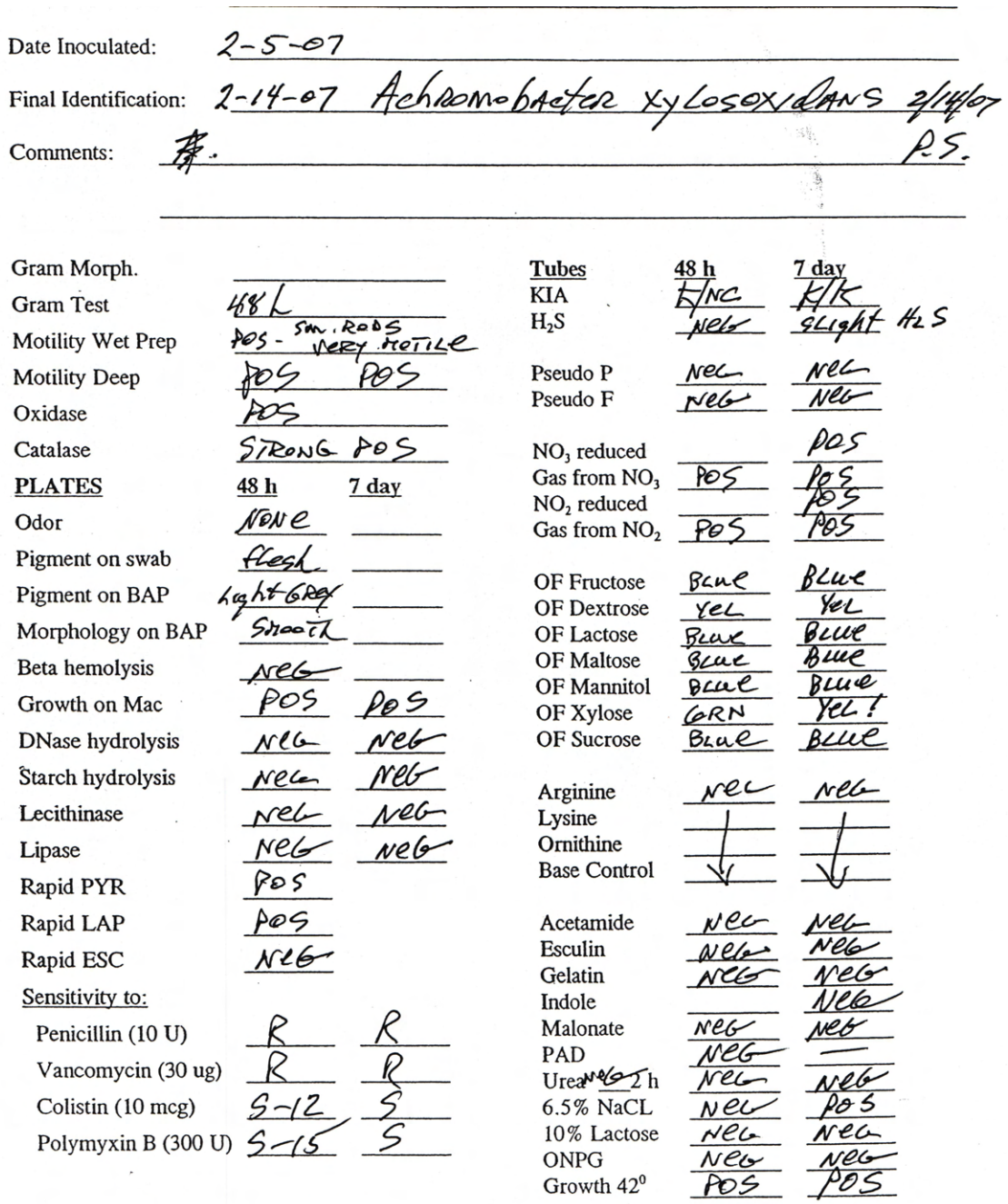
Comments: Light pink on Starch @ 7 D. White on Egg Yolk

Gram Morph.		
Gram Test		
Motility Wet Prep	POS- EXTREMELY MOTILE	
Motility Deep	POS	POS
Oxidase	POS	
Catalase	STRONG POS	
PLATES	**48 h**	**7 day**
Odor	NONE	
Pigment on swab	Flesh	
Pigment on BAP	Grey	
Morphology on BAP	WET-SLIMY-RUNNY	
Beta hemolysis	NEG	NEG
Growth on Mac	POS	POS LAVENDER COLONIES
DNase hydrolysis	NEG	NEG
Starch hydrolysis	NEG	NEG
Lecithinase	NEG	NEG
Lipase	NEG	NEG
Rapid PYR	POS	
Rapid LAP	POS	
Rapid ESC	NEG	
Sensitivity to:		
Penicillin (10 U)	R	R
Vancomycin (30 ug)	R	R
Colistin (10 mcg)	S-9	S
Polymyxin B (300 U)	S-12	S

Tubes	**48 h**	**7 day**
KIA	ALK/NC	K/K
H_2S	NEG	SLIGHT H_2S @ INTERFACE
Pseudo P	NEG	NEG → INOCULA SLIGHTLY PINK AT INTERFACE
Pseudo F	NEG	NEG
NO_3 reduced		POS
Gas from NO_3	POS	POS!
NO_2 reduced		POS
Gas from NO_2	POS	POS!
OF Fructose	BLUE	BLUE
OF Dextrose	YEL	GRN
OF Lactose	BLUE	BLUE
OF Maltose	BLUE	GRN
OF Mannitol	BLUE	BLUE
OF Xylose	YEL	YEL!
OF Sucrose	BLUE	BLUE
Arginine	W+	NEG
Lysine	NEG	↓
Ornithine	NEG	↓
Base Control	NEG	↓
Acetamide	POS!	POS
Esculin	NEG	NEG
Gelatin	NEG	NEG
Indole		
Malonate	NEG	LIGHT BLUE
PAD	NEG	—
Urea NEG 2 h	NEG	NEG
6.5% NaCL	NEG	POS
10% Lactose	NEG	NEG
ONPG	NEG	NEG
Growth 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 23: Achromobacter xylosoxidans isolate 12-of-64.



Date Inoculated: 2-5-07

Final Identification: 2-14-07 Achromobacter xylosoxidans 2/14/07

Comments: #. P.S.

Gram Morph.		
Gram Test	48 L	
Motility Wet Prep	POS - SM. RODS VERY MOTILE	
Motility Deep	POS	POS
Oxidase	POS	
Catalase	STRONG	POS
PLATES	**48 h**	**7 day**
Odor	NONE	
Pigment on swab	flesh	
Pigment on BAP	Light GREY	
Morphology on BAP	Smooth	
Beta hemolysis	NEG	
Growth on Mac	POS	POS
DNase hydrolysis	NEG	NEG
Starch hydrolysis	NEG	NEG
Lecithinase	NEG	NEG
Lipase	NEG	NEG
Rapid PYR	POS	
Rapid LAP	POS	
Rapid ESC	NEG	
Sensitivity to:		
Penicillin (10 U)	R	R
Vancomycin (30 ug)	R	R
Colistin (10 mcg)	S-12	S
Polymyxin B (300 U)	S-15	S

Tubes	**48 h**	**7 day**
KIA	K/NC	K/K
H_2S	NEG	SLIGHT H_2S
Pseudo P	NEG	NEG
Pseudo F	NEG	NEG
NO_3 reduced		POS
Gas from NO_3	POS	POS
NO_2 reduced		POS
Gas from NO_2	POS	POS
OF Fructose	BLUE	BLUE
OF Dextrose	YEL	YEL
OF Lactose	BLUE	BLUE
OF Maltose	BLUE	BLUE
OF Mannitol	BLUE	BLUE
OF Xylose	GRN	YEL!
OF Sucrose	BLUE	BLUE
Arginine	NEG	NEG
Lysine	↓	↓
Ornithine	↓	↓
Base Control	↓	↓
Acetamide	NEG	NEG
Esculin	NEG	NEG
Gelatin	NEG	NEG
Indole		NEG
Malonate	NEG	NEG
PAD	NEG	—
Urea NEG 2 h	NEG	NEG
6.5% NaCL	NEG	POS
10% Lactose	NEG	NEG
ONPG	NEG	NEG
Growth 42^0	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 24: Achromobacter xylosoxidans isolate 13-of-64.

Final Identification: Achromobacter xylosoxidans 3/29/07

Comments: P.S.

				3/29	
Gram Morph.			**Tubes**	**48 h**	**7 day**
Gram Test	48h		KIA	K/NC	K/K
Motility Wet Prep	VERY ACTIVE MOTILE		H_2S	SLIGHT H_2S	SLIGHT H_2S
Motility Deep	POS	POS	Pseudo P	NEG	NEG
Oxidase	POS		Pseudo F	NEG	NEG
Catalase	STRONG POS		NO_3 reduced		
PLATES	**48 h**	**7 day**	Gas from NO_3	POS	POS
Odor	NONE		NO_2 reduced		
Pigment on swab	Flesh		Gas from NO_2	POS	POS
Pigment on BAP	GREY		OF Fructose	GRN	BLUE
Morphology on BAP	Smooth		OF Dextrose	YEL/GRN	GRN
Beta hemolysis	NEG		OF Lactose	BLUE	BLUE
Growth on Mac	POS	POS	OF Maltose	BLUE	BLUE
DNase hydrolysis	NEG	NEG	OF Mannitol	BLUE	BLUE
Starch hydrolysis	NEG	NEG	OF Xylose	YEL	YEL!
Lecithinase	NEG	NEG	OF Sucrose	BLUE	BLUE
Lipase	NEG	NEG	Arginine	NEG	NEG
Rapid PYR	POS		Lysine	↓	↓
Rapid LAP	POS		Ornithine	↓	↓
Rapid ESC	NEG		Base Control	↓	↓
Sensitivity to:			Acetamide	BLUE!	BLUE
Penicillin (10 U)	R	R	Esculin	NEG	NEG
Vancomycin (30 ug)	R	R	Gelatin	NEG	NEG
Colistin (10 mcg)	S-10	S	Indole		
Polymyxin B (300 U)	S-14	S	Malonate	NEG	NEG
			PAD	NEG	- PINK RIM ON SLANT
			Urea	NEG 2 h	NEG
			6.5% NaCL	POS	POS
			10% Lactose	NEG	NEG
			ONPG	NEG	NEG
			Growth 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 25: Achromobacter xylosoxidans isolate 14-of-64.

Date Inoculated: 4-30-07

Final Identification: Achromobacter xylosoxidans P.S.

Comments: 5/7/07

Gram Morph.		
Gram Test	24h	
Motility Wet Prep	POS - short rods Extremely motile	
Motility Deep	POS	POS
Oxidase	POS	
Catalase	STRONG POS	
PLATES	**48 h**	**7 day**
Odor	None	
Pigment on swab	Flesh	
Pigment on BAP	Grey	
Morphology on BAP	Smooth - shiny	
Beta hemolysis	Neg	
Growth on Mac	POS	POS
DNase hydrolysis	Neg	Neg
Starch hydrolysis	Neg	Neg
Lecithinase	Neg	Neg
Lipase	Neg	Neg
Rapid PYR	POS (weak)	
Rapid LAP	POS (STRONG)	
Rapid ESC	Neg	
Sensitivity to:		
Penicillin (10 U)	R	R
Vancomycin (30 ug)	R	R
Colistin (10 mcg)	S-11	S
Polymyxin B (300 U)	S-13	S

Tubes	**48 h**	**7 day**
KIA	K/NC	K/A
H_2S	Slight Black	Slight H_2S
Pseudo P	Neg	Neg
Pseudo F	Neg	Neg
NO_3 reduced	POS	POS
Gas from NO_3	Neg	POS GAS + @ 72 h.
NO_2 reduced	Neg	POS
Gas from NO_2	POS	POS
OF Fructose	Blue	Blue
OF Dextrose	GRN	Yel/GRN
OF Lactose	Blue	Blue
OF Maltose	Blue	Blue
OF Mannitol	Blue	Blue
OF Xylose	GRN	Yel/GRN
OF Sucrose	Blue	Blue
Arginine	Neg	Neg
Lysine	↓	↓
Ornithine	↓	↓
Base Control	↓	↓
Acetamide	POS!	POS!!
Esculin	Neg	Neg
Gelatin	Neg	Neg
Indole		Neg
Malonate	Neg	Lt. Blue - Neg?
PAD	Neg	Inoculum turns slightly pink
Urea Neg 2 h	Neg	Neg
6.5% NaCL	Neg	POS!
10% Lactose	Neg	Neg
ONPG	Neg	Neg
Growth 42°	POS ~~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.

Date Inoculated: 6-21-07 20~

Final Identification: Achromobacter xylosoxidans P.S.

Comments: 6/25/07

Gram Morph.			Tubes	6/25 ~~48 h~~	7 day
Gram Test	24h		KIA	K/NC	
Motility Wet Prep	POS - med. RODS highly motile		H_2S	slight H_2S	
Motility Deep	POS		Pseudo P	NEG	
Oxidase	POS		Pseudo F	NEG	
Catalase	STRONG POS		NO_3 reduced		
PLATES	**48 h**	**7 day**	Gas from NO_3	POS	
Odor	NONE		NO_2 reduced		
Pigment on swab	FLESH		Gas from NO_2	POS	
Pigment on BAP	CREAM		OF Fructose	BLUE	
Morphology on BAP	SMOOTH - SMEARS		OF Dextrose	GRN	
Beta hemolysis	NEG		OF Lactose	BLUE	
Growth on Mac	POS		OF Maltose	BLUE	
DNase hydrolysis	NEG		OF Mannitol	BLUE	
Starch hydrolysis	NEG		OF Xylose	YEL !	
Lecithinase	NEG		OF Sucrose	BLUE	
Lipase	NEG		Arginine	NEG	
Rapid PYR	POS		Lysine		
Rapid LAP	POS		Ornithine		
Rapid ESC	NEG		Base Control	↓	
Sensitivity to:			Acetamide	POS	
Penicillin (10 U)	R		Esculin	NEG	
Vancomycin (30 ug)	R		Gelatin		
Colistin (10 mcg)	S-10		Indole		
Polymyxin B (300 U)	S-13		Malonate	NEG	
			PAD	NEG	PINK COLOR IN AGAR AFTER adding $FeCl_3$
			Urea NEG 2 h	NEG	
			6.5% NaCL	POS	
			10% Lactose	NEG	
			ONPG	NEG	
			Growth 42°	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 27: Achromobacter xylosoxidans isolate 16-of-64.


Date Inoculated: 1-3-08

Final Identification: Achromobacter xylosoxidans 1/10/08 P.S.

Comments: Light peach on Starch @ 7D.

Gram Morph.		
Gram Test	24h	
Motility Wet Prep	Pos sm Roos	
Motility Deep	Pos	Pos
Oxidase	Pos	
Catalase	STRONG Pos	
PLATES	~~48 h~~ 24	**7 day**
Odor	None	
Pigment on swab	Fresh	
Pigment on BAP	Light Grey	
Morphology on BAP	Smooth-Smudges	
Beta hemolysis	Neg	
Growth on Mac	SCANT Growth	Good Growth
DNase hydrolysis	Neg	Neg
Starch hydrolysis	Neg	
Lecithinase	Neg	Neg
Lipase	Neg	Neg
Rapid PYR	Wt	
Rapid LAP	Pos	
Rapid ESC	Neg	
Sensitivity to:		
Penicillin (10 U)	R	R
Vancomycin (30 ug)	R	R
Colistin (10 mcg)	S-13	S
Polymyxin B (300 U)	S-14	S

Tubes	~~48 h~~ 24	**7 day**	
KIA	K/NC	K/K	
H_2S	Neg	Neg	
Pseudo P	Neg	Neg	Pink growth at bottom of slant
Pseudo F	Neg	Neg	
NO_3 reduced		Pos	
Gas from NO_3	Neg	Pos!	
NO_2 reduced		Pos	
Gas from NO_2	Neg	Pos!	
OF Fructose	Blue	Blue	
OF Dextrose	GRN	Lt. GRN	
OF Lactose	Blue	Blue	
OF Maltose	Blue	Blue	
OF Mannitol	Blue	Blue	
OF Xylose	GRN	Yel.	
OF Sucrose	Blue	Blue	
Arginine	Neg	Neg	
Lysine			
Ornithine			
Base Control			
Acetamide	Blue	Blue!	
Esculin	Neg	Neg	
Gelatin		Neg	
Indole		Neg	
Malonate	Neg	Neg	
PAD	Neg		
Urea ~~Neg 2~~ h	Neg	Neg	
6.5% NaCL	Neg	Pos	
10% Lactose	Neg	Neg	
ONPG	Neg	Neg	
Growth 42^0	Pos	Pos	

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

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

Date Inoculated: 2-8-08

Final Identification:

Comments: Achromobacter xylosoxidans P.S. 2/21/08

Gram Morph.		
Gram Test		
Motility Wet Prep	POS - SM. RODS	
Motility Deep	POS	POS
Oxidase	POS	
Catalase	STRONG POS	
PLATES	**48 h**	**7 day**
Odor	NONE	
Pigment on swab	Flesh	
Pigment on BAP	GREY	
Morphology on BAP	Smooth	
Beta hemolysis	NEG	
Growth on Mac	POS	POS
DNase hydrolysis	NEG	NEG
Starch hydrolysis	NEG	NEG
Lecithinase	NEG	NEG
Lipase	NEG	NEG
Rapid PYR	NEG	
Rapid LAP	POS	
Rapid ESC	NEG	
Sensitivity to:		
Penicillin (10 U)	R	R
Vancomycin (30 ug)	R	R
Colistin (10 mcg)	S-10	S
Polymyxin B (300 U)	S-13	S

	72	2/21 13 DAYS
Tubes	~~48 h~~	**7 day**
KIA	K/NC	K/K
H_2S	NEG	NEG
Pseudo P	NEG	NEG
Pseudo F	NEG	NEG
NO_3 reduced		POS
Gas from NO_3	NEG	NEG
NO_2 reduced		NEG
Gas from NO_2	NEG	NEG
OF Fructose	BLUE	BLUE
OF Dextrose	YEL	GRN
OF Lactose	BLUE	BLUE
OF Maltose	BLUE	BLUE
OF Mannitol	BLUE	BLUE
OF Xylose	YEL	YEL
OF Sucrose	GREEN	BLUE
Arginine	NEG	NEG
Lysine	↓	↓
Ornithine	↓	↓
Base Control	↓	↓
Acetamide	NEG	POS
Esculin	NEG	NEG
Gelatin	NEG	NEG
Indole		NEG
Malonate	NEG	POS
PAD	NEG	- TURNS PINK ALONG EDGE
Urea NEG 2 h	NEG	NEG
6.5% NaCL	POS	POS
10% Lactose	NEG	NEG
ONPG	NEG	NEG
Growth 42^0	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 29: Achromobacter xylosoxidans isolate 18-of-64.

Comments: #5 - ox + - non-Beta hemolytic colonies

Achromobacter xylosoxidans P.S 10/18/08

10/10/08

Gram Morph.			**Tubes**	**48 h**	**7 day**
Gram Test	24 h		KIA		K/NC
Motility Wet Prep	Pos Med Rods Extremely Motile		H_2S		H_2S - Mod Amt At Interface
Motility Deep	Pos		Pseudo P		Neg Pink Inocula
Oxidase	Pos		Pseudo F		Neg Pink Inocula
Catalase	Strong Pos		NO_3 reduced		Pos
PLATES	**48 h**	**7 day**	Gas from NO_3		Pos!
			NO_2 reduced		Pos
Odor	None	None	Gas from NO_2		Pos!
Pigment on swab	Flesh				
Pigment on BAP	Grey	Grey	OF Fructose		GRN
Morphology on BAP	Smooth Smears	Smooth ~~Grainy~~	* OF Dextrose		Yel
			OF Lactose		Blue
Beta hemolysis	Neg		OF Maltose		Blue
Growth on Mac		Pos	OF Mannitol		Blue
DNase hydrolysis		Neg	* OF Xylose		Yel
Starch hydrolysis		Neg	OF Sucrose		Blue
Lecithinase		Neg	Arginine		Neg
Lipase		Neg	Lysine		↓
Rapid PYR	Pos		Ornithine		↓
Rapid LAP	Pos		Base Control		↓
Rapid ESC	Neg		Acetamide		Neg
Sensitivity to:			Esculin		Neg
Penicillin (10 U)		R	Gelatin		Neg
Vancomycin (30 ug)		R	Indole		Neg
Colistin (10 mcg)		S - 10	Malonate		Neg
Polymyxin B (300 U)		S - 14	PAD		Neg
			Urea Neg 2 h		Neg
			* 6.5% NaCL		Pos
			10% Lactose		Neg
			ONPG		Neg
			* Growth 42^0		Pos

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

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

Date Inoculated: 5-22-09

Final Identification: Achromobacter xylosoxidans P.S. 6/2/09

Comments:

			Tubes	5/29 48 h	5/29 7 day
Gram Morph.			KIA		K/K
Gram Test	24h		H_2S		slight H_2S
Motility Wet Prep	POS - medium rods Extremely motile				
Motility Deep	POS - 7 D.		Pseudo P		Neg
Oxidase	POS		Pseudo F		Neg
Catalase	STRONG POS				
			NO_3 reduced		POS
PLATES	**48 h**	**7 day**	Gas from NO_3		POS
			NO_2 reduced		POS
Odor	None		Gas from NO_2		POS
Pigment on swab	Clear				
Pigment on BAP	Grey		OF Fructose		Blue
			(+) OF Dextrose		Green
Morphology on BAP	Smooth - Smears		OF Lactose		Blue
Beta hemolysis	Neg	Neg	OF Maltose		Blue
			OF Mannitol		Blue
Growth on Mac		POS	(+) OF Xylose		Yel
DNase hydrolysis		Neg	OF Sucrose		Blue
Starch hydrolysis					
			Arginine		Neg
Lecithinase		Neg	Lysine		
Lipase		Neg	Ornithine		
			Base Control		
Rapid PYR	POS				
Rapid LAP	POS (STRONG)		Acetamide		Neg
Rapid ESC	Neg		Esculin		Neg
			Gelatin		Neg
Sensitivity to:			Indole		Neg
Penicillin (10 U)		R	Malonate		Neg
			PAD		Neg
Vancomycin (30 ug)		R	Urea Neg h	Neg	Neg
Colistin (10 mcg)		S-10	6.5% NaCL		POS
Polymyxin B (300 U)		S-14	10% Lactose		Neg
			ONPG		Neg
			Growth 42^0		POS

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

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

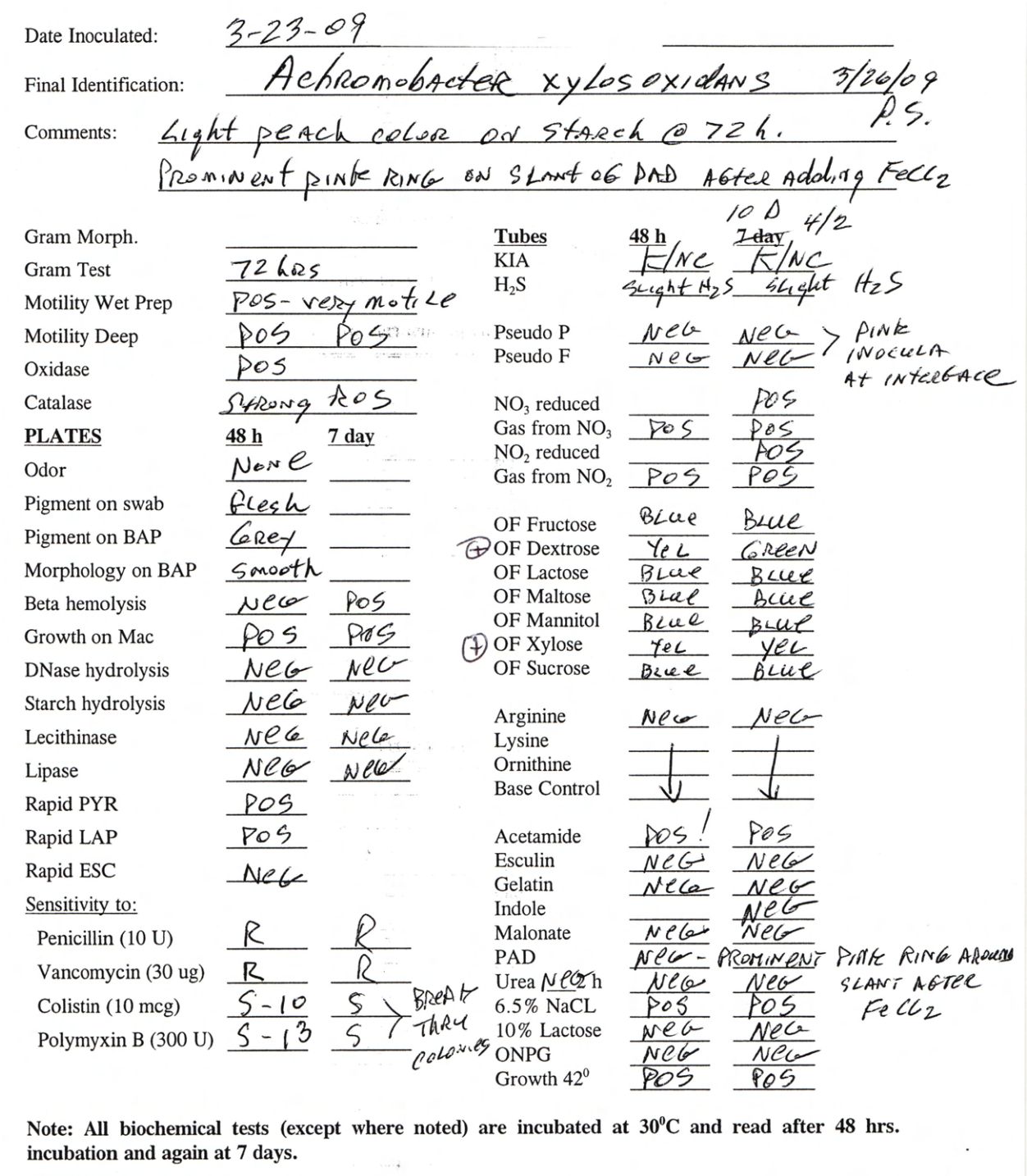
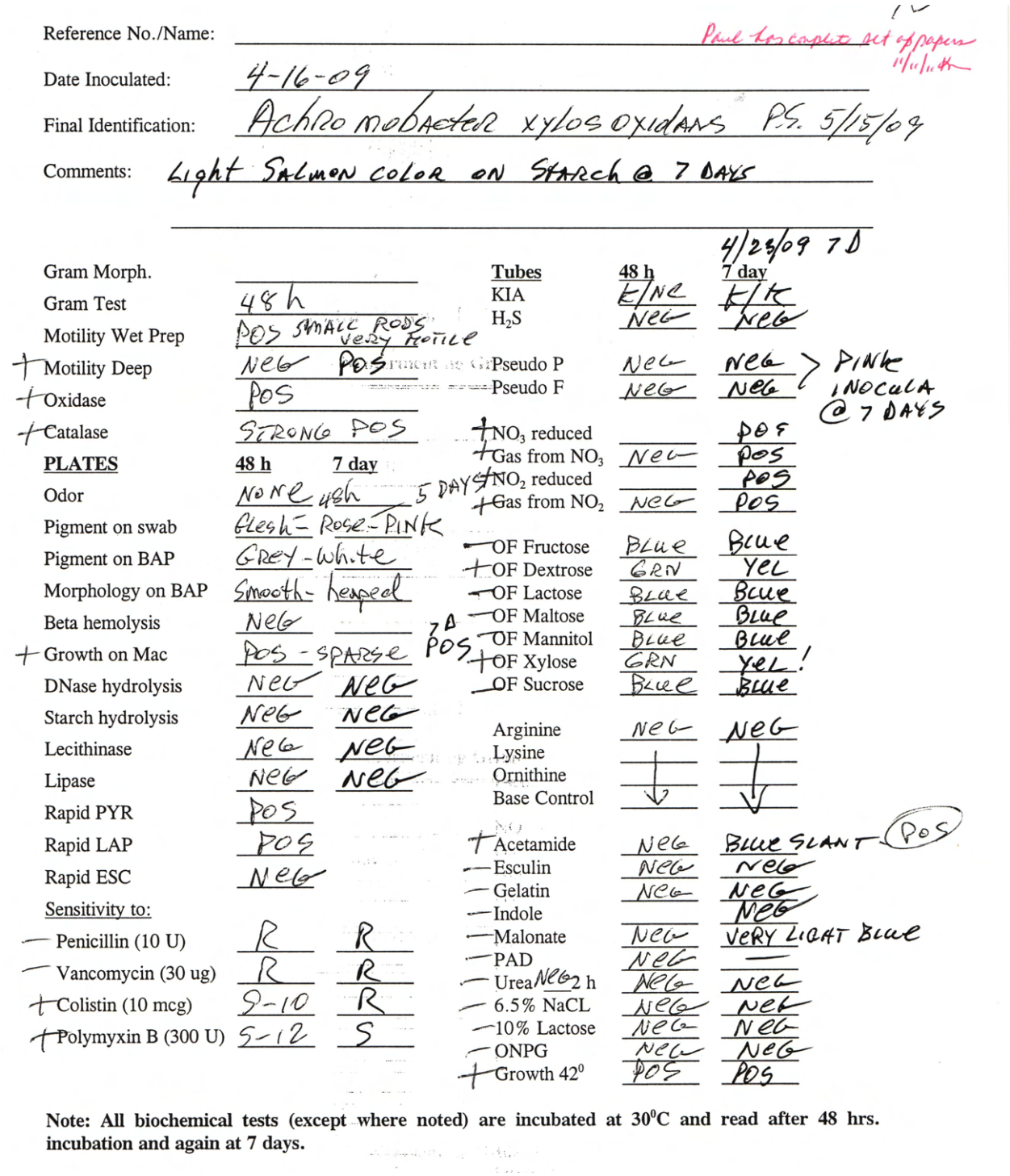


Figure 32: Achromobacter xylosoxidans isolate 21-of-64.



Reference No./Name: Paul has complete set of papers 11/11/11

Date Inoculated: 4-16-09

Final Identification: Achromobacter xylosoxidans P.S. 5/15/09

Comments: Light Salmon color on Starch @ 7 days

	48 h	7 day
Gram Morph.		
Gram Test	48 h	
Motility Wet Prep	POS small rods very motile	
+ Motility Deep	Neg	Pos
+ Oxidase	POS	
+ Catalase	STRONG POS	

PLATES	48 h	7 day
Odor	None	Musk 5 days
Pigment on swab	Flesh - Rose-Pink	
Pigment on BAP	Grey - White	
Morphology on BAP	Smooth - Irregular	
Beta hemolysis	Neg	
+ Growth on Mac	Pos - Sparse	7D Pos
DNase hydrolysis	Neg	Neg
Starch hydrolysis	Neg	Neg
Lecithinase	Neg	Neg
Lipase	Neg	Neg
Rapid PYR	POS	
Rapid LAP	POS	
Rapid ESC	Neg	
Sensitivity to:		
— Penicillin (10 U)	R	R
— Vancomycin (30 ug)	R	R
+ Colistin (10 mcg)	9-10	R
+ Polymyxin B (300 U)	5-12	S

Tubes	48 h	7 day
KIA	K/Neg	K/K
H_2S	Neg	Neg
Pseudo P	Neg	Neg > Pink inocula @ 7 days
Pseudo F	Neg	Neg
+ NO_3 reduced		Pos
+ Gas from NO_3	Neg	Pos
+ NO_2 reduced		Pos
+ Gas from NO_2	Neg	Pos
— OF Fructose	Blue	Blue
+ OF Dextrose	Grn	Yel
— OF Lactose	Blue	Blue
— OF Maltose	Blue	Blue
— OF Mannitol	Blue	Blue
+ OF Xylose	Grn	Yel !
— OF Sucrose	Blue	Blue
Arginine	Neg	Neg
Lysine	↓	↓
Ornithine	↓	↓
Base Control	↓	↓
+ Acetamide	Neg	Blue slant (Pos)
— Esculin	Neg	Neg
— Gelatin	Neg	Neg
— Indole		Neg
— Malonate	Neg	very light blue
— PAD	Neg	—
— Urea Neg 2 h	Neg	Neg
— 6.5% NaCL	Neg	Neg
— 10% Lactose	Neg	Neg
— ONPG	Neg	Neg
+ Growth 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 33: Achromobacter xylosoxidans isolate 22-of-64.

Date Inoculated: 5-22-09

Final Identification: Achromobacter xylosoxidans D.F. 6/2/09

Comments:

				5/29 48 h	5/29 7 day
Gram Morph.			**Tubes**		
Gram Test	24h		KIA		K/K
Motility Wet Prep	Pos - medium rods Extremely motile		H_2S		Slight H_2S
Motility Deep	POS - 7 D.		Pseudo P		Neg
Oxidase	POS		Pseudo F		Neg
Catalase	STRONG POS		NO_3 reduced		POS
PLATES	**48 h**	**7 day**	Gas from NO_3		Pos
Odor	None		NO_2 reduced		POS
Pigment on swab	Clear		Gas from NO_2		Pos
Pigment on BAP	Grey		OF Fructose		Blue
Morphology on BAP	Smooth - Smears		⊕ OF Dextrose		Green
Beta hemolysis	Neg	Neg	OF Lactose		Blue
Growth on Mac		POS	OF Maltose		Blue
DNase hydrolysis		Neg	⊕ OF Mannitol		Blue
Starch hydrolysis			OF Xylose		Yel
Lecithinase		Neg	OF Sucrose		Blue
Lipase		Neg	Arginine		Neg
Rapid PYR	Pos		Lysine		
Rapid LAP	Pos (STRONG)		Ornithine		
Rapid ESC	Neg		Base Control		↓
Sensitivity to:			Acetamide		Neg
Penicillin (10 U)		R	Esculin		Neg
Vancomycin (30 ug)		R	Gelatin		Neg
Colistin (10 mcg)		S-10	Indole		Neg
Polymyxin B (300 U)		S-14	Malonate		Neg
			PAD		Neg
			Urea Neg h	Neg	Neg
			6.5% NaCL		Pos
			10% Lactose		Neg
			ONPG		Neg
			Growth 42^0		Pos

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

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

Date Inoculated: 10-16-09

Final Identification: Achromobacter xylosoxidans P.S.

Comments: 10/29/09

				10/19	10/21
Gram Morph.			**Tubes**	**48 h**	**7 day**
Gram Test			KIA		NC/NC
Motility Wet Prep	POS - SM RODS		H_2S		SLIGHT H_2S
Motility Deep	POS		Pseudo P		NEG
Oxidase	POS		Pseudo F		NEG
Catalase	STRONG POS		NO_3 reduced		POS
PLATES	**48 h**	**7 day**	Gas from NO_3		POS
Odor	NONE		NO_2 reduced		POS
Pigment on swab	BLUE		Gas from NO_2		POS
Pigment on BAP	GREY		NEG OF Fructose		BLUE
Morphology on BAP	SKINNY, WET		OF Dextrose		YEL/GRN
Beta hemolysis	NEG		NEG OF Lactose		BLUE
Growth on Mac		POS	OF Maltose		BLUE/GRN
DNase hydrolysis		NEG	OF Mannitol		YEL/GRN
Starch hydrolysis		NEG	OF Xylose		YEL
Lecithinase		NEG	NEG OF Sucrose		BLUE
Lipase		NEG	Arginine		NEG
Rapid PYR	POS		Lysine		↓
Rapid LAP	POS		Ornithine		↓
Rapid ESC	NEG		Base Control		↓
Sensitivity to:			Acetamide		POS!
Penicillin (10 U)		R	Esculin		NEG
Vancomycin (30 ug)		R	Gelatin		NEG, NEG
Colistin (10 mcg)		S-9	Indole		VERY SLIGHT PINK
Polymyxin B (300 U)		S-13.5	Malonate		NEG
			PAD		NEG PINK RING LINING
			Urea 2 h		NEG SLANT AFTER ADDING $FeCl_3$
			6.5% NaCL		POS
			10% Lactose		NEG
			ONPG		NEG
			Growth 42^0		POS

Note: All biochemical tests (except where noted) are incubated at 30^0C 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: Light Apricot on Starch @ 4 DAYS, Grey AND Rough

Comments: on Egg Yolk

Achromobacter xylosoxidans P.S. 2/15/10

				2/12 48 h	8 7 day
Gram Morph.			**Tubes**	**48 h**	**7 day**
Gram Test	48h		KIA	K/NC	K/K
Motility Wet Prep	Pos		H_2S	Neg	Neg
Motility Deep	Pos	Pos	Pseudo P	Neg	Neg
Oxidase	Pos		Pseudo F	Neg	Neg
Catalase	STRONG	Pos	NO_3 reduced		Pos
PLATES	**48 h**	**7 day** 8	Gas from NO_3	Pos	Pos
Odor	None		NO_2 reduced		Pos
Pigment on swab	Flesh		Gas from NO_2	Pos	Pos
Pigment on BAP	Grey		OF Fructose	Blue	Blue
Morphology on BAP	Smooth/A		OF Dextrose	Green	Green +
Beta hemolysis	Neg		OF Lactose	Blue	Blue
Growth on Mac	Pos	Pos LAVENDER	OF Maltose	Blue	Blue
DNase hydrolysis	Neg	Neg	OF Mannitol	Blue	Blue
Starch hydrolysis	Neg	Neg	OF Xylose	Yel	Yel +
Lecithinase	Neg	Neg	OF Sucrose	Blue	Blue
Lipase	Neg	Neg	Arginine	Neg	Neg
Rapid PYR	Pos		Lysine	↓	↓
Rapid LAP	Pos		Ornithine	↓	↓
Rapid ESC	Neg		Base Control	↓	↓
~~Sensitivity to:~~			Acetamide	W+	W+
Penicillin (10 U)	R	R	Esculin	Neg	Neg
Vancomycin (30 ug)	R	R	Gelatin		Neg
Colistin (10 mcg)	S-10	S	Indole		Neg
Polymyxin B (300 U)	S-13	S	Malonate	Neg	W+
			PAD	—	Neg - PINK OUTLINE ON SLANT
			Urea Neg 2 h	Neg	Neg
			6.5% NaCL	Pos	Pos
			10% Lactose	Neg	Neg
			ONPG	Neg	Neg
			Growth 42^0	Pos	Pos

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

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

Date Inoculated: 8-30-10

Final Identification: Achromobacter xylosoxidans PS / 9/9/10

Comments: _____

_____

						4 days	9/7/10
Gram Morph.				**Tubes**	**48 h**	**7 day**	
Gram Test				KIA	NC/NC	K/NC	K/NC
Motility Wet Prep	very motile			H_2S	neg	Neg	Neg
Motility Deep	positive pos		pos	Pseudo P	neg	Neg	Neg
Oxidase	positive			Pseudo F	neg	Neg	Neg
Catalase	strong positive			NO_3 reduced		POS	
PLATES	**48 h**	~~7 day~~ 4 DAY		Gas from NO_3	pos	POS	
				NO_2 reduced		POS	
Odor	none			Gas from NO_2	pos	POS	
Pigment on swab	flesh						
Pigment on BAP	grey, smooth			OF Fructose	green	Blue	Blue
			+	OF Dextrose	yellow	Yel/GRN	GRN
Morphology on BAP	smooth			OF Lactose	green	Blue	Blue
Beta hemolysis	none	Neg		OF Maltose	green	Blue	Blue
				OF Mannitol	green	Blue	Blue
Growth on Mac	growth	growth	+	OF Xylose	yellow	Yel	Yel
DNase hydrolysis	neg	Neg		OF Sucrose	green	Blue	Blue
Starch hydrolysis	neg	Neg					
Lecithinase	neg	Neg	Neg	Arginine	neg	Neg	Neg
				Lysine	neg	Neg	
Lipase	neg	Neg	Neg	Ornithine	neg	Neg	
				Base Control	neg	Neg	
Rapid PYR	pos						
Rapid LAP	pos			Acetamide	neg	Neg	Neg
Rapid ESC	neg			Esculin	neg	Neg	Neg
				Gelatin	neg	Neg	Neg
Sensitivity to:				Indole		Neg	—
Penicillin (10 U)	R	R		Malonate	neg	Neg	Neg
				PAD	neg	—	—
Vancomycin (30 ug)	R	R		Urea ⊖ 2 h	neg	Neg	Neg
Colistin (10 mcg)	~~R~~ S	S		6.5% NaCL	wk pos	W +	pos
Polymyxin B (300 U)	12S	S		10% Lactose	neg	Neg	Neg
				ONPG	neg	Neg	Neg
				Growth 42°	growth	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 37: Achromobacter xylosoxidans isolate 26-of-64.

Date Inoculated: 9/13/10 (Monday) – SAME AS #2

Final Identification: Achromobacter xylosoxidans P.S. 9/20/10

Comments:

Gram Morph.		
Gram Test		
Motility Wet Prep		
Motility Deep	pos?	POS
Oxidase	pos	
Catalase	pos	
PLATES	**48 h**	**7 day**
Odor	none	
Pigment on swab	flesh	
Pigment on BAP	grey	
Morphology on BAP	pinpoint/mucoid	
Beta hemolysis	no	
Growth on Mac	yes	POS
DNase hydrolysis		Neg
Starch hydrolysis		Neg
Lecithinase		Neg
Lipase		Neg
Rapid PYR	pos	
Rapid LAP	pos	
Rapid ESC	neg	
Sensitivity to:		
Penicillin (10 U)	R	R
Vancomycin (30 ug)	R	R
Colistin (10 mcg)	S13	S
Polymyxin B (300 U)	S8	S

Tubes	**48 h**	**7 day**
KIA	K/Nc	K/K
H_2S	neg	slight H_2S
Pseudo P	neg	Neg
Pseudo F	neg	Neg
NO_3 reduced		POS
Gas from NO_3	tiny bubble	POS
NO_2 reduced		POS
Gas from NO_2	tiny bubble	POS
OF Fructose	blue	Blue
OF Dextrose	green	Green
OF Lactose	blue	Blue
OF Maltose	blue	Blue
OF Mannitol	blue	Blue
OF Xylose	green	Yel
OF Sucrose	blue	Blue
Arginine	neg	Neg
Lysine	↓	↓
Ornithine	↓	↓
Base Control	↓	↓
Acetamide	neg	Neg
Esculin	neg	Neg
Gelatin		Neg
Indole		Neg
Malonate	neg	Neg
PAD		Neg
Urea – 2 h	neg	Neg
6.5% NaCL	neg	POS
10% Lactose	pink slant	Neg
ONPG	neg	Neg
Growth 42°	? growth	POS

PINK COLOR OUTLINE AFTER FULL 3

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

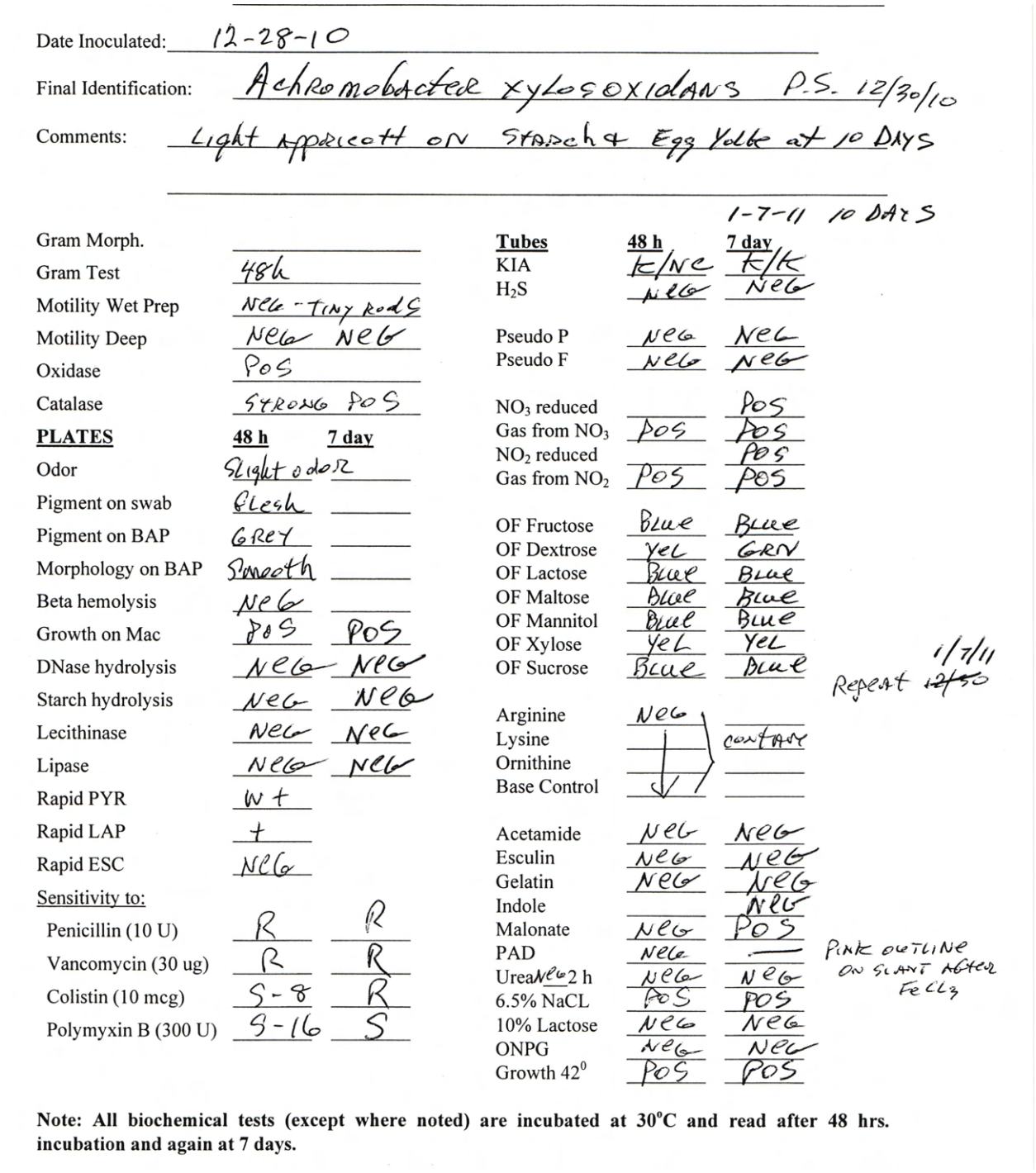
Final Identification: Achromobacter xylosoxidans P.S. 11/29/10

Comments:

Gram Morph.			**Tubes**	**48 h**	**7 day**
Gram Test	24 48		KIA		K/K
Motility Wet Prep	NEG NEG TINY POS		H_2S		Neg
Motility Deep	POS		Pseudo P		Neg
Oxidase	POS		Pseudo F		Neg
Catalase	STRONG POS.		NO_3 reduced		POS
PLATES	**48 h**	**7 day**	Gas from NO_3		POS
Odor	None		NO_2 reduced		POS
Pigment on swab	Clear		Gas from NO_2		POS
Pigment on BAP	White		OF Fructose		Blue
Morphology on BAP	ENTIRE		OF Dextrose		Yel +
Beta hemolysis	Neg		OF Lactose		Blue
Growth on Mac		POS	OF Maltose		Blue
DNase hydrolysis		Neg	OF Mannitol		Blue
Starch hydrolysis		Neg	OF Xylose		Yel +
Lecithinase		Neg	OF Sucrose		Blue
Lipase		Neg	Arginine		Neg
Rapid PYR	POS		Lysine		↓
Rapid LAP	POS		Ornithine		↓
Rapid ESC	Neg		Base Control		↓
Sensitivity to:			Acetamide		POS!
Penicillin (10 U)		R	Esculin		Neg
Vancomycin (30 ug)		R	Gelatin		Neg
Colistin (10 mcg)		R	Indole		Neg
Polymyxin B (300 U)		S-18	Malonate		W+
			PAD		Neg
			Urea ~~Neg~~ 2 h	Neg	Neg
			6.5% NaCL		Neg
			10% Lactose		Neg
			ONPG		Neg
			Growth 42^0		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 39: Achromobacter xylosoxidans isolate 28-of-64.



Date Inoculated: 12-28-10

Final Identification: Achromobacter xylosoxidans P.S. 12/30/10

Comments: Light Apricot on Starch & Egg Yolk at 10 DAYS

1-7-11 10 DAYS

Gram Morph.		
Gram Test	48h	
Motility Wet Prep	Neg - Tiny rods	
Motility Deep	Neg	Neg
Oxidase	Pos	
Catalase	Strong Pos	
PLATES	**48 h**	**7 day**
Odor	Slight odor	
Pigment on swab	Flesh	
Pigment on BAP	Grey	
Morphology on BAP	Smooth	
Beta hemolysis	Neg	
Growth on Mac	Pos	Pos
DNase hydrolysis	Neg	Neg
Starch hydrolysis	Neg	Neg
Lecithinase	Neg	Neg
Lipase	Neg	Neg
Rapid PYR	Wt	
Rapid LAP	+	
Rapid ESC	Neg	
Sensitivity to:		
Penicillin (10 U)	R	R
Vancomycin (30 ug)	R	R
Colistin (10 mcg)	S-8	R
Polymyxin B (300 U)	S-16	S

Tubes	**48 h**	**7 day**
KIA	K/Neg	K/K
H_2S	Neg	Neg
Pseudo P	Neg	Neg
Pseudo F	Neg	Neg
NO_3 reduced		Pos
Gas from NO_3	Pos	Pos
NO_2 reduced		Pos
Gas from NO_2	Pos	Pos
OF Fructose	Blue	Blue
OF Dextrose	Yel	Grn
OF Lactose	Blue	Blue
OF Maltose	Blue	Blue
OF Mannitol	Blue	Blue
OF Xylose	Yel	Yel
OF Sucrose	Blue	Blue
Arginine	Neg	
Lysine		contam
Ornithine		
Base Control		
Acetamide	Neg	Neg
Esculin	Neg	Neg
Gelatin	Neg	Neg
Indole		Neg
Malonate	Neg	Pos
PAD	Neg	—
Urea Neg 2 h	Neg	Neg
6.5% NaCL	Pos	Pos
10% Lactose	Neg	Neg
ONPG	Neg	Neg
Growth 42^0	Pos	Pos

1/7/11 Repeat 12/30

Pink outline on slant after $FeCl_3$

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 xylosoxidans P.S. 2/25/11

Comments:

				2/25	3/3 8 DAYS
Gram Morph.			**Tubes**	**48 h**	**7 day**
Gram Test	24h		KIA	K/Nc	K/K
Motility Wet Prep	POS? TINY RODS & DIPLOBACILLI		H_2S	Neg	slight H_2S
Motility Deep	Neg POS very j. +++ery		Pseudo P	Neg	Neg
Oxidase	Pos		Pseudo F	Neg	Neg
Catalase	STRONG POS		NO_3 reduced		POS
PLATES	**48 h**	**7 day**	Gas from NO_3	Pos	Pos
Odor	None		NO_2 reduced		POS
Pigment on swab	Flesh		Gas from NO_2	Neg	POS
Pigment on BAP	Grey		OF Fructose	Blue	Blue
Morphology on BAP	Smooth		OF Dextrose	YELLGRN	GRN
Beta hemolysis	Neg		OF Lactose	Blue	Blue
Growth on Mac	Pos	Pos	OF Maltose	Blue	Blue
DNase hydrolysis	Neg	Neg	OF Mannitol	Blue	Blue
Starch hydrolysis	Neg	Neg	OF Xylose	Yel	Yel
Lecithinase	Neg	Neg	OF Sucrose	Blue	Blue
Lipase	Neg	Neg	Arginine	Neg	Neg
Rapid PYR	W+		Lysine	↓	↓
Rapid LAP	Pos		Ornithine	↓	↓
Rapid ESC	Neg		Base Control	↓	↓
Sensitivity to:			Acetamide	Neg	W+
Penicillin (10 U)	R	R	Esculin	Neg	Neg
Vancomycin (30 ug)	R	R	Gelatin	Neg	Neg
Colistin (10 mcg)	S-10	S	Indole		
Polymyxin B (300 U)	S-14	S	Malonate	W+	W+
			PAD	Neg	—
			Urea Neg 2 h	Neg	Neg
			6.5% NaCL	Pos	Pos
			10% Lactose	Neg	Neg
			ONPG	Neg	Neg
			Growth 42^0	Pos	Pos

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

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

Date Inoculated: 2-23-11

Final Identification: Achromobacter xylosoxidans P.S. 2/25/11

Comments:

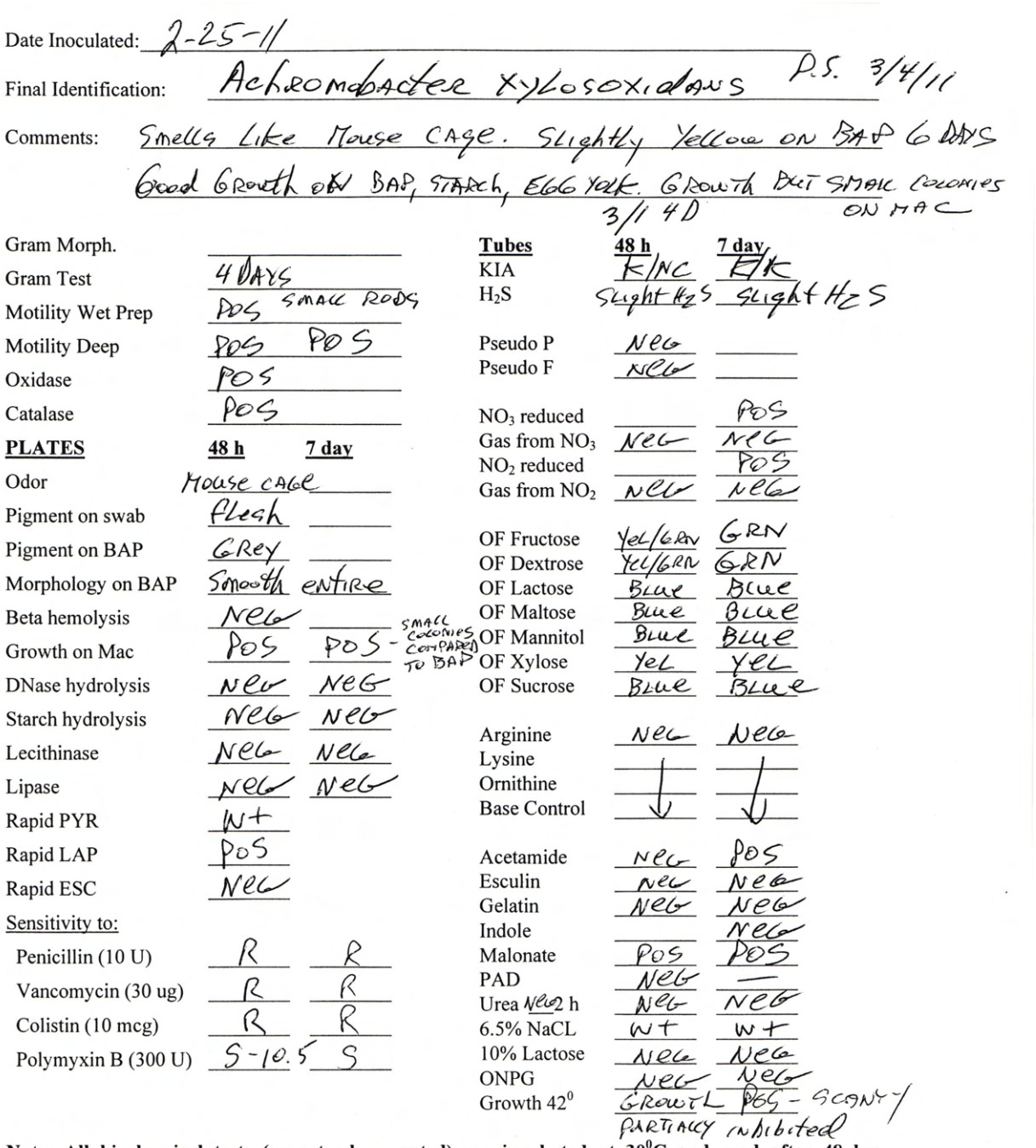
Gram Morph.		
Gram Test	24h	
Motility Wet Prep	POS? DIPHOBACILLI, VERY JITTERY	
Motility Deep	NEG	NEG
Oxidase	POS	
Catalase	STRONG POS	
PLATES	**48 h**	**7 day**
Odor	NONE	
Pigment on swab	CREAM	
Pigment on BAP	GREY	
Morphology on BAP	SMOOTH	
Beta hemolysis	NEG	
Growth on Mac	POS	POS
DNase hydrolysis	NEG	NEG
Starch hydrolysis	NEG	NEG
Lecithinase	NEG	NEG
Lipase	NEG	NEG
Rapid PYR	W+	
Rapid LAP	POS	
Rapid ESC	NEG	
Sensitivity to:		
Penicillin (10 U)	R	R
Vancomycin (30 ug)	R	R
Colistin (10 mcg)	S-10	S
Polymyxin B (300 U)	S-15	S

2/25

Tubes	**48 h**	**7 day**
KIA	E/NC	E/K
H_2S	NEG	NEG
Pseudo P	NEG	NEG
Pseudo F	NEG	NEG
NO_3 reduced		POS
Gas from NO_3	POS	POS
NO_2 reduced		POS
Gas from NO_2	TINY BUBBLE	POS
OF Fructose	BLUE	BLUE
OF Dextrose	GRN	GRN
OF Lactose	BLUE	BLUE
OF Maltose	BLUE	BLUE
OF Mannitol	BLUE	BLUE
OF Xylose	YEL	YEL
OF Sucrose	BLUE	BLUE
Arginine	NEG	NEG
Lysine	↓	↓
Ornithine	↓	↓
Base Control	↓	↓
Acetamide	NEG	W+
Esculin	NEG	POS!
Gelatin	NEG	NEG
Indole		
Malonate	W+	W+
PAD	NEG	—
Urea NEG 2 h	NEG	NEG
6.5% NaCL	POS	POS
10% Lactose	NEG	NEG
ONPG	NEG	NEG
Growth 42^0	POS	POS

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

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



Date Inoculated: 2-25-11

Final Identification: Achromobacter xylosoxidans P.S. 3/4/11

Comments: Smells Like Mouse CAGE. Slightly Yellow on BAP 6 DAYS
Good Growth on BAP, STARCH, EGG YOLK. GROWTH but SMALL COLONIES ON MAC
3/1 4D

Gram Morph.		
Gram Test	4 DAYS	
Motility Wet Prep	POS SMALL RODS	
Motility Deep	POS	POS
Oxidase	POS	
Catalase	POS	
PLATES	**48 h**	**7 day**
Odor	Mouse CAGE	
Pigment on swab	flesh	
Pigment on BAP	GREY	
Morphology on BAP	Smooth	entire
Beta hemolysis	NEG	
Growth on Mac	POS	POS - SMALL COLONIES COMPARED TO BAP
DNase hydrolysis	NEG	NEG
Starch hydrolysis	NEG	NEG
Lecithinase	NEG	NEG
Lipase	NEG	NEG
Rapid PYR	W+	
Rapid LAP	POS	
Rapid ESC	NEG	
Sensitivity to:		
Penicillin (10 U)	R	R
Vancomycin (30 ug)	R	R
Colistin (10 mcg)	R	R
Polymyxin B (300 U)	S-10.5	S

Tubes	**48 h**	**7 day**
KIA	K/NC	K/K
H_2S	Slight H_2S	Slight H_2S
Pseudo P	NEG	
Pseudo F	NEG	
NO_3 reduced		POS
Gas from NO_3	NEG	NEG
NO_2 reduced		POS
Gas from NO_2	NEG	NEG
OF Fructose	YEL/GRN	GRN
OF Dextrose	YEL/GRN	GRN
OF Lactose	Blue	Blue
OF Maltose	Blue	Blue
OF Mannitol	Blue	Blue
OF Xylose	YEL	YEL
OF Sucrose	Blue	Blue
Arginine	NEG	NEG
Lysine	↓	↓
Ornithine	↓	↓
Base Control	↓	↓
Acetamide	NEG	POS
Esculin	NEG	NEG
Gelatin	NEG	NEG
Indole		NEG
Malonate	POS	POS
PAD	NEG	—
Urea NEG 2 h	NEG	NEG
6.5% NaCL	W+	W+
10% Lactose	NEG	NEG
ONPG	NEG	NEG
Growth 42°	GROWTH PARTIALLY INHIBITED	POS - SCANTY

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

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

Final Identification: Achromobacter xylosoxidans P.S./6-21-11

Comments: Light Peach on Starch

				6/20	
Gram Morph.			**Tubes**	**48 h**	**7 day**
Gram Test	48h		KIA	K/NC	K/K
Motility Wet Prep	POS - TINY Rods		H_2S	Slight H_2S	slight H_2S
Motility Deep	POS	POS	Pseudo P	Neg	Neg
Oxidase	POS		Pseudo F	Neg	Neg
Catalase	STRONG POS		NO_3 reduced		POS
PLATES	**48 h**	**7 day**	Gas from NO_3	POS	POS
Odor	None		NO_2 reduced		POS
Pigment on swab	Flesh		Gas from NO_2	POS	POS
Pigment on BAP	Grey		OF Fructose	Blue	Blue
Morphology on BAP	Smooth		OF Dextrose	Yel	GRN
Beta hemolysis	Neg		OF Lactose	Blue	Blue
Growth on Mac	POS	POS LAVENDER	OF Maltose	Blue	Blue
DNase hydrolysis	Neg	Neg	OF Mannitol	Blue	Blue
Starch hydrolysis	Neg	Neg	OF Xylose	Yel	Yel
Lecithinase	Neg	Neg	OF Sucrose	Blue	Blue
Lipase	Neg	Neg	Arginine	Neg	Neg
Rapid PYR	Neg		Lysine	↓	↓
Rapid LAP	POS		Ornithine	↓	↓
Rapid ESC	Neg		Base Control	↓	↓
Sensitivity to:			Acetamide	POS!	POS!
Penicillin (10 U)	R	R	Esculin	Neg	Neg
Vancomycin (30 ug)	R	R	Gelatin	Neg	Neg
Colistin (10 mcg)	S - 9.2	S	Indole		Neg
Polymyxin B (300 U)	S - 19.2	S	Malonate	Neg	Neg
			PAD	Neg	Neg
			Urea Neg 2 h	Neg	Neg
			6.5% NaCL	POS	POS
			10% Lactose	Neg	Neg
			ONPG	Neg	Neg
			Growth 42^0		

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 44: Achromobacter xylosoxidans isolate 33-of-64.

Date Inoculated: 3-29-11

Final Identification: Achromobacter xylosoxidans 4/8/11 P.S.

Comments:

Gram Morph.		
Gram Test	3-DAY	
Motility Wet Prep	POS - SM. RODS	
Motility Deep	POS	POS
Oxidase	POS	
Catalase	STRONG POS	
PLATES	**48 h**	**7 day**
Odor	NONE	
Pigment on swab	Flesh	
Pigment on BAP	GREY	
Morphology on BAP	ENTIRE	
Beta hemolysis	NEG	
Growth on Mac	POS	POS
DNase hydrolysis	NEG	NEG
Starch hydrolysis	NEG	NEG
Lecithinase	NEG	NEG
Lipase	NEG	NEG
Rapid PYR	NEG	
Rapid LAP	POS	
Rapid ESC	NEG	
Sensitivity to:		
Penicillin (10 U)	R	R
Vancomycin (30 ug)	R	R
Colistin (10 mcg)	S-I	S
Polymyxin B (300 U)	S→I	S

	3 DAY	4/8	10 DAYS
Tubes	~~48 h~~	**7 day**	
KIA	K/NC	K/K	
H_2S	SLIGHT H_2S	SLIGHT H_2S	
Pseudo P	NEG	NEG	
Pseudo F	NEG	NEG	
NO_3 reduced		POS	
Gas from NO_3	POS	POS	
NO_2 reduced		POS	
Gas from NO_2	POS	POS	
OF Fructose	BLUE	BLUE	
OF Dextrose	YEL	GRN	
OF Lactose	BLUE	BLUE	
OF Maltose	BLUE	BLUE	
OF Mannitol	BLUE	BLUE	
OF Xylose	YEL	YEL	
OF Sucrose	BLUE	BLUE	
Arginine	NEG	NEG	
Lysine	↓	↓	
Ornithine	↓	↓	
Base Control	↓	↓	
Acetamide	POS!	POS	
Esculin	NEG	NEG	
Gelatin	NEG	NEG	
Indole		NEG	
Malonate	NEG	POS	
PAD	NEG	—	
Urea ~~NEG~~ h	NEG	NEG	
6.5% NaCL	POS	POS	
10% Lactose	NEG	NEG	
ONPG	NEG	NEG	
Growth 42^0	POS	POS	

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

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

Date Inoculated: 12-20-11

Final Identification: Achromobacter xylosoxidans

Comments: Poor Growth on BAP & MAC @ 48L

12/22

	48 h	7 day
Gram Morph.	48h	
Gram Test	~~Pos~~	
Motility Wet Prep	POS - Rods very motile Rapid spinning	
Motility Deep	POS	
Oxidase	POS	
Catalase	STRONG POS	

PLATES	48 h	7 day
Odor	NONE	
Pigment on swab	BuGG	
Pigment on BAP	GREY	
Morphology on BAP	TRANSLUCENT	
Beta hemolysis	NEG	
Growth on Mac	Poor Growth	
DNase hydrolysis	NEG	
Starch hydrolysis	NEG	
Lecithinase	NEG	
Lipase	NEG	
Rapid PYR	NEG	
Rapid LAP	POS	
Rapid ESC	NEG	
Sensitivity to:		
Penicillin (10 U)	R	
Vancomycin (30 ug)	R	
Colistin (10 mcg)	S-11	
Polymyxin B (300 U)	S-24	

Tubes	48 h	7 day
KIA	K/NC	
H_2S	NEG	
Pseudo P	NEG	
Pseudo F	NEG	
NO_3 reduced		
Gas from NO_3	NEG	
NO_2 reduced		
Gas from NO_2	NEG	
OF Fructose	Blue	
OF Dextrose	Yel	
OF Lactose	Blue	
OF Maltose	Blue	
OF Mannitol	Blue	
OF Xylose	GRN	
OF Sucrose	Blue	
Arginine	NEG	
Lysine	↓	
Ornithine	↓	
Base Control	↓	
Acetamide	NEG	
Esculin	NEG	
Gelatin	NEG	
Indole		
Malonate	NEG	
PAD	NEG	
Urea NEG 2 h	NEG	
6.5% NaCL	NEG	
10% Lactose	NEG	
ONPG	NEG	
Growth 42^0	POS	POS

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

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

Date Inoculated: 2-16-12

Final Identification: Achromobacter xylosoxidans 2/24/12 P.S.

Comments:

				1D 48 h	2/24 7 day
Gram Morph.			**Tubes**		
Gram Test	24h		KIA	K/NC	K/K
Motility Wet Prep	POS- sm rods very motile		H_2S	Neg	slight A_2 S
Motility Deep	Neg POS		Pseudo P	Neg	Neg
Oxidase	POS		Pseudo F	Neg	Neg
Catalase	STRONG POS		NO_3 reduced		POS
PLATES	**48 h**	**7 day**	Gas from NO_3	Sm. bubble	Sm Bubble - POS
Odor	None		NO_2 reduced		POS
Pigment on swab	Buff		Gas from NO_2	Neg	POS
Pigment on BAP	Grey		— OF Fructose	Blue	Blue
Morphology on BAP	TRANSLUCENT		+ OF Dextrose	Yel	GRN
Beta hemolysis	Neg		— OF Lactose	Blue	Blue
Growth on Mac	POS	POS	— OF Maltose	Blue	Blue
DNase hydrolysis	Neg	Neg	— OF Mannitol	Blue	Blue
Starch hydrolysis	Neg	Neg	+ OF Xylose	GRN	Yel
Lecithinase	Neg	Neg	+ OF Sucrose	GRN	GRN (same as Gluc)
Lipase	Neg	Neg	Arginine	Neg	Neg
Rapid PYR	Neg (w+)		Lysine		
Rapid LAP	POS		Ornithine		
Rapid ESC	Neg		Base Control		
Sensitivity to:			Acetamide	POS	POS!
Penicillin (10 U)	R	R	Esculin	Neg	Neg
Vancomycin (30 ug)	R	R	Gelatin	Neg	Neg
Colistin (10 mcg)	S-8	S (sm zone)	Indole		Neg
Polymyxin B (300 U)	S-12	S	Malonate	Neg	POS
			PAD	Neg	—
			Urea Neg 2 h	Neg	Neg
			6.5% NaCL	Neg	POS
			10% Lactose	Neg	Neg
			ONPG	Neg	Neg
			Growth 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 47: Achromobacter xylosoxidans isolate 36-of-64.

Date Inoculated: 6-1-12

Final Identification: Achromobacter xylosoxidans D.S. 6/8/12

Comments:

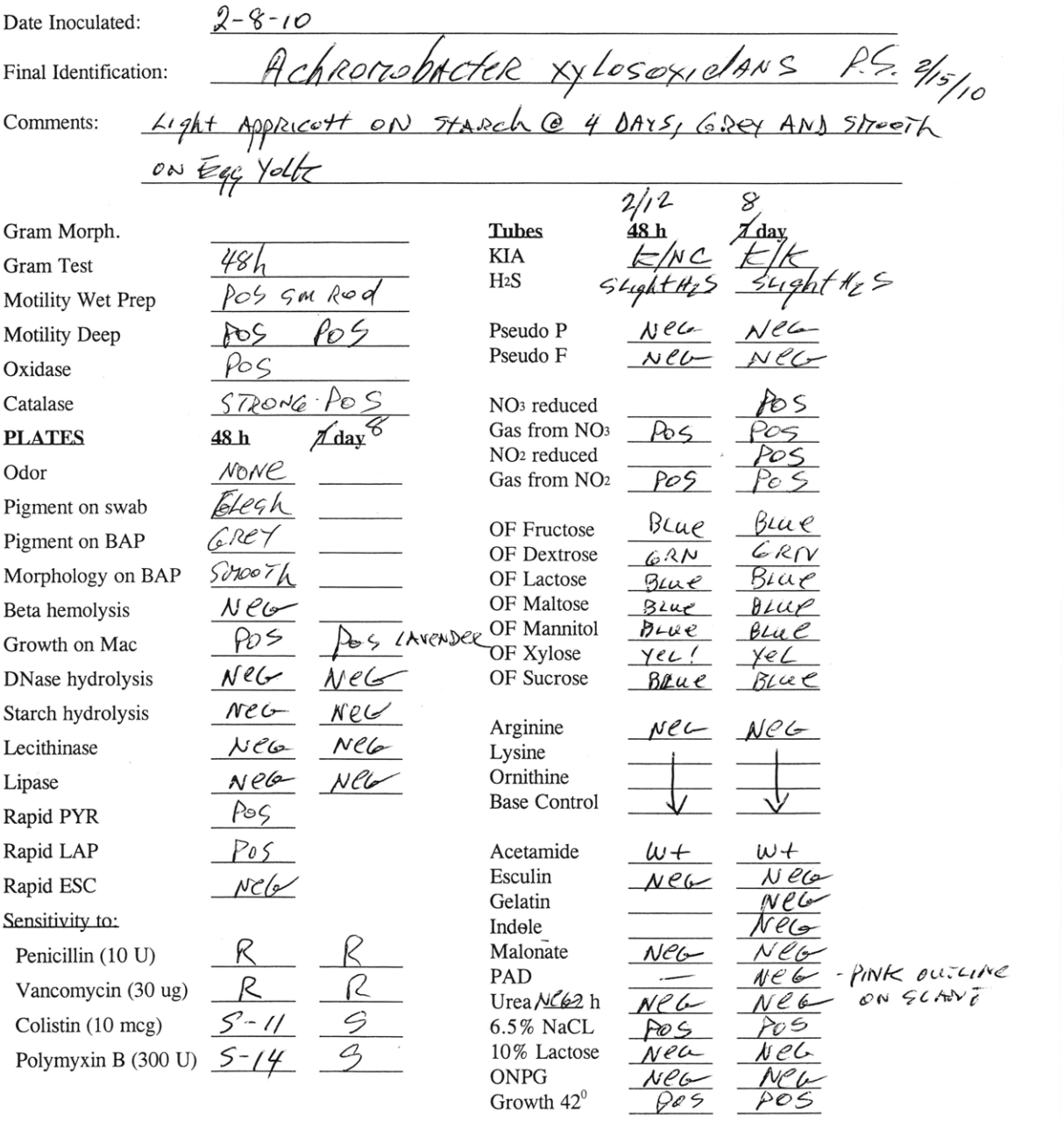
Gram Morph.		
Gram Test	24h	med-Long Rods
Motility Wet Prep	POS- very motile	
Motility Deep	POS	POS
Oxidase	POS	
Catalase	STRONG POS	

PLATES	48 h	7 day
Odor	None	
Pigment on swab	Buff	
Pigment on BAP	GREY	
Morphology on BAP	Shinny- wet looking	
Beta hemolysis	Neg	
Growth on Mac	POS	POS
DNase hydrolysis	Neg	Neg
Starch hydrolysis	Neg	Neg
Lecithinase	Neg	Neg
Lipase	Neg	Neg
Rapid PYR	W+	
Rapid LAP	POS	
Rapid ESC	Neg	
Sensitivity to:		
Penicillin (10 U)	R	R
Vancomycin (30 ug)	R	R
Colistin (10 mcg)	R	R
Polymyxin B (300 U)	RS-11	S

Tubes	48 h	7 day
KIA	K/Neg	K/K
H_2S	Neg	SLIGHT H_2S
Pseudo P	Neg	Neg
Pseudo F	Neg	Neg
NO_3 reduced		POS
Gas from NO_3	Neg	POS!
NO_2 reduced		POS
Gas from NO_2	Neg	POS!
OF Fructose	GRN	GRN
OF Dextrose	Yel	Yel
OF Lactose	Blue	Blue
OF Maltose	Blue	Blue
OF Mannitol	Blue	Blue
OF Xylose	GRN	Yel
OF Sucrose	GRN	GRN
Arginine	Neg	Neg
Lysine	↓	↓
Ornithine	↓	↓
Base Control	↓	↓
Acetamide	Neg	Neg
Esculin	Neg	Neg
Gelatin	Neg	Neg
Indole		Neg
Malonate	Neg	POS
PAD	Neg	—
Urea ~~Neg~~ h	Neg	Neg
6.5% NaCL	Neg	POS
10% Lactose	Neg	Neg
ONPG	Neg	Neg
Growth 42^0	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 48: Achromobacter xylosoxidans isolate 37-of-64.



Date Inoculated: 2-8-10

Final Identification: Achromobacter xylosoxidans P.S. 2/15/10

Comments: Light Apricott on Starch @ 4 DAYS, Grey and Smooth on Egg Yolk

Gram Morph.		
Gram Test	48h	
Motility Wet Prep	Pos sm Rod	
Motility Deep	Pos	Pos
Oxidase	Pos	
Catalase	STRONG Pos	
PLATES	**48 h**	~~7 day~~ 8
Odor	NONE	
Pigment on swab	Bleach	
Pigment on BAP	GREY	
Morphology on BAP	Smooth	
Beta hemolysis	Neg	
Growth on Mac	Pos	Pos LAVENDER
DNase hydrolysis	Neg	Neg
Starch hydrolysis	Neg	Neg
Lecithinase	Neg	Neg
Lipase	Neg	Neg
Rapid PYR	Pos	
Rapid LAP	Pos	
Rapid ESC	Neg	
~~Sensitivity to:~~		
Penicillin (10 U)	R	R
Vancomycin (30 ug)	R	R
Colistin (10 mcg)	S-11	S
Polymyxin B (300 U)	S-14	S

	2/12 48 h	8 ~~7 day~~
Tubes		
KIA	K/NC	K/K
H_2S	Slight H_2S	Slight H_2S
Pseudo P	Neg	Neg
Pseudo F	Neg	Neg
NO_3 reduced		Pos
Gas from NO_3	Pos	Pos
NO_2 reduced		Pos
Gas from NO_2	Pos	Pos
OF Fructose	Blue	Blue
OF Dextrose	GRN	GRN
OF Lactose	Blue	Blue
OF Maltose	Blue	Blue
OF Mannitol	Blue	Blue
OF Xylose	Yel	Yel
OF Sucrose	Blue	Blue
Arginine	Neg	Neg
Lysine	↓	↓
Ornithine	↓	↓
Base Control	↓	↓
Acetamide	W+	W+
Esculin	Neg	Neg
Gelatin		Neg
Indole		Neg
Malonate	Neg	Neg
PAD	—	Neg - PINK OUTLINE ON SLANT
Urea ~~NC62~~ h	Neg	Neg
6.5% NaCL	Pos	Pos
10% Lactose	Neg	Neg
ONPG	Neg	Neg
Growth 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 49: Achromobacter xylosoxidans isolate 38-of-64.

Date Inoculated: 4-1-09

Final Identification: Achromobacter xylosoxidans P.S. 4/15/09

Comments:

					4/13/09
Gram Morph.			**Tubes**	**48 h**	**7 day**
Gram Test	24h		KIA	K/Ne	K/K
Motility Wet Prep	POS - short rods very motile		H_2S	slight H_2S	slight H_2S
Motility Deep	POS	POS	Pseudo P	Neg	Neg
Oxidase	POS		Pseudo F	Neg	Neg
Catalase	STRONG POS		NO_3 reduced		POS
PLATES	**48 h**	**7 day**	Gas from NO_3	POS	POS
Odor	None		NO_2 reduced		POS
Pigment on swab	Flesh		Gas from NO_2	POS	POS
Pigment on BAP	Grey		OF Fructose	Blue	Blue
Morphology on BAP	Smooth		OF Dextrose	Yel	GRN
Beta hemolysis	Neg		OF Lactose		
Growth on Mac	POS	POS	OF Maltose	Blue	Blue
DNase hydrolysis	Neg	Neg	OF Mannitol	Blue	Blue
Starch hydrolysis	Neg	Neg	OF Xylose	Yel	Yel
Lecithinase	Neg	Neg	OF Sucrose	Blue	Blue
Lipase	Neg	Neg	Arginine	Neg	Neg
Rapid PYR	POS - LIGHT PINK		Lysine		
Rapid LAP	POS		Ornithine		
Rapid ESC	Neg		Base Control		
Sensitivity to:			Acetamide	Pos !	POS
Penicillin (10 U)	R	R	Esculin	Neg	Neg
Vancomycin (30 ug)	R	R	Gelatin	Neg	Neg
Colistin (10 mcg)	~~S~~ R	R	Indole		Neg
Polymyxin B (300 U)	S - 13	S	Malonate	Neg	Neg
			PAD	Neg	Red ring along slant after $FeCl_2$
			Urea Neg 2 h	Neg	Neg
			6.5% NaCL	WT	POS !
			10% Lactose	Neg	Neg
			ONPG	Neg	Neg
			Growth 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 50: Achromobacter xylosoxidans isolate 39-of-64.

4 GENUS ACIDOVORAX

4.1 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%**	**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	0	1	0.00	39.67	Pseudo F	0	1	0.00	39.67
Yellow Pigment	1	0	100.00	60.33	NO_3 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	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 (10μg)	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%**	**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_3 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 (30μg)	0	1	0.00	39.67	Lysine	0	1	0.00	39.67
Colistin (10μg)	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.

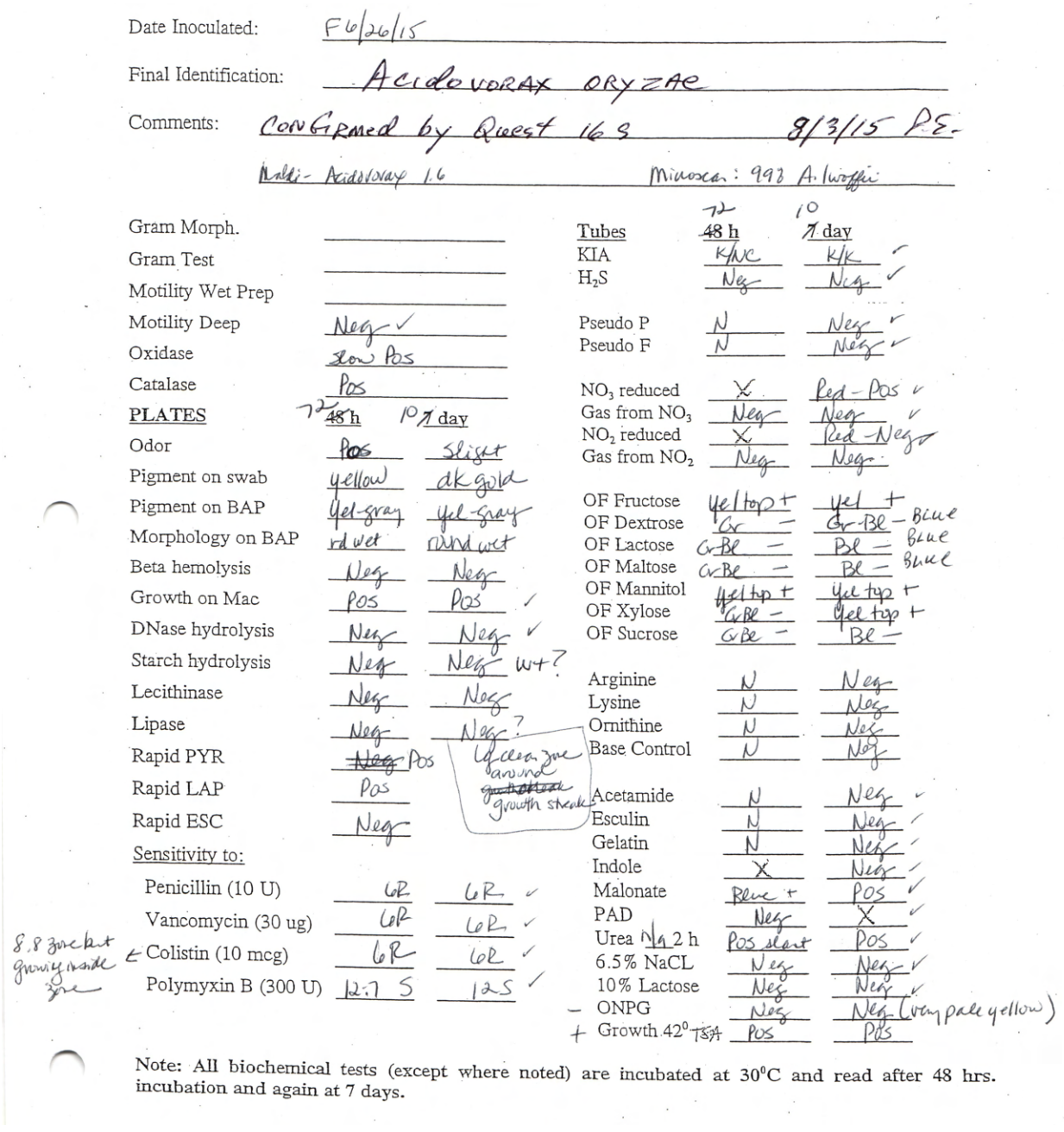


Figure 51: Acidovorax oryzae isolate 1-of-1.

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%**	**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_3 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	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 (30μg)	0	1	0.00	39.67	Lysine	0	1	0.00	39.67
Colistin (10μg)	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.

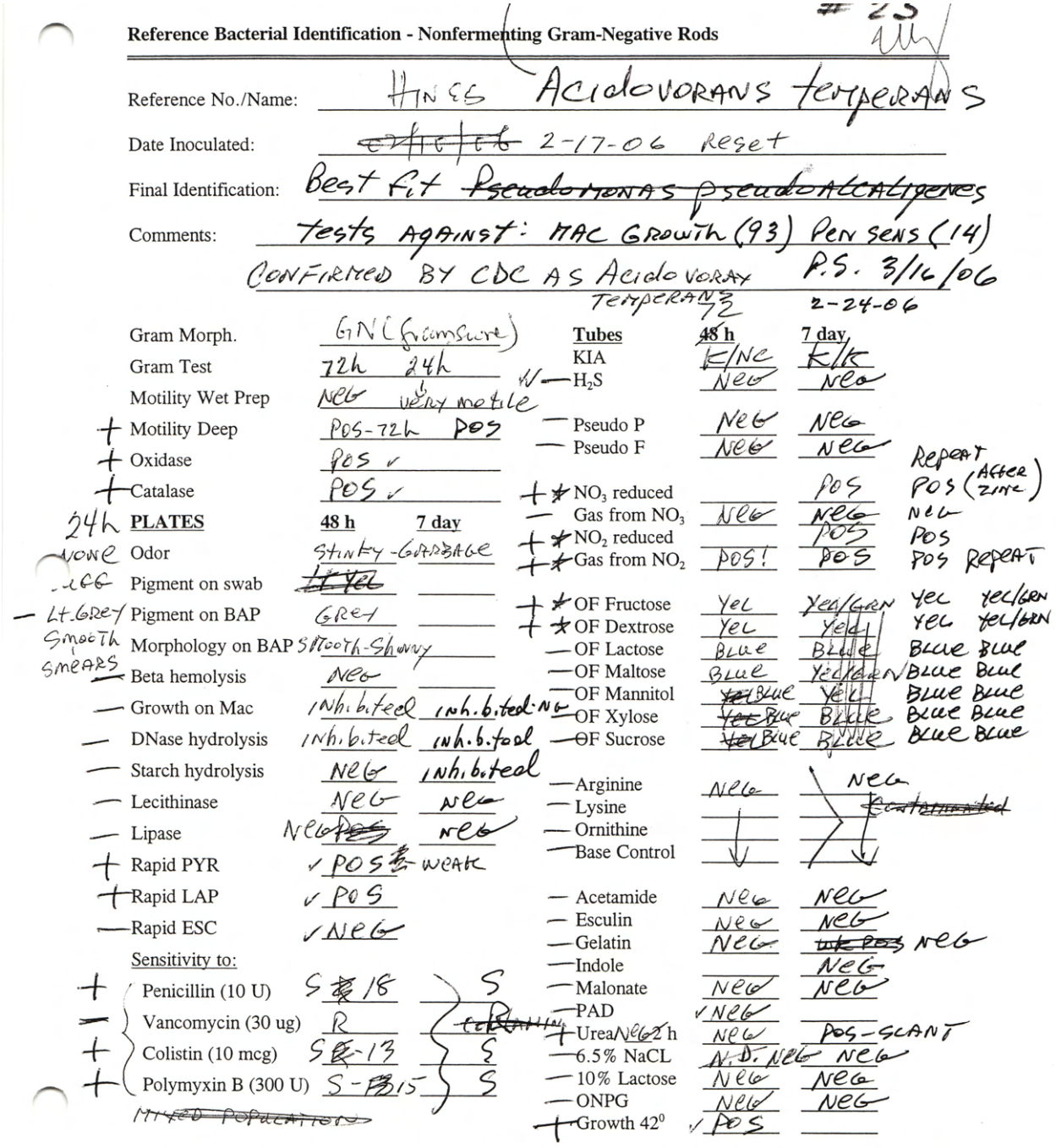


Figure 52: Acidovorax temperans isolate 1-of-1.

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%**	**W95%**	**Test**	+	−	**Raw%**	**W95%**
Motility	0	24	0.00	6.90	H_2S	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_3 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_2 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 (30μg)	1	23	4.17	10.49	Lysine	0	24	0.00	6.90
Colistin (10μg)	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°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.

Date Inoculated: 1-16-08

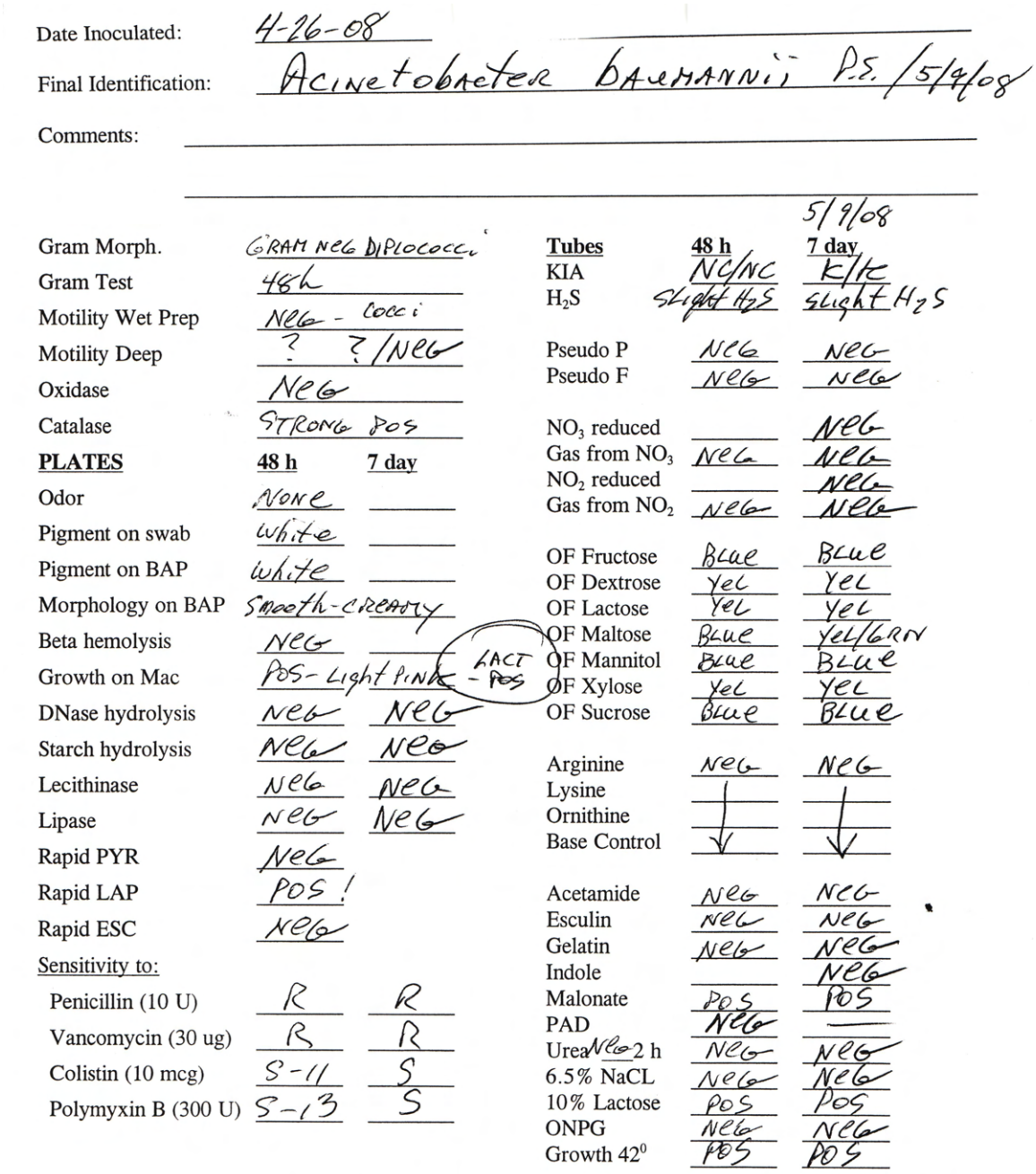
Final Identification: Acinetobacter baumannii 1/24/08 P.S.

Comments:

					1/24/08
Gram Morph.			**Tubes**	**48 h**	**7 day**
Gram Test	24h		KIA	NC/NC	K/NC
Motility Wet Prep	NEG cocci - clusters		H_2S	NEG	NEG
Motility Deep	NEG	NEG	Pseudo P	NEG	NEG
Oxidase	NEG		Pseudo F	NEG	NEG
Catalase	STRONG POS !		NO_3 reduced		NEG
PLATES	**48 h**	**7 day**	Gas from NO_3	NEG	NEG
Odor	NONE		NO_2 reduced		NEG
Pigment on swab	white		Gas from NO_2	NEG	NEG
Pigment on BAP	Light Grey		OF Fructose	BLUE	BLUE
Morphology on BAP	DULL, GROUND GLASS APPEARANCE - CAKES UP		OF Dextrose	YEL	YEL
Beta hemolysis	NEG		OF Lactose	YEL	YEL
Growth on Mac	POS - Light Purple		OF Maltose	BLUE	YEL/GRN
DNase hydrolysis	NEG	NEG	OF Mannitol	BLUE	BLUE
Starch hydrolysis	NEG	NEG	OF Xylose	YEL	YEL
Lecithinase	NEG	NEG	OF Sucrose	BLUE	BLUE
Lipase	NEG	NEG	Arginine	NEG	NEG
Rapid PYR	NEG		Lysine	↓	↓
Rapid LAP	POS		Ornithine	↓	↓
Rapid ESC	NEG		Base Control	↓	↓
Sensitivity to:			Acetamide	NEG	NEG
Penicillin (10 U)	R	R	Esculin	NEG	NEG
Vancomycin (30 ug)	R	R	Gelatin	NEG	NEG
Colistin (10 mcg)	S-11	S	Indole		NEG
Polymyxin B (300 U)	S-12	S	Malonate	POS	POS
			PAD	NEG	
			Urea NEG 2 h	NEG	NEG
			6.5% NaCL	NEG	NEG
			10% Lactose	POS	POS
			ONPG	NEG	NEG
			Growth 42^0	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.



Date Inoculated: 4-26-08

Final Identification: Acinetobacter baumannii P.S. /5/4/08

Comments:

5/9/08

Gram Morph.	GRAM NEG DIPLOCOCCI	
Gram Test	48h	
Motility Wet Prep	NEG - COCCI	
Motility Deep	? ?/NEG	
Oxidase	NEG	
Catalase	STRONG POS	

PLATES	**48 h**	**7 day**
Odor	NONE	
Pigment on swab	white	
Pigment on BAP	white	
Morphology on BAP	Smooth-creamy	
Beta hemolysis	NEG	
Growth on Mac	POS- Light PINK	LACT - POS
DNase hydrolysis	NEG	NEG
Starch hydrolysis	NEG	NEG
Lecithinase	NEG	NEG
Lipase	NEG	NEG
Rapid PYR	NEG	
Rapid LAP	POS !	
Rapid ESC	NEG	
Sensitivity to:		
Penicillin (10 U)	R	R
Vancomycin (30 ug)	R	R
Colistin (10 mcg)	S-11	S
Polymyxin B (300 U)	S-13	S

Tubes	**48 h**	**7 day**
KIA	NC/NC	K/K
H_2S	slight H_2S	slight H_2S
Pseudo P	NEG	NEG
Pseudo F	NEG	NEG
NO_3 reduced		NEG
Gas from NO_3	NEG	NEG
NO_2 reduced		NEG
Gas from NO_2	NEG	NEG
OF Fructose	BLUE	BLUE
OF Dextrose	YEL	YEL
OF Lactose	YEL	YEL
OF Maltose	BLUE	YEL/GRN
OF Mannitol	BLUE	BLUE
OF Xylose	YEL	YEL
OF Sucrose	BLUE	BLUE
Arginine	NEG	NEG
Lysine		
Ornithine		
Base Control		
Acetamide	NEG	NEG
Esculin	NEG	NEG
Gelatin	NEG	NEG
Indole		NEG
Malonate	POS	POS
PAD	NEG	
Urea NEG 2 h	NEG	NEG
6.5% NaCL	NEG	NEG
10% Lactose	POS	POS
ONPG	NEG	NEG
Growth 42^0	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 54: Acinetobacter baumannii complex isolate 2-of-24.

Date Inoculated: 8-31-09

Final Identification: Acinetobacter baumannii P.S 9/10/09

Comments: CREAM COLOR ON STARCH & EGG @ 11 DAYS

				9/2	9/10
Gram Morph.			**Tubes**	**48 h**	**7 day**
Gram Test	24h		KIA	Yel/NC	K/NC
Motility Wet Prep	Neg cocci, single pairs, clusters		H_2S	Neg	slight H_2S
Motility Deep	Neg	Neg	Pseudo P	Neg	Neg
Oxidase	Neg		Pseudo F	Neg	Neg
Catalase	STRONG POS		NO_3 reduced		Neg
PLATES	**48 h**	**7 day**	Gas from NO_3	Neg	Neg
Odor	None		NO_2 reduced		Neg
Pigment on swab	CREAM		Gas from NO_2	Neg	Neg
Pigment on BAP	CRE-I		OF Fructose	Blue	Blue
Morphology on BAP	SMOOTH ENTIRE STICKY		OF Dextrose	Yel	Yel (+)
Beta hemolysis	Neg		OF Lactose	Yel	Yel (+)
Growth on Mac	Pos	Pos DARK PURPLE	OF Maltose	Blue	GRN/Yel (+)
DNase hydrolysis	Neg	Neg DARK BLUE COLONIES	OF Mannitol	Blue	Blue
Starch hydrolysis	Neg	Neg	OF Xylose	Yel	Yel (+)
Lecithinase	Neg	Neg	OF Sucrose	Blue	Blue
Lipase	Neg	Neg	Arginine	Neg	Neg
Rapid PYR	Neg		Lysine		
Rapid LAP	Pos !!		Ornithine		
Rapid ESC	Neg		Base Control		
Sensitivity to:			Acetamide	Neg	Neg
Penicillin (10 U)	R	R	Esculin	Neg	Neg
Vancomycin (30 ug)	R	R	Gelatin	Neg	Neg
Colistin (10 mcg)	S	S-II	Indole		Neg
Polymyxin B (300 U)	S	S-II	Malonate	Neg	Pos
			PAD		Neg
			Urea Neg 2 h	Neg	Neg
			6.5% NaCL	Neg	Neg
			10% Lactose	Pos	Pos
			ONPG	Neg	Neg
			Growth 42^0	—	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: 9-22-09

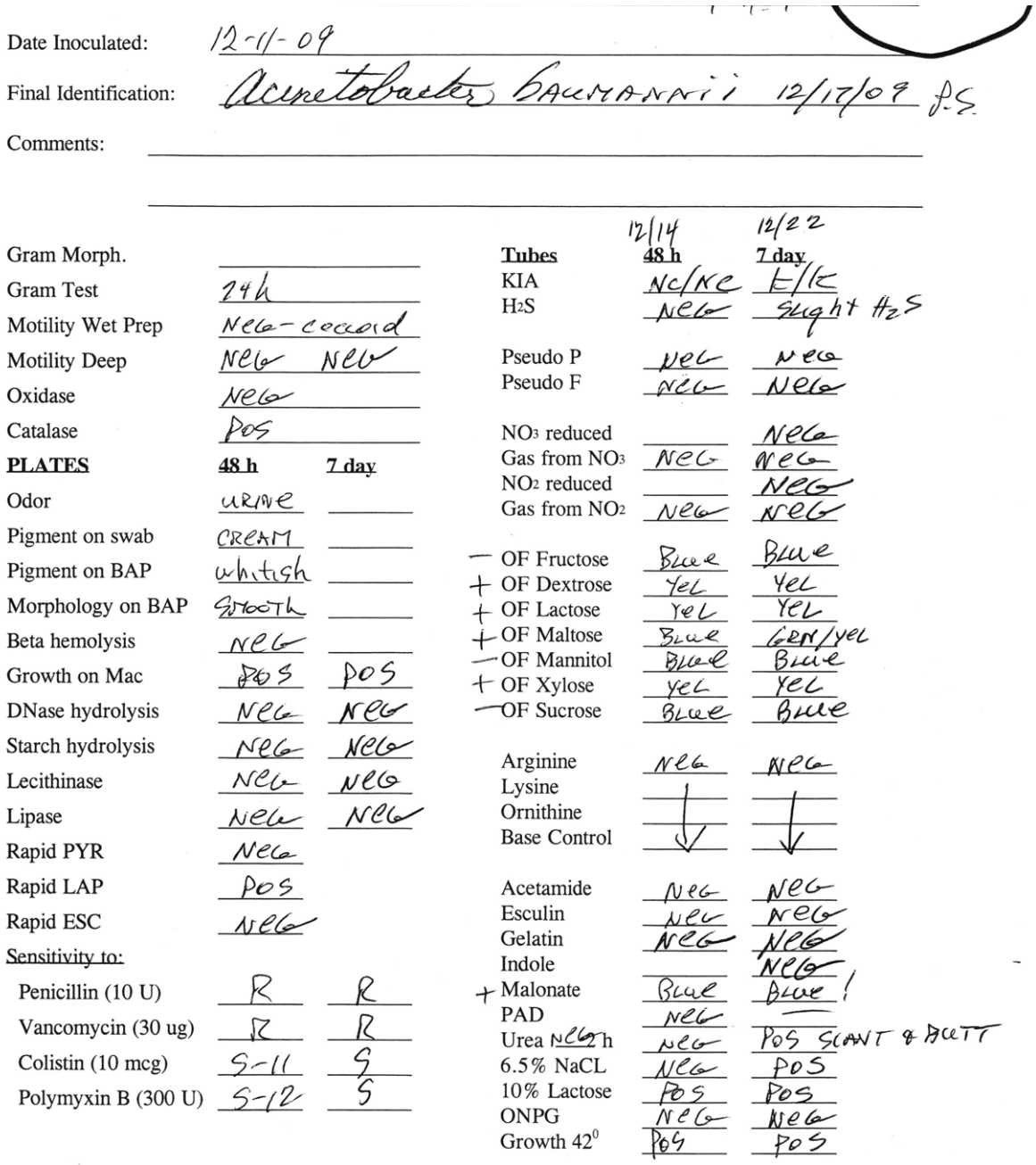
Final Identification: Acinetobacter baumannii 10/6/09 P.S.

Comments:

				24	10/6
Gram Morph.			**Tubes**	~~48 h~~	**7 day**
Gram Test	24h		KIA	Y/NC	Y/NC
Motility Wet Prep	Neg coccobacilli		H_2S	neg	Neg
Motility Deep	Neg	Neg	Pseudo P	Neg	Neg
Oxidase	Neg		Pseudo F	Neg	Neg
Catalase	STRONG POS		NO_3 reduced		Neg
PLATES	24 ~~48 h~~	**7 day**	Gas from NO_3	Neg	Neg
Odor	URINE ODOR		NO_2 reduced		Neg
Pigment on swab	BuFF		Gas from NO_2	Neg	Neg
Pigment on BAP	LIGHT GREY		OF Fructose	Blue	Blue
Morphology on BAP	SMOOTH, TRANSLUCENT		OF Dextrose	Yel	Yel (+)
Beta hemolysis	Neg		OF Lactose	Yel	Yel (+)
Growth on Mac	POS	POS BRIGHT PURPLE COLONIES	OF Maltose	Blue	Yel (+)
DNase hydrolysis	Neg	Neg	OF Mannitol	Blue	Blue
Starch hydrolysis	Neg	Neg	OF Xylose	Yel	Yel (+)
Lecithinase	Neg	Neg	OF Sucrose	Blue	Blue
Lipase	POS	POS	Arginine	Neg	Neg
Rapid PYR	Neg		Lysine		
Rapid LAP	POS!		Ornithine		
Rapid ESC	Neg		Base Control		
~~Sensitivity to:~~			Acetamide	POS!	POS!
Penicillin (10 U)	R	R	Esculin	Neg	Neg
Vancomycin (30 ug)	R	R	Gelatin	Neg	Neg
Colistin (10 mcg)	S-10	S-10	Indole		Neg
Polymyxin B (300 U)	S-11	S-11	Malonate	Neg	Neg
			PAD	Neg	
			Urea ~~Neg~~ 2 h	Neg	POS
			6.5% NaCL	Neg	Neg
			10% Lactose	POS	POS
			ONPG	Neg	Neg
			Growth 42°	Slight growth	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 56: Acinetobacter baumannii complex isolate 4-of-24.



Date Inoculated: 12-11-09

Final Identification: Acinetobacter baumannii 12/17/09 P.S.

Comments:

Gram Morph.		
Gram Test	24h	
Motility Wet Prep	Neg - cocci rod	
Motility Deep	Neg	Neg
Oxidase	Neg	
Catalase	Pos	
PLATES	**48 h**	**7 day**
Odor	urine	
Pigment on swab	cream	
Pigment on BAP	whitish	
Morphology on BAP	smooth	
Beta hemolysis	neg	
Growth on Mac	Pos	Pos
DNase hydrolysis	Neg	Neg
Starch hydrolysis	Neg	Neg
Lecithinase	Neg	Neg
Lipase	Neg	Neg
Rapid PYR	Neg	
Rapid LAP	Pos	
Rapid ESC	Neg	
Sensitivity to:		
Penicillin (10 U)	R	R
Vancomycin (30 ug)	R	R
Colistin (10 mcg)	S-11	S
Polymyxin B (300 U)	S-12	S

	12/14	12/22
Tubes	**48 h**	**7 day**
KIA	Nc/Nc	K/K
H_2S	Neg	slight H_2S
Pseudo P	Neg	Neg
Pseudo F	Neg	Neg
NO_3 reduced		Neg
Gas from NO_3	Neg	Neg
NO_2 reduced		Neg
Gas from NO_2	Neg	Neg
— OF Fructose	Blue	Blue
+ OF Dextrose	Yel	Yel
+ OF Lactose	Yel	Yel
+ OF Maltose	Blue	Grn/yel
— OF Mannitol	Blue	Blue
+ OF Xylose	Yel	Yel
— OF Sucrose	Blue	Blue
Arginine	Neg	Neg
Lysine	↓	↓
Ornithine		
Base Control	✓	✓
Acetamide	Neg	Neg
Esculin	Neg	Neg
Gelatin	Neg	Neg
Indole		Neg
+ Malonate	Blue	Blue !
PAD	Neg	—
Urea Neg 2h	Neg	Pos slant & butt
6.5% NaCL	Neg	Pos
10% Lactose	Pos	Pos
ONPG	Neg	Neg
Growth 42^0	Pos	Pos

Note: All biochemical tests (except where noted) are incubated at 30^0C 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: Acinetobacter baumannii

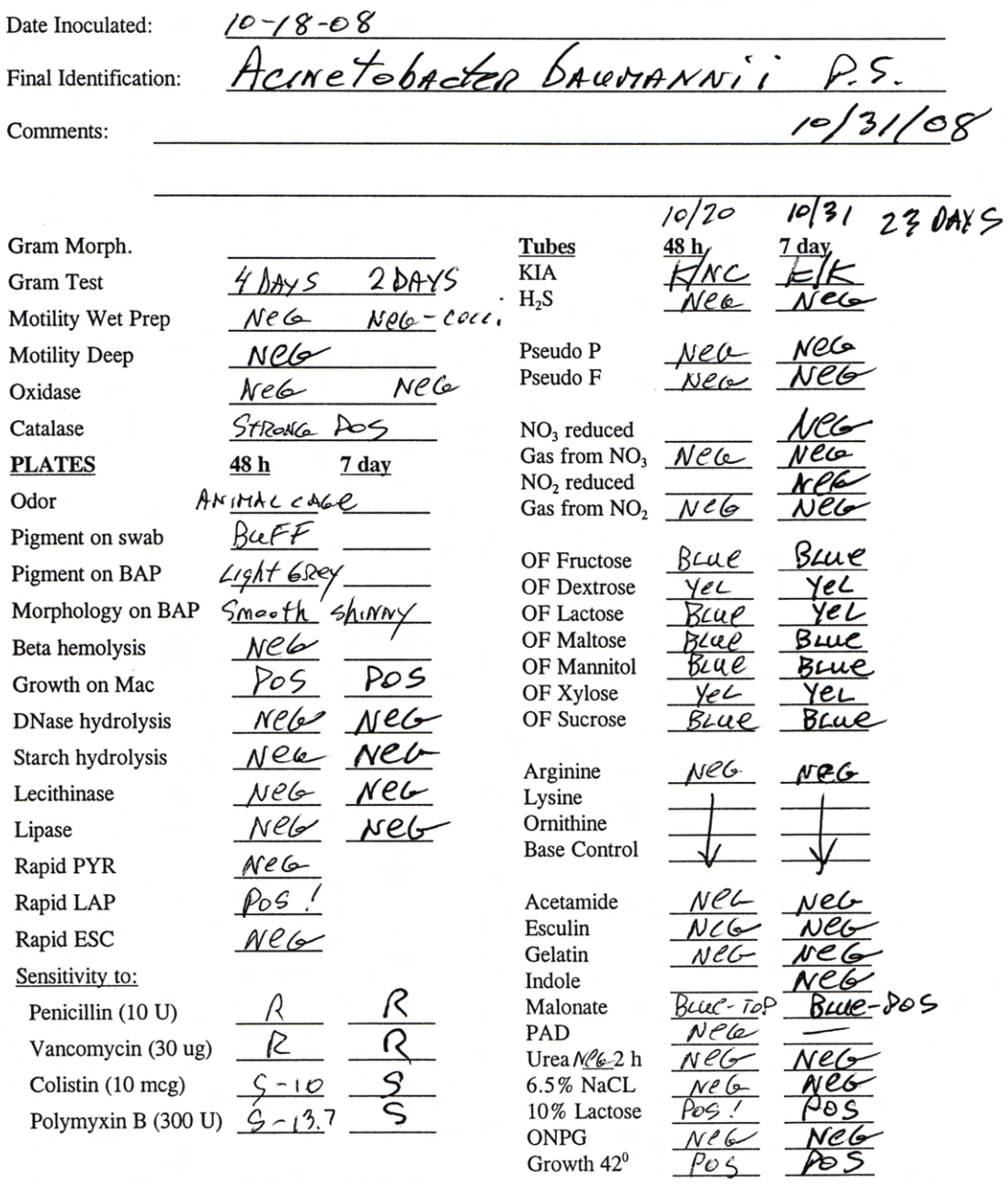
Comments: Extremely Sticky

Gram Morph.		
Gram Test	24h	
Motility Wet Prep	neg - cb	
Motility Deep	neg	
Oxidase	neg	
Catalase	strong pos	
PLATES	**48 h**	**7 day**
Odor	none	
Pigment on swab	cream	
Pigment on BAP	grey	
Morphology on BAP	sticky - forms string	
Beta hemolysis	neg	
Growth on Mac	pos	
DNase hydrolysis	neg	
Starch hydrolysis	neg	
Lecithinase	neg	
Lipase	neg	
Rapid PYR	neg	
Rapid LAP	pos !	
Rapid ESC	neg	
Sensitivity to:		
Penicillin (10 U)	R	
Vancomycin (30 ug)	R	
Colistin (10 mcg)	S - 10	
Polymyxin B (300 U)	S - 12	

Tubes	**48 h**	**7 day**
KIA	NC/NC	
H_2S	neg	
Pseudo P	neg	
Pseudo F	neg	
NO_3 reduced		
Gas from NO_3	TINY bubble	
NO_2 reduced		
Gas from NO_2	neg	
OF Fructose	GRN	NEG
OF Dextrose	yel	⊕
OF Lactose	yel	⊕
OF Maltose	blue	
OF Mannitol	blue	
OF Xylose	yel	⊕
OF Sucrose	blue	
Arginine	neg	
Lysine		
Ornithine		
Base Control	↓	
Acetamide	neg	
Esculin	neg	
Gelatin	neg	
Indole		
Malonate	pos	
PAD	neg	
Urea neg 2 h	neg	
6.5% NaCL	neg	
10% Lactose	pos	
ONPG	neg	
Growth 42^0	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 58: Acinetobacter baumannii complex isolate 6-of-24.



Date Inoculated: 10-18-08

Final Identification: Acinetobacter baumannii P.S.

Comments: 10/31/08

				10/20	10/31 23 days
Gram Morph.			**Tubes**	**48 h**	**7 day**
Gram Test	4 days	2 days	KIA	K/NC	K/K
Motility Wet Prep	Neg	Neg - cocci	H_2S	Neg	Neg
Motility Deep	Neg		Pseudo P	Neg	Neg
Oxidase	Neg	Neg	Pseudo F	Neg	Neg
Catalase	Strong Pos		NO_3 reduced		Neg
PLATES	**48 h**	**7 day**	Gas from NO_3	Neg	Neg
Odor	Animal cage		NO_2 reduced		Neg
Pigment on swab	Buff		Gas from NO_2	Neg	Neg
Pigment on BAP	Light Grey		OF Fructose	Blue	Blue
Morphology on BAP	Smooth	shinny	OF Dextrose	Yel	Yel
Beta hemolysis	Neg		OF Lactose	Blue	Yel
Growth on Mac	Pos	Pos	OF Maltose	Blue	Blue
DNase hydrolysis	Neg	Neg	OF Mannitol	Blue	Blue
Starch hydrolysis	Neg	Neg	OF Xylose	Yel	Yel
Lecithinase	Neg	Neg	OF Sucrose	Blue	Blue
Lipase	Neg	Neg	Arginine	Neg	Neg
Rapid PYR	Neg		Lysine	↓	↓
Rapid LAP	Pos !		Ornithine	↓	↓
Rapid ESC	Neg		Base Control	↓	↓
Sensitivity to:			Acetamide	Neg	Neg
Penicillin (10 U)	R	R	Esculin	Neg	Neg
Vancomycin (30 ug)	R	R	Gelatin	Neg	Neg
Colistin (10 mcg)	S - 10	S	Indole		Neg
Polymyxin B (300 U)	S - 13.7	S	Malonate	Blue - top	Blue - bot
			PAD	Neg	—
			Urea Neg 2 h	Neg	Neg
			6.5% NaCL	Neg	Neg
			10% Lactose	Pos !	Pos
			ONPG	Neg	Neg
			Growth 42^0	Pos	Pos

Note: All biochemical tests (except where noted) are incubated at 30^0C 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: ACINETOBACTER BAUMANNII 4/8/11 P.S.

Comments:

Gram Morph.		
Gram Test	48h	
Motility Wet Prep	NEG – eb	
Motility Deep	NEG	NEG
Oxidase	NEG	
Catalase	STRONG POS	

PLATES	**48 h**	**7 day**
Odor	STINKS	
Pigment on swab	BLEGG	
Pigment on BAP	GREY	
Morphology on BAP	dull, entire	
Beta hemolysis	NEG	
Growth on Mac	POS - Light pink	
DNase hydrolysis	NEG	NEG
Starch hydrolysis	NEG ~~POS!~~	NEG
Lecithinase	NEG	NEG
Lipase	POS	POS
Rapid PYR	NEG	
Rapid LAP	POS (STRONG)	
Rapid ESC	NEG	
Sensitivity to:		
Penicillin (10 U)	R	R
Vancomycin (30 ug)	R	R
Colistin (10 mcg)	S-11	S
Polymyxin B (300 U)	S-12	S

	4/1	4/8 9 DAYS
Tubes	**48 h**	**7 day**
KIA	YEL/NC	YEL/NC
H_2S	NEG	NEG
Pseudo P	NEG	NEG
Pseudo F	NEG	NEG
NO_3 reduced		NEG
Gas from NO_3	NEG	NEG
NO_2 reduced		NEG
Gas from NO_2	NEG	NEG
OF Fructose	BLUE	BLUE
OF Dextrose	YEL	YEL
OF Lactose	YEL	YEL
OF Maltose	GRN/BLUE	YEL/GRN ⊕
OF Mannitol	BLUE	BLUE
OF Xylose	YEL	YEL ⊕
OF Sucrose	BLUE	BLUE
Arginine	NEG	NEG
Lysine	↓	↓
Ornithine	↓	↓
Base Control	↓	↓
Acetamide	POS!	POS!
Esculin	NEG	NEG
Gelatin	NEG	NEG
Indole		NEG
Malonate	NEG	W+
PAD	W+	—
Urea NEG 2 h	NEG	W+ SLANT ONLY
6.5% NaCL	NEG	NEG
10% Lactose	POS!	POS
ONPG	NEG	NEG
Growth 42^0	NEG	NEG

DEEP PURPLE 9 DAYS

Note: All biochemical tests (except where noted) are incubated at 30^0C 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_3 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 (30μg)	0	3	0.00	28.08	Lysine	0	3	0.00	28.08
Colistin (10μg)	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: 8-4-08

Final Identification: Acinetobacter haemolyticus P.S. 8/11/08

Comments:

				8-8/08	
Gram Morph.			**Tubes**	~~48 h~~ 96	**7 day**
Gram Test	96 h		KIA	K/NC	K/NC
Motility Wet Prep	Neg - cb		H_2S	Neg	Neg
Motility Deep	Neg (96h) Neg		Pseudo P	Neg	Neg
Oxidase	Neg		Pseudo F	Neg	Neg
Catalase	STRONG POS		NO_3 reduced		Neg
PLATES	**48 h**	**7 day**	Gas from NO_3	Neg	Neg
Odor	None		NO_2 reduced		Neg
Pigment on swab	Buff		Gas from NO_2	Neg	Neg
Pigment on BAP	Light Grey		OF Fructose	Blue	Blue
Morphology on BAP	Smooth-entire		OF Dextrose	↓	↓
Beta hemolysis	STRONG POS		OF Lactose	↓	↓
Growth on Mac	Pos - deep purple colonies		OF Maltose	↓	↓
DNase hydrolysis	Neg	Neg	OF Mannitol	↓	↓
Starch hydrolysis	Neg	Neg	OF Xylose	↓	↓
Lecithinase	Neg	Neg	OF Sucrose	↓	↓
Lipase	Pos	Pos	Arginine	Neg	Neg
Rapid PYR	Neg		Lysine	↓	↓
Rapid LAP	Pos		Ornithine	↓	↓
Rapid ESC	Neg		Base Control	↓	↓
Sensitivity to:			Acetamide	Neg	Neg
Penicillin (10 U)	R	R	Esculin	Neg	Neg
Vancomycin (30 ug)	R	R	Gelatin	Neg	
Colistin (10 mcg)	S-11	S	Indole		Neg
Polymyxin B (300 U)	S-13	S	Malonate	Neg	Neg
			PAD	W+	
			Urea 2 h	POS (SLANT)	POS SLANT & BUTT
			6.5% NaCL	Neg	Neg
			10% Lactose	Neg	Neg
			ONPG	Neg	Neg
			Growth 42°	Slight growth	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 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%**	**W95%**	**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	0	1	0.00	39.67	NO_3 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	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 (30μg)	0	1	0.00	39.67	Lysine	0	1	0.00	39.67
Colistin (10μg)	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

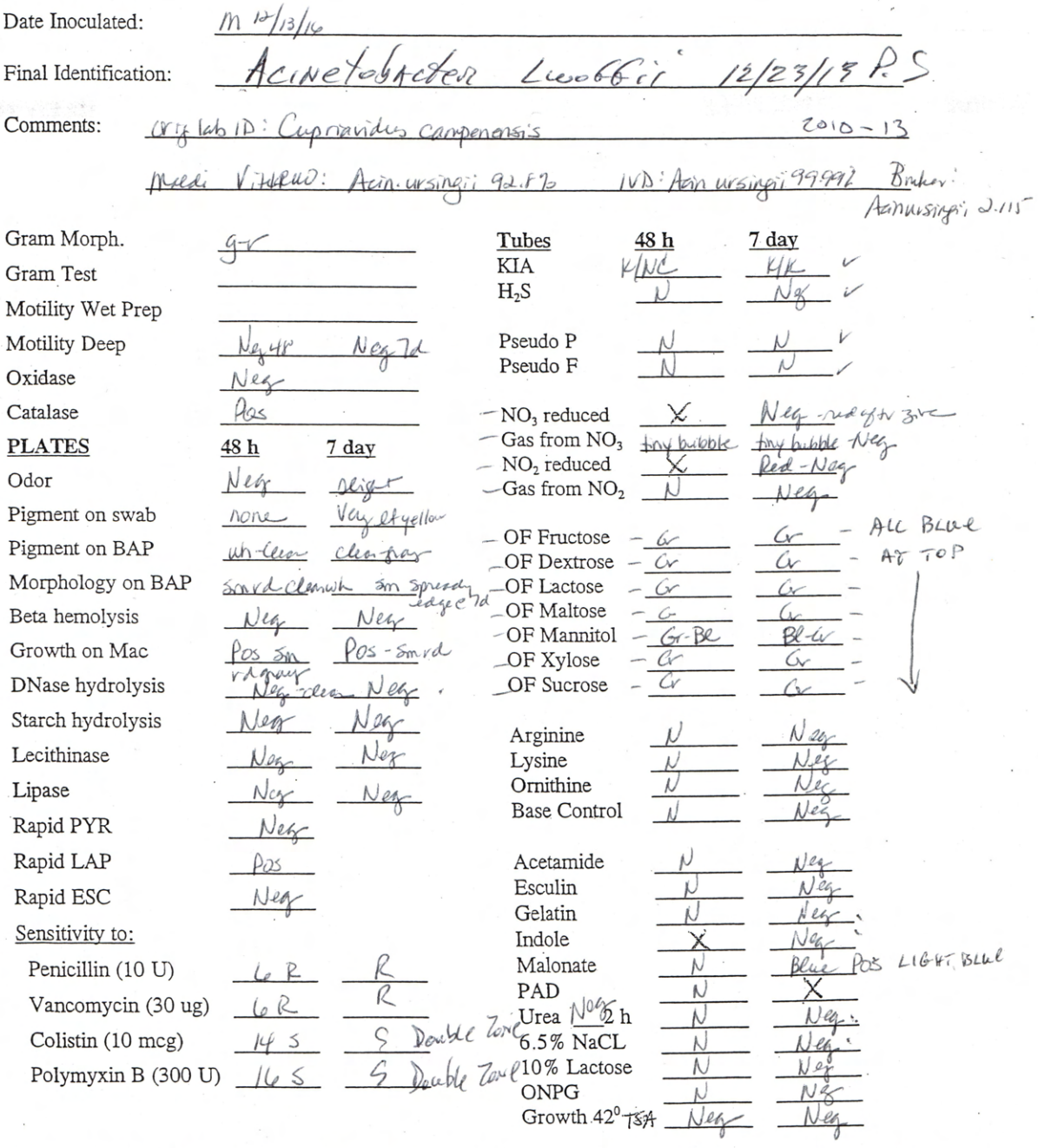
Table 10: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as $n_+/(n_+ + n_-)$, where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which 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_2S	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_3 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_2 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 (30μg)	2	21	8.70	14.61	Lysine	0	23	0.00	7.16
Colistin (10μg)	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 12/13/16

Final Identification: Acinetobacter Lwoffii 12/23/13 P.S

Comments: Orig lab ID: Cupriavidus campenensis 2010-13

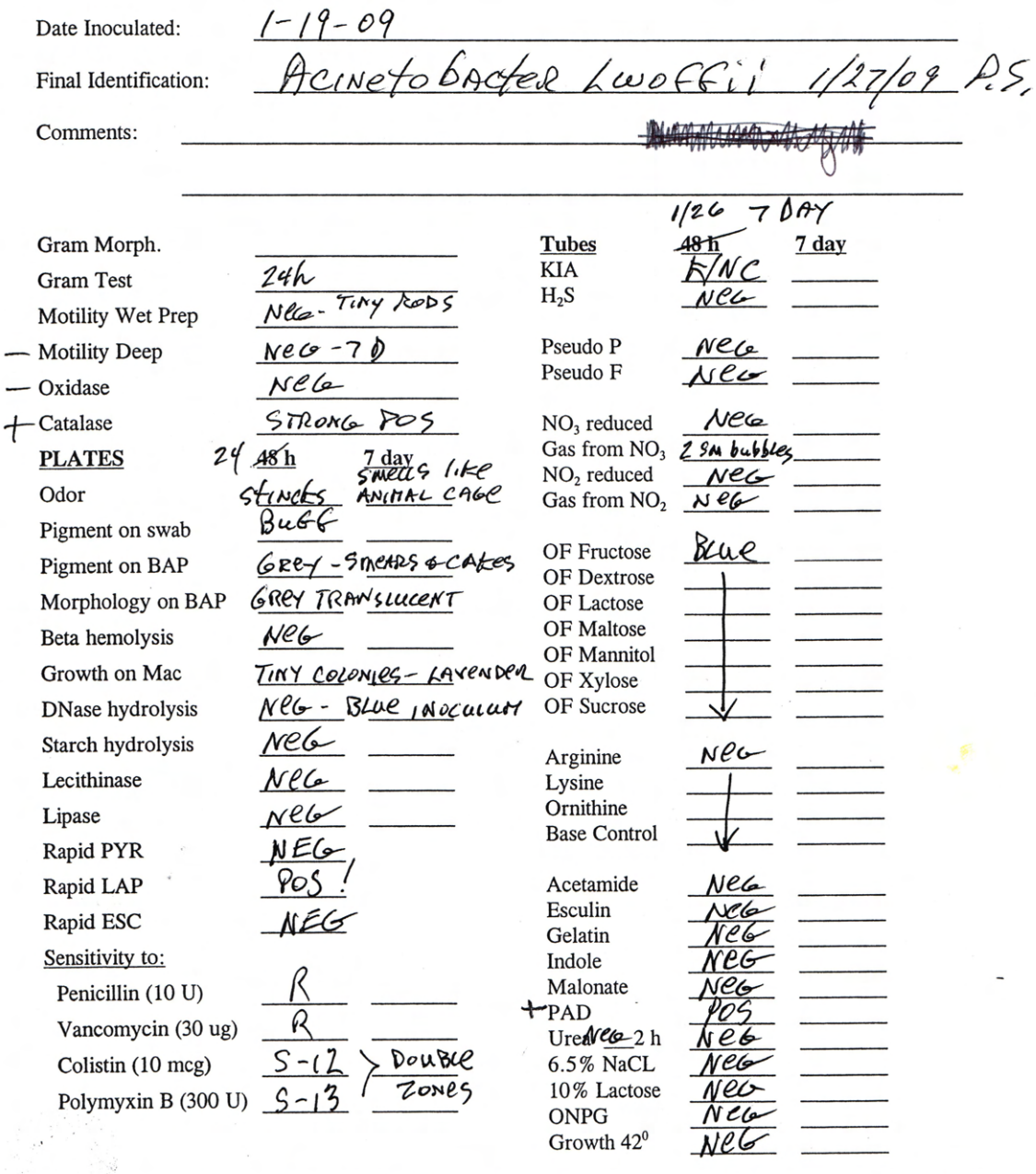
Medi Vitkeno: Acin. ursingii 92.8% IVD: Acin ursingii 99.99% Bruker: Acinursingii 2.115

Gram Morph.	g-r	
Gram Test		
Motility Wet Prep		
Motility Deep	Neg 48	Neg 7d
Oxidase	Neg	
Catalase	Pos	
PLATES	**48 h**	**7 day**
Odor	Neg	slight
Pigment on swab	none	Very lt yellow
Pigment on BAP	wh-clear	clear-gray
Morphology on BAP	smrd clear wh	sm spreading edge 7d
Beta hemolysis	Neg	Neg
Growth on Mac	Pos sm rd gray	Pos - smrd
DNase hydrolysis	Neg - clear	Neg
Starch hydrolysis	Neg	Neg
Lecithinase	Neg	Neg
Lipase	Neg	Neg
Rapid PYR	Neg	
Rapid LAP	Pos	
Rapid ESC	Neg	
Sensitivity to:		
Penicillin (10 U)	6 R	R
Vancomycin (30 ug)	6 R	R
Colistin (10 mcg)	14 S	S Double Zone
Polymyxin B (300 U)	16 S	S Double Zone

Tubes	48 h	7 day
KIA	K/NC	K/K ✓
H_2S	N	Neg ✓
Pseudo P	N	N ✓
Pseudo F	N	N ✓
NO_3 reduced	X	Neg - red after zinc
Gas from NO_3	tiny bubble	tiny bubble - Neg
NO_2 reduced	X	Red - Neg
Gas from NO_2	N	Neg
OF Fructose	Gr	Gr - ALL BLUE
OF Dextrose	Gr	Gr - AT TOP
OF Lactose	Gr	Gr
OF Maltose	Gr	Gr
OF Mannitol	Gr-Bl	Bl-Gr
OF Xylose	Gr	Gr
OF Sucrose	Gr	Gr
Arginine	N	Neg
Lysine	N	Neg
Ornithine	N	Neg
Base Control	N	Neg
Acetamide	N	Neg
Esculin	N	Neg
Gelatin	N	Neg
Indole	X	Neg
Malonate	N	Blue POS LIGHT BLUE
PAD	N	X
Urea Neg 2 h	N	Neg
6.5% NaCL	N	Neg
10% Lactose	N	Neg
ONPG	N	Neg
Growth 42° TSA	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 62: Acinetobacter lwoffii isolate 1-of-23.



Date Inoculated: 1-19-09

Final Identification: Acinetobacter lwoffii 1/27/09 P.S.

Comments: [illegible]

1/26 7 DAY

		Tubes	48 h	7 day
Gram Morph.		KIA	K/NC	
Gram Test	24h	H_2S	Neg	
Motility Wet Prep	Neg - TINY RODS			
— Motility Deep	Neg - 7 D	Pseudo P	Neg	
— Oxidase	Neg	Pseudo F	Neg	
+ Catalase	STRONG POS	NO_3 reduced	Neg	
PLATES	24 ~~48 h~~ 7 day	Gas from NO_3	2 SM bubbles	
Odor	STINKS SMELLS LIKE ANIMAL CAGE	NO_2 reduced	Neg	
Pigment on swab	BUGG	Gas from NO_2	Neg	
Pigment on BAP	GREY - SMEARS & CAKES	OF Fructose	Blue	
Morphology on BAP	GREY TRANSLUCENT	OF Dextrose		
Beta hemolysis	Neg	OF Lactose		
Growth on Mac	TINY COLONIES - LAVENDER	OF Maltose		
DNase hydrolysis	Neg - BLUE INOCULUM	OF Mannitol		
Starch hydrolysis	Neg	OF Xylose		
Lecithinase	Neg	OF Sucrose	↓	
Lipase	Neg	Arginine	Neg	
Rapid PYR	NEG	Lysine		
Rapid LAP	POS !	Ornithine		
Rapid ESC	NEG	Base Control	↓	
Sensitivity to:		Acetamide	Neg	
Penicillin (10 U)	R	Esculin	Neg	
Vancomycin (30 ug)	R	Gelatin	Neg	
Colistin (10 mcg)	S-12 > DOUBLE ZONES	Indole	NEG	
Polymyxin B (300 U)	S-13	Malonate	Neg	
		+ PAD	POS	
		Urea Neg 2 h	Neg	
		6.5% NaCL	Neg	
		10% Lactose	Neg	
		ONPG	Neg	
		Growth 42^0	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 63: Acinetobacter lwoffii isolate 2-of-23.

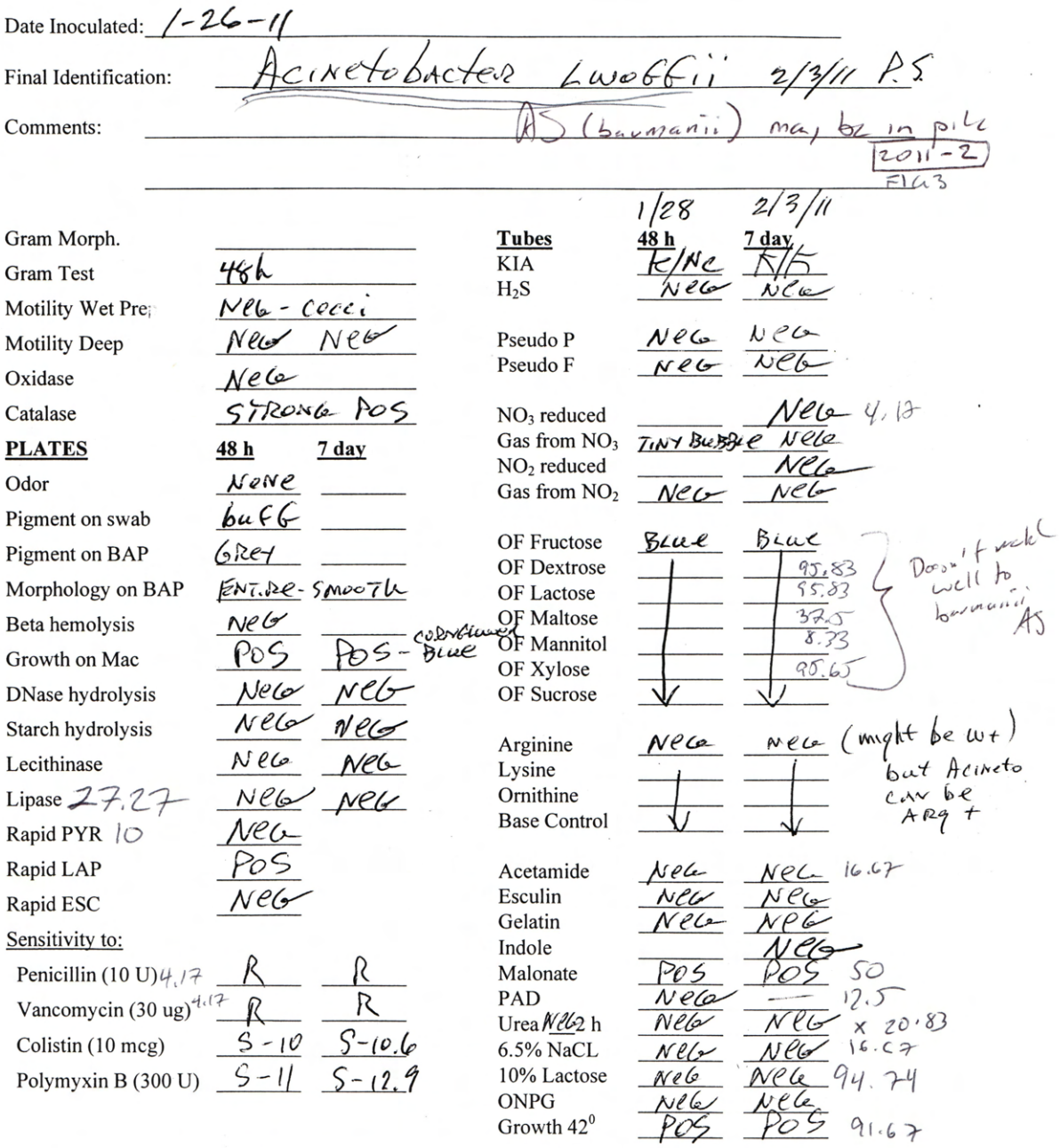
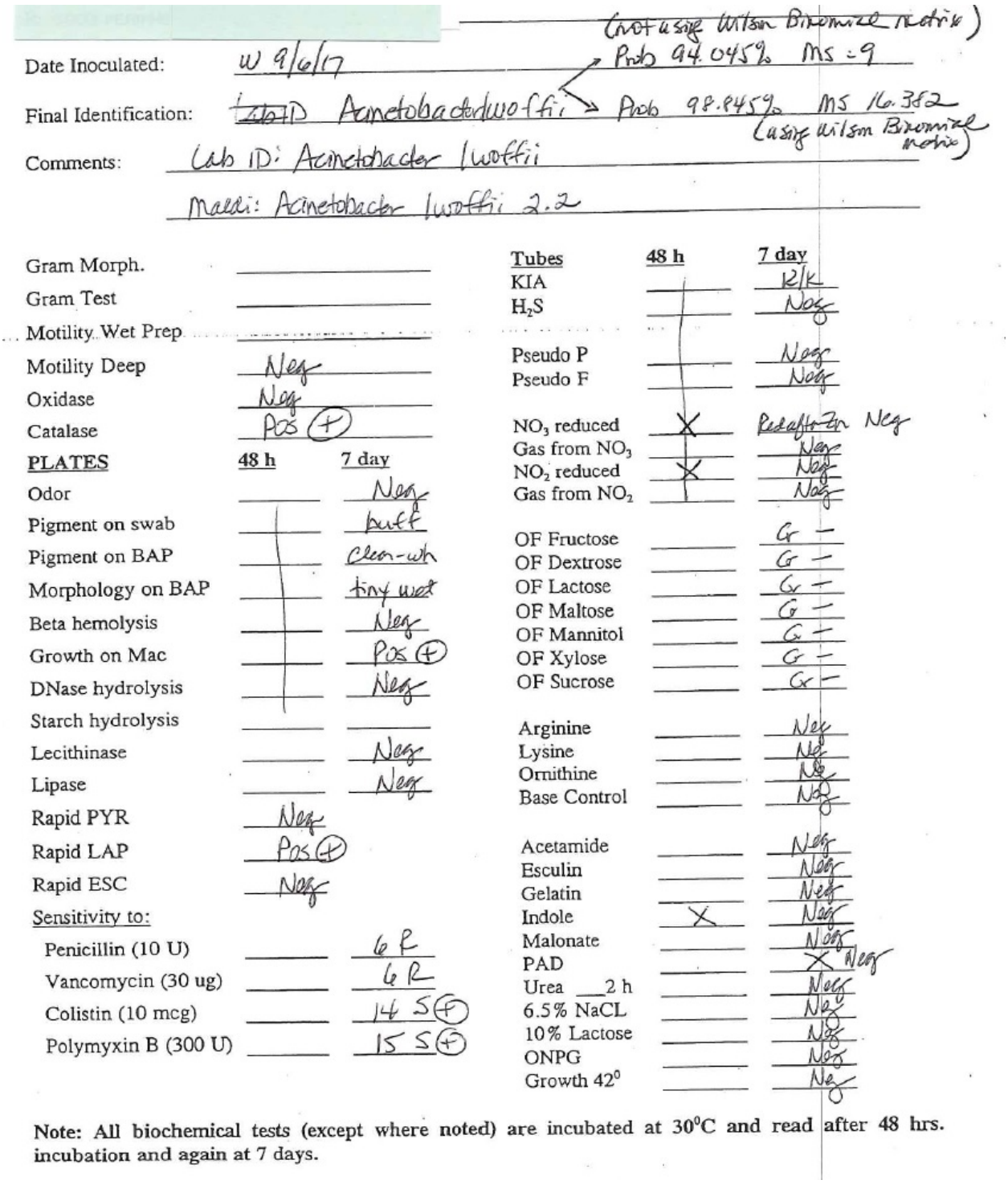


Figure 64: Acinetobacter lwoffii isolate 3-of-23.



(not using Wilson Binomial matrix)

Date Inoculated: W 9/6/17 → Prob 94.045% MS = 9

Final Identification: ~~Lab ID~~ Acinetobacter lwoffii → Prob 98.845% MS 16.382 (using Wilson Binomial matrix)

Comments: Lab ID: Acinetobacter lwoffii

Maldi: Acinetobacter lwoffii 2.2

Gram Morph.		
Gram Test		
Motility Wet Prep		
Motility Deep	Neg	
Oxidase	Neg	
Catalase	Pos (+)	
PLATES	**48 h**	**7 day**
Odor		Neg
Pigment on swab		buff
Pigment on BAP		clear-wh
Morphology on BAP		tiny wet
Beta hemolysis		Neg
Growth on Mac		Pos (+)
DNase hydrolysis		Neg
Starch hydrolysis		
Lecithinase		Neg
Lipase		Neg
Rapid PYR	Neg	
Rapid LAP	Pos (+)	
Rapid ESC	Neg	
Sensitivity to:		
Penicillin (10 U)		6 R
Vancomycin (30 ug)		6 R
Colistin (10 mcg)		14 S (+)
Polymyxin B (300 U)		15 S (+)

Tubes	**48 h**	**7 day**
KIA		K/K
H_2S		Neg
Pseudo P		Neg
Pseudo F		Neg
NO_3 reduced	X	Red after Zn Neg
Gas from NO_3		Neg
NO_2 reduced	X	Neg
Gas from NO_2		Neg
OF Fructose		G –
OF Dextrose		G –
OF Lactose		G –
OF Maltose		G –
OF Mannitol		G –
OF Xylose		G –
OF Sucrose		G –
Arginine		Neg
Lysine		Neg
Ornithine		Neg
Base Control		Neg
Acetamide		Neg
Esculin		Neg
Gelatin		Neg
Indole	X	Neg
Malonate		Neg
PAD		X Neg
Urea ___2 h		Neg
6.5% NaCL		Neg
10% Lactose		Neg
ONPG		Neg
Growth 42°		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 65: Acinetobacter lwoffii isolate 4-of-23.

Final Identification: Acinetobacter lwoffii P.S. 5-29-07

Comments:

Gram Morph.			**Tubes**	**48 h**	**7 day**
Gram Test	48h		KIA	K/NC	K/K
Motility Wet Prep	Neg - Sm. Rods		H_2S	Neg	NC
Motility Deep	Neg	Neg	Pseudo P	Neg	Neg
Oxidase	Neg		Pseudo F	Neg	Neg
Catalase	STRONG	POS	NO_3 reduced		Neg
PLATES	**48 h**	**7 day**	Gas from NO_3	Sm. bubble	Neg
Odor	NONE		NO_2 reduced		Neg
Pigment on swab	CREAM		Gas from NO_2	Neg	Neg
Pigment on BAP	GREY		OF Fructose	GRN	Blue
Morphology on BAP	TRANSLUCENT		OF Dextrose	GRN	
Beta hemolysis	Neg ~~Poly~~		OF Lactose	GRN	
Growth on Mac	POS	POS	OF Maltose	Blue	
DNase hydrolysis	Neg - PURPLE COLONIES @48		OF Mannitol	Blue	
Starch hydrolysis	Neg	Neg	OF Xylose	Blue	
Lecithinase	Neg	Neg	OF Sucrose	GRN	
Lipase	Neg	Neg	Arginine	Neg	Neg
Rapid PYR	⊖		Lysine		
Rapid LAP	⊕ WB		Ornithine		
Rapid ESC	⊖		Base Control		
Sensitivity to:			Acetamide	Neg	Neg
Penicillin (10 U)	R	R	Esculin	Neg	Neg
Vancomycin (30 ug)	R	R	Gelatin	Neg	Neg
Colistin (10 mcg)	S-I?	S	Indole		Neg
Polymyxin B (300 U)	S-I?	S	Malonate	Neg	Neg
			★ PAD	POS	
			Urea Neg 2 h	Neg	Neg
			6.5% NaCL	Neg	Neg
			10% Lactose	Neg	Neg
			ONPG	Neg	Neg
			Growth 42°	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 66: Acinetobacter lwoffii isolate 5-of-23.

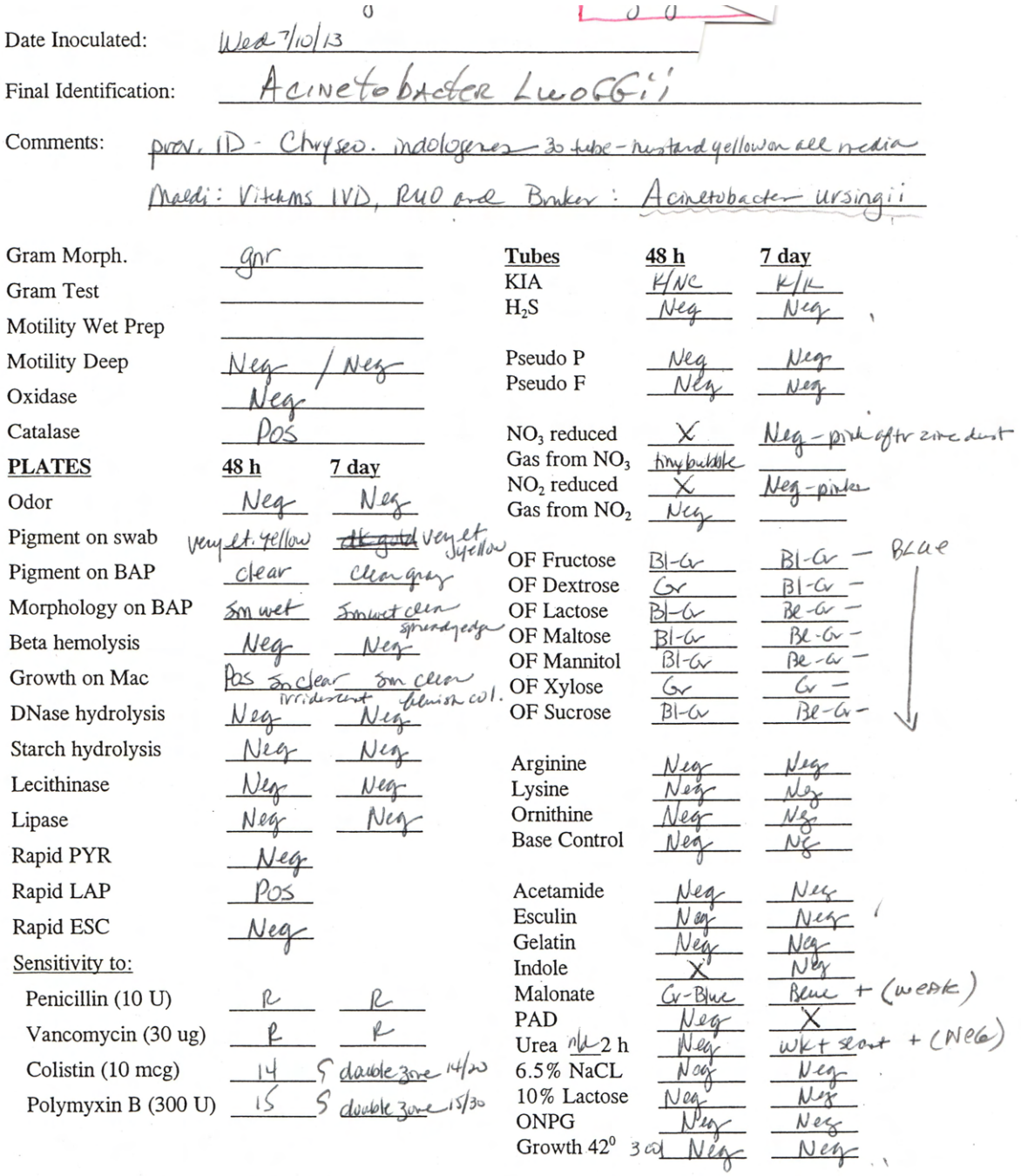
Final Identification: 5-29-07 Acinetobacter Lwoffii P.S.

Comments: 5-29-07

Gram Morph.			**Tubes**	**48 h**	**7 day**
Gram Test	48h		KIA	K/NC	K/K
Motility Wet Prep	NEG - SM. RODS		H_2S	NEG	NEG
Motility Deep	NEG NEG		Pseudo P	NEG	NEG
Oxidase	NEG		Pseudo F	NEG	NEG
Catalase	STRONG POS		NO_3 reduced		NEG
PLATES	**48 h**	**7 day**	Gas from NO_3	NEG	NEG
Odor	NONE		NO_2 reduced		NEG
Pigment on swab	CREAM		Gas from NO_2	NEG	TINY BUBBLE
Pigment on BAP	GREY		OF Fructose	GRN	BLUE
Morphology on BAP	TRANSLUCENT		OF Dextrose	GRN	
Beta hemolysis	NEG		OF Lactose	GRN	
Growth on Mac	POS	POS	OF Maltose	BLUE	
DNase hydrolysis	NEG - PURPLE COLONIES @48		OF Mannitol	BLUE	
Starch hydrolysis	NEG	NEG	OF Xylose	BLUE	
Lecithinase	NEG	NEG	OF Sucrose	BLUE	
Lipase	NEG	NEG	Arginine	NEG	NEG
Rapid PYR	POS		Lysine		
Rapid LAP	POS	LB	Ornithine		
Rapid ESC	NEG		Base Control		
Sensitivity to:			Acetamide	NEG	NEG
Penicillin (10 U)	R	R	Esculin	NEG	NEG
Vancomycin (30 ug)	R	R	Gelatin	NEG	NEG
Colistin (10 mcg)	S-13	S	Indole		NEG
Polymyxin B (300 U)	S-14	S	Malonate	NEG	NEG
			PAD	POS	—
			Urea ~~NEG~~ h	NEG	NEG
			6.5% NaCL	NEG	NEG
			10% Lactose	NEG	NEG
			ONPG	NEG	NEG
			Growth 42°	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 67: Acinetobacter lwoffii isolate 6-of-23.



Date Inoculated: Wed 7/10/13

Final Identification: Acinetobacter Lwoffii

Comments: prev. ID - Chryseo. indologenes 30 tube - mustard yellow on all media

Maldi: Vitekms IVD, RUO and Bruker: Acinetobacter ursingii

Gram Morph.	gnr	
Gram Test		
Motility Wet Prep		
Motility Deep	Neg / Neg	
Oxidase	Neg	
Catalase	Pos	
PLATES	**48 h**	**7 day**
Odor	Neg	Neg
Pigment on swab	very lt. yellow	~~dk gold~~ very lt yellow
Pigment on BAP	clear	clear gray
Morphology on BAP	Sm wet	Sm wet clear spreading edge
Beta hemolysis	Neg	Neg
Growth on Mac	Pos Sm clear irridescent	Sm clear flesh col.
DNase hydrolysis	Neg	Neg
Starch hydrolysis	Neg	Neg
Lecithinase	Neg	Neg
Lipase	Neg	Neg
Rapid PYR	Neg	
Rapid LAP	Pos	
Rapid ESC	Neg	
Sensitivity to:		
Penicillin (10 U)	R	R
Vancomycin (30 ug)	R	R
Colistin (10 mcg)	14 S double zone 14/20	
Polymyxin B (300 U)	15 S double zone 15/30	

Tubes	**48 h**	**7 day**
KIA	K/NC	K/K
H_2S	Neg	Neg
Pseudo P	Neg	Neg
Pseudo F	Neg	Neg
NO_3 reduced	X	Neg - pink after zinc dust
Gas from NO_3	tiny bubble	
NO_2 reduced	X	Neg - pink
Gas from NO_2	Neg	
OF Fructose	Bl-Gr	Bl-Gr - Blue
OF Dextrose	Gr	Bl-Gr -
OF Lactose	Bl-Gr	Bl-Gr -
OF Maltose	Bl-Gr	Bl-Gr -
OF Mannitol	Bl-Gr	Bl-Gr -
OF Xylose	Gr	Gr -
OF Sucrose	Bl-Gr	Bl-Gr -
Arginine	Neg	Neg
Lysine	Neg	Neg
Ornithine	Neg	Neg
Base Control	Neg	Neg
Acetamide	Neg	Neg
Esculin	Neg	Neg
Gelatin	Neg	Neg
Indole	X	Neg
Malonate	Gr-Blue	Blue + (weak)
PAD	Neg	X
Urea nd 2 h	Neg	wk + scant + (Neg)
6.5% NaCL	Neg	Neg
10% Lactose	Neg	Neg
ONPG	Neg	Neg
Growth 42° 3 col	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 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%**	**W95%**
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_3 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_2 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 (30μg)	1	1	50.00	50.00	Lysine	0	2	0.00	32.88
Colistin (10μg)	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°C	0	2	0.00	32.88

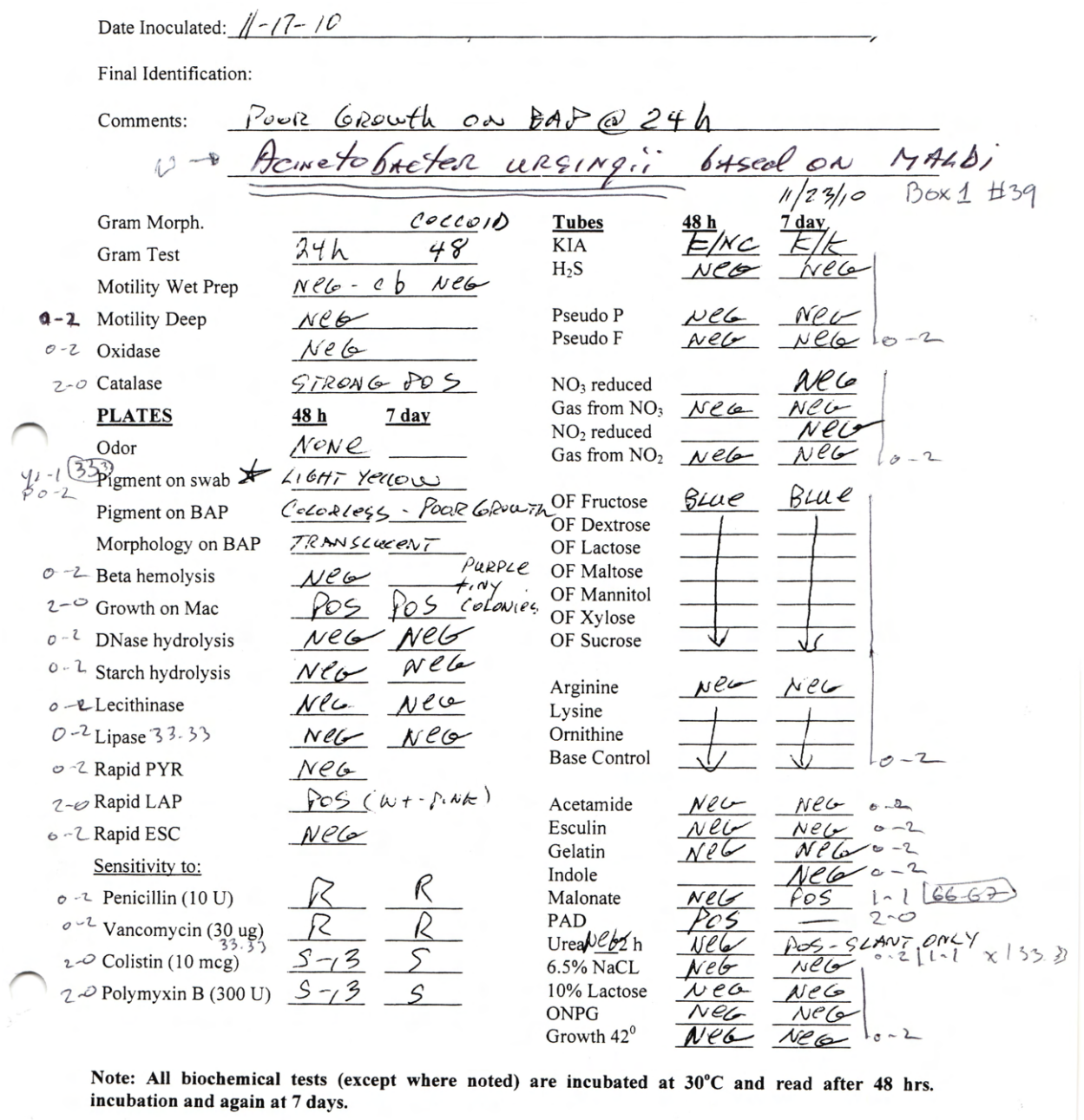
Table 12: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as $n_+/(n_+ + n_-)$, where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which 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%**	**W95%**	**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_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	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 (30μg)	1	3	25.00	37.25	Lysine	0	4	0.00	24.50
Colistin (10μg)	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: 11-17-10

Final Identification:

Comments: Poor Growth on BAP @ 24h

→ Acinetobacter ursingii based on MALDI

11/23/10 Box 1 #39

				Tubes	48 h	7 day	
	Gram Morph.	coccoid		KIA	E/NC	E/K	
	Gram Test	24h	48	H_2S	Neg	Neg	
	Motility Wet Prep	Neg - cb	Neg				
0-2	Motility Deep	Neg		Pseudo P	Neg	Neg	
0-2	Oxidase	Neg		Pseudo F	Neg	Neg	0-2
2-0	Catalase	STRONG POS		NO_3 reduced		Neg	
	PLATES	**48 h**	**7 day**	Gas from NO_3	Neg	Neg	
	Odor	NONE		NO_2 reduced		Neg	
Yl-1 (33) Po-2	Pigment on swab ★	LIGHT YELLOW		Gas from NO_2	Neg	Neg	0-2
	Pigment on BAP	Colorless - Poor Growth		OF Fructose	Blue	Blue	
	Morphology on BAP	TRANSLUCENT		OF Dextrose			
0-2	Beta hemolysis	Neg	PURPLE tiny colonies	OF Lactose			
2-0	Growth on Mac	POS	POS	OF Maltose			
0-2	DNase hydrolysis	Neg	Neg	OF Mannitol			
0-2	Starch hydrolysis	Neg	Neg	OF Xylose			
0-2	Lecithinase	Neg	Neg	OF Sucrose			
0-2	Lipase 33.33	Neg	Neg	Arginine	Neg	Neg	
0-2	Rapid PYR	Neg		Lysine			
2-0	Rapid LAP	POS (w+ - pink)		Ornithine			
0-2	Rapid ESC	Neg		Base Control			0-2
	Sensitivity to:			Acetamide	Neg	Neg	0-2
0-2	Penicillin (10 U)	R	R	Esculin	Neg	Neg	0-2
0-2	Vancomycin (30 ug)	R	R	Gelatin	Neg	Neg	0-2
2-0	Colistin (10 mcg)	S-I-3	S	Indole		Neg	0-2
2-0	Polymyxin B (300 U)	S-I-3	S	Malonate	Neg	POS	1-1 66-67
				PAD	POS	—	2-0
				Urea ~~Neg~~ 2 h	Neg	POS - SLANT ONLY	0-2 1-1 x (33)
				6.5% NaCL	Neg	Neg	
				10% Lactose	Neg	Neg	
				ONPG	Neg	Neg	
				Growth 42°	Neg	Neg	0-2

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

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

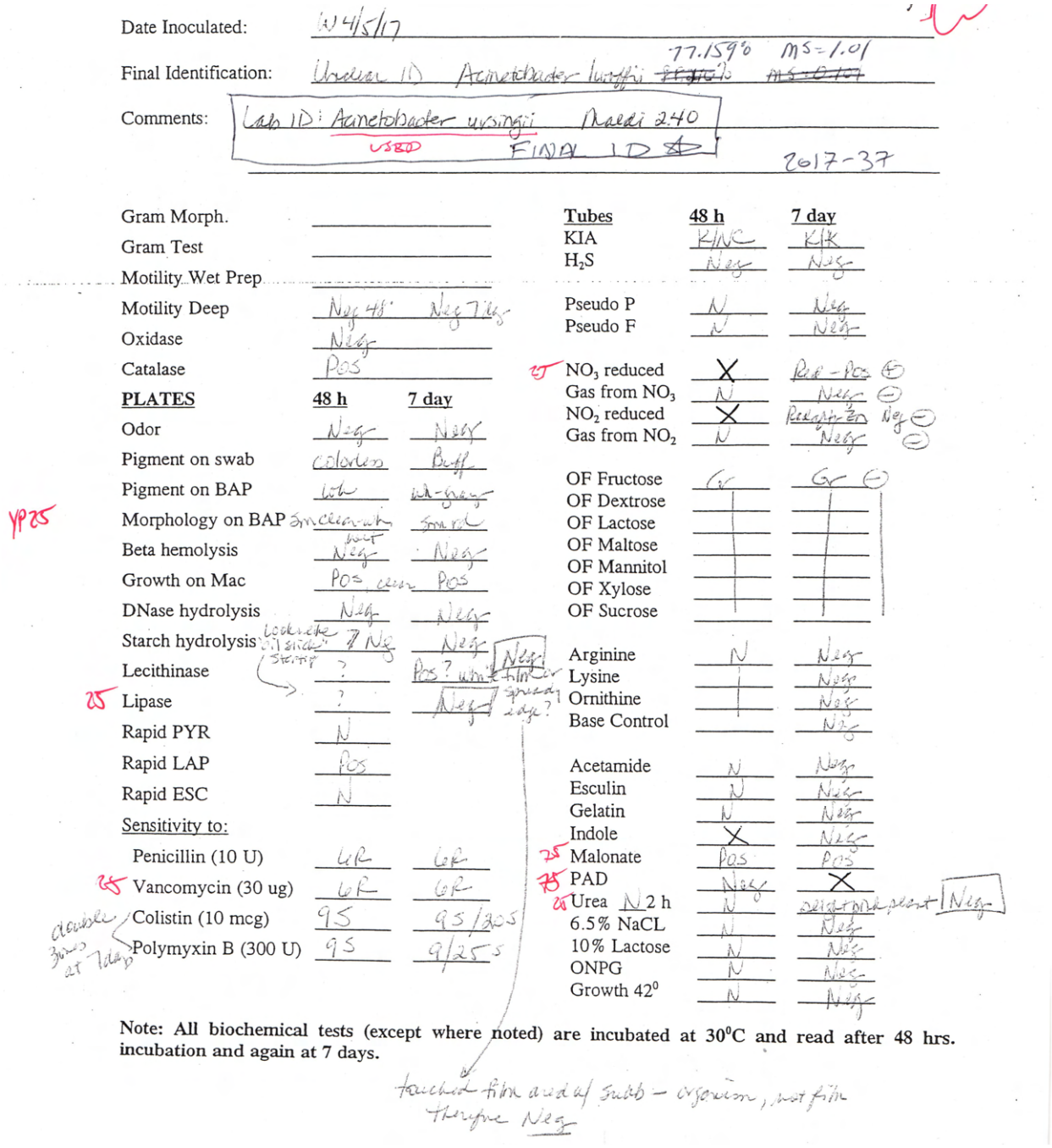


Figure 70: Acinetobacter ursingii isolate 2-of-4.

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_2S	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_3 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_2 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 (30μg)	0	15	0.00	10.19	Lysine	0	15	0.00	10.19
Colistin (10μg)	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 3/22/17 [2017-27]

Final Identification: Alcaligenes faecalis 99.919% MS=100

Comments: Lab ID: Alcaligenes faecalis Maldi 2.30

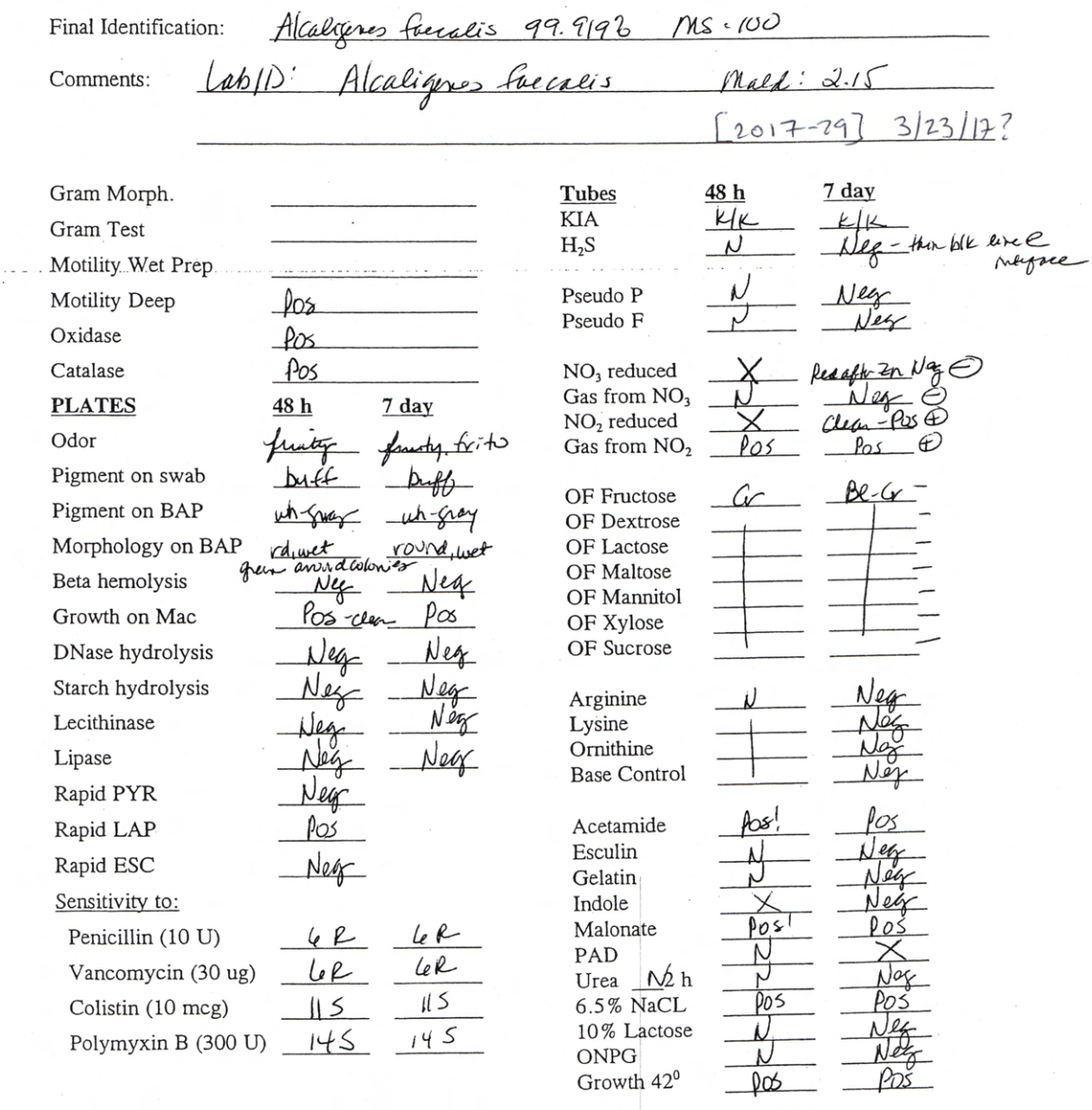
Gram Morph.		
Gram Test		
Motility Wet Prep		
Motility Deep	Pos	Pos
Oxidase	Pos	
Catalase	POS	

PLATES	48 h	7 day
Odor	(no fruity odor) Neg	slight
Pigment on swab	lt peach	lt tan
Pigment on BAP	wk gray	wk gray
Morphology on BAP	spready	spready
Beta hemolysis	Neg	Neg
Growth on Mac	sm clear spready Pos	Pos
DNase hydrolysis	Neg	Neg
Starch hydrolysis	Neg	Neg
Lecithinase	Neg	Neg
Lipase	Neg	Neg
Rapid PYR	Neg	
Rapid LAP	Pos	
Rapid ESC	Neg	
Sensitivity to:		
Penicillin (10 U)	6R	6R
Vancomycin (30 ug)	6R	6R
Colistin (10 mcg)	11S	11S
Polymyxin B (300 U)	15S	15S

Tubes	48 h	7 day
KIA	K/NC	K/K
H_2S sm line of dk pigment @ interface	Neg	Neg - slight dk line at interface
Pseudo P	N	Neg
Pseudo F	N	Neg
NO_3 reduced	X	Red after Zn ⊖
Gas from NO_3	N	Neg ⊖
NO_2 reduced	X	Clear - Pos ⊕
Gas from NO_2	Pos	Pos ⊕
OF Fructose	Bl-Gr	Bl-Gr -
OF Dextrose	|	| -
OF Lactose	|	| -
OF Maltose	|	| -
OF Mannitol	|	| -
OF Xylose	|	Gr -
OF Sucrose	|	Bl-Gr -
Arginine	N	Neg
Lysine	|	Neg
Ornithine	|	Neg
Base Control	|	Neg
Acetamide	Pos!	Pos
Esculin	Neg	Neg
Gelatin	N	Neg
Indole	X	Neg
Malonate	Pos!	Pos
PAD	Neg	X
Urea N 2 h	Neg	Neg
6.5% NaCL	Pos	Pos
10% Lactose	N	Neg
ONPG	N	Neg
Growth 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 71: Alcaligenes faecalis isolate 1-of-15.



Final Identification: Alcaligenes faecalis 99.9196 MS: 100

Comments: Lab ID: Alcaligenes faecalis Mald: 2.15

[2017-79] 3/23/17?

Gram Morph.	
Gram Test	
Motility Wet Prep	
Motility Deep	Pos
Oxidase	Pos
Catalase	Pos

PLATES	48 h	7 day
Odor	fruity	fruity, fritos
Pigment on swab	buff	buff
Pigment on BAP	wh-gray	wh-gray
Morphology on BAP	rd, wet grey ovoid colonies	round, wet
Beta hemolysis	Neg	Neg
Growth on Mac	Pos-clear	Pos
DNase hydrolysis	Neg	Neg
Starch hydrolysis	Neg	Neg
Lecithinase	Neg	Neg
Lipase	Neg	Neg
Rapid PYR	Neg	
Rapid LAP	Pos	
Rapid ESC	Neg	
Sensitivity to:		
Penicillin (10 U)	6R	6R
Vancomycin (30 ug)	6R	6R
Colistin (10 mcg)	11S	11S
Polymyxin B (300 U)	14S	14S

Tubes	48 h	7 day
KIA	K/K	K/K
H_2S	N	Neg - thin blk line @ surface
Pseudo P	N	Neg
Pseudo F	N	Neg
NO_3 reduced	X	Red after Zn Neg ⊖
Gas from NO_3	N	Neg ⊖
NO_2 reduced	X	Clear-Pos ⊕
Gas from NO_2	Pos	Pos ⊕
OF Fructose	Gr	Bl-Gr −
OF Dextrose		−
OF Lactose		−
OF Maltose		−
OF Mannitol		−
OF Xylose		−
OF Sucrose		−
Arginine	N	Neg
Lysine		Neg
Ornithine		Neg
Base Control		Neg
Acetamide	Pos!	Pos
Esculin	N	Neg
Gelatin	N	Neg
Indole	X	Neg
Malonate	Pos!	Pos
PAD	N	X
Urea N2 h	N	Neg
6.5% NaCL	Pos	Pos
10% Lactose	N	Neg
ONPG	N	Neg
Growth 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 72: Alcaligenes faecalis isolate 2-of-15.

Date Inoculated: F 3/24/17

Final Identification: Alcaligenes faecalis 99.9192 MS = 1.01

Comments: Lab ID: Alcaligenes faecalis Maldi: 2.38

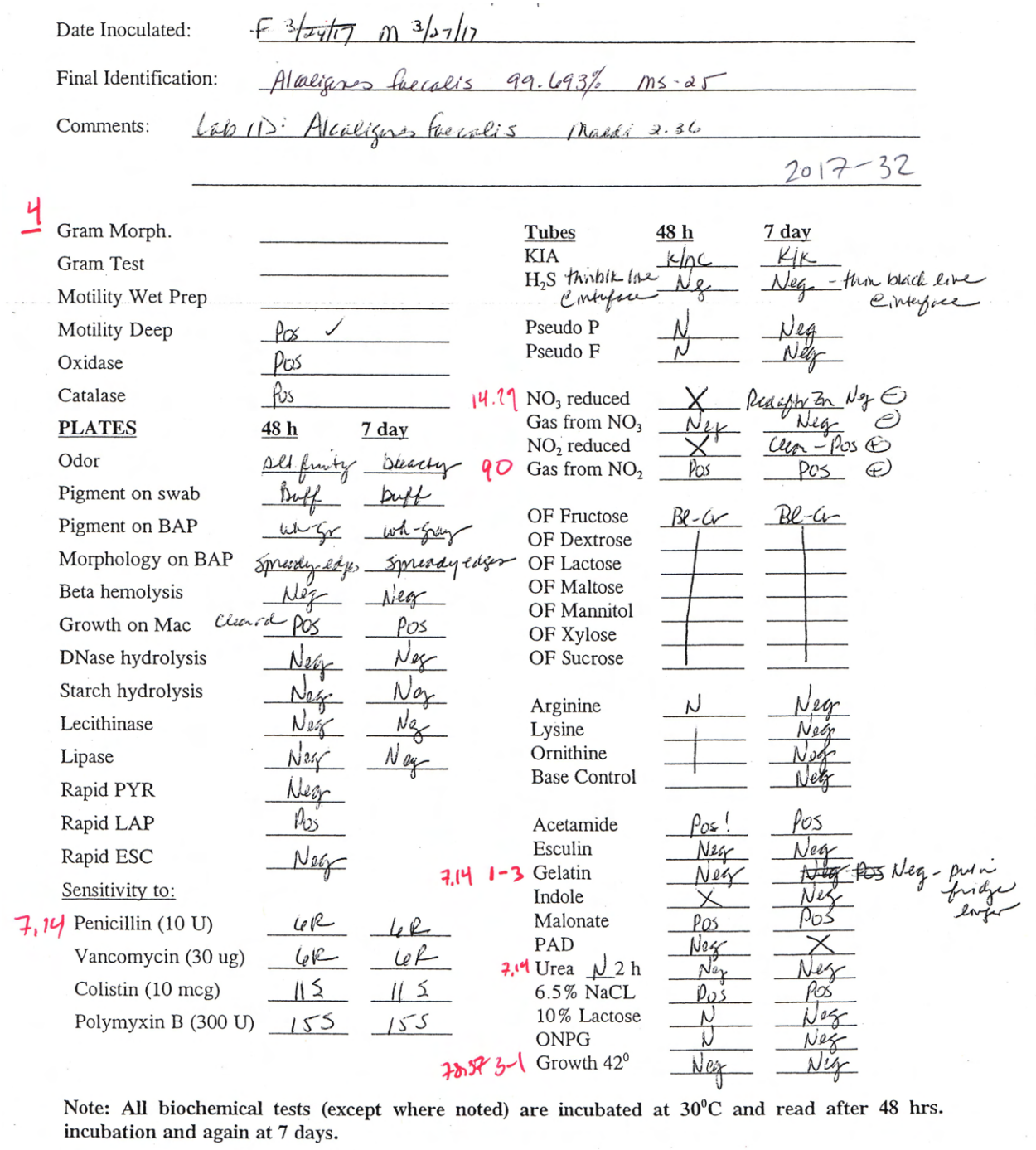
207-30

Gram Morph.		
Gram Test		
Motility Wet Prep		
Motility Deep	Pos ✓	
Oxidase	Pos	
Catalase	Pos	
PLATES	**48 h**	**7 day**
Odor	fruity	fruity, frito
Pigment on swab	buff	buff
Pigment on BAP	lt gray	lt gray
Morphology on BAP	spreadyedge	spreadyedge
Beta hemolysis	Neg	Neg
Growth on Mac	Pos-clear	Pos
DNase hydrolysis	Neg	Neg
Starch hydrolysis	Neg	Neg
Lecithinase	Neg	Neg
Lipase	Neg	Neg
Rapid PYR	Neg	
Rapid LAP	Pos	
Rapid ESC	Neg	
Sensitivity to:		
Penicillin (10 U)	6R	6R
Vancomycin (30 ug)	6R	6R
Colistin (10 mcg)	11S	11S
Polymyxin B (300 U)	14S	14S

Tubes	**48 h**	**7 day**
KIA	K/NC	K/K
H_2S	Neg	Neg thin blk line @ interface
Pseudo P	Neg	Neg
Pseudo F	Neg	Neg
NO_3 reduced	X	Red after Zn Neg ⊖
Gas from NO_3	Neg	Neg ⊖
NO_2 reduced	X	clear - Pos ⊕
Gas from NO_2	Pos	Pos ⊕
OF Fructose	Bl-Gr	Bl-Gr −
OF Dextrose		−
OF Lactose		−
OF Maltose		−
OF Mannitol		−
OF Xylose		−
OF Sucrose		−
Arginine	N	Neg
Lysine		Neg
Ornithine		Neg
Base Control		Neg
Acetamide	Pos!	Pos
Esculin	Neg	Neg
Gelatin	N	Pos
Indole	X	Neg
Malonate	Pos!	Pos
PAD	Neg	X
Urea N 2 h	N	Neg
6.5% NaCL	Pos	Pos
10% Lactose	N	Neg
ONPG	N	Neg
Growth 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 73: Alcaligenes faecalis isolate 3-of-15.


Date Inoculated: F 3/24/17 M 3/27/17

Final Identification: Alcaligenes faecalis 99.693% MS-25

Comments: Lab ID: Alcaligenes faecalis Mandi 2.36

2017-32

4

Gram Morph.		
Gram Test		
Motility Wet Prep		
Motility Deep	Pos ✓	
Oxidase	Pos	
Catalase	Pos	

PLATES	48 h	7 day
Odor	del fruity	bleachy
Pigment on swab	Buff	buff
Pigment on BAP	wh-gr	wh-gray
Morphology on BAP	spready edge	spready edges
Beta hemolysis	Neg	Neg
Growth on Mac	clear Pos	Pos
DNase hydrolysis	Neg	Neg
Starch hydrolysis	Neg	Neg
Lecithinase	Neg	Neg
Lipase	Neg	Neg
Rapid PYR	Neg	
Rapid LAP	Pos	
Rapid ESC	Neg	
Sensitivity to:		
7,14 Penicillin (10 U)	6R	6R
Vancomycin (30 ug)	6R	6R
Colistin (10 mcg)	11 S	11 S
Polymyxin B (300 U)	15S	15S

Tubes	48 h	7 day
KIA	K/NC	K/K
H_2S thinblk line @ interface	Neg	Neg - thin black line @ interface
Pseudo P	N	Neg
Pseudo F	N	Neg
14.19 NO_3 reduced	X	Reagent Zn Neg ⊖
Gas from NO_3	Neg	Neg ⊖
NO_2 reduced	X	clear - Pos ⊕
9.0 Gas from NO_2	Pos	Pos ⊕
OF Fructose	Bl-Gr	Bl-Gr
OF Dextrose		
OF Lactose		
OF Maltose		
OF Mannitol		
OF Xylose		
OF Sucrose		
Arginine	N	Neg
Lysine		Neg
Ornithine		Neg
Base Control		Neg
Acetamide	Pos !	Pos
Esculin	Neg	Neg
7.14 1-3 Gelatin	Neg	~~Neg~~ ~~Pos~~ Neg - put in fridge longer
Indole	X	Neg
Malonate	Pos	Pos
PAD	Neg	X
7.14 Urea N 2 h	Neg	Neg
6.5% NaCL	Pos	Pos
10% Lactose	N	Neg
ONPG	N	Neg
7.25.17 3-1 Growth 42°	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 74: Alcaligenes faecalis isolate 4-of-15.

Final Identification: Alcaligenes faecalis Prob:99.919% MS:100

Comments: Lab final ID: Alcaligenes faecalis

Maldi: Alcaligenes faecalis 2.07

Gram Morph.	
Gram Test	
Motility Wet Prep	
Motility Deep	Pos ⊕
Oxidase	very slow ⊕
Catalase	Pos ⊕

PLATES	48 h	7 day
Odor		slight
Pigment on swab		buff
Pigment on BAP		gr-wh
Morphology on BAP		spreading
Beta hemolysis		Neg
Growth on Mac		Pos ⊕
DNase hydrolysis		Neg
Starch hydrolysis		Neg
Lecithinase		Neg
Lipase		Neg
Rapid PYR	Neg	
Rapid LAP	Pos ⊕	
Rapid ESC	Neg	
Sensitivity to:		
Penicillin (10 U)		6 R
Vancomycin (30 ug)		6 R
Colistin (10 mcg)		10 S ⊕
Polymyxin B (300 U)		15 S ⊕

Tubes	48 h	7 day
KIA		K/K
H_2S		Neg
Pseudo P		Neg
Pseudo F		Neg
NO_3 reduced	X	Red after Zn – Neg
Gas from NO_3		Neg
NO_2 reduced	X	Green-Pos ⊕
Gas from NO_2		Pos ⊕
OF Fructose		Bl-Gr –
OF Dextrose		Bl-Gr –
OF Lactose		Bl-Gr –
OF Maltose		Bl-Gr –
OF Mannitol		Bl-Gr –
OF Xylose		Bl-Gr –
OF Sucrose		Bl-Gr –
Arginine		Neg
Lysine		Neg
Ornithine		Neg
Base Control		Neg
Acetamide		Pos! ⊕
Esculin		Neg
Gelatin		Neg
Indole	X	Neg
Malonate		Pos! ⊕
PAD		X Neg
Urea N 2 h		Neg
6.5% NaCL		Pos ⊕
10% Lactose		Neg
ONPG		Neg
Growth 42°		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 75: Alcaligenes faecalis isolate 5-of-15.

Date Inoculated: 3-23-09

Final Identification: Alcaligenes faecalis 3/26/09 A.S.

Comments: Light pink-flesh on Starch @ 72h. shows diffusible Light yellow pigment on Starch
SLIGHT Yellow diffusible pigmt on Pseudo F

Gram Morph.			**Tubes**	**48 h**	**7 day** 10D 4/2
Gram Test	72h		KIA	K/NC	K/K
Motility Wet Prep	Pos		$-H_2S$	Slight H_2S	Slight H_2S
Motility Deep	Pos	Pos	Pseudo P	Neg	Neg > Yellow diffusible pigment NOT FLUORESCENT
Oxidase	Pos		Pseudo F	Neg	Neg
Catalase	Strong Pos		NO_3 reduced		Neg
PLATES	**48 h**	**7 day**	Gas from NO_3	sm. bubble	sm bubble Neg
Odor	None		NO_2 reduced		Pos
Pigment on swab	Flesh		Gas from NO_2	Pos Lg Bubble	Lg Bubble Pos
Pigment on BAP	Grey - Like A. faecalis		OF Fructose	Blue	Blue
Morphology on BAP	Smooth - Turn Noar Green		OF Dextrose	Blue	
Beta hemolysis	Neg		OF Lactose	Blue	
Growth on Mac	Pos	Pos	OF Maltose	Blue	
DNase hydrolysis	Neg	Neg	OF Mannitol	Blue	
Starch hydrolysis	Neg	Neg	OF Xylose	Blue	
Lecithinase	Neg	Neg	OF Sucrose	Blue	
Lipase	Neg	Neg	Arginine	Neg	Neg
Rapid PYR	Neg		Lysine		
Rapid LAP	Pos		Ornithine		
Rapid ESC	Neg		Base Control		
Sensitivity to:			Acetamide	Pos	Pos
Penicillin (10 U)	R	R	Esculin	Neg	Neg
Vancomycin (30 ug)	R	R	Gelatin	Neg	Neg
Colistin (10 mcg)	S-12	S > Break-thru colonies	Indole		Neg
Polymyxin B (300 U)	S-15	S	Malonate	Neg	Blue
			PAD	Neg	—
			Urea Neg 2 h	Neg	Neg
			6.5% NaCL	Pos	Pos
			10% Lactose	Neg	Neg
			ONPG	Neg	Neg
			Growth 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 76: Alcaligenes faecalis isolate 6-of-15.

Date Inoculated: 11-16-11

Final Identification: ALCALIGENES FAECALIS 12/1/11 P.S.

Comments:

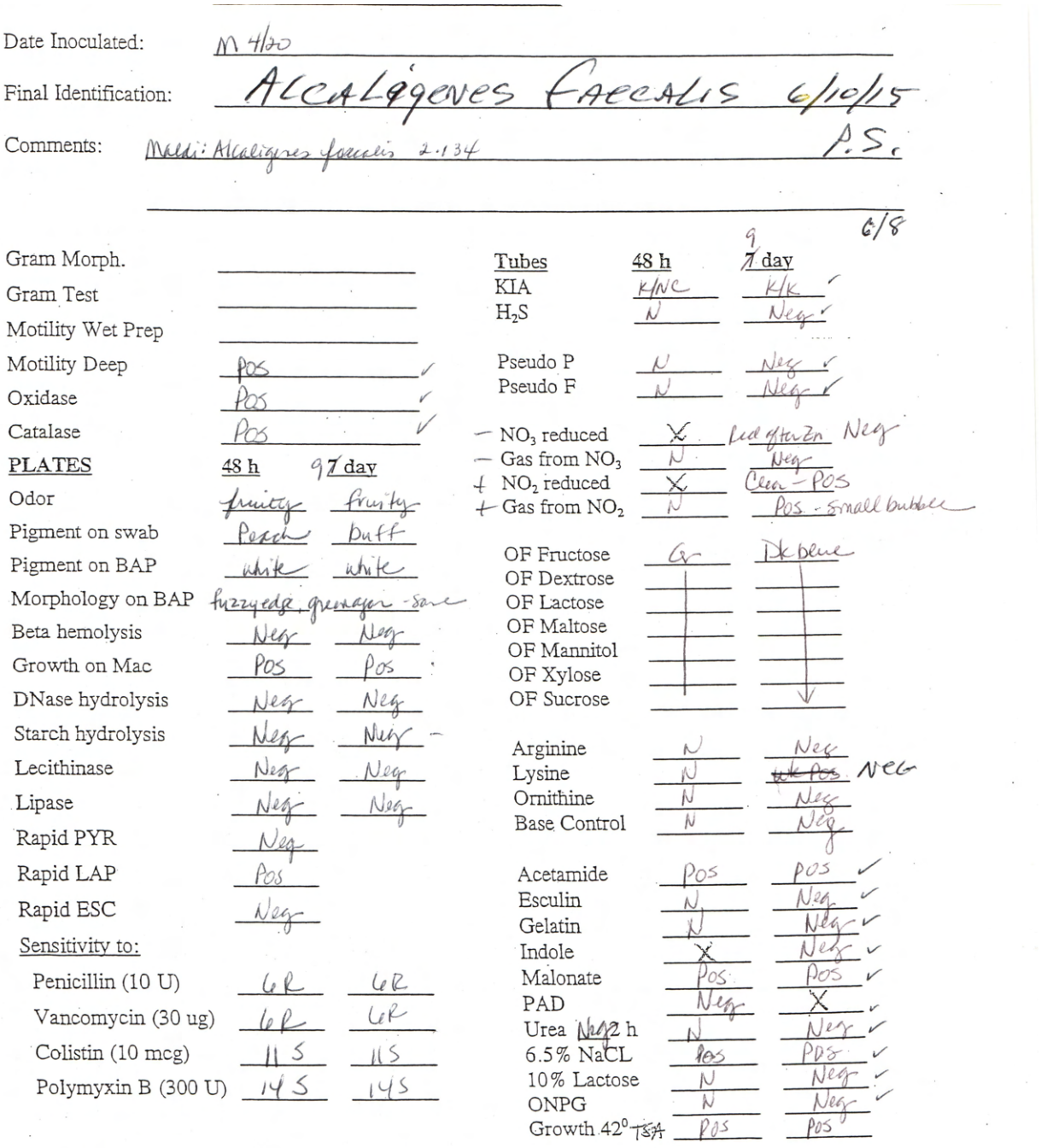
12/1/11 15 DAYS

Gram Morph.		
Gram Test	24h	
Motility Wet Prep	POS	
Motility Deep	POS	
Oxidase	POS	
Catalase	STRONG POS	
PLATES	**48 h**	**7 day**
Odor	APPLE	
Pigment on swab	FLESH-PINK	
Pigment on BAP	GREY	
Morphology on BAP	SPREADY - TURN AGAR GREEN	
Beta hemolysis	NEG	
Growth on Mac	POS	POS
DNase hydrolysis	NEG	NEG
Starch hydrolysis	NEG	NEG
Lecithinase	NEG	NEG
Lipase	NEG	NEG
Rapid PYR	NEG	
Rapid LAP	POS	
Rapid ESC	NEG	
Sensitivity to:		
Penicillin (10 U)	R	
Vancomycin (30 ug)	R	
Colistin (10 mcg)	S-11	
Polymyxin B (300 U)	S-14	

Tubes	**48 h**	**7 day**
KIA		K/K
$-H_2S$		SLIGHT H_2S
Pseudo P		NEG
Pseudo F		NEG
NO_3 reduced		NEG
Gas from NO_3		NEG
NO_2 reduced		POS
Gas from NO_2		NEG
OF Fructose		DARK BLUE
OF Dextrose		↓
OF Lactose		↓
OF Maltose		↓
OF Mannitol		↓
OF Xylose		↓
OF Sucrose		↓
Arginine		NEG
Lysine		↓
Ornithine		↓
Base Control		↓
Acetamide		POS!
Esculin		NEG
Gelatin		NEG
Indole		NEG
Malonate		POS!
PAD		NEG
Urea NEG 2 h	NEG	NEG
6.5% NaCL		POS!
10% Lactose		NEG
ONPG		NEG
Growth 42^0		POS

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

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



Date Inoculated: M 4/20

Final Identification: Alcaligenes faecalis 6/10/15

Comments: Maldi: Alcaligenes faecalis 2.134 P.S.

6/8

Gram Morph.		
Gram Test		
Motility Wet Prep		
Motility Deep	Pos ✓	
Oxidase	Pos ✓	
Catalase	Pos ✓	
PLATES	**48 h**	**9 7 day**
Odor	fruity	fruity
Pigment on swab	Peach	buff
Pigment on BAP	white	white
Morphology on BAP	fuzzy edge, greenish - sm	
Beta hemolysis	Neg	Neg
Growth on Mac	Pos	Pos
DNase hydrolysis	Neg	Neg
Starch hydrolysis	Neg	Neg
Lecithinase	Neg	Neg
Lipase	Neg	Neg
Rapid PYR	Neg	
Rapid LAP	Pos	
Rapid ESC	Neg	
Sensitivity to:		
Penicillin (10 U)	6R	6R
Vancomycin (30 ug)	6R	6R
Colistin (10 mcg)	11S	11S
Polymyxin B (300 U)	14S	14S

Tubes	48 h	7 day
KIA	K/NC	K/K ✓
H_2S	N	Neg ✓
Pseudo P	N	Neg ✓
Pseudo F	N	Neg ✓
− NO_3 reduced	X	Red after Zn Neg
− Gas from NO_3	N	Neg
+ NO_2 reduced	X	Clear - Pos
+ Gas from NO_2	N	Pos - small bubble
OF Fructose	Gr	Dk blue
OF Dextrose		
OF Lactose		
OF Maltose		
OF Mannitol		
OF Xylose		
OF Sucrose		
Arginine	N	Neg
Lysine	N	~~dk Pos~~ Neg
Ornithine	N	Neg
Base Control	N	Neg
Acetamide	Pos	Pos ✓
Esculin	N	Neg ✓
Gelatin	N	Neg ✓
Indole	X	Neg ✓
Malonate	Pos	Pos ✓
PAD	Neg	X ✓
Urea ~~Neg~~ 2 h	N	Neg ✓
6.5% NaCL	~~Pos~~	Pos ✓
10% Lactose	N	Neg ✓
ONPG	N	Neg ✓
Growth 42° ~~15A~~	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 78: Alcaligenes faecalis isolate 8-of-15.

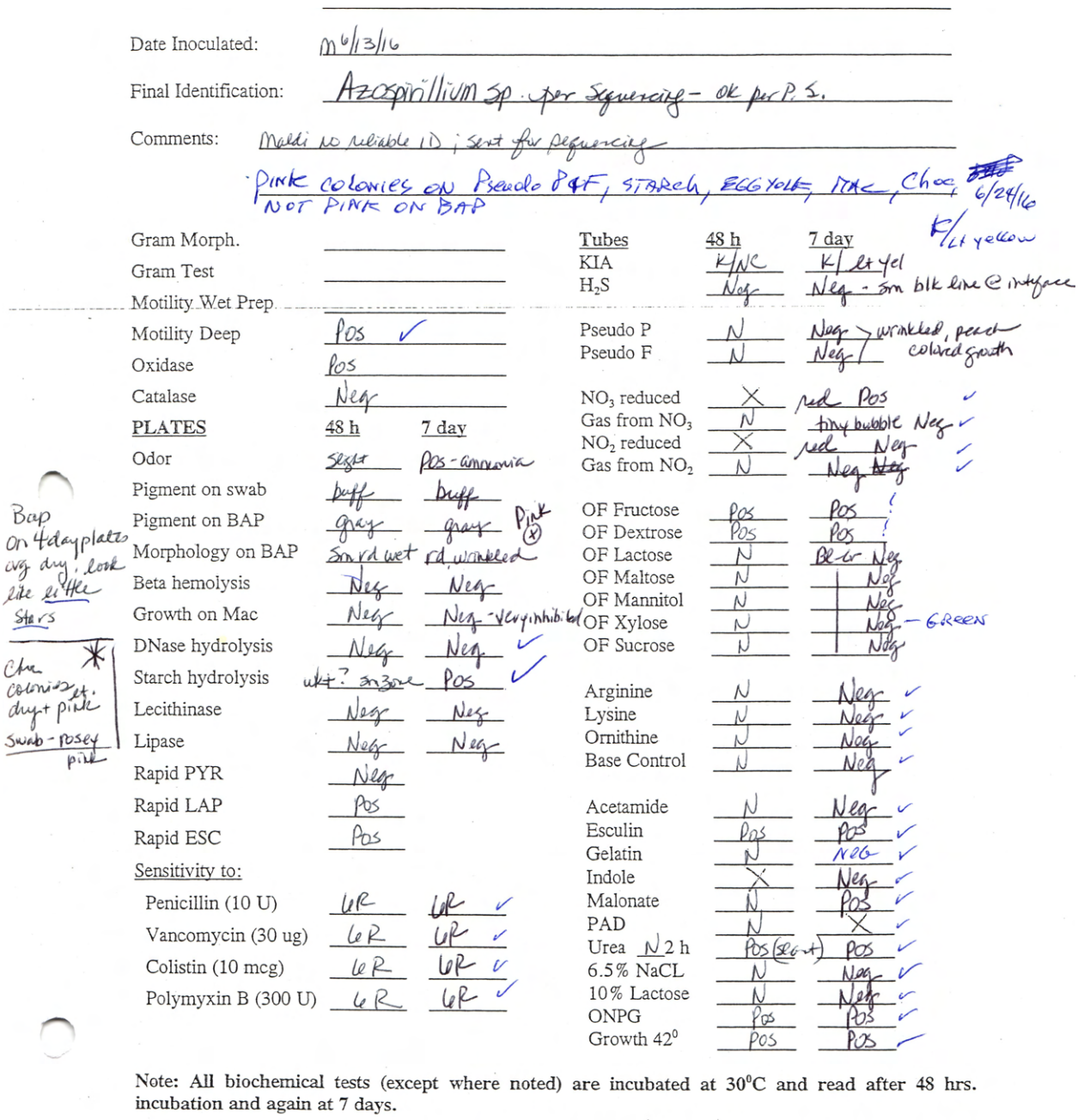
7 GENUS AZOSPIRILLIUM

7.1 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%**	**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	0	1	0.00	39.67	Pseudo F	0	1	0.00	39.67
Yellow Pigment	0	1	0.00	39.67	NO_3 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 (30μg)	0	1	0.00	39.67	Lysine	0	1	0.00	39.67
Colistin (10μg)	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: m 6/13/16

Final Identification: Azospirillium sp. per Sequencing - ok per P.S.

Comments: Maldi no reliable ID; sent for sequencing

Pink colonies on Pseudo P&F, Starch, Egg Yolk, Mac, Choc, 6/24/16
NOT PINK ON BAP

Gram Morph.		
Gram Test		
Motility Wet Prep		
Motility Deep	Pos ✓	
Oxidase	Pos	
Catalase	Neg	
PLATES	**48 h**	**7 day**
Odor	Slight	Pos - ammonia
Pigment on swab	buff	buff
Pigment on BAP	gray	gray Pink (x)
Morphology on BAP	Sm rd wet	rd, wrinkled
Beta hemolysis	Neg	Neg
Growth on Mac	Neg	Neg - very inhibited
DNase hydrolysis	Neg	Neg ✓
Starch hydrolysis	wkt? sn zone	Pos ✓
Lecithinase	Neg	Neg
Lipase	Neg	Neg
Rapid PYR	Neg	
Rapid LAP	Pos	
Rapid ESC	Pos	
Sensitivity to:		
Penicillin (10 U)	6R	6R ✓
Vancomycin (30 ug)	6R	6R ✓
Colistin (10 mcg)	6R	6R ✓
Polymyxin B (300 U)	6R	6R ✓

Bap on 4 day plates avg dry, look like little stars

Chc colonies lt. dry + pink swab - rosey pink *

Tubes	48 h	7 day
KIA	K/NC	K/ lt yel
H_2S	Neg	Neg - sm blk line @ interface
Pseudo P	N	Neg } wrinkled, peach colored growth
Pseudo F	N	Neg }
NO_3 reduced	X	red Pos ✓
Gas from NO_3	N	tiny bubble Neg ✓
NO_2 reduced	X	red Neg ✓
Gas from NO_2	N	Neg ~~Neg~~ ✓
OF Fructose	Pos	Pos !
OF Dextrose	Pos	Pos !
OF Lactose	N	Bl-Gr Neg
OF Maltose	N	Neg
OF Mannitol	N	Neg
OF Xylose	N	Neg - GREEN
OF Sucrose	N	Neg
Arginine	N	Neg ✓
Lysine	N	Neg ✓
Ornithine	N	Neg ✓
Base Control	N	Neg ✓
Acetamide	N	Neg ✓
Esculin	Pos	Pos ✓
Gelatin	N	NEG ✓
Indole	X	Neg ✓
Malonate	N	Pos ✓
PAD	N	X ✓
Urea N 2 h	Pos (slight)	Pos ✓
6.5% NaCL	N	Neg ✓
10% Lactose	N	Neg ✓
ONPG	Pos	Pos ✓
Growth 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 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_3 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_2 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 (30μg)	6	0	100.00	80.48	Lysine	0	6	0.00	19.52
Colistin (10μg)	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: Lab: Bergeyella zoohelcum Maldi 2.024/2.077

NO 48° read done 2015-16 #55

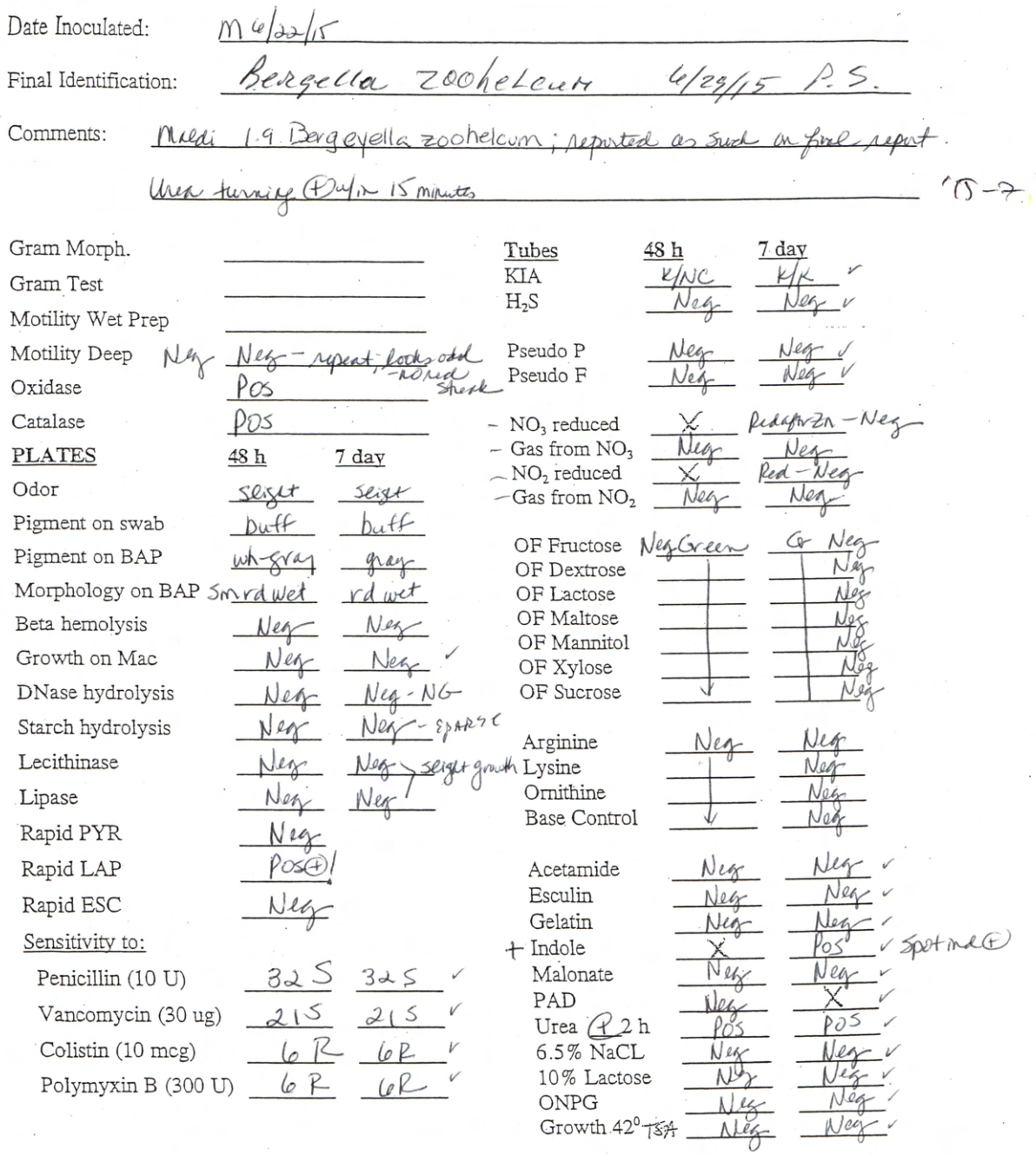
Gram Morph.		
Gram Test		
Motility Wet Prep		
Motility Deep	Neg	
Oxidase 80	Pos	
Catalase 60	Neg	

PLATES	48 h	7 day
Odor		slight, non descript
Pigment on swab		golden br
Pigment on BAP		gray
Morphology on BAP		round, wet
Beta hemolysis		Neg
Growth on Mac	N	Neg
DNase hydrolysis		Neg
Starch hydrolysis		Neg
Lecithinase		Neg
Lipase		Neg
Rapid PYR	Neg	
Rapid LAP	Pos	
Rapid ESC	Neg	
Sensitivity to:		
Penicillin (10 U)	n/d	n/d
Vancomycin (30 ug)	I S	I S
Colistin (10 mcg)	I R	I R
Polymyxin B (300 U)	I R	I R

Tubes	48 h	7 day
KIA	~~K/K~~	K/K
H_2S		Neg
Pseudo P		Neg
Pseudo F		Neg
NO_3 reduced	X	Red after Neg
Gas from NO_3		Neg
NO_2 reduced	X	Red Neg
Gas from NO_2		~~Red~~ Neg
OF Fructose		Gr –
OF Dextrose		Gr –
OF Lactose		Gr –
OF Maltose		Gr –
OF Mannitol		Gr –
OF Xylose		Gr –
OF Sucrose		Gr –
Arginine		Neg
Lysine		Neg
Ornithine		Neg
Base Control		Neg
Acetamide		Neg
Esculin		Neg
Gelatin 60		Pos
Indole 80		Pos
Malonate		Neg
PAD		X Neg
Urea n/a 2 h		Pos
6.5% NaCL		Neg
10% Lactose		Neg
ONPG		Neg
Growth 42° 40		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 80: Bergeyella zoohelcum isolate 1-of-6.


Date Inoculated: M 6/22/15

Final Identification: Bergeella zoohelcum 6/29/15 P.S.

Comments: Medi 1.9 Bergeyella zoohelcum; reported as such on final report.
Urea turning (+) by/in 15 minutes '15-7

Gram Morph.		
Gram Test		
Motility Wet Prep		
Motility Deep	Neg	Neg - repeat, looks odd - NO red streak
Oxidase		POS
Catalase		POS

PLATES	48 h	7 day
Odor	slight	slight
Pigment on swab	buff	buff
Pigment on BAP	wh-gray	gray
Morphology on BAP	Sm rd wet	rd wet
Beta hemolysis	Neg	Neg
Growth on Mac	Neg	Neg ✓
DNase hydrolysis	Neg	Neg - NG
Starch hydrolysis	Neg	Neg - sparse
Lecithinase	Neg	Neg > slight growth
Lipase	Neg	Neg
Rapid PYR	Neg	
Rapid LAP	POS (+)!	
Rapid ESC	Neg	

Sensitivity to:		
Penicillin (10 U)	32 S	32 S ✓
Vancomycin (30 ug)	21 S	21 S ✓
Colistin (10 mcg)	6 R	6 R ✓
Polymyxin B (300 U)	6 R	6 R ✓

Tubes	48 h	7 day
KIA	K/NC	K/K ✓
H_2S	Neg	Neg ✓
Pseudo P	Neg	Neg ✓
Pseudo F	Neg	Neg ✓
- NO_3 reduced	X	Red for 2h - Neg
- Gas from NO_3	Neg	Neg
- NO_2 reduced	X	Red - Neg
- Gas from NO_2	Neg	Neg

OF Fructose	Neg Green	G+ Neg
OF Dextrose		Neg
OF Lactose		Neg
OF Maltose		Neg
OF Mannitol		Neg
OF Xylose		Neg
OF Sucrose	↓	Neg
Arginine	Neg	Neg
Lysine		Neg
Ornithine		Neg
Base Control	↓	Neg
Acetamide	Neg	Neg ✓
Esculin	Neg	Neg ✓
Gelatin	Neg	Neg ✓
+ Indole	X	POS ✓ Spot mac (+)
Malonate	Neg	Neg ✓
PAD	Neg	X ✓
Urea (+) 2 h	POS	POS ✓
6.5% NaCL	Neg	Neg ✓
10% Lactose	Neg	Neg ✓
ONPG	Neg	Neg ✓
Growth 42° TSA	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 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%**	**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_3 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	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 (30μg)	1	0	100.00	60.33	Lysine	0	1	0.00	39.67
Colistin (10μg)	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.

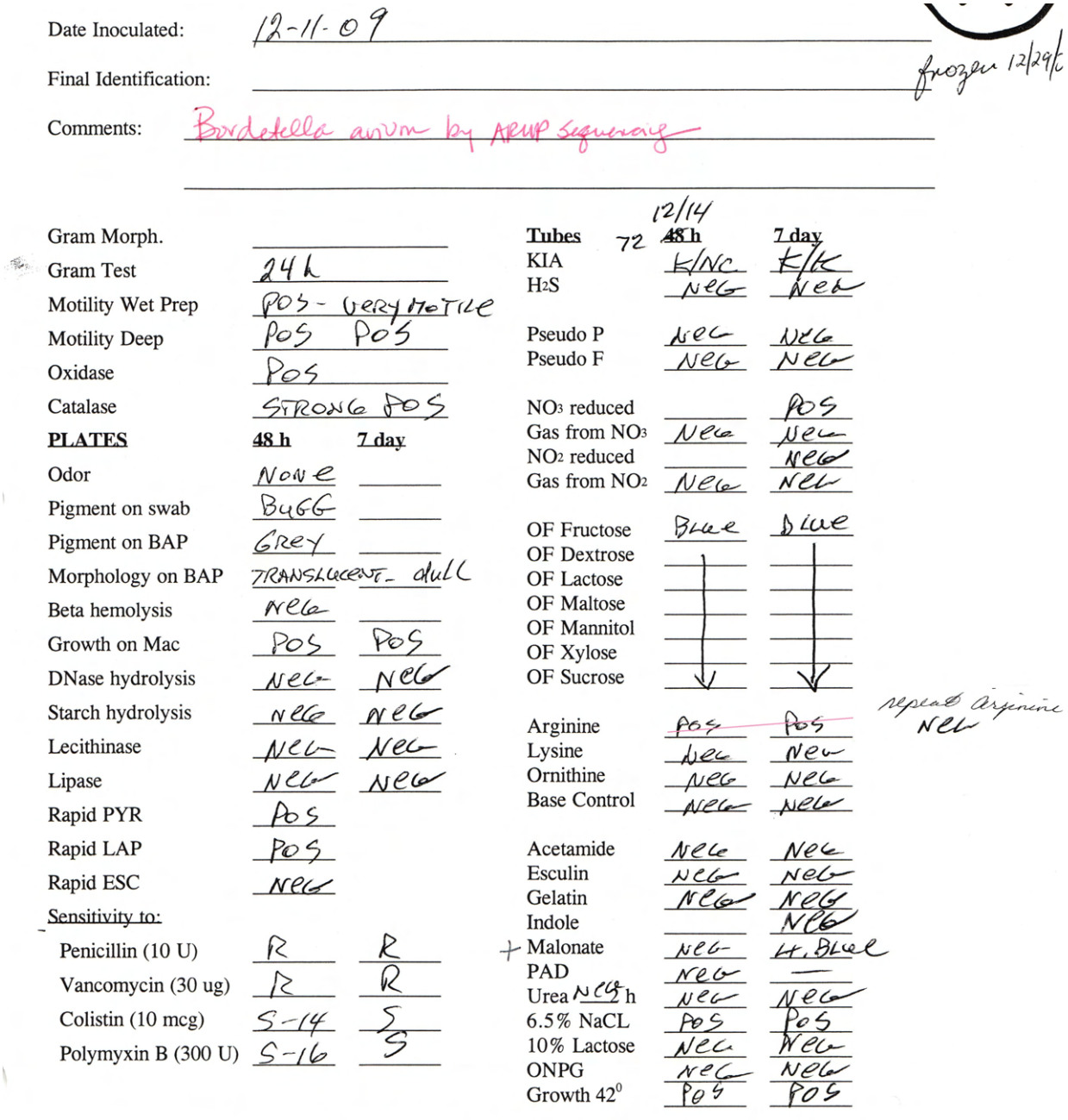
10 GENUS BORDETELLA

10.1 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%**	**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_3 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 (30μg)	0	1	0.00	39.67	Lysine	0	1	0.00	39.67
Colistin (10μg)	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: frozen 12/29/

Comments: Bordetella avium by ARUP sequencing

Gram Morph.		
Gram Test	24 h	
Motility Wet Prep	POS - VERY MOTILE	
Motility Deep	POS	POS
Oxidase	POS	
Catalase	STRONG POS	
PLATES	**48 h**	**7 day**
Odor	NONE	
Pigment on swab	BUGG	
Pigment on BAP	GREY	
Morphology on BAP	TRANSLUCENT - dull	
Beta hemolysis	NEG	
Growth on Mac	POS	POS
DNase hydrolysis	NEG	NEG
Starch hydrolysis	NEG	NEG
Lecithinase	NEG	NEG
Lipase	NEG	NEG
Rapid PYR	POS	
Rapid LAP	POS	
Rapid ESC	NEG	
Sensitivity to:		
Penicillin (10 U)	R	R
Vancomycin (30 ug)	R	R
Colistin (10 mcg)	S-14	S
Polymyxin B (300 U)	S-16	S

Tubes	72 ~~48 h~~ 12/14	**7 day**
KIA	K/NC	K/K
H_2S	NEG	NEG
Pseudo P	NEG	NEG
Pseudo F	NEG	NEG
NO_3 reduced		POS
Gas from NO_3	NEG	NEG
NO_2 reduced		NEG
Gas from NO_2	NEG	NEG
OF Fructose	BLUE	BLUE
OF Dextrose	↓	↓
OF Lactose	↓	↓
OF Maltose	↓	↓
OF Mannitol	↓	↓
OF Xylose	↓	↓
OF Sucrose	↓	↓
Arginine	~~POS~~	~~POS~~
Lysine	NEG	NEG
Ornithine	NEG	NEG
Base Control	NEG	NEG
Acetamide	NEG	NEG
Esculin	NEG	NEG
Gelatin	NEG	NEG
Indole		NEG
+ Malonate	NEG	LT. BLUE
PAD	NEG	—
Urea NEG 2 h	NEG	NEG
6.5% NaCL	POS	POS
10% Lactose	NEG	NEG
ONPG	NEG	NEG
Growth 42^0	POS	POS

repeat arginine NEG

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

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

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%**	**W95%**
Motility	16	3	84.21	78.46	H_2S	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_3 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_2 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 (30μg)	0	19	0.00	8.41	Lysine	0	19	0.00	8.41
Colistin (10μg)	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.

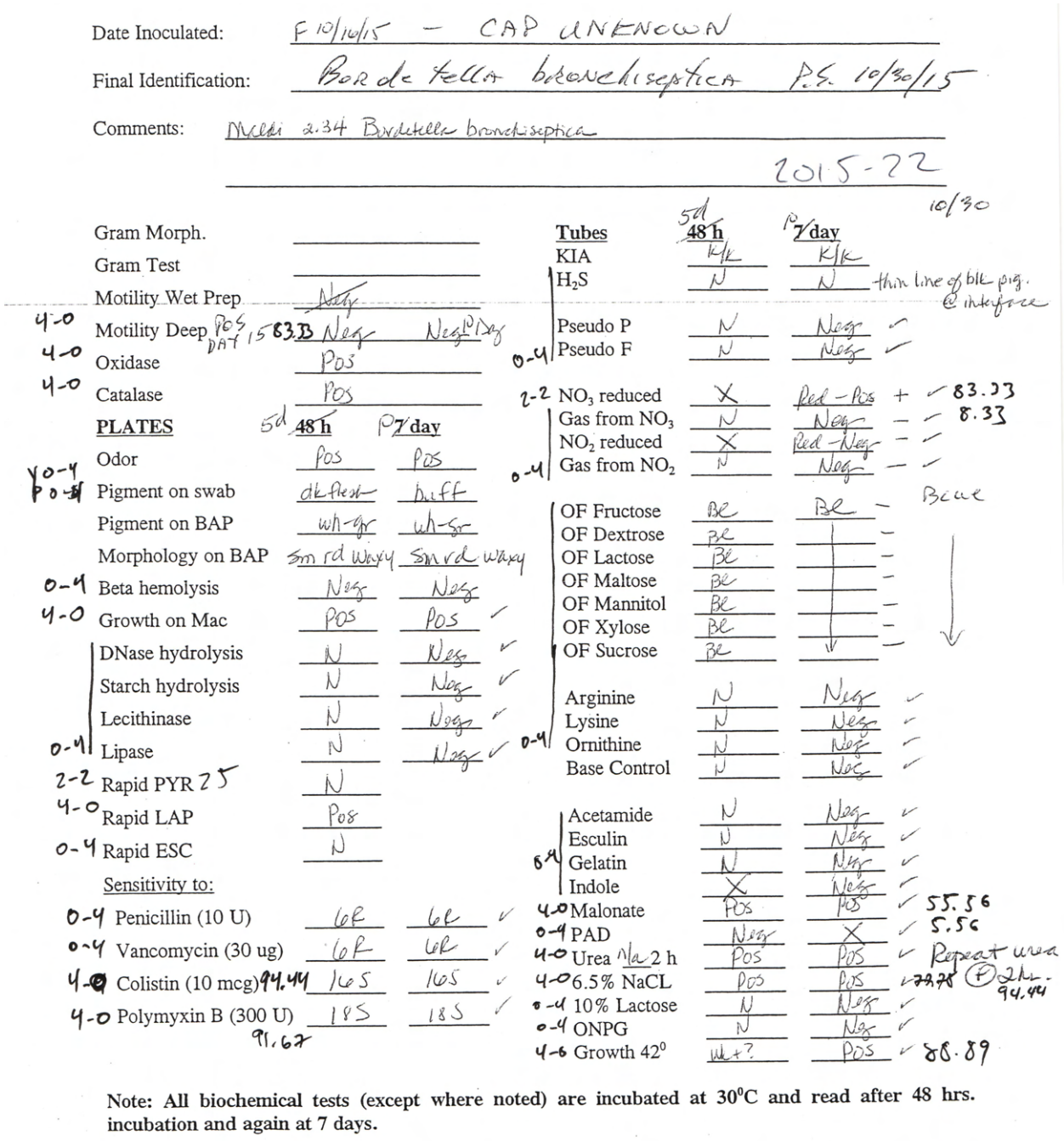
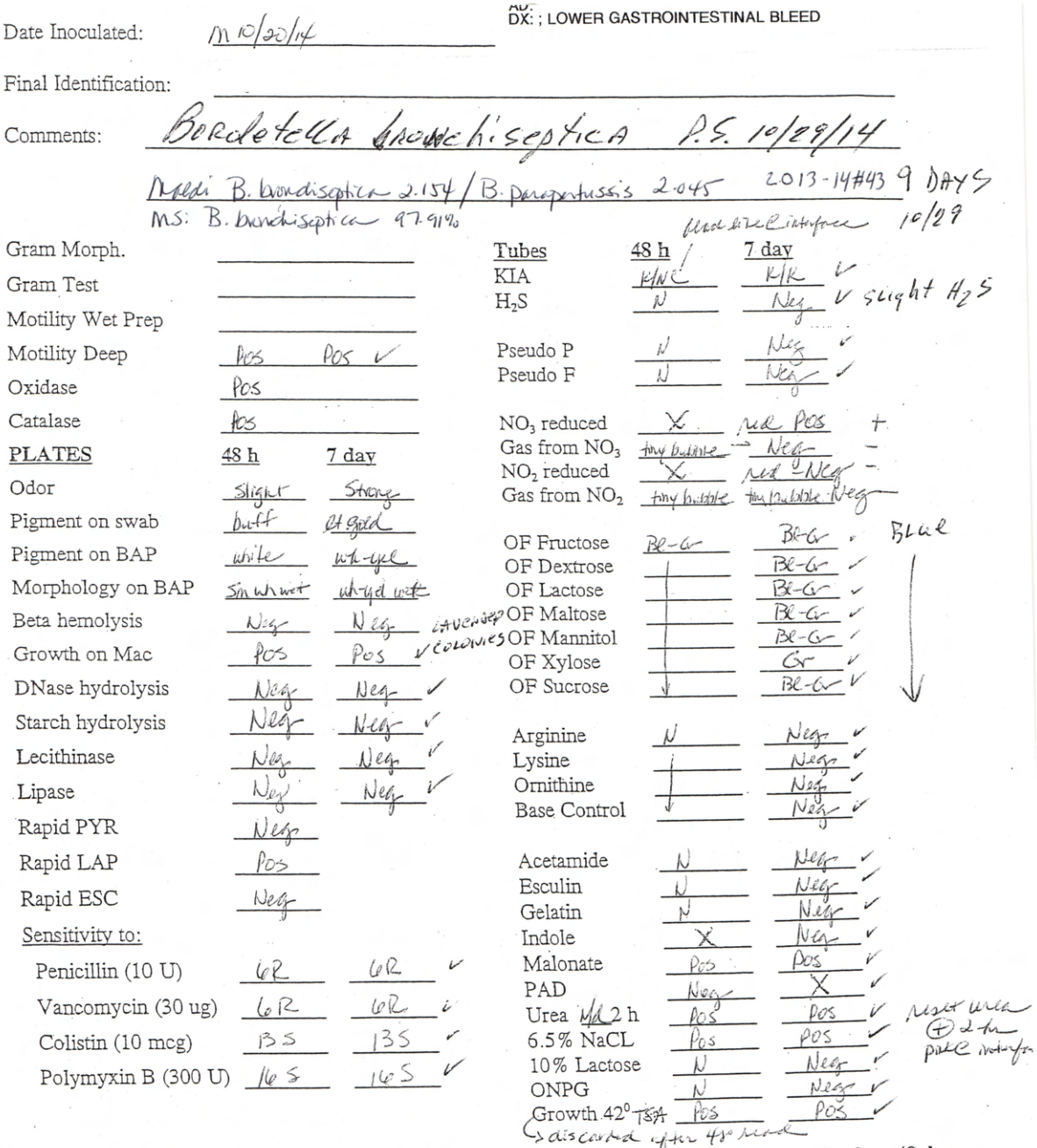


Figure 83: Bordetella bronchiseptica isolate 1-of-19.



Date Inoculated: 10/20/14

DX: ; LOWER GASTROINTESTINAL BLEED

Final Identification:

Comments: Bordetella bronchiseptica P.S. 10/29/14

Needs B. bronchiseptica 2.154 / B. parapertussis 2.045 2013-14#43 9 DAYS

MS: B. bronchiseptica 97.91%

Gram Morph.			Tubes	48 h	7 day
Gram Test			KIA	K/NC	K/K ✓
Motility Wet Prep			H_2S	N	Neg ✓ slight H_2S
Motility Deep	Pos	Pos ✓	Pseudo P	N	Neg ✓
Oxidase	Pos		Pseudo F	N	Neg ✓
Catalase	Pos		NO_3 reduced	X	red Pos +
PLATES	**48 h**	**7 day**	Gas from NO_3	tiny bubble	→ Neg −
Odor	slight	strong	NO_2 reduced	X	red Neg −
Pigment on swab	buff	lt gold	Gas from NO_2	tiny bubble	tiny bubble Neg
Pigment on BAP	white	wh-yel	OF Fructose	Bl-Gr	Bl-Gr ✓
Morphology on BAP	sm wh wet	wh-yel wet	OF Dextrose		Bl-Gr ✓
Beta hemolysis	Neg	Neg	OF Lactose		Bl-Gr ✓
Growth on Mac	Pos	Pos ✓	OF Maltose		Bl-Gr ✓
DNase hydrolysis	Neg	Neg ✓	OF Mannitol		Bl-Gr ✓
Starch hydrolysis	Neg	Neg ✓	OF Xylose		Gr ✓
Lecithinase	Neg	Neg ✓	OF Sucrose		Bl-Gr ✓
Lipase	Neg	Neg ✓	Arginine	N	Neg ✓
Rapid PYR	Neg		Lysine		Neg ✓
Rapid LAP	Pos		Ornithine		Neg ✓
Rapid ESC	Neg		Base Control		Neg ✓
Sensitivity to:			Acetamide	N	Neg ✓
Penicillin (10 U)	6R	6R ✓	Esculin	N	Neg ✓
Vancomycin (30 ug)	6R	6R ✓	Gelatin	N	Neg ✓
Colistin (10 mcg)	13S	13S ✓	Indole	X	Neg ✓
Polymyxin B (300 U)	16S	16S ✓	Malonate	Pos	Pos ✓
			PAD	Neg	X ✓
			Urea Mod 2 h	Pos	Pos ✓
			6.5% NaCL	Pos	Pos ✓
			10% Lactose	N	Neg ✓
			ONPG	N	Neg ✓
			Growth 42° TSA	Pos	Pos ✓

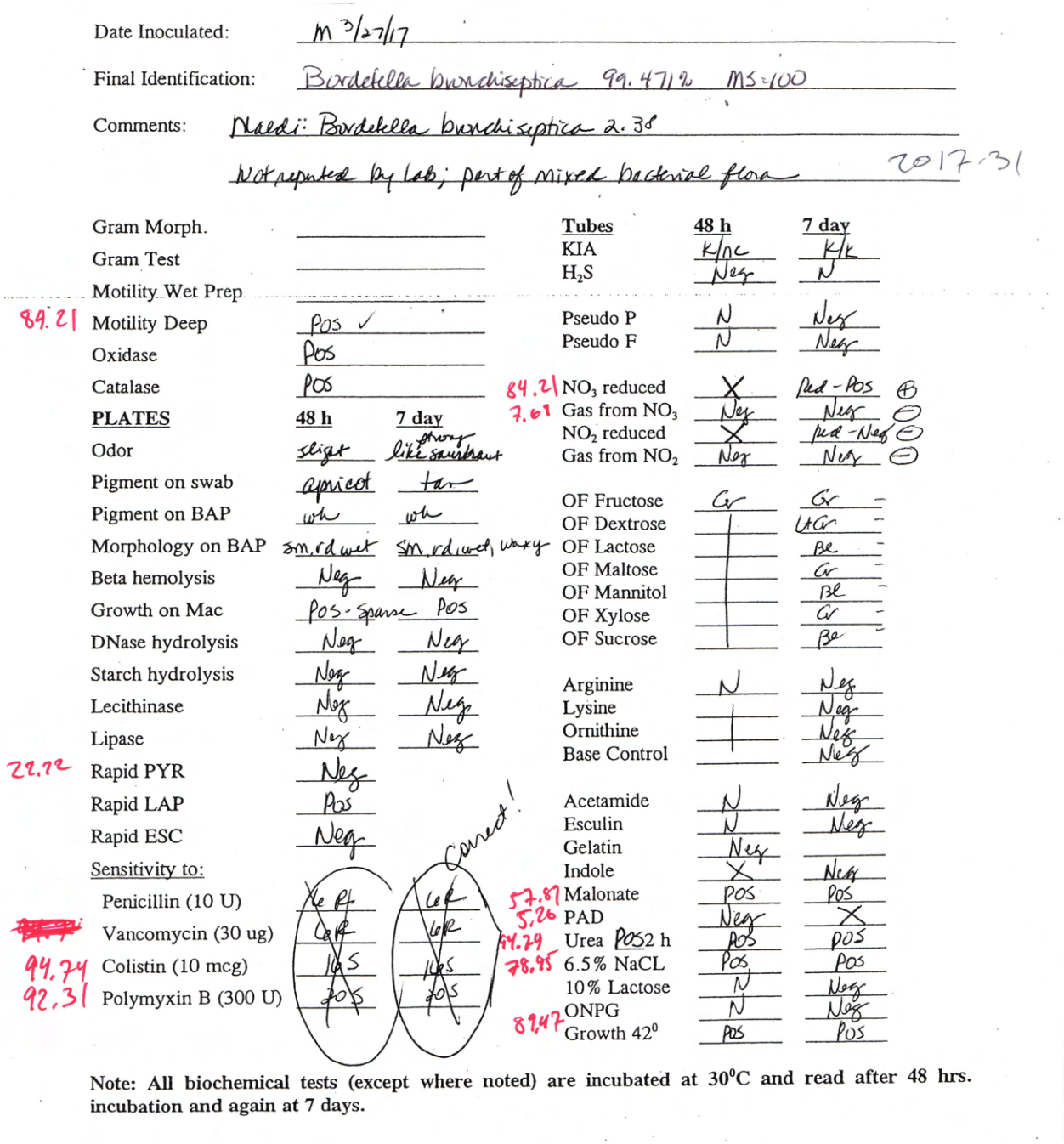
Blue

Most urea + 2 hr pink interior

→ discarded after 48 hr read

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

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



Date Inoculated: M 3/27/17

Final Identification: Bordetella bronchiseptica 99.471% MS=100

Comments: Maldi: Bordetella bronchiseptica 2.38

Not reported by lab; part of mixed bacterial flora 2017-31

	Gram Morph.		
	Gram Test		
	Motility Wet Prep		
89.21	Motility Deep	Pos ✓	
	Oxidase	Pos	
	Catalase	Pos	
	PLATES	**48 h**	**7 day**
	Odor	sligt	strong like sauerkraut
	Pigment on swab	apricot	tan
	Pigment on BAP	wh	wh
	Morphology on BAP	sm.rd wet	sm.rd wet, waxy
	Beta hemolysis	Neg	Neg
	Growth on Mac	Pos-Sparse	Pos
	DNase hydrolysis	Neg	Neg
	Starch hydrolysis	Neg	Neg
	Lecithinase	Neg	Neg
	Lipase	Neg	Neg
22.22	Rapid PYR	Neg	
	Rapid LAP	Pos	
	Rapid ESC	Neg	
	Sensitivity to:		
	Penicillin (10 U)	~~Le R~~	~~Le R~~
~~[illegible]~~	Vancomycin (30 ug)	~~Le R~~	~~Le R~~
94.74	Colistin (10 mcg)	~~Le S~~	~~Le S~~
92.31	Polymyxin B (300 U)	~~Pos~~	~~Pos~~

Correct!

	Tubes	48 h	7 day
	KIA	K/nc	K/K
	H_2S	Neg	N
	Pseudo P	N	Neg
	Pseudo F	N	Neg
84.21	NO_3 reduced	X	Red - Pos ⊕
7.69	Gas from NO_3	Neg	Neg ⊖
	NO_2 reduced	X	Red - Neg ⊖
	Gas from NO_2	Neg	Neg ⊖
	OF Fructose	Gr	Gr
	OF Dextrose		LtGr
	OF Lactose		Be
	OF Maltose		Gr
	OF Mannitol		Be
	OF Xylose		Gr
	OF Sucrose		Be
	Arginine	N	Neg
	Lysine		Neg
	Ornithine		Neg
	Base Control		Neg
	Acetamide	N	Neg
	Esculin	N	Neg
	Gelatin	Neg	
	Indole	X	Neg
57.87	Malonate	Pos	Pos
5.26	PAD	Neg	X
94.79	Urea Pos 2 h	Pos	Pos
78.95	6.5% NaCL	Pos	Pos
	10% Lactose	N	Neg
	ONPG	N	Neg
89.47	Growth 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 85: Bordetella bronchiseptica isolate 3-of-19.

Date Inoculated: 1-17-12

Final Identification: Bordetella bronchiseptica P.S. 1/26/12

Comments: P.S.

Gram Morph.		
Gram Test	48	
Motility Wet Prep	POS Rods	
Motility Deep	POS POS	
Oxidase	POS	
Catalase	Strong POS	
PLATES	**48 h**	**7 day**
Odor	None	
Pigment on swab	flesh	
Pigment on BAP	Grey	
Morphology on BAP	Smooth	
Beta hemolysis	Neg	
Growth on Mac	POS	POS
DNase hydrolysis	Neg	Neg
Starch hydrolysis	Neg	Neg
Lecithinase		
Lipase		
Rapid PYR	Neg	
Rapid LAP	POS	
Rapid ESC	Neg	
Sensitivity to:		
Penicillin (10 U)	R	R
Vancomycin (30 ug)	R	R
Colistin (10 mcg)	S-13	S
Polymyxin B (300 U)	S-15	S

1/25

Tubes	**48 h**	**7 day**
KIA	K/NC	K/K
H_2S	Slight H_2S	Slight H_2S
Pseudo P	Neg	Neg
Pseudo F	Neg	Neg
NO_3 reduced		POS
Gas from NO_3	Tiny Bubble	Tiny Bubble
NO_2 reduced		Neg
Gas from NO_2	Neg	Neg
OF Fructose	Blue	Blue
OF Dextrose	↓	↓
OF Lactose	↓	↓
OF Maltose	↓	↓
OF Mannitol	↓	↓
OF Xylose	↓	↓
OF Sucrose	↓	↓
Arginine	Neg	Neg
Lysine	↓	↓
Ornithine	↓	↓
Base Control	↓	↓
Acetamide	Neg	Neg
Esculin	Neg	Neg
Gelatin	Neg	Neg
Indole		Neg
Malonate	WT	POS
PAD	Neg	—
Urea POS 2 h	POS	POS
6.5% NaCL	Neg	POS
10% Lactose	Neg	Neg
ONPG	Neg	Neg
Growth 42^0	POS	POS

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

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

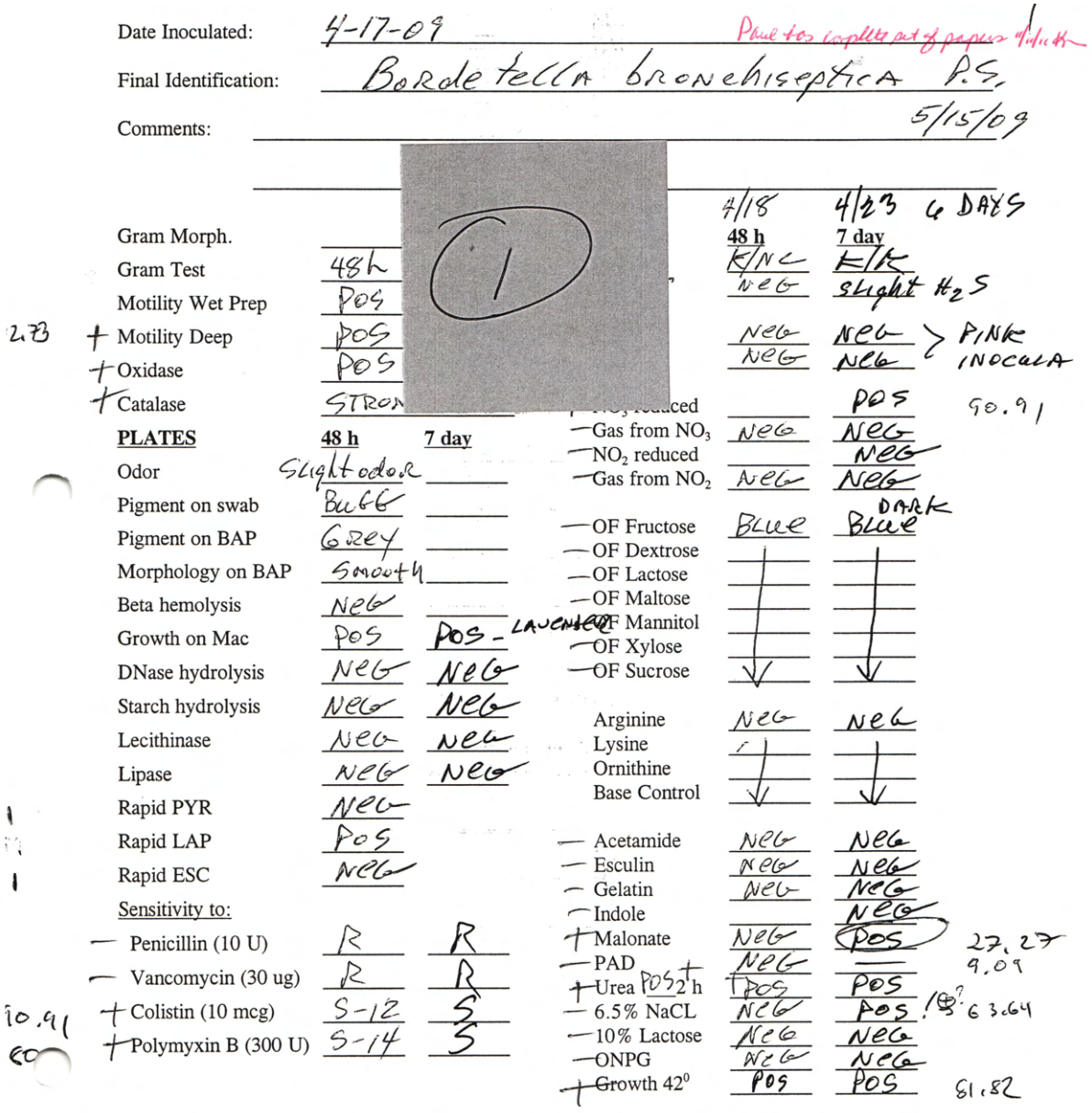


Figure 87: Bordetella bronchiseptica isolate 5-of-19.

Date Inoculated: 11-20-12

Final Identification: Bordetella bronchiseptica P.S. 11/21/12

Comments:

				24h	12/1 11 DAYS
Gram Morph.			**Tubes**	~~48 h~~	**7 day**
Gram Test	24h		KIA	K/NG	K/K
Motility Wet Prep	POS - gm reacts very motile		H_2S	Neg	Neg
Motility Deep	POS	POS	Pseudo P	Neg	
Oxidase	POS		Pseudo F	Neg	
Catalase	STRONG POS		NO_3 reduced		POS
PLATES	**48 h**	**7 day**	Gas from NO_3	Neg	Neg
Odor	None		NO_2 reduced		Neg
Pigment on swab	Fresh		Gas from NO_2	TINY Bub	Neg
Pigment on BAP	Light Grey		OF Fructose	BLUE	GREEN (LIGHT)
Morphology on BAP	Smooth		OF Dextrose	↓	LIGHT BLUE
Beta hemolysis	Neg		OF Lactose	↓	DARK BLUE
Growth on Mac	POS	POS	OF Maltose	↓	DARK BLUE
DNase hydrolysis	Neg	Neg	OF Mannitol	↓	DARK BLUE
Starch hydrolysis	Neg	Neg	OF Xylose	↓	GREEN (LIGHT)
Lecithinase	Neg	Neg	OF Sucrose	↓	LIGHT BLUE
Lipase	Neg	Neg	Arginine	Neg	Neg
Rapid PYR	~~POS~~ Neg		Lysine		
Rapid LAP	POS		Ornithine	↓	↓
Rapid ESC	Neg		Base Control	↓	↓
Sensitivity to:			Acetamide	Neg	Neg
Penicillin (10 U)	R	R	Esculin	Neg	Neg
Vancomycin (30 ug)	R	R	Gelatin	Neg	Neg
Colistin (10 mcg)	S	S	Indole		Neg
Polymyxin B (300 U)	S	S	Malonate	Neg	BLUE - POS
			PAD	Neg	—
			Urea ~~POS~~ 2 h	POS	POS
			6.5% NaCL	Neg	POS
			10% Lactose	Neg	Neg
			ONPG	Neg	Neg
			Growth 42°	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 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%**	**W95%**	**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_3 Reduced	0	2	0.00	32.88
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	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 (30μg)	0	2	0.00	32.88	Lysine	0	2	0.00	32.88
Colistin (10μg)	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%**	**W95%**	**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_3 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_2 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 (30μg)	0	8	0.00	16.22	Lysine	0	8	0.00	16.22
Colistin (10μg)	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.

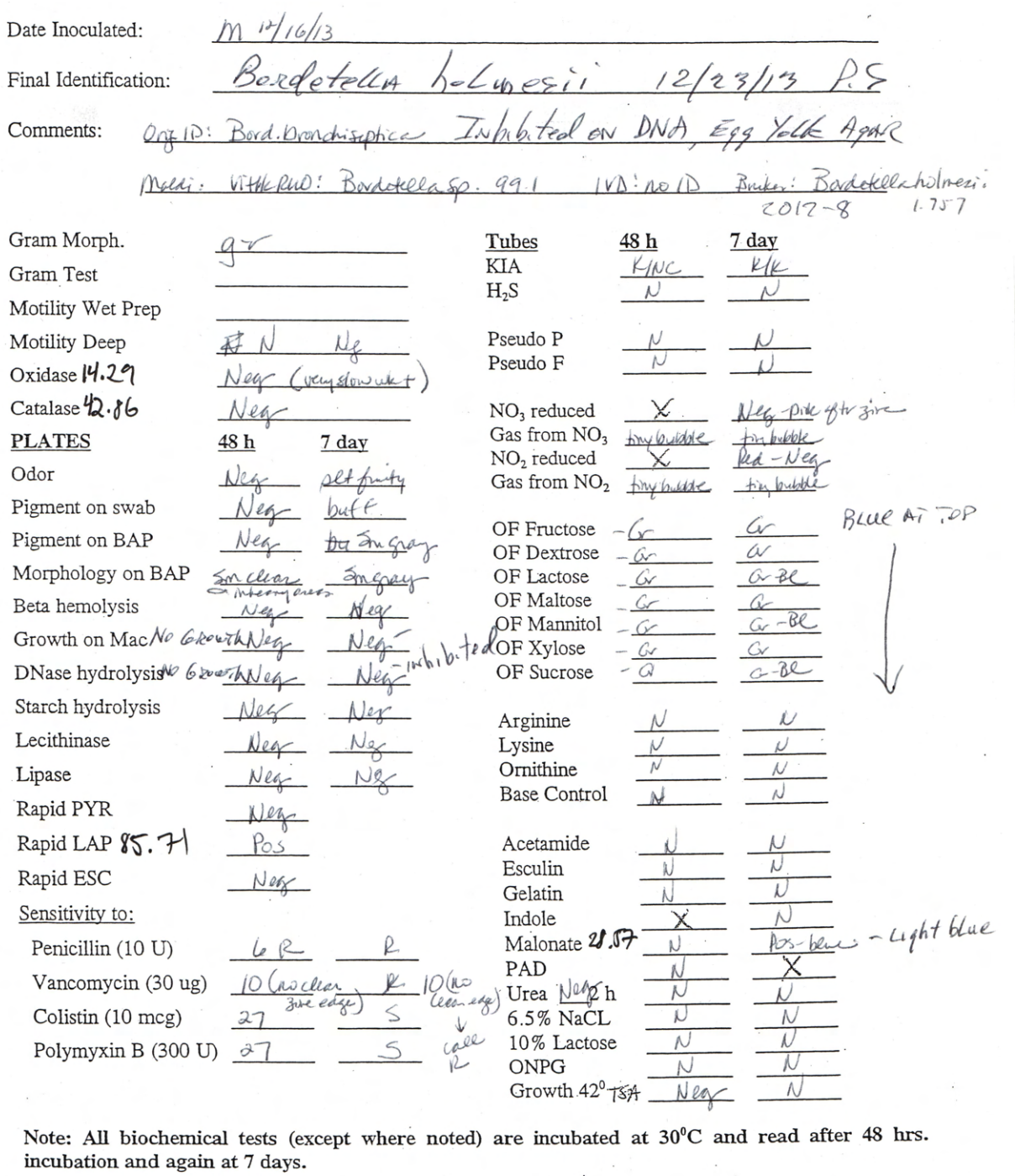
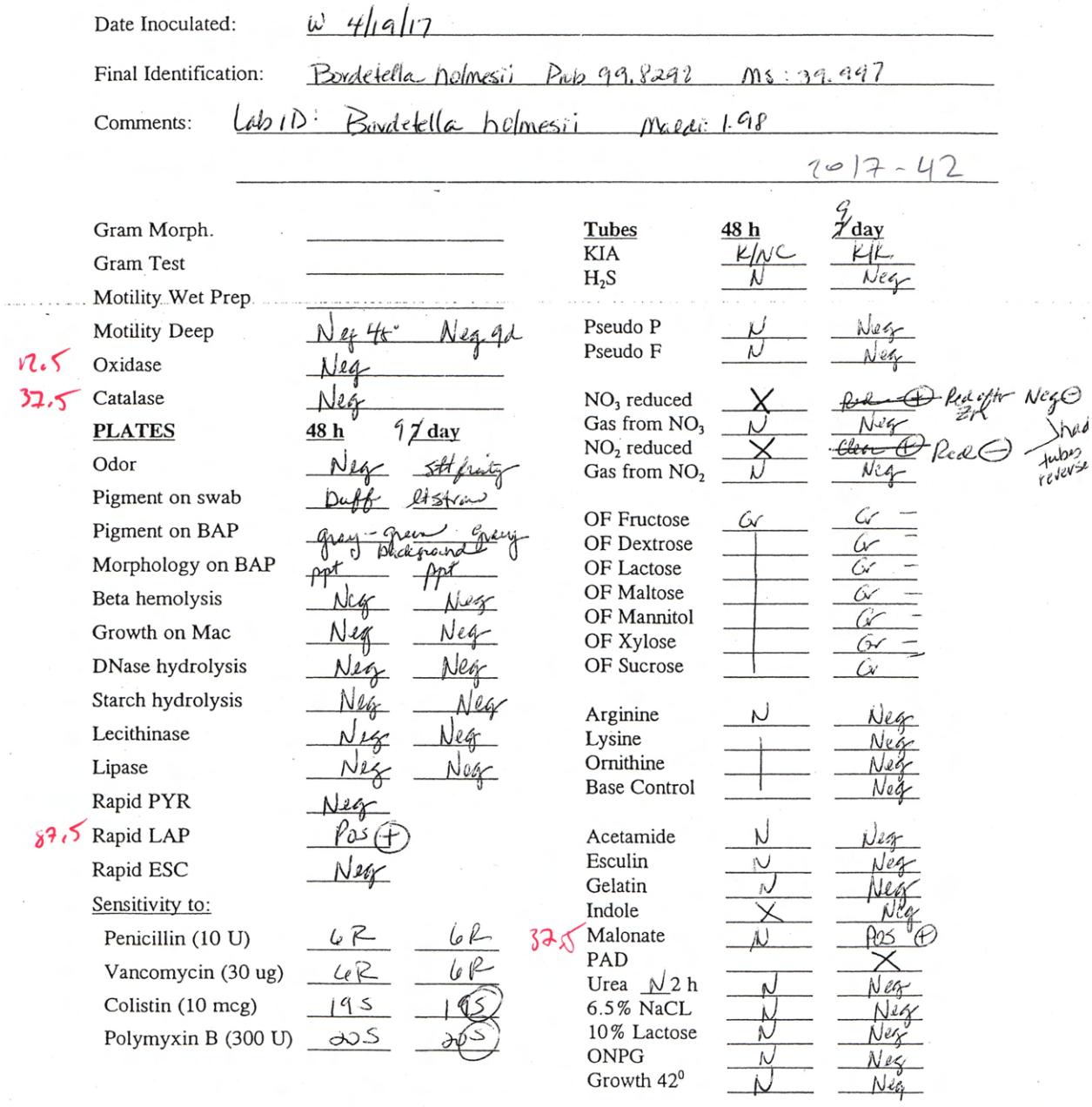


Figure 89: Bordetella holmesii isolate 1-of-8.



Date Inoculated: W 4/19/17

Final Identification: Bordetella holmesii Prob 99.8292 MS: 39.997

Comments: Lab ID: Bordetella holmesii Maldi: 1.98

2017-42

	Gram Morph.		
	Gram Test		
	Motility Wet Prep		
	Motility Deep	Neg 45°	Neg 9d
12.5	Oxidase	Neg	
37.5	Catalase	Neg	
	PLATES	**48 h**	**9 ~~7~~ day**
	Odor	Neg	sft fruity
	Pigment on swab	Buff	lt straw
	Pigment on BAP	gray-green background	gray
	Morphology on BAP	ppt	ppt
	Beta hemolysis	Neg	Neg
	Growth on Mac	Neg	Neg
	DNase hydrolysis	Neg	Neg
	Starch hydrolysis	Neg	Neg
	Lecithinase	Neg	Neg
	Lipase	Neg	Neg
	Rapid PYR	Neg	
87.5	Rapid LAP	Pos (+)	
	Rapid ESC	Neg	
	Sensitivity to:		
	Penicillin (10 U)	6R	6R
	Vancomycin (30 ug)	6R	6R
	Colistin (10 mcg)	19S	19S
	Polymyxin B (300 U)	20S	20S

	Tubes	**48 h**	**9 ~~7~~ day**
	KIA	K/NC	K/K
	H_2S	N	Neg
	Pseudo P	N	Neg
	Pseudo F	N	Neg
	NO_3 reduced	X	~~Red (+)~~ Red after ZR Neg (−)
	Gas from NO_3	N	Neg
	NO_2 reduced	X	~~Clear (+)~~ Red (−) had tubes reverse
	Gas from NO_2	N	Neg
	OF Fructose	Gr	Gr
	OF Dextrose		Gr
	OF Lactose		Gr
	OF Maltose		Gr
	OF Mannitol		Gr
	OF Xylose		Gr
	OF Sucrose		Gr
	Arginine	N	Neg
	Lysine		Neg
	Ornithine		Neg
	Base Control		Neg
	Acetamide	N	Neg
	Esculin	N	Neg
	Gelatin	N	Neg
	Indole	X	Neg
32.5	Malonate	N	Pos (+)
	PAD		X
	Urea N 2 h	N	Neg
	6.5% NaCL	N	Neg
	10% Lactose	N	Neg
	ONPG	N	Neg
	Growth 42°	N	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 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_3 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 (30μg)	0	5	0.00	21.72	Lysine	0	5	0.00	21.72
Colistin (10μg)	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

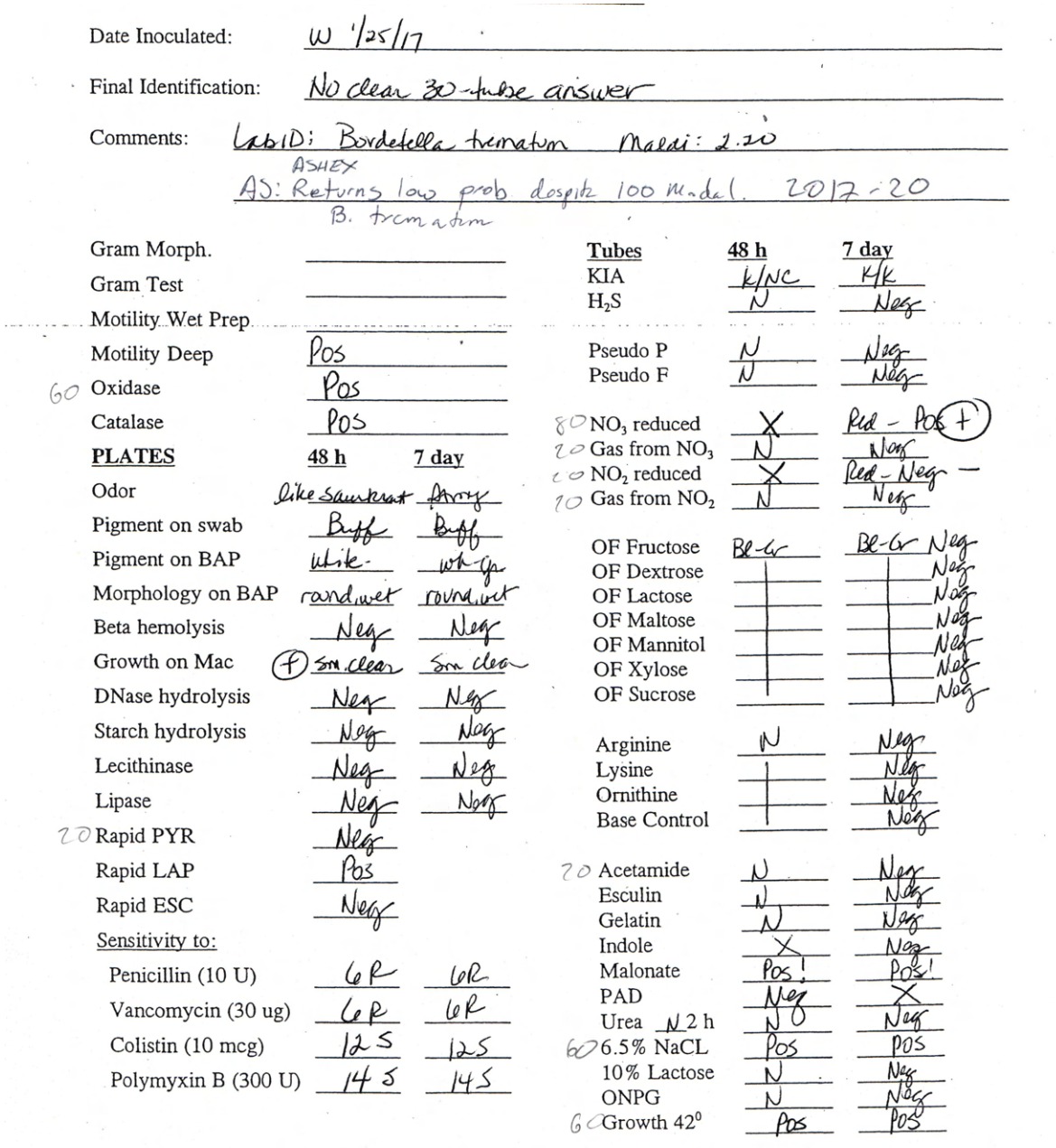
Table 22: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as $n_+/(n_+ + n_-)$, where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which 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_3 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_2 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 (30μg)	0	5	0.00	21.72	Lysine	0	5	0.00	21.72
Colistin (10μg)	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 1/25/17

Final Identification: No clear 30-tube answer

Comments: LabID: Bordetella trematum Maldi: 2.20
ASHEX
AS: Returns low prob despite 100 Modal. 2017-20
B. trematum

Gram Morph.		
Gram Test		
Motility Wet Prep		
Motility Deep	Pos	
60 Oxidase	Pos	
Catalase	Pos	
PLATES	**48 h**	**7 day**
Odor	like sauerkraut	Avoy
Pigment on swab	Buff	Buff
Pigment on BAP	white	wh-gr
Morphology on BAP	round, wet	round, wet
Beta hemolysis	Neg	Neg
Growth on Mac	(+) sm. clear	Sm clear
DNase hydrolysis	Neg	Neg
Starch hydrolysis	Neg	Neg
Lecithinase	Neg	Neg
Lipase	Neg	Neg
20 Rapid PYR	Neg	
Rapid LAP	Pos	
Rapid ESC	Neg	
Sensitivity to:		
Penicillin (10 U)	6R	6R
Vancomycin (30 ug)	6R	6R
Colistin (10 mcg)	12S	12S
Polymyxin B (300 U)	14S	14S

Tubes	**48 h**	**7 day**
KIA	K/NC	K/K
H_2S	N	Neg
Pseudo P	N	Neg
Pseudo F	N	Neg
80 NO_3 reduced	X	Red - Pos (+)
20 Gas from NO_3	N	Neg
20 NO_2 reduced	X	Red - Neg —
20 Gas from NO_2	N	Neg
OF Fructose	Bl-Gr	Bl-Gr Neg
OF Dextrose		Neg
OF Lactose		Neg
OF Maltose		Neg
OF Mannitol		Neg
OF Xylose		Neg
OF Sucrose		Neg
Arginine	N	Neg
Lysine		Neg
Ornithine		Neg
Base Control		Neg
20 Acetamide	N	Neg
Esculin	N	Neg
Gelatin	N	Neg
Indole	X	Neg
Malonate	Pos!	Pos!
PAD	Neg	X
Urea N 2 h	N	Neg
60 6.5% NaCL	Pos	Pos
10% Lactose	N	Neg
ONPG	N	Neg
60 Growth 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 91: Bordetella trematum isolate 1-of-5.

11 GENUS BREVUNDIMONAS

11.1 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%**	**W95%**	**Test**	+	−	**Raw%**	**W95%**
Motility	14	0	100.00	89.23	H_2S	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_3 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_2 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 (30μg)	4	10	28.57	33.19	Lysine	0	14	0.00	10.77
Colistin (10μg)	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 Brevundimonas diminuta

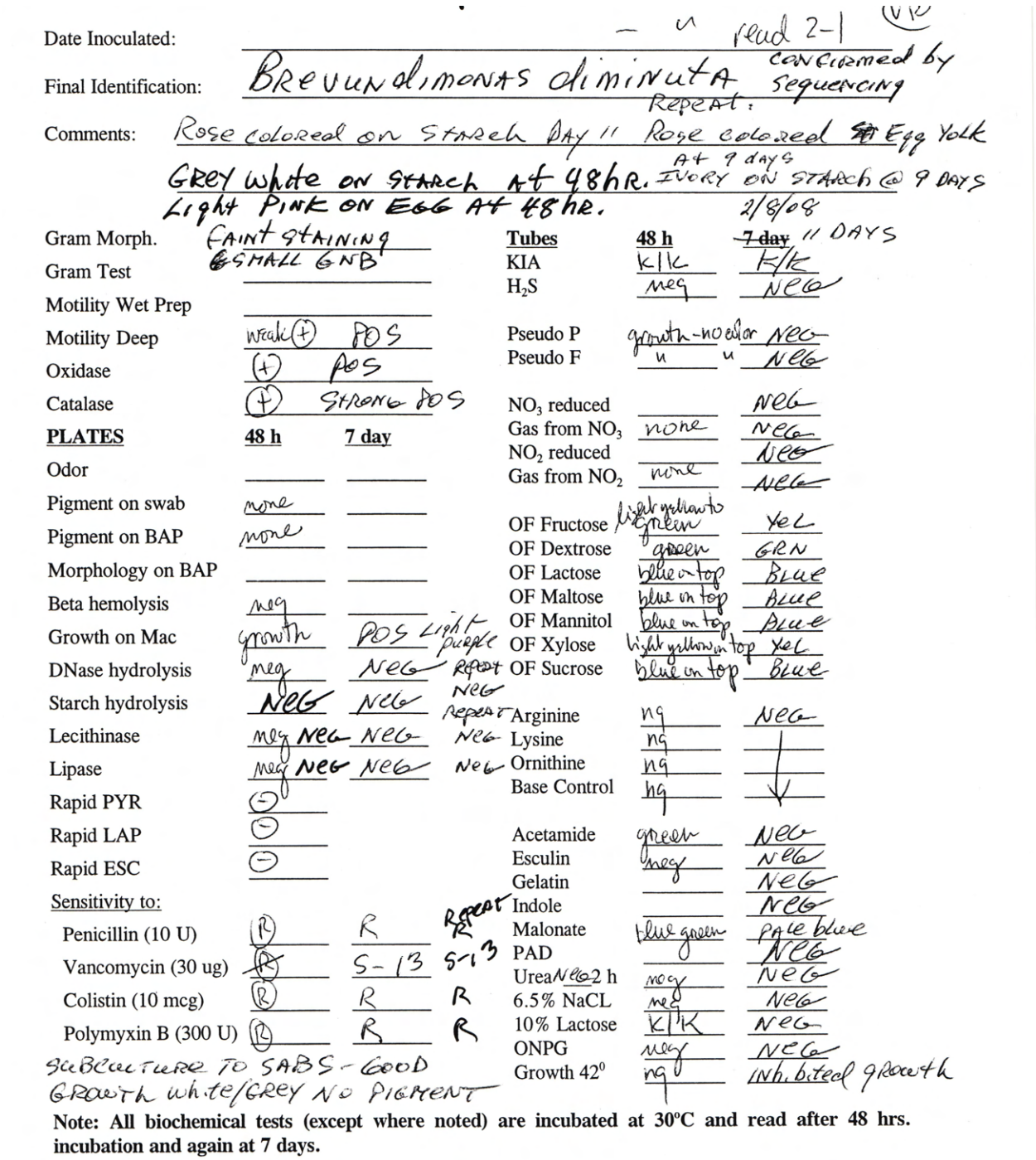
Final Identification: ~~NO MATCH SEND FOR SEQUENCING~~

Comments: Egg Yolk ~~STARCH~~ plate shows Real pigment in center of Z streak Line

					11-25-08	11-25-08 10 DAYS
Gram Morph.			**Tubes**	**48 h**	~~7 day~~	
Gram Test			KIA		K/K	
Motility Wet Prep	Pos - tiny Rods		H_2S		slight H_2S	
Motility Deep	POS		Pseudo P		Neg	> PINE INOCULA
Oxidase	POS		Pseudo F		Neg	
Catalase	STRONG POS		NO_3 reduced		Neg	
PLATES	24h ~~48h~~	7 day 11-25-08	Gas from NO_3	~~Neg~~	Neg	
Odor	NONE		NO_2 reduced		Neg	
Pigment on swab	Buff		Gas from NO_2	~~Neg~~	TINY BUBBLE	
Pigment on BAP	Light Grey		OF Fructose		Blue	
Morphology on BAP	Smooth-	Smears	OF Dextrose			
Beta hemolysis	Neg		OF Lactose			
Growth on Mac	POS		OF Maltose			
DNase hydrolysis	Neg	Neg	OF Mannitol			
Starch hydrolysis		Neg	OF Xylose			
Lecithinase		Neg	OF Sucrose			
Lipase		Neg	Arginine		Neg	
Rapid PYR	Neg		Lysine			
Rapid LAP	POS		Ornithine			
Rapid ESC	Neg		Base Control			
Sensitivity to:			Acetamide		Neg	
Penicillin (10 U)		R	Esculin		Neg	
Vancomycin (30 ug)		S-12	Gelatin		POS	
Colistin (10 mcg)		R	Indole		Neg	
Polymyxin B (300 U)		R	Malonate		Neg	
			PAD	Neg	Neg	
			Urea ~~Neg~~ 2 h	Neg	W+	
			6.5% NaCL		Neg	
			10% Lactose		Neg	
			ONPG		Neg	
			Growth 42^0		Neg	

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

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



Date Inoculated: — " read 2-1 (VR)

Final Identification: Brevundimonas diminuta confirmed by sequencing

Comments: Rose colored on Starch Day 11 Repeat: Rose colored Egg Yolk
Grey white on Starch at 48hr. At 9 days Ivory on Starch @ 9 days
Light Pink on Egg at 48hr. 2/8/08

Gram Morph.	Faint staining	
Gram Test	Small GNB	
Motility Wet Prep		
Motility Deep	weak (+)	POS
Oxidase	(+)	POS
Catalase	(+)	Strong POS

PLATES	48 h	7 day	
Odor			
Pigment on swab	none		
Pigment on BAP	none		
Morphology on BAP			
Beta hemolysis	neg		
Growth on Mac	growth	POS	Light purple
DNase hydrolysis	neg	NEG	Repeat NEG
Starch hydrolysis	NEG	NEG	Repeat
Lecithinase	neg NEG	NEG	NEG
Lipase	neg NEG	NEG	NEG
Rapid PYR	(−)		
Rapid LAP	(−)		
Rapid ESC	(−)		
Sensitivity to:			
Penicillin (10 U)	(R)	R	Repeat R
Vancomycin (30 ug)	~~(R)~~	S-13	S-13
Colistin (10 mcg)	(R)	R	R
Polymyxin B (300 U)	(R)	R	R

Subculture to SABS - Good growth white/Grey no pigment

Tubes	48 h	~~7 day~~ 11 days
KIA	K/K	K/K
H_2S	neg	NEG
Pseudo P	growth-no color	NEG
Pseudo F	" "	NEG
NO_3 reduced		NEG
Gas from NO_3	none	NEG
NO_2 reduced		NEG
Gas from NO_2	none	NEG
OF Fructose	light yellow to green	YEL
OF Dextrose	green	GRN
OF Lactose	blue on top	BLUE
OF Maltose	blue on top	BLUE
OF Mannitol	blue on top	BLUE
OF Xylose	light yellow on top	YEL
OF Sucrose	blue on top	BLUE
Arginine	ng	NEG
Lysine	ng	↓
Ornithine	ng	↓
Base Control	ng	↓
Acetamide	green	NEG
Esculin	neg	NEG
Gelatin		NEG
Indole		NEG
Malonate	blue green	pale blue
PAD		NEG
Urea NEG 2 h	neg	NEG
6.5% NaCL	neg	NEG
10% Lactose	K/K	NEG
ONPG	neg	NEG
Growth 42°	ng	inhibited growth

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

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

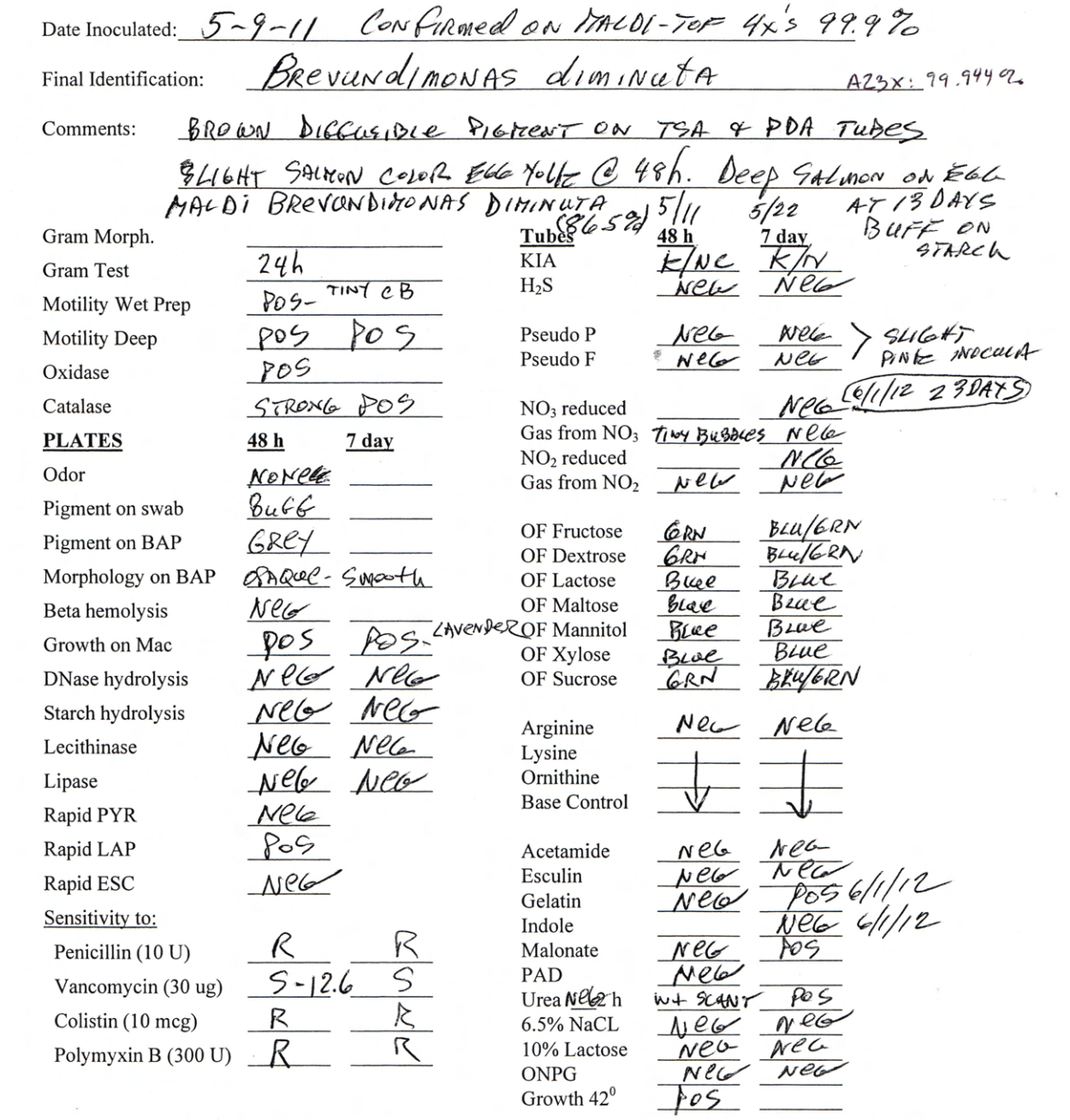


Figure 94: Brevundimonas diminuta isolate 3-of-14.

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_2S	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_3 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_2 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 (30μg)	14	1	93.33	84.50	Lysine	0	15	0.00	10.19
Colistin (10μg)	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.

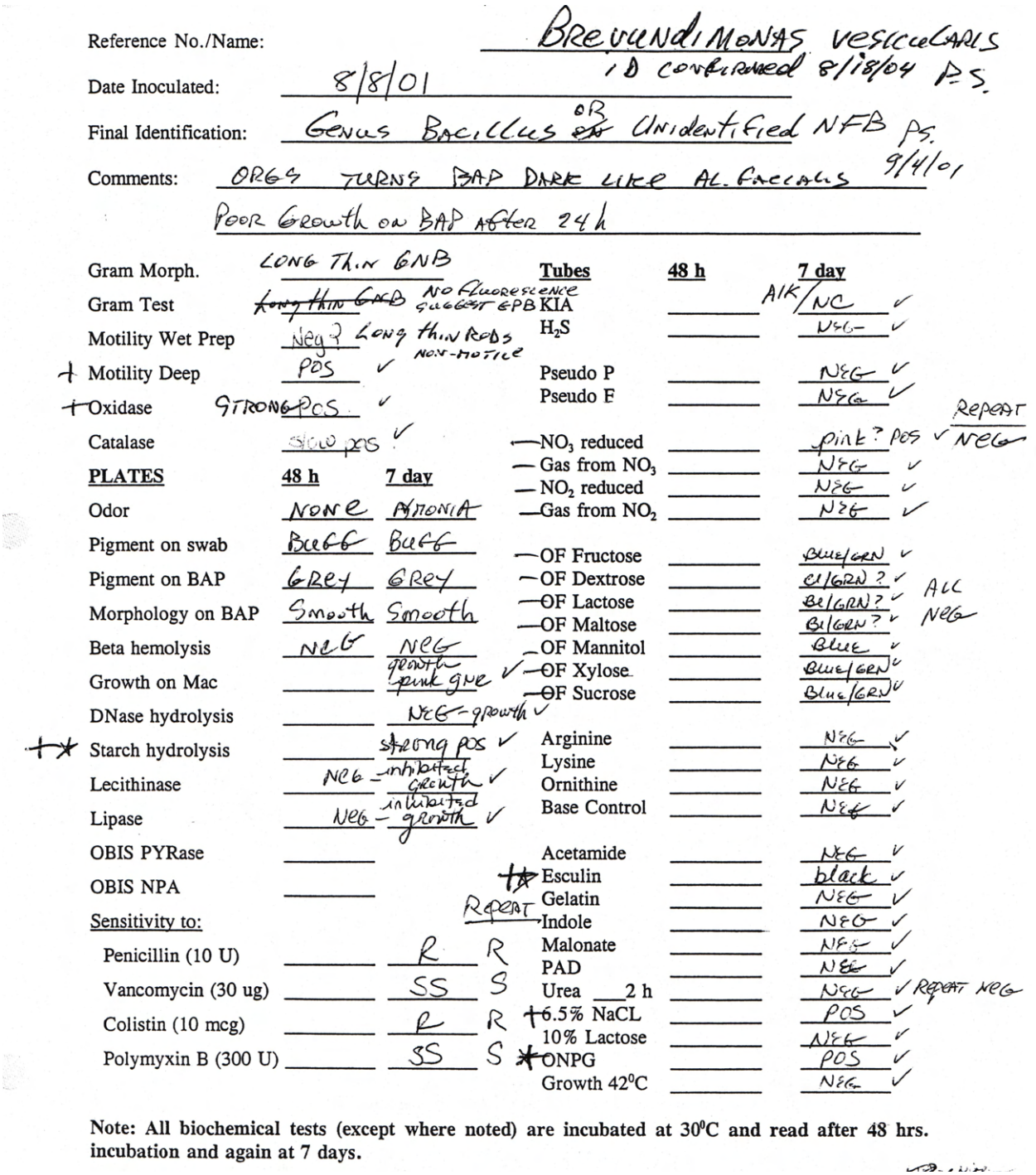
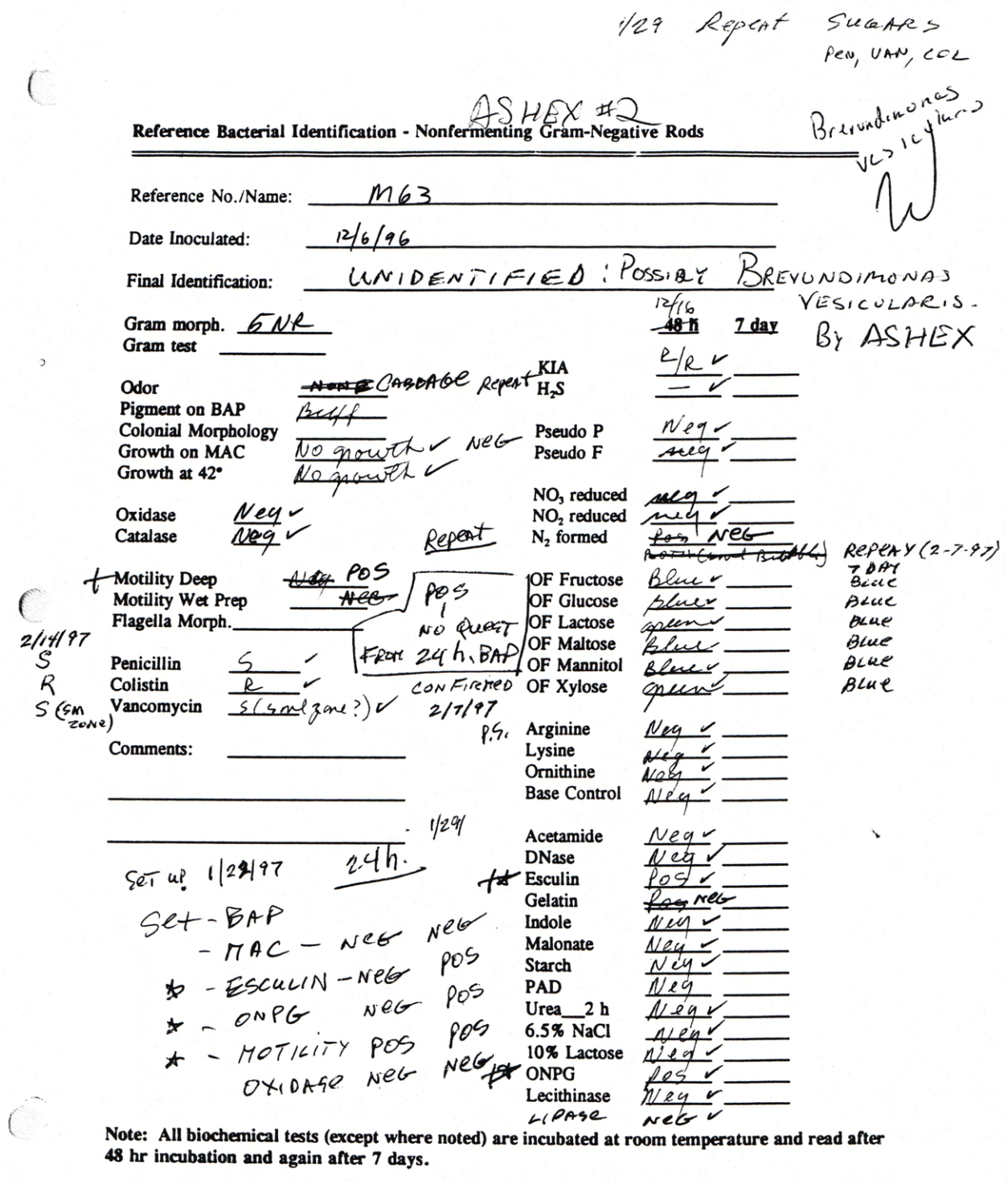


Figure 95: Brevundimonas vesicularis isolate 1-of-15.



1/29 Repeat SUGARS PEN, UAN, COL

ASHEX #2

Reference Bacterial Identification - Nonfermenting Gram-Negative Rods

Brevundimonas vesicularis

Reference No./Name: M63

Date Inoculated: 12/6/96

Final Identification: UNIDENTIFIED : POSSIBLY BREVUNDIMONAS VESICULARIS. By ASHEX

Gram morph. GNR
Gram test

Odor ~~NONE~~ CABBAGE Repeat
Pigment on BAP Buff
Colonial Morphology
Growth on MAC No growth ✓ NEG
Growth at 42° No growth ✓

Oxidase Neg ✓
Catalase Neg ✓

Repeat

Motility Deep ~~NEG~~ POS
Motility Wet Prep ~~NEG~~
Flagella Morph.

POS
NO QUEST
FROM 24 h. BAP
CONFIRMED 2/7/97

2/14/97
S Penicillin S ✓
R Colistin R ✓
S (SM ZONE) Vancomycin S (small zone?) ✓

Comments:

Set up 1/29/97 24h. 1/29

Set - BAP
- MAC - NEG NEG
- ESCULIN - NEG POS
- ONPG NEG POS
- MOTILITY POS POS
OXIDASE NEG NEG

	12/16 48 h	7 day	
KIA	K/R ✓		
H_2S	— ✓		
Pseudo P	Neg ✓		
Pseudo F	~~NEG~~ ✓		
NO_3 reduced	~~NEG~~ ✓		
NO_2 reduced	~~NEG~~ ✓		
N_2 formed	~~Pos~~ NEG		REPEAT (2-7-97)
OF Fructose	Blue ✓		7 DAY Blue
OF Glucose	Blue ✓		Blue
OF Lactose	~~GREEN~~ ✓		Blue
OF Maltose	Blue ✓		Blue
OF Mannitol	Blue ✓		Blue
OF Xylose	~~GREEN~~ ✓		Blue
Arginine	Neg ✓		
Lysine	~~NEG~~ ✓		
Ornithine	~~NEG~~ ✓		
Base Control	~~NEG~~ ✓		
Acetamide	Neg ✓		
DNase	~~NEG~~ ✓		
Esculin	Pos ✓		
Gelatin	~~Pos~~ NEG		
Indole	~~NEG~~ ✓		
Malonate	~~NEG~~ ✓		
Starch	~~NEG~~ ✓		
PAD	~~NEG~~		
Urea 2 h	~~NEG~~ ✓		
6.5% NaCl	~~NEG~~ ✓		
10% Lactose	~~NEG~~ ✓		
ONPG	Pos ✓		
Lecithinase	~~NEG~~ ✓		
LIPASE	NEG ✓		

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: 10-18-07

Final Identification: BREVUNDIMONAS VESICULARIS P.S. 10/24/07

Comments: NO GROWTH ON ORIGNAL CHOC OR MAC

BRIGHT YELLOW ON ALL MEDIA

Gram Morph.			**Tubes**	~~48 h~~ 4D	7 day
Gram Test	24h		KIA	K/NC	K/NC
Motility Wet Prep	POS - VERY MOTILE - DARTING, TUMBLING		H_2S	NEG	
Motility Deep	POS	POS	Pseudo P	NEG	NEG
Oxidase	SLOW POS > 1 MIN		Pseudo F	NEG	NEG
Catalase	POS		★NO_3 reduced		POS
PLATES	4D ~~48 h~~	7 day	Gas from NO_3	NEG	NEG
Odor	NONE		NO_2 reduced		NEG
Pigment on swab	BRIGHT DEEP YELLOW		Gas from NO_2	NEG	NEG
Pigment on BAP	YELLOW		OF Fructose	BLUE	BLUE 11/12 BLUE
Morphology on BAP	SPARSE IN 24h.		OF Dextrose	GRN	GRN BLUE/GRN
Beta hemolysis	NEG		OF Lactose	BLUE	BLUE BLUE
Growth on Mac	NEG	NEG	OF Maltose	BLUE	↓ ↓
★DNase hydrolysis	POS	POS	OF Mannitol	BLUE	
★Starch hydrolysis	NEG	WEAK +	OF Xylose	BLUE	
Lecithinase	NEG	NEG	OF Sucrose	BLUE	↓
Lipase	NEG	NEG	Arginine	NEG	NEG
Rapid PYR	NEG		Lysine	↓	↓
Rapid LAP	POS		Ornithine	↓	↓
Rapid ESC	NEG		Base Control	↓	↓
Sensitivity to:			Acetamide	NEG	NEG
Penicillin (10 U)	R	R	★Esculin	POS !	POS
Vancomycin (30 ug)	S-16	S	★Gelatin	NEG	WEAK +
Colistin (10 mcg)	R	R	Indole		NEG
Polymyxin B (300 U)	S-10	R - DOUBLE ZONE GROWTH UP TO DISK	Malonate	NEG	NEG
			PAD	NEG	—
			Urea NEG 2 h	NEG	NEG
			6.5% NaCL	NEG	NEG
			10% Lactose	NEG	NEG
			ONPG	NEG	NEG
			Growth 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 97: Brevundimonas vesicularis isolate 3-of-15.

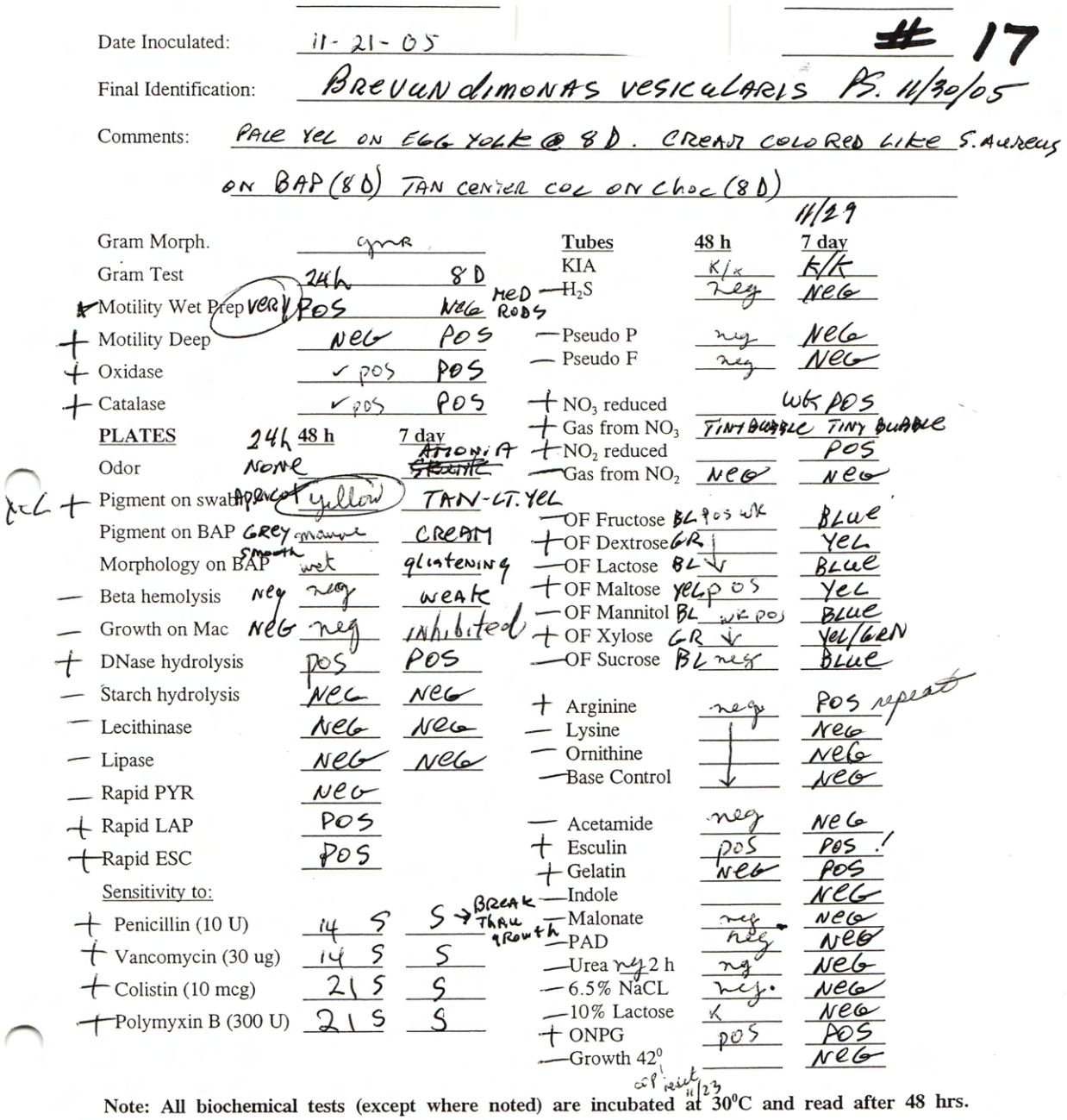


Figure 98: Brevundimonas vesicularis isolate 4-of-15.

Date Inoculated: 8-10-12

Final Identification: Brevundimonas vesicularis 8/12/12 P.S.

Comments: SLIGHT REDISH-BROWN DIFFUSIBLE PIGMENT ON PAD
SLIGHT BROWN DIFFUSIBLE PIGMENT ON STARCH @ 8 DAYS

Gram Morph.		
Gram Test	cocci, short & med Rods	
Motility Wet Prep	NeG (POS) 48hr BAP	
Motility Deep	POS 48h POS	
Oxidase (from choc)	NeG BAP POS (30 sec)	
Catalase (from choc)	NeG (NeG) (very weak)	

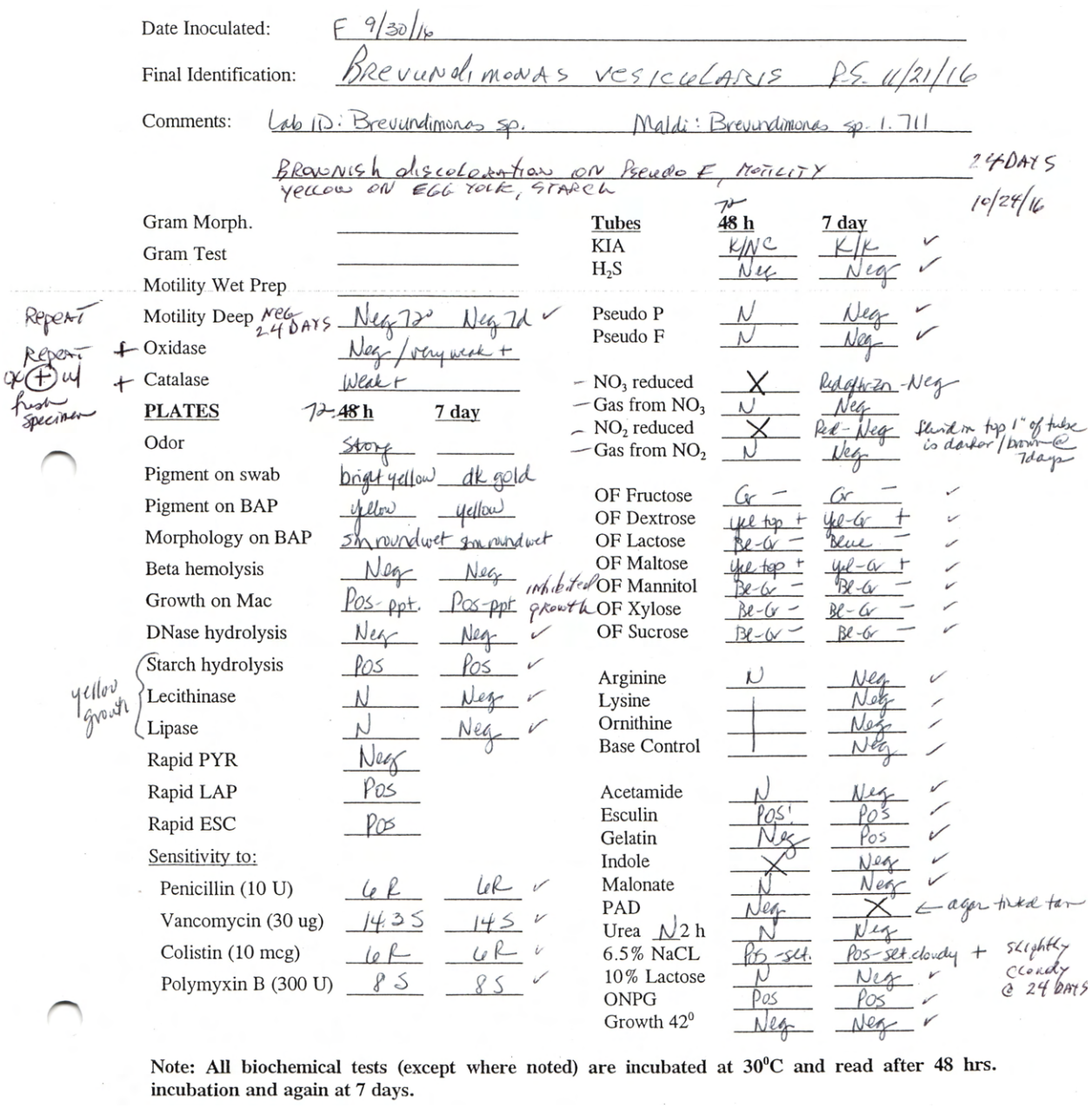
PLATES	48 h	7 day
Odor	~~stinks~~	None
Pigment on swab	Light cream/~~yellow~~	Buff
Pigment on BAP	Grey	
Morphology on BAP	Smooth	
Beta hemolysis	NeG	
Growth on Mac	NeG	POS (small deep lavender)
DNase hydrolysis	NeG	NeG
Starch hydrolysis	NeG	POS
Lecithinase	NeG	NeG
Lipase	NeG	NeG
Rapid PYR (Choc)	NeG	NeG (48 h. BAP)
Rapid LAP (Choc)	POS	POS (48 h. BAP)
Rapid ESC (Choc)	POS	POS (48 h. BAP)

Sensitivity to:		
Penicillin (10 U)	R	R
Vancomycin (30 ug)	S-12.7	S
Colistin (10 mcg)	R	R
Polymyxin B (300 U)	R	R

Tubes	48 h	7 day (8/18/12 8 DAYS)
KIA	K/NC	K/K
H_2S	NeG	NeG
Pseudo P	NeG	NeG
Pseudo F	NeG	NeG – Diffusible Brown Pigmt
NO_3 reduced		NeG
Gas from NO_3	NeG	TINY
NO_2 reduced		NeG
Gas from NO_2	NeG	NeG
NeG OF Fructose	Blue	Blue
POS OF Dextrose	Yel	Yel/GRN
POS OF Lactose	Blue	GRN
POS OF Maltose	Yel	GRN
NeG OF Mannitol	Blue	Blue
NeG OF Xylose	Blue	Blue
NeG OF Sucrose	Blue	Blue
Arginine	NeG	NeG
Lysine	↓	↓
Ornithine	↓	↓
Base Control	↓	↓
Acetamide	NeG	NeG
Esculin	POS	POS
Gelatin	NeG	NeG
Indole		NeG
Malonate	NeG	NeG
PAD	NeG	—
Urea NeG 2 h	NeG	NeG
6.5% NaCL	NeG	NeG
10% Lactose	NeG	NeG
ONPG	NeG	NeG
Growth 42^0	NeG	NeG

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

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



Date Inoculated: F 9/30/16

Final Identification: Brevundimonas vesicularis P.S. 11/21/16

Comments: Lab ID: Brevundimonas sp. Maldi: Brevundimonas sp. 1.711

Brownish discoloration on Pseudo F, motility yellow on egg yolk, starch 24 DAYS 10/24/16

Gram Morph.			
Gram Test			
Motility Wet Prep			
Motility Deep (Neg 24 DAYS)	Neg 72°	Neg 7d	✓
+ Oxidase	Neg / very weak +		
+ Catalase	Weak +		
PLATES	72 ~~48~~ h	7 day	
Odor	Strong		
Pigment on swab	bright yellow	dk gold	
Pigment on BAP	yellow	yellow	
Morphology on BAP	sm round wet	sm round wet	
Beta hemolysis	Neg	Neg	
Growth on Mac	Pos-ppt.	Pos-ppt	inhibited growth
DNase hydrolysis	Neg	Neg	✓
Starch hydrolysis	Pos	Pos	✓
Lecithinase	N	Neg	✓
Lipase	N	Neg	✓
Rapid PYR	Neg		
Rapid LAP	Pos		
Rapid ESC	Pos		
Sensitivity to:			
Penicillin (10 U)	6 R	6R	✓
Vancomycin (30 ug)	14.3 S	14 S	✓
Colistin (10 mcg)	6 R	6 R	✓
Polymyxin B (300 U)	8 S	8 S	✓

Repeat

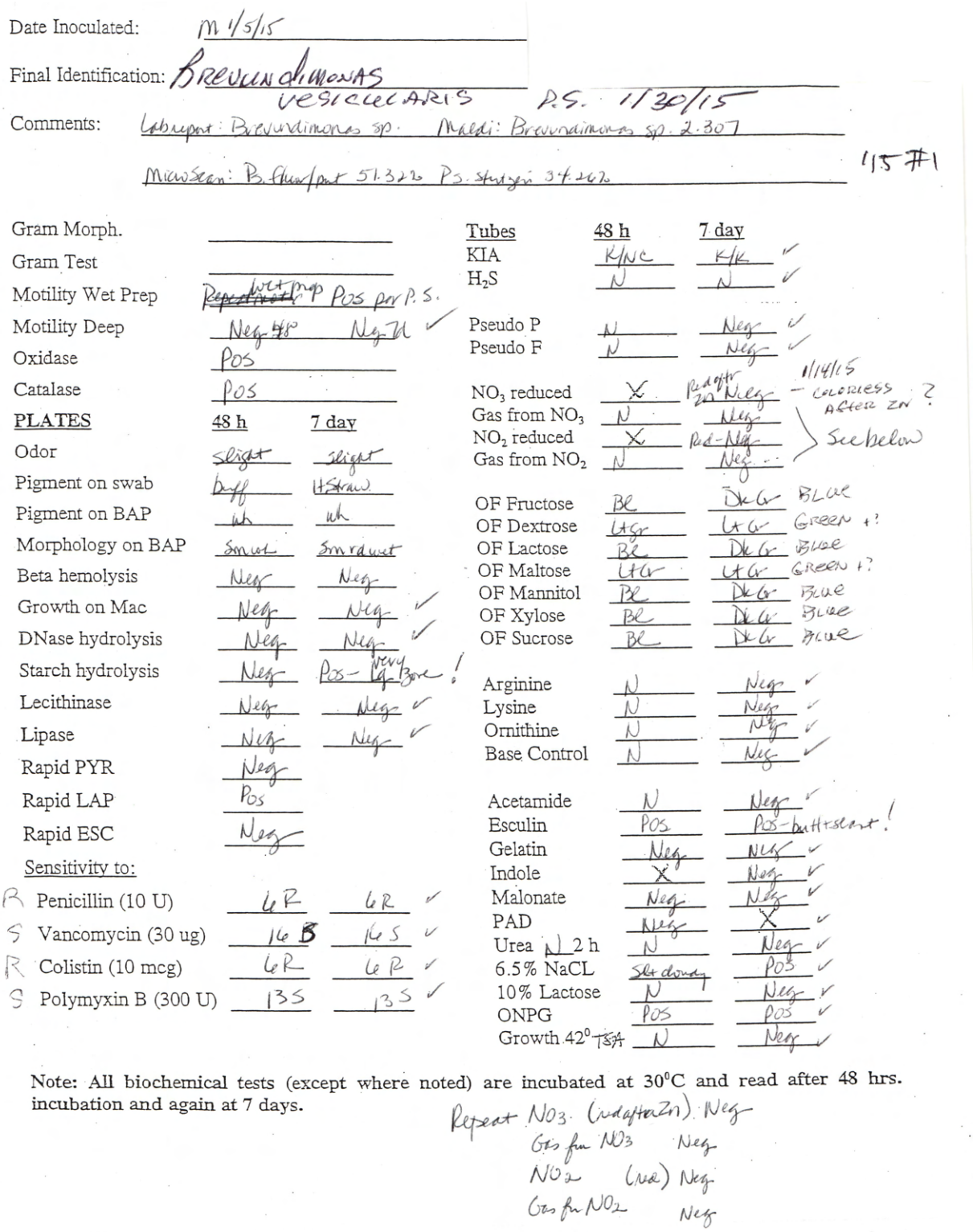
Repeat ox (+) w/ fresh specimen

yellow growth

Tubes	72 ~~48~~ h	7 day	
KIA	K/NC	K/K	✓
H_2S	Neg	Neg	✓
Pseudo P	N	Neg	✓
Pseudo F	N	Neg	✓
– NO_3 reduced	X	Red after Zn - Neg	
– Gas from NO_3	N	Neg	
– NO_2 reduced	X	Red - Neg	fluid in top 1" of tube is darker / brown @ 7 days
– Gas from NO_2	N	Neg	
OF Fructose	Gr –	Gr –	✓
OF Dextrose	yel top +	yel-Gr +	✓
OF Lactose	Bl-Gr –	Blue –	✓
OF Maltose	yel top +	yel-Gr +	✓
OF Mannitol	Bl-Gr –	Bl-Gr –	✓
OF Xylose	Bl-Gr –	Bl-Gr –	✓
OF Sucrose	Bl-Gr –	Bl-Gr –	✓
Arginine	N	Neg	✓
Lysine		Neg	✓
Ornithine		Neg	✓
Base Control		Neg	✓
Acetamide	N	Neg	✓
Esculin	Pos!	Pos	✓
Gelatin	Neg	Pos	✓
Indole	X	Neg	✓
Malonate	N	Neg	✓
PAD	Neg	X	← agar tinted tan
Urea N 2 h	N	Neg	
6.5% NaCL	Pos-slt.	Pos-slt. cloudy +	slightly cloudy @ 24 DAYS
10% Lactose	N	Neg	✓
ONPG	Pos	Pos	✓
Growth 42°	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 100: Brevundimonas vesicularis isolate 6-of-15.



Date Inoculated: M 1/5/15

Final Identification: BREVUNDIMONAS VESICULARIS P.S. 1/30/15

Comments: Labreport: Brevundimonas sp. Maldi: Brevundimonas sp. 2.307

MicroSeam: Ps. fluor/put 51.32% Ps. stutzeri 34.26%

115 #1

Gram Morph.		
Gram Test		
Motility Wet Prep	~~Repeat motil~~ wet prep	Pos per P.S.
Motility Deep	Neg 48	Neg 7d ✓
Oxidase	Pos	
Catalase	Pos	

PLATES	48 h	7 day
Odor	slight	slight
Pigment on swab	buff	lt straw
Pigment on BAP	wh	wh
Morphology on BAP	Sm wh	Sm rd wet
Beta hemolysis	Neg	Neg
Growth on Mac	Neg	Neg ✓
DNase hydrolysis	Neg	Neg ✓
Starch hydrolysis	Neg	Pos - very lg zone!
Lecithinase	Neg	Neg ✓
Lipase	Neg	Neg ✓
Rapid PYR	Neg	
Rapid LAP	Pos	
Rapid ESC	Neg	

Sensitivity to:

R	Penicillin (10 U)	6R	6R ✓
S	Vancomycin (30 ug)	16 B	16 S ✓
R	Colistin (10 mcg)	6R	6R ✓
S	Polymyxin B (300 U)	13S	13S ✓

Tubes	48 h	7 day	
KIA	K/NC	K/K ✓	
H_2S	N	N ✓	
Pseudo P	N	Neg ✓	
Pseudo F	N	Neg ✓	
NO_3 reduced	X	Red after Zn Neg	1/14/15 - colorless after Zn?
Gas from NO_3	N	Neg	See below
NO_2 reduced	X	Red-Neg	
Gas from NO_2	N	Neg	
OF Fructose	Bl	Dk Gr	Blue
OF Dextrose	Lt Gr	Lt Gr	Green +?
OF Lactose	Bl	Dk Gr	Blue
OF Maltose	Lt Gr	Lt Gr	Green +?
OF Mannitol	Bl	Dk Gr	Blue
OF Xylose	Bl	Dk Gr	Blue
OF Sucrose	Bl	Dk Gr	Blue
Arginine	N	Neg ✓	
Lysine	N	Neg ✓	
Ornithine	N	Neg ✓	
Base Control	N	Neg ✓	
Acetamide	N	Neg ✓	
Esculin	Pos	Pos - butt + slant!	
Gelatin	Neg	Neg ✓	
Indole	X	Neg ✓	
Malonate	Neg	Neg ✓	
PAD	Neg	X ✓	
Urea N 2 h	N	Neg ✓	
6.5% NaCL	Slt cloudy	Pos ✓	
10% Lactose	N	Neg ✓	
ONPG	Pos	Pos ✓	
Growth 42° TSA	N	Neg ✓	

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

Repeat NO_3 (red after Zn) Neg
Gas from NO_3 Neg
NO_2 (red) Neg
Gas from NO_2 Neg

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

12 GENUS BURKHOLDERIA

12.1 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_3 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 (30μg)	0	6	0.00	19.52	Lysine	3	3	50.00	50.00
Colistin (10μg)	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: 6-1-12

Final Identification: Burkholderia cenocepacia (Genomospecies 3)

Comments: P.S. 6/8/12

Gram Morph.		
Gram Test	24h	
Motility Wet Prep	Pos - great spots very motile	
Motility Deep	Pos	Pos !
Oxidase	Pos - 10 sec	
Catalase	Strong Pos	
PLATES	**48 h**	**7 day**
Odor	None	
Pigment on swab	Flesh	
Pigment on BAP	Grey-Cream	
Morphology on BAP	Opaque	Smooth
Beta hemolysis	Neg	
Growth on Mac	Pos	Pos
DNase hydrolysis	Neg	Neg
Starch hydrolysis	Neg	Neg
Lecithinase	Neg	Neg
Lipase	Pos !	Pos !
Rapid PYR	Neg	
Rapid LAP	Pos	
Rapid ESC	Neg	
Sensitivity to:		
Penicillin (10 U)	R	R
Vancomycin (30 ug)	R	R
Colistin (10 mcg)	R	R
Polymyxin B (300 U)	R	R

	24 48 h	6/8 7 day
Tubes		
KIA	Alk/Alk	K/K
H_2S	Neg	Neg
Pseudo P	Neg	Neg
Pseudo F	Neg	Neg - Brown tip of slant
NO_3 reduced		Neg
Gas from NO_3	tiny bubble	Neg - tiny bubble
NO_2 reduced		Neg
Gas from NO_2	Neg	Neg
OF Fructose	GRN	GRN
OF Dextrose	Yel	Yel
OF Lactose	Yel/GRN	Yel
OF Maltose	GRN	Yel
OF Mannitol	Yel/GRN	GRN
OF Xylose	GRN	Yel/GRN
OF Sucrose	Yel	Yel
Arginine	Neg	Neg
Lysine	Neg	Neg
Ornithine	Pos	Pos
Base Control	Neg	Neg
Acetamide	Pos	Pos
Esculin	Neg	Pos
Gelatin	W+	Pos !
Indole		Neg
Malonate	Neg	Neg
PAD	Neg	—
Urea Neg 2 h	Pos slant	Pos
6.5% NaCL	Neg	Neg
10% Lactose	Pos	Pos
ONPG	Neg	Neg
Growth 42^0	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 102: Burkholderia cenocepacia isolate 1-of-6.

Date Inoculated: 6-17-10

Final Identification: Burkholderia cenocepacia (GS III) 6/29/10 P.S.

Comments: Yellow on KIA, Starch + Egg @ 8 Days (Light Yellow)

Gram Morph.		
Gram Test	24hr	
Motility Wet Prep	Pos - very motile	
Motility Deep	Pos	Pos
Oxidase	Pos	
Catalase	Pos (Not strong)	
PLATES	**48 h**	**7 day**
Odor	Cabbage	
Pigment on swab	Flesh	
Pigment on BAP	Grey	
Morphology on BAP	Smooth - Smears	
Beta hemolysis	Neg	
Growth on Mac	Neg	Pos - Inhibited Growth
DNase hydrolysis	Neg	Neg
Starch hydrolysis	Neg	Neg
Lecithinase	Neg	Neg
Lipase	Neg	Pos
Rapid PYR	Neg	
Rapid LAP	Pos	
Rapid ESC	Neg	
Sensitivity to:		
Penicillin (10 U)	R	R
Vancomycin (30 ug)	R	R
Colistin (10 mcg)	R	R
Polymyxin B (300 U)	R	R

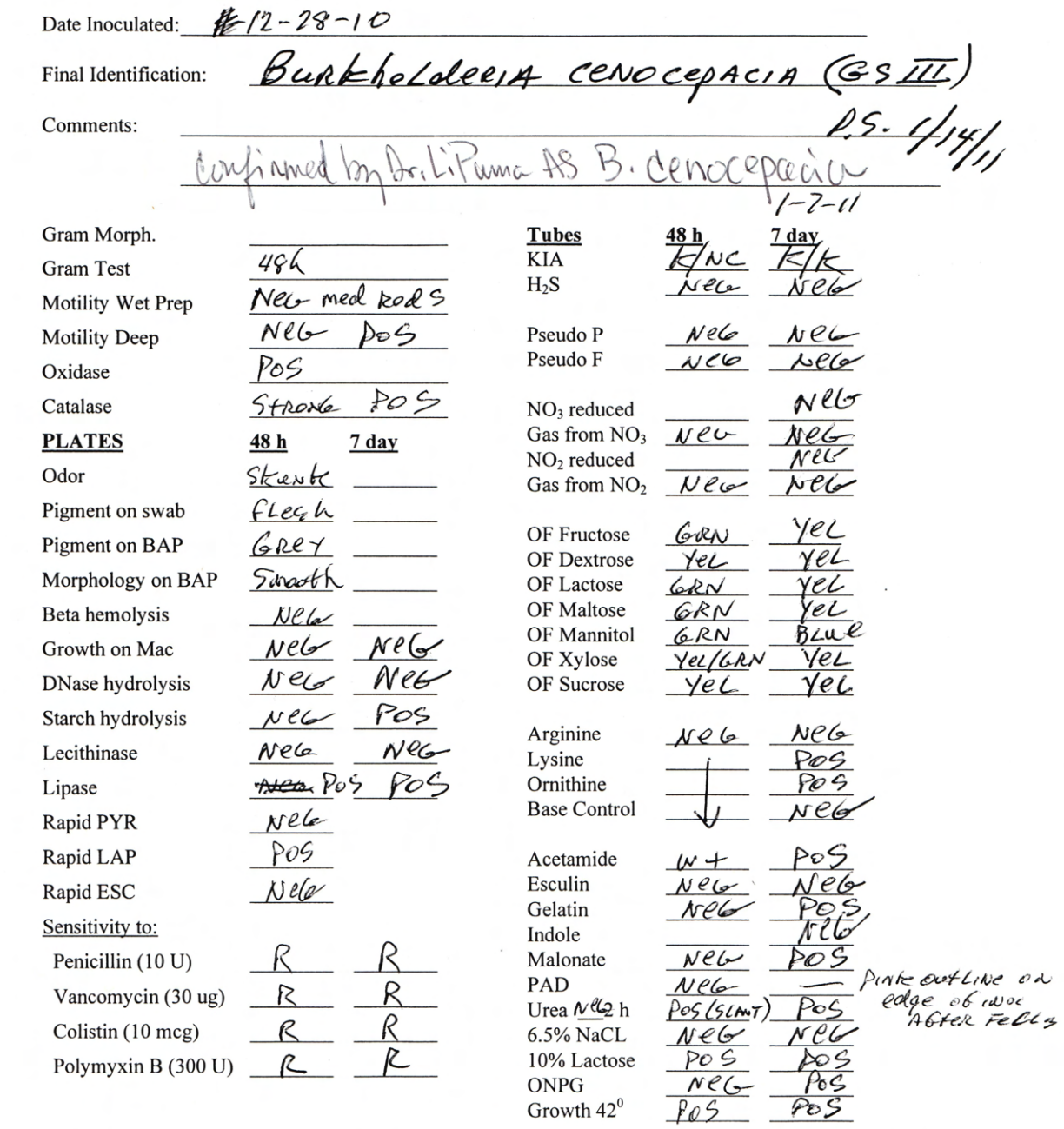
24 6/25 8 DAYS

Tubes	**48 h**	**7 day**
KIA	NC/NC	K/K
H_2S	Neg	Neg
Pseudo P	Neg	Neg
Pseudo F	Neg	Neg
NO_3 reduced		Neg
Gas from NO_3	Neg	Neg
NO_2 reduced		Neg
Gas from NO_2	TINY Bubble	TINY Bubble
OF Fructose	Blue	Yel/GRN
OF Dextrose	Yel	Yel
OF Lactose	Yel	Yel
OF Maltose	GRN	Yel/GRN
OF Mannitol	GRN	Yel/GRN
OF Xylose	GRN	Yel
OF Sucrose	Yel	Yel
Arginine	Neg	Neg
Lysine	Pos	Pos
Ornithine	Pos	Pos
Base Control	Neg	Neg
Acetamide	Neg	Neg
Esculin	Neg	Neg (BROWN PIGMENT)
Gelatin	Neg	Pos!
Indole		Neg
Malonate	Neg	Pos
PAD	Neg	
Urea Neg 2 h	Neg	Pos
6.5% NaCL	Neg	Neg
10% Lactose	Pos	Pos
ONPG	Neg	Neg
Growth 42^0	Pos	Pos

Brown diffusible pigment @ 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: Burkholderia cenocepacia (GS III)

Comments: P.S. 4/14/11

Confirmed by Dr. LiPuma as B. cenocepacia 1-7-11

Gram Morph.	
Gram Test	48h
Motility Wet Prep	Neg med rods
Motility Deep	Neg Pos
Oxidase	Pos
Catalase	Strong Pos

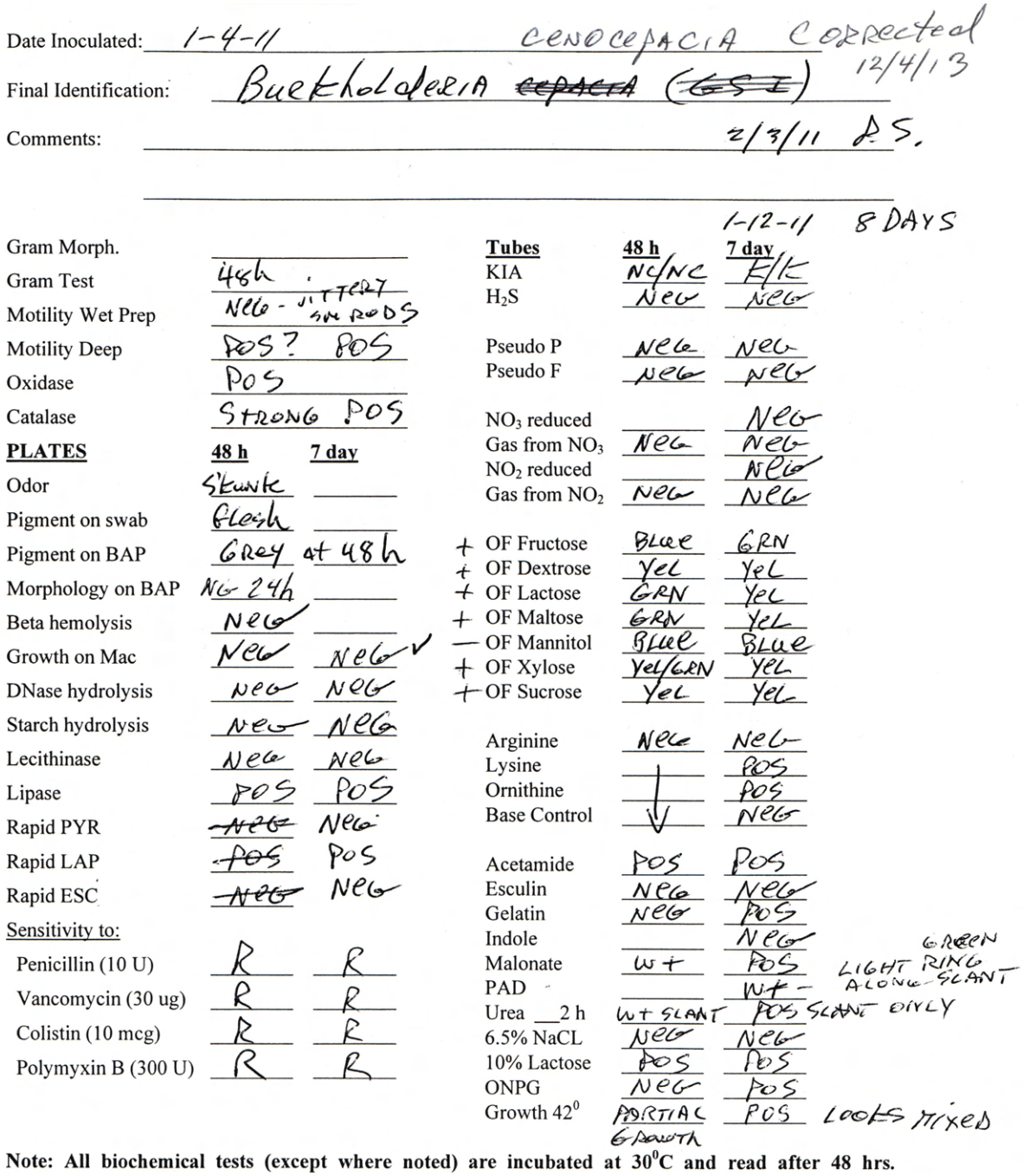
PLATES	48 h	7 day
Odor	Skunk	
Pigment on swab	Flesh	
Pigment on BAP	Grey	
Morphology on BAP	Smooth	
Beta hemolysis	Neg	
Growth on Mac	Neg	Neg
DNase hydrolysis	Neg	Neg
Starch hydrolysis	Neg	Pos
Lecithinase	Neg	Neg
Lipase	~~Neg~~ Pos	Pos
Rapid PYR	Neg	
Rapid LAP	Pos	
Rapid ESC	Neg	
Sensitivity to:		
Penicillin (10 U)	R	R
Vancomycin (30 ug)	R	R
Colistin (10 mcg)	R	R
Polymyxin B (300 U)	R	R

Tubes	48 h	7 day
KIA	K/NC	K/K
H_2S	Neg	Neg
Pseudo P	Neg	Neg
Pseudo F	Neg	Neg
NO_3 reduced		Neg
Gas from NO_3	Neg	Neg
NO_2 reduced		Neg
Gas from NO_2	Neg	Neg
OF Fructose	GRN	Yel
OF Dextrose	Yel	Yel
OF Lactose	GRN	Yel
OF Maltose	GRN	Yel
OF Mannitol	GRN	Blue
OF Xylose	Yel/GRN	Yel
OF Sucrose	Yel	Yel
Arginine	Neg	Neg
Lysine		Pos
Ornithine		Pos
Base Control		Neg
Acetamide	W+	Pos
Esculin	Neg	Neg
Gelatin	Neg	Pos
Indole		Neg
Malonate	Neg	Pos
PAD	Neg	—
Urea Neg h	Pos (slmt)	Pos
6.5% NaCL	Neg	Neg
10% Lactose	Pos	Pos
ONPG	Neg	Pos
Growth 42^0	Pos	Pos

Pink outline on edge of wells after FeCl3

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

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



Date Inoculated: 1-4-11 CENOCEPACIA Corrected 12/4/13

Final Identification: Burkholderia ~~cepacia~~ (~~GSI~~)

Comments: 2/3/11 D.S.

1-12-11 8 DAYS

				Tubes	48 h	7 day
Gram Morph.				KIA	NC/NC	K/K
Gram Test	48h. JITTERY			H_2S	Neg	Neg
Motility Wet Prep	Neg - SM RODS					
Motility Deep	POS? POS			Pseudo P	Neg	Neg
Oxidase	POS			Pseudo F	Neg	Neg
Catalase	STRONG POS			NO_3 reduced		Neg
PLATES	**48 h**	**7 day**		Gas from NO_3	Neg	Neg
Odor	Skunk			NO_2 reduced		Neg
Pigment on swab	Flesh			Gas from NO_2	Neg	Neg
Pigment on BAP	Grey at 48h		+	OF Fructose	Blue	GRN
Morphology on BAP	NG 24h		+	OF Dextrose	Yel	Yel
Beta hemolysis	Neg		+	OF Lactose	GRN	Yel
Growth on Mac	Neg	Neg ✓	+	OF Maltose	GRN	Yel
DNase hydrolysis	Neg	Neg	—	OF Mannitol	Blue	Blue
Starch hydrolysis	Neg	Neg	+	OF Xylose	Yel/GRN	Yel
Lecithinase	Neg	Neg	+	OF Sucrose	Yel	Yel
Lipase	POS	POS		Arginine	Neg	Neg
Rapid PYR	~~Neg~~	Neg		Lysine		POS
Rapid LAP	~~POS~~	POS		Ornithine		POS
Rapid ESC	~~Neg~~	Neg		Base Control		Neg
Sensitivity to:				Acetamide	POS	POS
Penicillin (10 U)	R	R		Esculin	Neg	Neg
Vancomycin (30 ug)	R	R		Gelatin	Neg	POS
Colistin (10 mcg)	R	R		Indole		Neg
Polymyxin B (300 U)	R	R		Malonate	W+	POS
				PAD		W+
				Urea 2 h	W+ SLANT	POS SLANT ONLY
				6.5% NaCL	Neg	Neg
				10% Lactose	POS	POS
				ONPG	Neg	POS
				Growth 42°	PARTIAL GROWTH	POS

GREEN LIGHT RING ALONG SLANT

LOOKS MIXED

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

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_3 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_2 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 (30μg)	0	28	0.00	6.03	Lysine	26	2	92.86	87.69
Colistin (10μg)	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.

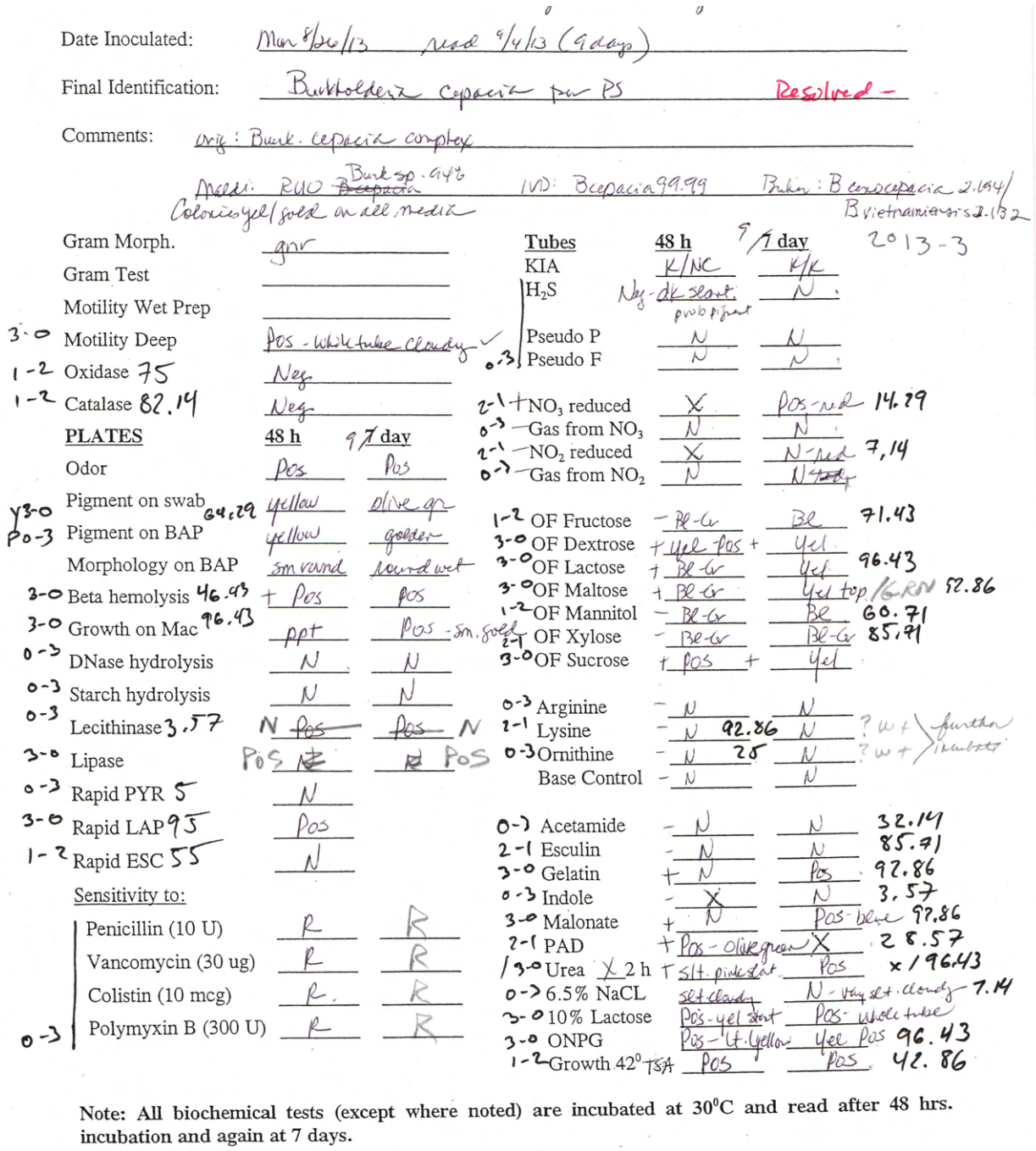
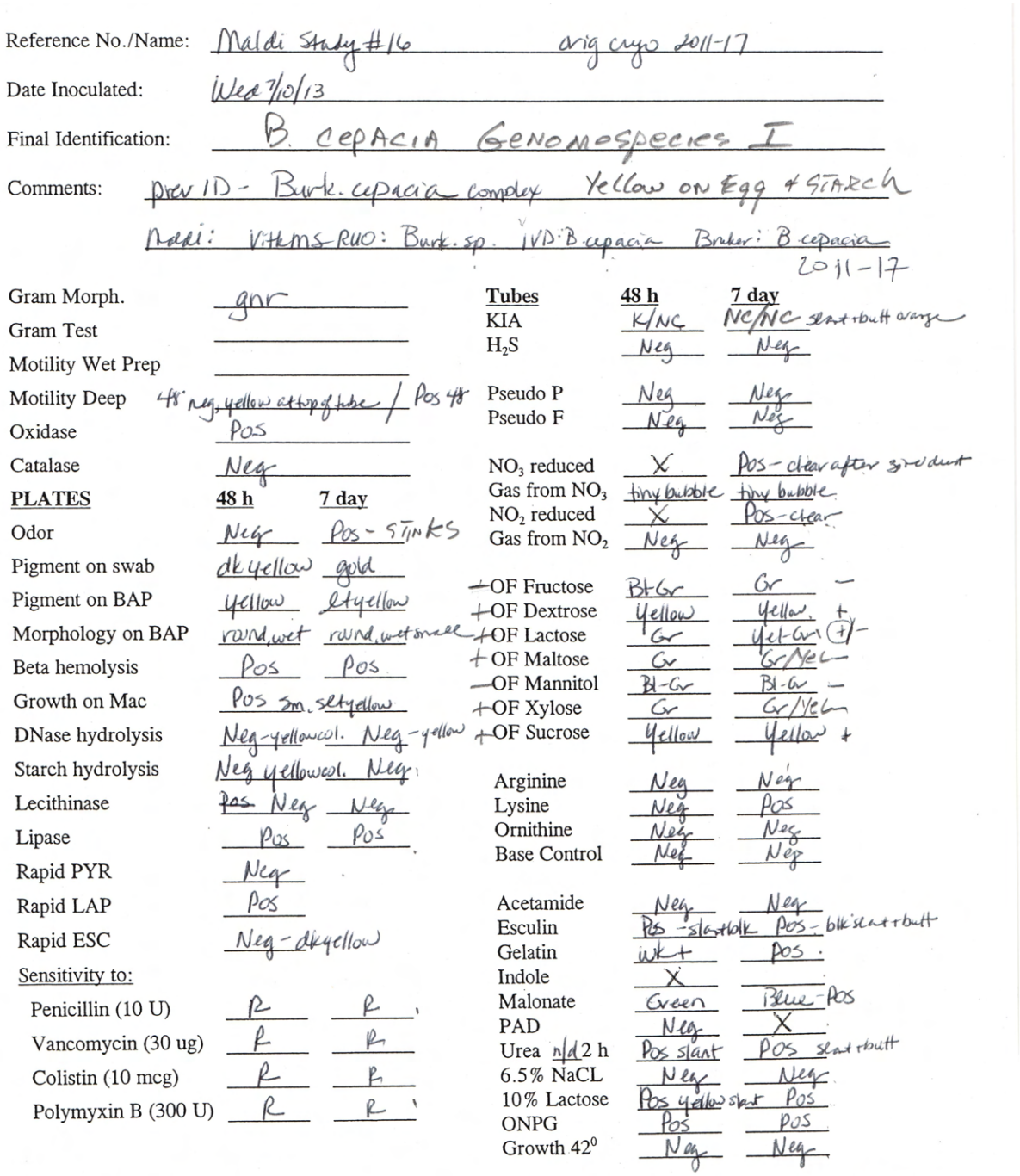


Figure 106: Burkholderia cepacia isolate 1-of-28.



Reference No./Name: Maldi Study #16 orig cryo 2011-17

Date Inoculated: Wed 7/10/13

Final Identification: B. cepacia Genomospecies I

Comments: prev ID - Burk. cepacia complex Yellow on Egg + Starch

Maldi: Vitek MS RUO: Burk. sp. IVD: B. cepacia Bruker: B. cepacia 2011-17

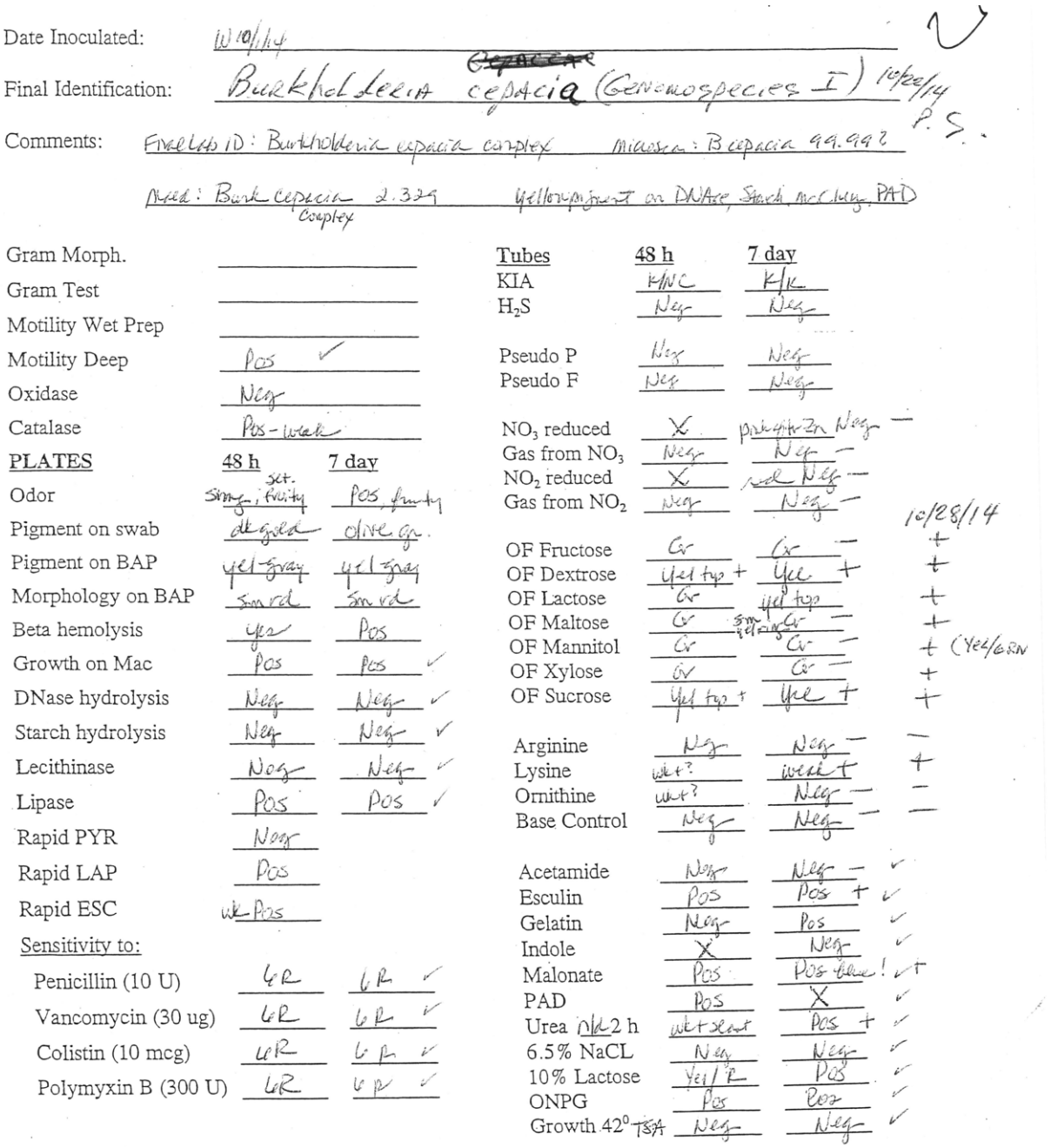
Gram Morph.	gnr	
Gram Test		
Motility Wet Prep		
Motility Deep	48 Neg, yellow at top of tube / Pos 48	
Oxidase	Pos	
Catalase	Neg	

PLATES	48 h	7 day
Odor	Neg	Pos - stinks
Pigment on swab	dk yellow	gold
Pigment on BAP	yellow	lt yellow
Morphology on BAP	round, wet	round, wet smear
Beta hemolysis	Pos	Pos
Growth on Mac	Pos sm. sl yellow	
DNase hydrolysis	Neg - yellow col.	Neg - yellow
Starch hydrolysis	Neg yellow col.	Neg
Lecithinase	~~Pos~~ Neg	Neg
Lipase	Pos	Pos
Rapid PYR	Neg	
Rapid LAP	Pos	
Rapid ESC	Neg - dk yellow	
Sensitivity to:		
Penicillin (10 U)	R	R
Vancomycin (30 ug)	R	R
Colistin (10 mcg)	R	R
Polymyxin B (300 U)	R	R

Tubes	48 h	7 day
KIA	K/NC	NC/NC slant + butt orange
H_2S	Neg	Neg
Pseudo P	Neg	Neg
Pseudo F	Neg	Neg
NO_3 reduced	X	Pos - clear after zinc dust
Gas from NO_3	tiny bubble	tiny bubble
NO_2 reduced	X	Pos - clear
Gas from NO_2	Neg	Neg
−OF Fructose	Bt Gr	Gr −
+OF Dextrose	Yellow	Yellow +
+OF Lactose	Gr	Yel-Gr (+)/−
+ OF Maltose	Gr	Gr/Yel
−OF Mannitol	Bl-Gr	Bl-Gr −
+OF Xylose	Gr	Gr/Yel
+OF Sucrose	Yellow	Yellow +
Arginine	Neg	Neg
Lysine	Neg	Pos
Ornithine	Neg	Neg
Base Control	Neg	Neg
Acetamide	Neg	Neg
Esculin	Pos - slant blk	Pos - blk slant + butt
Gelatin	wk +	pos
Indole	X	
Malonate	Green	Blue - Pos
PAD	Neg	X
Urea n/d 2 h	Pos slant	Pos slant + butt
6.5% NaCL	Neg	Neg
10% Lactose	Pos yellow slant	Pos
ONPG	Pos	Pos
Growth 42^0	Neg	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 107: Burkholderia cepacia isolate 2-of-28.



Date Inoculated: W 10/1/14

Final Identification: Burkholderia cepacia (Genomospecies I) 10/22/14 P.S.

Comments: Final Lab ID: Burkholderia cepacia complex Microscan: B cepacia 99.99?

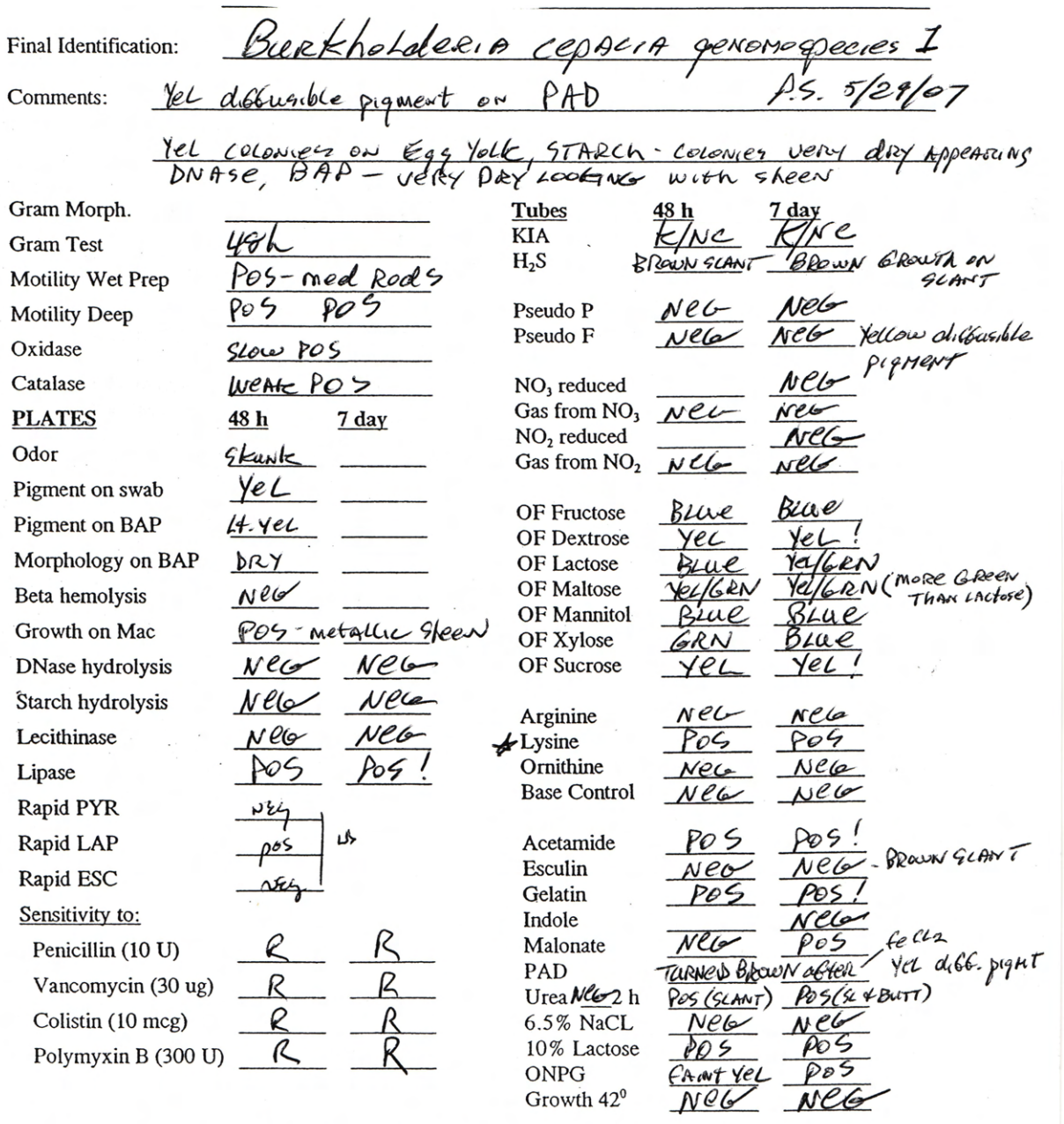
Mad: Burk cepacia complex 2.329 Yellow pigment on DNAse, Starch, McCluy, PAD

Gram Morph.		
Gram Test		
Motility Wet Prep		
Motility Deep	Pos ✓	
Oxidase	Neg	
Catalase	Pos - weak	
PLATES	**48 h**	**7 day**
Odor	Smg, sct. fruity	Pos, fruity
Pigment on swab	dk gold	olive gr.
Pigment on BAP	yel-gray	yel gray
Morphology on BAP	Sm rd	Sm rd
Beta hemolysis	yes	Pos
Growth on Mac	Pos	Pos ✓
DNase hydrolysis	Neg	Neg ✓
Starch hydrolysis	Neg	Neg ✓
Lecithinase	Neg	Neg ✓
Lipase	Pos	Pos ✓
Rapid PYR	Neg	
Rapid LAP	Pos	
Rapid ESC	wk Pos	
Sensitivity to:		
Penicillin (10 U)	6R	6R ✓
Vancomycin (30 ug)	6R	6R ✓
Colistin (10 mcg)	6R	6R ✓
Polymyxin B (300 U)	6R	6R ✓

Tubes	48 h	7 day	
KIA	K/NC	K/K	
H_2S	Neg	Neg	
Pseudo P	Neg	Neg	
Pseudo F	Neg	Neg	
NO_3 reduced	X	pink gitr Zn Neg	−
Gas from NO_3	Neg	Neg	−
NO_2 reduced	X	red Neg	−
Gas from NO_2	Neg	Neg	−
			10/28/14
OF Fructose	Cr	Cr −	+
OF Dextrose	Yel top +	Yel +	+
OF Lactose	Cr	yel top	+
OF Maltose	Cr	sm yel ring Cr −	+
OF Mannitol	Cr	Cr −	+ (Yel/GRN
OF Xylose	Cr	Cr −	+
OF Sucrose	Yel top +	Yel +	+
Arginine	Neg	Neg −	−
Lysine	wk+?	weak +	+
Ornithine	wk+?	Neg −	−
Base Control	Neg	Neg −	−
Acetamide	Neg	Neg −	✓
Esculin	Pos	Pos +	✓
Gelatin	Neg	Pos	✓
Indole	X	Neg	✓
Malonate	Pos	Pos blue!	✓ +
PAD	Pos	X	✓
Urea nld 2 h	wk+ slant	Pos +	✓
6.5% NaCL	Neg	Neg	✓
10% Lactose	Yel/R	Pos	✓
ONPG	Pos	Pos	✓
Growth 42° TSA	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 108: Burkholderia cepacia isolate 3-of-28.


Final Identification: Burkholderia cepacia genomospecies I

Comments: Yel diffusible pigment on PAD A.S. 5/29/07

Yel colonies on Egg Yolk, STARCH - colonies very dry appearing
DNASE, BAP – very dry looking with sheen

Gram Morph.		
Gram Test	48h	
Motility Wet Prep	Pos - med Rods	
Motility Deep	Pos Pos	
Oxidase	Slow Pos	
Catalase	Weak Pos	
PLATES	**48 h**	**7 day**
Odor	Skunk	
Pigment on swab	Yel	
Pigment on BAP	Lt. Yel	
Morphology on BAP	DRY	
Beta hemolysis	Neg	
Growth on Mac	Pos - metallic sheen	
DNase hydrolysis	Neg	Neg
Starch hydrolysis	Neg	Neg
Lecithinase	Neg	Neg
Lipase	Pos	Pos !
Rapid PYR	Neg	
Rapid LAP	pos	LR
Rapid ESC	Neg	
Sensitivity to:		
Penicillin (10 U)	R	R
Vancomycin (30 ug)	R	R
Colistin (10 mcg)	R	R
Polymyxin B (300 U)	R	R

Tubes	**48 h**	**7 day**
KIA	K/NC	K/NC
H_2S	Brown slant	Brown growth on slant
Pseudo P	Neg	Neg
Pseudo F	Neg	Neg Yellow diffusible pigment
NO_3 reduced		Neg
Gas from NO_3	Neg	Neg
NO_2 reduced		Neg
Gas from NO_2	Neg	Neg
OF Fructose	Blue	Blue
OF Dextrose	Yel	Yel !
OF Lactose	Blue	Ya/GRN
OF Maltose	Yel/GRN	Ya/GRN (more green than lactose)
OF Mannitol	Blue	Blue
OF Xylose	GRN	Blue
OF Sucrose	Yel	Yel !
Arginine	Neg	Neg
★ Lysine	Pos	Pos
Ornithine	Neg	Neg
Base Control	Neg	Neg
Acetamide	Pos	Pos !
Esculin	Neg	Neg - brown slant
Gelatin	Pos	Pos !
Indole		Neg
Malonate	Neg	Pos
PAD	Turned Brown after	fe Cl2 Yel diff. pigment
Urea Neg 2 h	Pos (slant)	Pos (sl & butt)
6.5% NaCL	Neg	Neg
10% Lactose	Pos	Pos
ONPG	Faint Yel	Pos
Growth 42°	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 109: Burkholderia cepacia isolate 4-of-28.

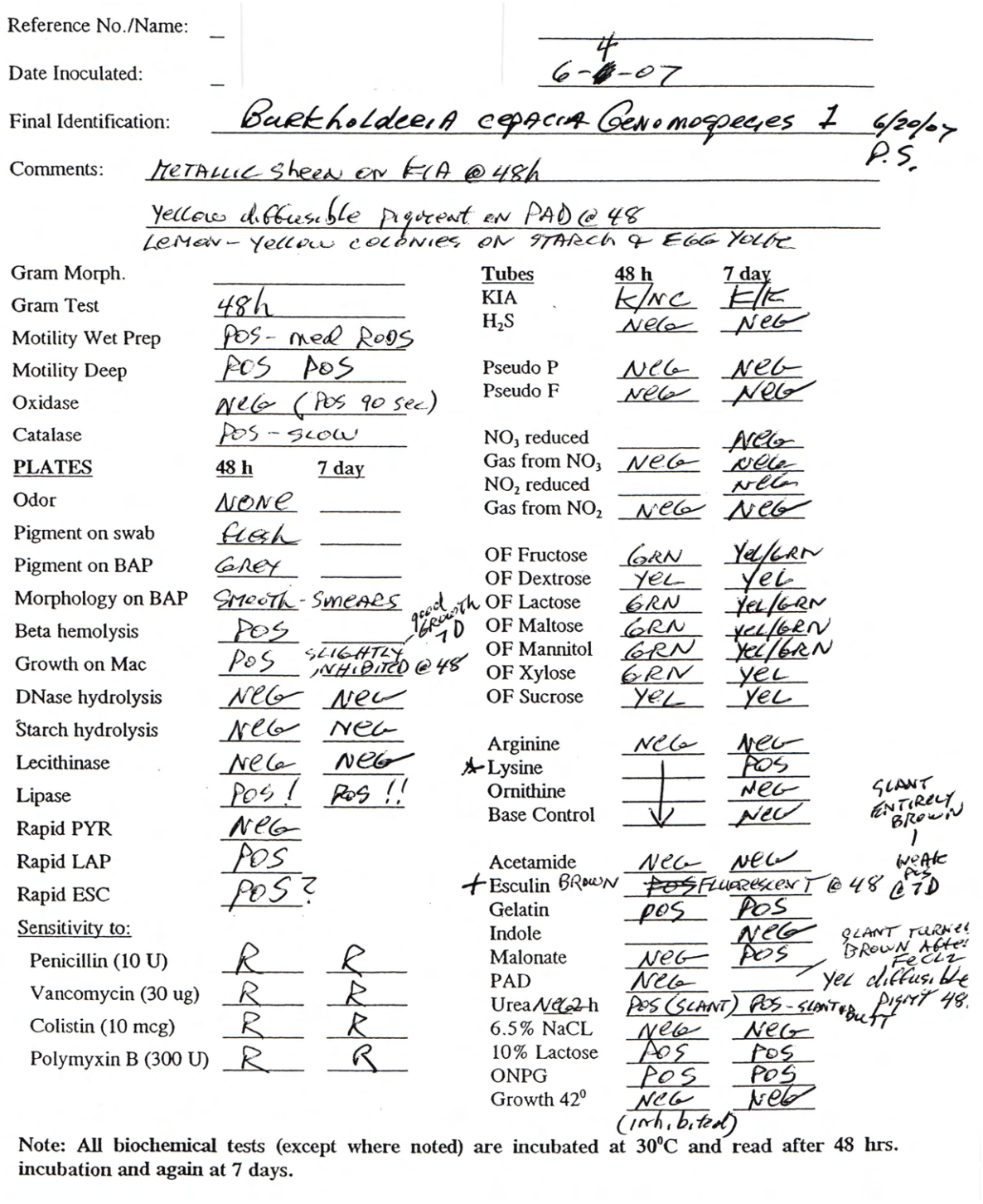


Figure 110: Burkholderia cepacia isolate 5-of-28.

Date Inoculated: 6-1-07

Final Identification: 6-18-07 Burkholderia cepacia Genomospecies 1

Comments: Yel diffusible pigment on PAD. Yel colonies on 6/20/07 P.S. Starch, Egg Yolk, DNase

Gram Morph.		
Gram Test	72h	
Motility Wet Prep	Pos-med Rods	
Motility Deep	Pos Pos	
Oxidase	Neg (very delayed)	
Catalase	Pos	
PLATES	**48 h**	**7 day**
Odor	None	
Pigment on swab	Flesh	
Pigment on BAP	Grey	
Morphology on BAP	Smooth	
Beta hemolysis	Pos	
Growth on Mac	Pos	
DNase hydrolysis	Neg	Neg
Starch hydrolysis	Neg	Neg
Lecithinase	Neg	Neg
Lipase	Pos!!	Pos
Rapid PYR	Neg	
Rapid LAP	Pos	
Rapid ESC	+??	
Sensitivity to:		
Penicillin (10 U)	R	R
Vancomycin (30 ug)	R	R
Colistin (10 mcg)	R	R
Polymyxin B (300 U)	R	R

6/14

Tubes	**48 h**	**7 day**
KIA	K/NC	K/K
H_2S	Neg	Neg
Pseudo P	Neg	Neg
Pseudo F	Neg	Neg
NO_3 reduced		Neg
Gas from NO_3	Neg	Neg
NO_2 reduced		Neg
Gas from NO_2	Neg	Neg
OF Fructose	GRN	Yel/GRN
OF Dextrose	Yel !	Yel
OF Lactose	Yel/GRN	Yel/GRN
OF Maltose	GRN	Yel/GRN
OF Mannitol	GRN	Yel/GRN
OF Xylose	Yel/GRN	Yel/GRN
OF Sucrose	Yel !	Yel
Arginine	Neg	Neg
Lysine	W+	Pos
Ornithine	Neg	Pos
Base Control	Neg	Neg
Acetamide	Neg	Neg
+Esculin	W+	Pos
Gelatin	—	Pos
Indole	—	Neg
Malonate	Lt Blue	Pos
PAD		Yel diff pigment, Turns Brown in Age. Fe Cl3
Urea Neg 2 h	Neg	Pos-Slant + Butt
6.5% NaCL	Neg	Neg
10% Lactose	Pos	Pos
ONPG	Pos	Pos
Growth 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 111: Burkholderia cepacia isolate 6-of-28.

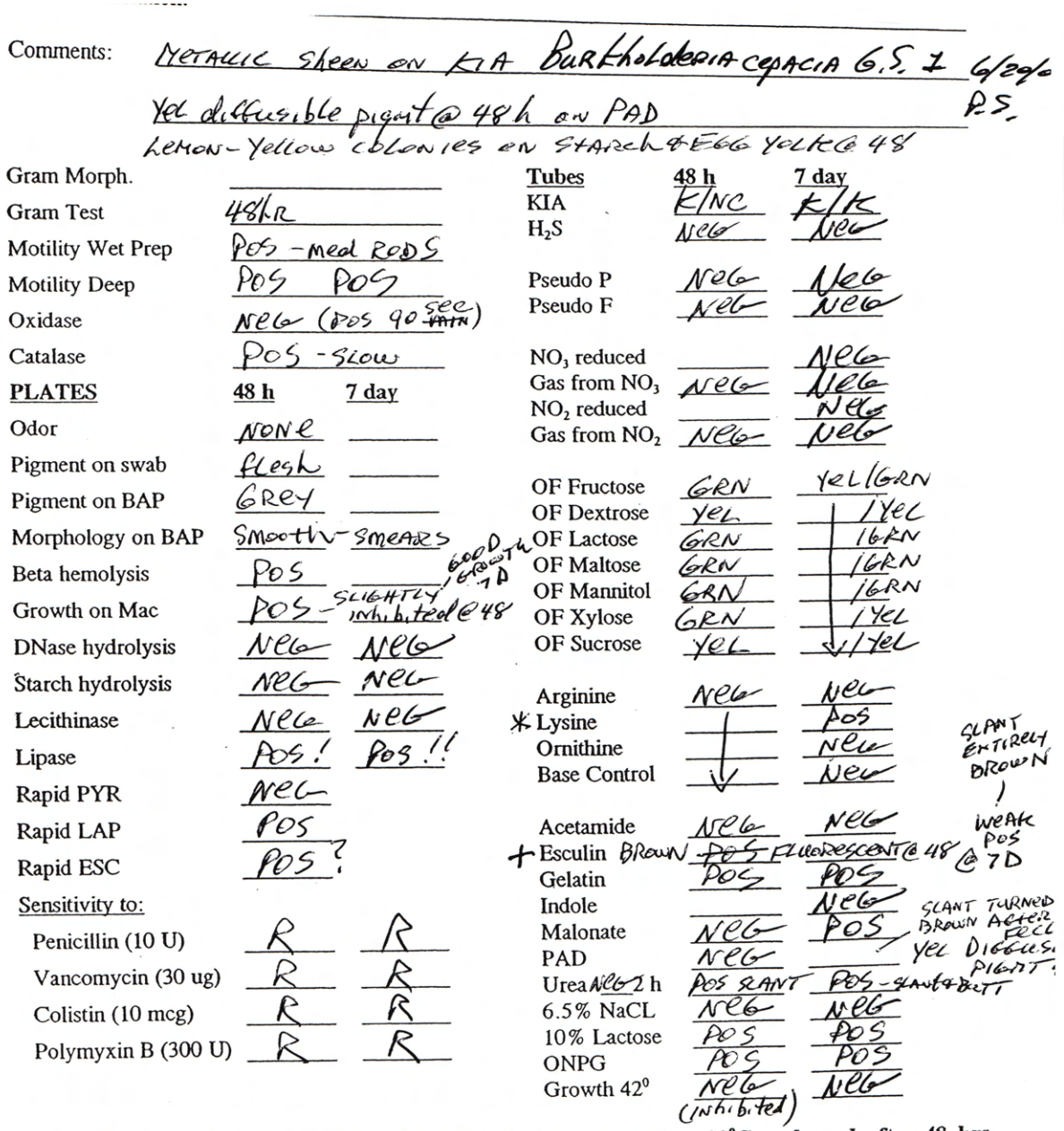
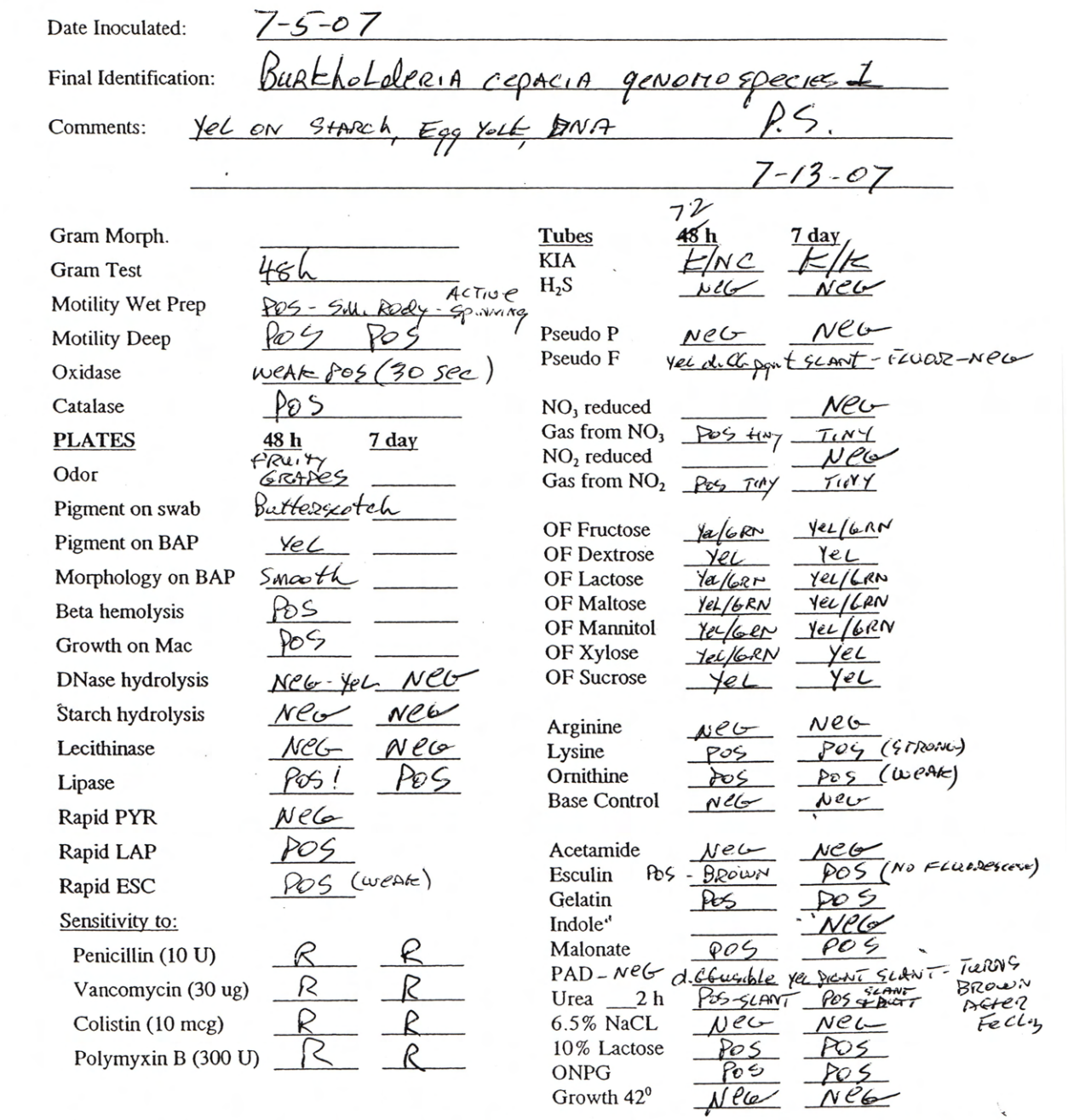


Figure 112: Burkholderia cepacia isolate 7-of-28.



Date Inoculated: 7-5-07

Final Identification: Burkholderia cepacia genomo species 1

Comments: Yel on Starch, Egg Yolk, DNA P.S.

7-13-07

Gram Morph.		
Gram Test	48h	
Motility Wet Prep	POS - Sm. Body - Active Spinning	
Motility Deep	POS	POS
Oxidase	weak POS (30 sec)	
Catalase	POS	
PLATES	**48 h**	**7 day**
Odor	Fruity Grapes	
Pigment on swab	Butterscotch	
Pigment on BAP	Yel	
Morphology on BAP	Smooth	
Beta hemolysis	POS	
Growth on Mac	POS	
DNase hydrolysis	NEG - Yel	NEG
Starch hydrolysis	NEG	NEG
Lecithinase	NEG	NEG
Lipase	POS!	POS
Rapid PYR	NEG	
Rapid LAP	POS	
Rapid ESC	POS (weak)	
Sensitivity to:		
Penicillin (10 U)	R	R
Vancomycin (30 ug)	R	R
Colistin (10 mcg)	R	R
Polymyxin B (300 U)	R	R

Tubes	~~48 h~~ 72	7 day
KIA	K/NC	K/K
H_2S	NEG	NEG
Pseudo P	NEG	NEG
Pseudo F	Yel d.Cb pgmt slant - Fluor - NEG	
NO_3 reduced		NEG
Gas from NO_3	POS tiny	TINY
NO_2 reduced		NEG
Gas from NO_2	POS TINY	TINY
OF Fructose	Yel/GRN	Yel/GRN
OF Dextrose	Yel	Yel
OF Lactose	Yel/GRN	Yel/GRN
OF Maltose	Yel/GRN	Yel/GRN
OF Mannitol	Yel/GRN	Yel/GRN
OF Xylose	Yel/GRN	Yel
OF Sucrose	Yel	Yel
Arginine	NEG	NEG
Lysine	POS	POS (strong)
Ornithine	POS	POS (weak)
Base Control	NEG	NEG
Acetamide	NEG	NEG
Esculin	POS - Brown	POS (no fluorescence)
Gelatin	POS	POS
Indole		NEG
Malonate	POS	POS
PAD - NEG	d.Cb usible	Yel pigmt slant - turns brown after FeCl3
Urea ___2 h	POS-slant	POS slant & butt
6.5% NaCL	NEG	NEG
10% Lactose	POS	POS
ONPG	POS	POS
Growth 42°	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 113: Burkholderia cepacia isolate 8-of-28.

Date Inoculated: 12-10-07

Final Identification: 12-17-07 Burkholderia cepacia Genomospecies 1

Comments: Yellow on Starch & Egg Yolk P.S. 12/17/07

Yellow diffus. ble Pigment on PAD

Gram Morph.	
Gram Test	
Motility Wet Prep	POS- medium RODS
Motility Deep	POS POS
Oxidase	Delayed POS after 2 min
Catalase	POS

PLATES	48 h	7 day
Odor	Fruity + Aromatic	
Pigment on swab	APRICOT	
Pigment on BAP	Grey	
Morphology on BAP	Smooth - Shinny	
Beta hemolysis	POS	
Growth on Mac	POS - slightly inhibited - POS	
DNase hydrolysis	Neg	Neg
Starch hydrolysis	Neg	Neg
Lecithinase	Neg	Neg
Lipase	POS !	POS !!
Rapid PYR	Neg	
Rapid LAP	POS	
Rapid ESC	Neg	
Sensitivity to:		
Penicillin (10 U)	R	R
Vancomycin (30 ug)	R	R
Colistin (10 mcg)	R	R
Polymyxin B (300 U)	R	R

Tubes	48 h	7 day
KIA	K/NC	K/K
H_2S	Neg	Neg
Pseudo P	Neg	Neg
Pseudo F	Neg	Neg
NO_3 reduced		Neg
Gas from NO_3	Neg	Neg
NO_2 reduced		Neg
Gas from NO_2	Neg	Neg
OF Fructose	GRN	Yel/GRN
OF Dextrose	Yel	Yel
OF Lactose	GRN	Yel/GRN
OF Maltose	GRN	Yel/GRN
OF Mannitol	GRN	Yel/GRN
OF Xylose	GRN	Yel
OF Sucrose	Yel	Yel
Arginine	Neg	Neg (POS CONTAMINATED)
Lysine	POS	POS
Ornithine	Neg	Neg
Base Control	Neg	Neg
Acetamide	Neg	Neg
Esculin	POS	POS
Gelatin	POS	POS
Indole		
Malonate	Neg	POS
PAD	Neg	- Yellow diffus, ble pigment
Urea Neg 2 h	POS - SLANT ONLY	POS TURNS BROWN AFTER Addition OF $FeCl_3$
6.5% NaCL	Neg	Neg
10% Lactose	POS	POS
ONPG	POS	POS
Growth 42°	Wt SLIGHT GROWTH	SLIGHT GROWTH

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

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

Date Inoculated: 1-3-08

Final Identification: Burkholderia cepacia genospecies I D.S. 1/10/08

Comments: Yel/GRN DIFFUSIBLE PIGMT on Pseudo P&F PAD

BROWN GROWTH w/ METTALIC SHEEN on KIA @ 7 D. GOLDEN YELLOW ON STARCH & Egg Yolk @ 7 D. YELLOW on DNASE 7D

Gram Morph.		
Gram Test	24h	
Motility Wet Prep	POS SM. RODS	
Motility Deep	POS POS	
Oxidase	SLOW POS	
Catalase	POS	
PLATES	**48 h**	**7 day**
Odor	NONE - SKUNK	
Pigment on swab	Butterscotch	
Pigment on BAP	Butterscotch	
Morphology on BAP	SMOOTH	
Beta hemolysis	NEG-24h. NEG 48	
Growth on Mac	POS	POS
DNase hydrolysis	NEG	NEG
Starch hydrolysis	NEG	NEG
Lecithinase	NEG	NEG
Lipase	POS	POS !
Rapid PYR	NEG	
Rapid LAP	POS	
Rapid ESC	POS	
Sensitivity to:		
Penicillin (10 U)	R	R
Vancomycin (30 ug)	R	R
Colistin (10 mcg)	R	R
Polymyxin B (300 U)	R	R

Tubes	**48 h**	**7 day**	
KIA	NC/NC	K/K	
H_2S	NEG	NEG	
Pseudo P	NEG	NEG	
Pseudo F	NEG	NEG	YELLOW DIFFUSIBLE PIGMT @ 7 D.
NO_3 reduced		NEG	
Gas from NO_3	NEG	NEG	REPEAT NO_2
NO_2 reduced			
Gas from NO_2	NEG	NEG	
OF Fructose	BLUE	BLUE/GRN	
OF Dextrose	YEL	YEL !	
OF Lactose	GRN	YEL	
OF Maltose	GRN	YEL	
OF Mannitol	BLUE	BLUE/GRN	
OF Xylose	BLUE	YEL	
OF Sucrose	YEL	YEL !	
Arginine	NEG	NEG	
Lysine	POS	POS	
Ornithine	NEG	NEG	
Base Control	NEG	NEG	
Acetamide	NEG	NEG	
Esculin	POS	POS	
Gelatin		POS	
Indole		NEG	
Malonate	NEG	POS	
PAD	NEG		
Urea NEG 2 h	INT SLANT	POS SLANT & BUTT	
6.5% NaCL	NEG	NEG	
10% Lactose	POS	POS	
ONPG	POS	POS	
Growth 42^0	POS	inhibited Growth	

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

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

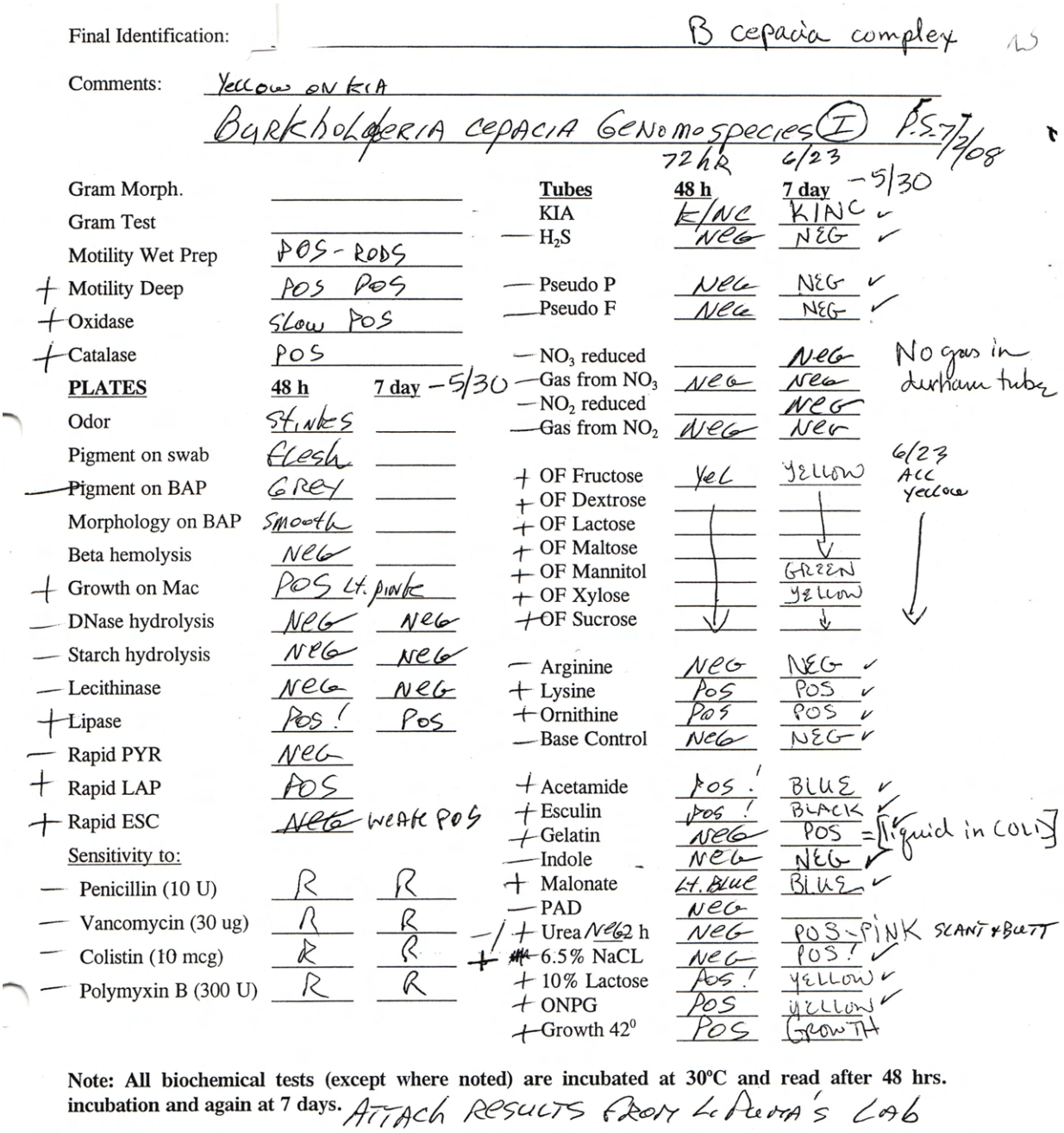
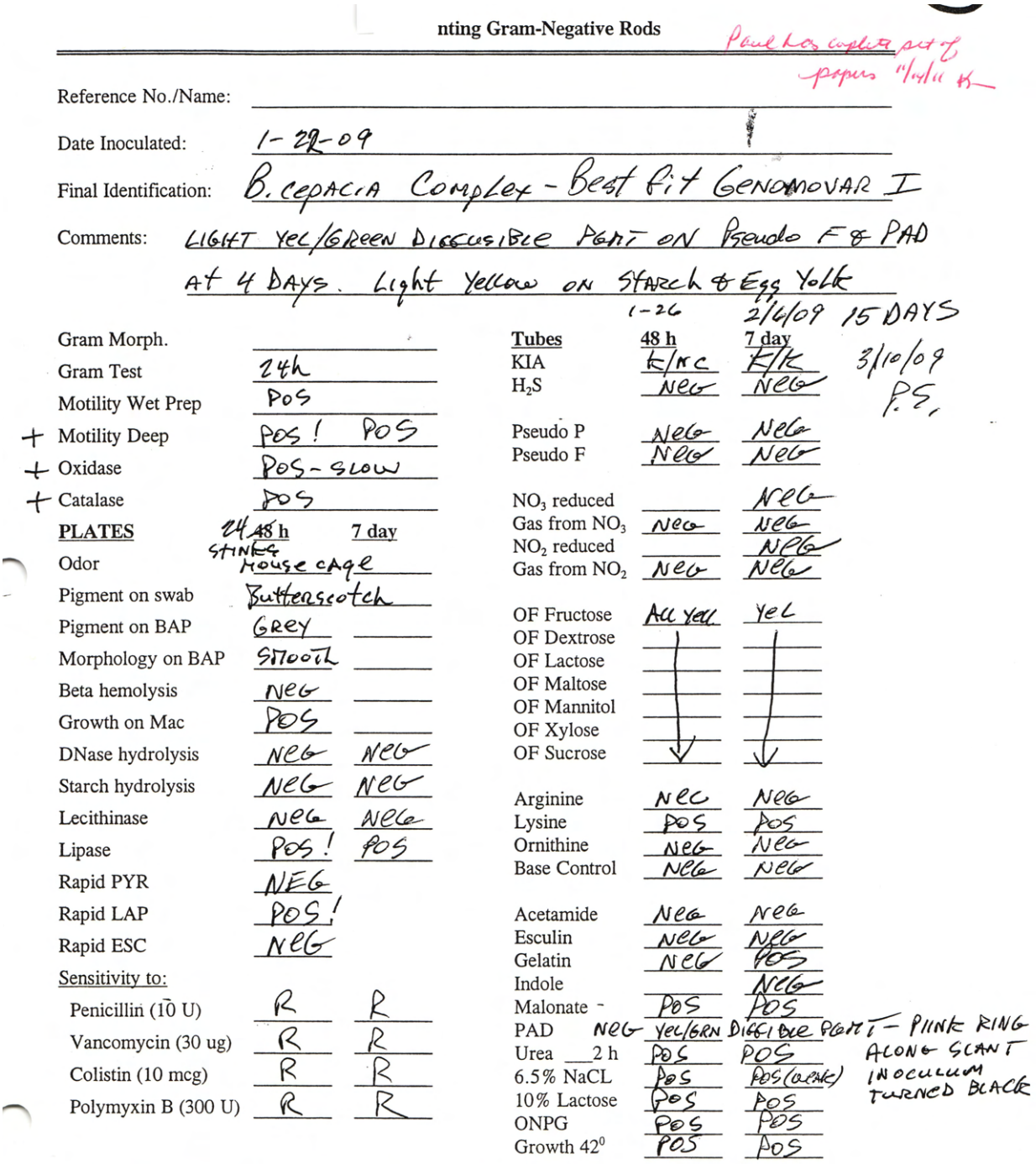


Figure 116: Burkholderia cepacia isolate 11-of-28.



nting Gram-Negative Rods

Paul has complete set of papers 11/14/11 [illegible]

Reference No./Name:

Date Inoculated: 1-22-09

Final Identification: B. cepacia Complex - Best fit Genomovar I

Comments: LIGHT YEL/GREEN DIFFUSIBLE PGMT ON Pseudo F & PAD AT 4 DAYS. Light Yellow on Starch & Egg Yolk

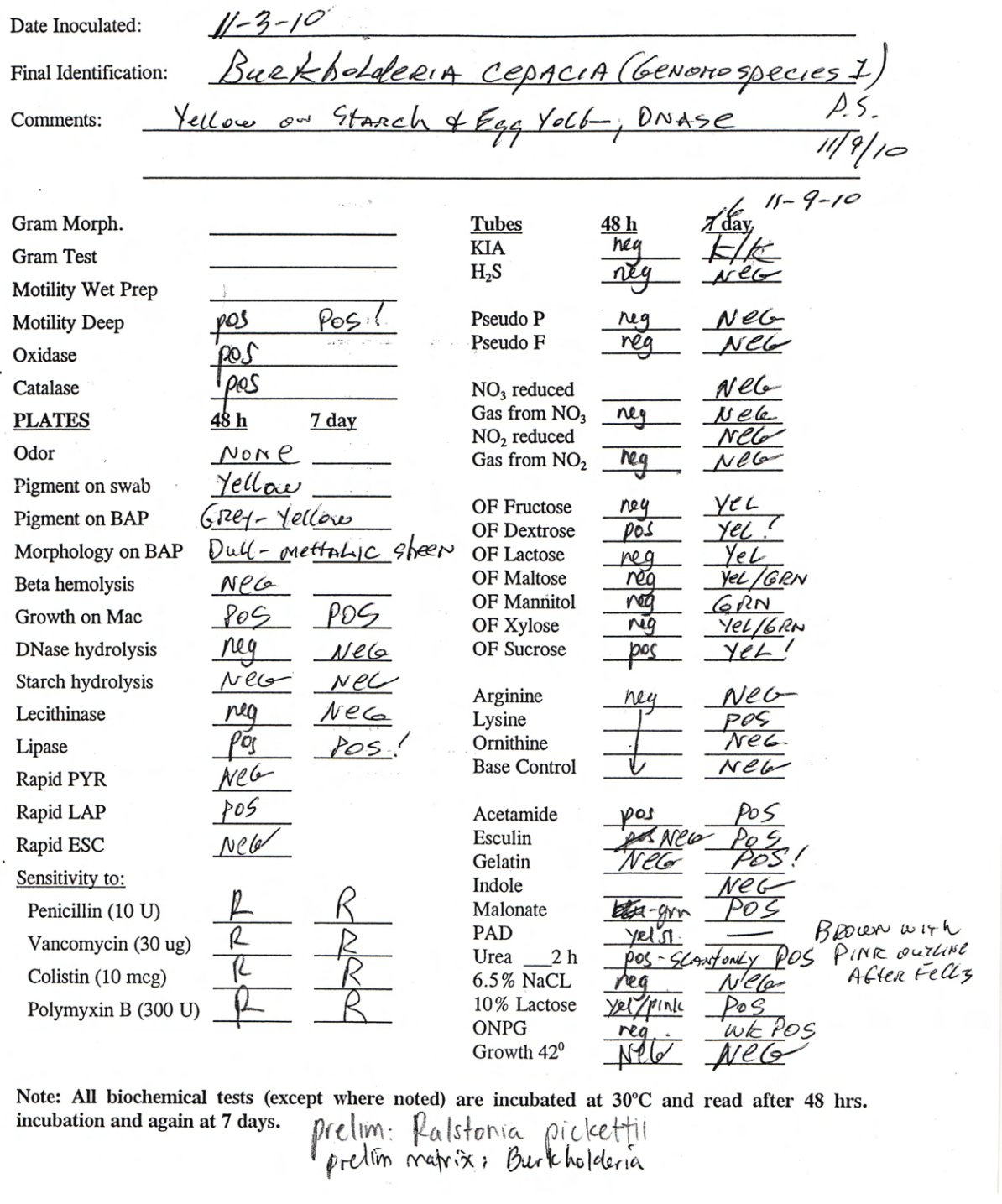
Gram Morph.		
Gram Test	24h	
Motility Wet Prep	POS	
+ Motility Deep	POS!	POS
+ Oxidase	POS - SLOW	
+ Catalase	POS	
PLATES	24 ~~48~~ h	7 day
Odor	STINKS House cage	
Pigment on swab	Butterscotch	
Pigment on BAP	GREY	
Morphology on BAP	SMOOTH	
Beta hemolysis	NEG	
Growth on Mac	POS	
DNase hydrolysis	NEG	NEG
Starch hydrolysis	NEG	NEG
Lecithinase	NEG	NEG
Lipase	POS!	POS
Rapid PYR	NEG	
Rapid LAP	POS!	
Rapid ESC	NEG	
Sensitivity to:		
Penicillin (10 U)	R	R
Vancomycin (30 ug)	R	R
Colistin (10 mcg)	R	R
Polymyxin B (300 U)	R	R

Tubes	1-26 48 h	2/6/09 7 day
KIA	K/NC	K/K
H_2S	NEG	NEG
Pseudo P	NEG	NEG
Pseudo F	NEG	NEG
NO_3 reduced		NEG
Gas from NO_3	NEG	NEG
NO_2 reduced		NEG
Gas from NO_2	NEG	NEG
OF Fructose	All yell	YEL
OF Dextrose	↓	↓
OF Lactose	↓	↓
OF Maltose	↓	↓
OF Mannitol	↓	↓
OF Xylose	↓	↓
OF Sucrose	↓	↓
Arginine	NEG	NEG
Lysine	POS	POS
Ornithine	NEG	NEG
Base Control	NEG	NEG
Acetamide	NEG	NEG
Esculin	NEG	NEG
Gelatin	NEG	POS
Indole		NEG
Malonate	POS	POS
PAD	NEG	YEL/GRN DIFFIBLE PGMT - PINK RING ALONG SLANT INOCULUM TURNED BLACK
Urea ___2 h	POS	POS
6.5% NaCL	POS	POS (weak)
10% Lactose	POS	POS
ONPG	POS	POS
Growth 42°	POS	POS

15 DAYS 3/10/09 P.S.

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

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



Date Inoculated: 11-3-10

Final Identification: Burkholderia cepacia (Genomospecies 1)

Comments: Yellow on Starch & Egg Yolk-, DNase P.S. 11/9/10

	48 h	7 day
Gram Morph.		
Gram Test		
Motility Wet Prep		
Motility Deep	pos	Pos!
Oxidase	pos	
Catalase	pos	
PLATES	**48 h**	**7 day**
Odor	None	
Pigment on swab	Yellow	
Pigment on BAP	Grey-Yellow	
Morphology on BAP	Dull-metallic sheen	
Beta hemolysis	Neg	
Growth on Mac	Pos	Pos
DNase hydrolysis	neg	Neg
Starch hydrolysis	Neg	Neg
Lecithinase	neg	Neg
Lipase	Pos	Pos!
Rapid PYR	Neg	
Rapid LAP	pos	
Rapid ESC	Neg	
Sensitivity to:		
Penicillin (10 U)	R	R
Vancomycin (30 ug)	R	R
Colistin (10 mcg)	R	R
Polymyxin B (300 U)	R	R

11-9-10

Tubes	**48 h**	**7 day**
KIA	neg	K/k
H_2S	neg	Neg
Pseudo P	neg	Neg
Pseudo F	neg	Neg
NO_3 reduced		Neg
Gas from NO_3	neg	Neg
NO_2 reduced		Neg
Gas from NO_2	neg	Neg
OF Fructose	neg	Yel
OF Dextrose	pos	Yel!
OF Lactose	neg	Yel
OF Maltose	neg	Yel/Grn
OF Mannitol	neg	Grn
OF Xylose	neg	Yel/Grn
OF Sucrose	pos	Yel!
Arginine	neg	Neg
Lysine		Pos
Ornithine		Neg
Base Control		Neg
Acetamide	pos	Pos
Esculin	~~pos~~ Neg	Pos
Gelatin	Neg	Pos!
Indole		Neg
Malonate	~~Yel-grn~~	Pos
PAD	Yel sl.	—
Urea 2 h	pos - slantonly	Pos
6.5% NaCL	neg	Neg
10% Lactose	Yel/pink	Pos
ONPG	neg	wk Pos
Growth 42°	Neg	Neg

Broken with pink outline after Fe/Cs

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 pickettii
prelim matrix: Burkholderia

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

Date Inoculated: 12-17-10

Final Identification: Burkholderia cepacia genomospecies I

Comments: Yellow pigmented on Starch & Egg Yolk DNA, MAC - DRY colonies P.S. 12/22/10

~~DRY colonies all media~~

Gram Morph.		
Gram Test		
Motility Wet Prep	NEG 24hr 5D NEG	
Motility Deep	POS	
Oxidase	SLOW POS (30 sec)	
Catalase	NEG	
PLATES	**48 h**	~~7 day~~ 5 DAY
Odor		NONE
Pigment on swab		Flesh
Pigment on BAP		Yellow
Morphology on BAP		MUCOID
Beta hemolysis	POS-24h	POS
Growth on Mac		POS MIXED MORH
DNase hydrolysis		NEG DRY & smooth
Starch hydrolysis		NEG
Lecithinase		NEG
Lipase		POS
Rapid PYR	NEG	
Rapid LAP	POS	
Rapid ESC	NEG	
Sensitivity to:		
Penicillin (10 U)		R
Vancomycin (30 ug)		R
Colistin (10 mcg)		R
Polymyxin B (300 U)		R

Tubes	**48 h**	**7 day** 12/22
KIA		K/NC
H_2S		NEG
Pseudo P		NEG
Pseudo F		NEG
NO_3 reduced		POS
Gas from NO_3		NEG
NO_2 reduced		NEG
Gas from NO_2		NEG
OF Fructose		YEL/GRN
OF Dextrose		YEL
OF Lactose		YEL
OF Maltose		YEL
OF Mannitol		YEL/GRN
OF Xylose		YEL
OF Sucrose		YEL
Arginine		NEG
Lysine		POS
Ornithine		NEG
Base Control		NEG
Acetamide		NEG
Esculin		POS
Gelatin		POS
Indole		NEG
Malonate		POS
PAD		NEG
Urea NEG 2 h	NEG	POS SLANT ONLY
6.5% NaCL		NEG
10% Lactose		POS
ONPG		POS
Growth 42^0		NEG

Diffusible yellow pigment FLUOR - 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 119: Burkholderia cepacia isolate 14-of-28.

Date Inoculated: 12-17-10

Final Identification: Burkholderia cepacia genomospecies I

Comments: Light butterscotch on Egg + Starch - smooth colonies
smooth colonies all media

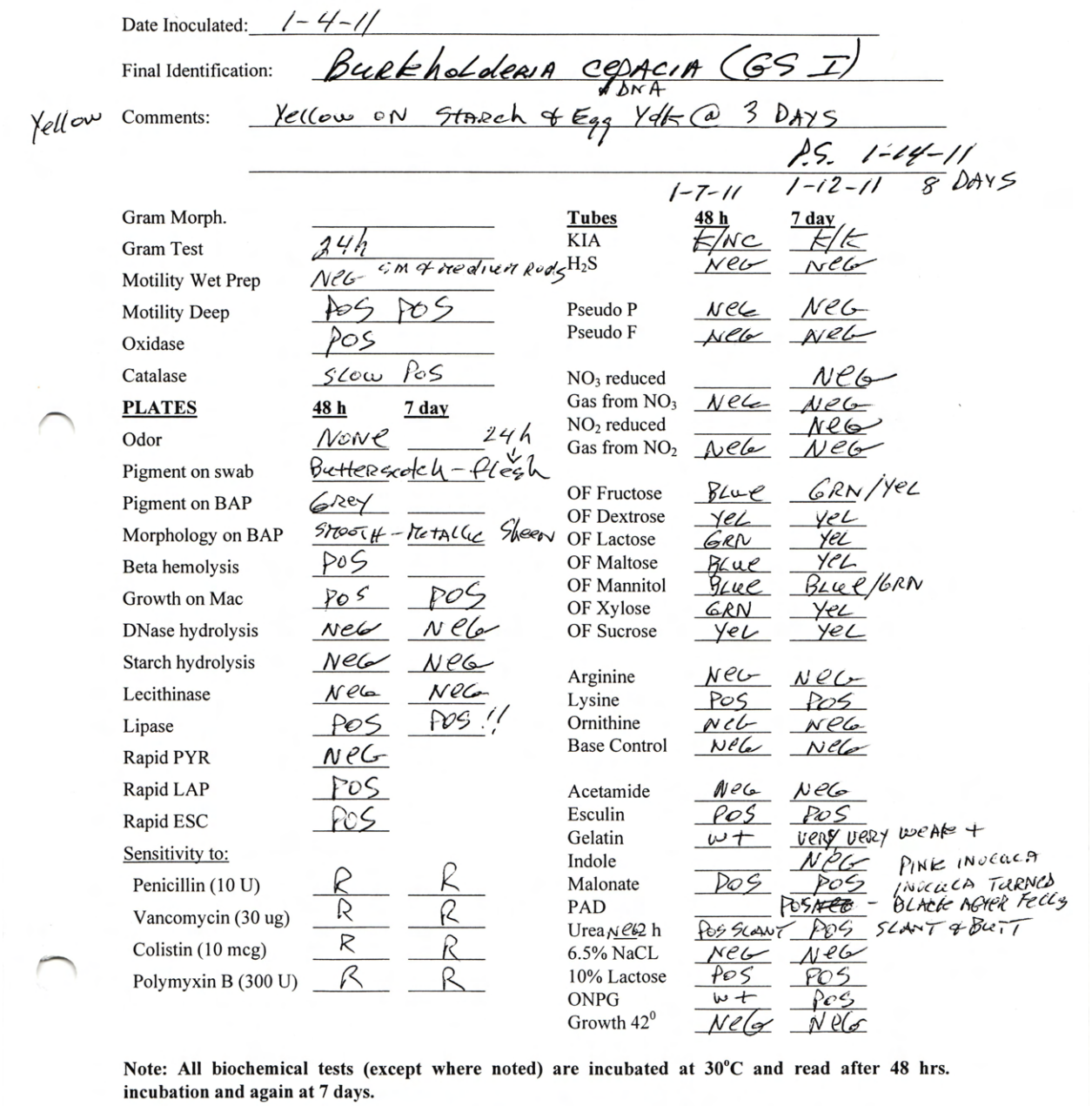
P.S. 12/22 12/22/10

Gram Morph.		
Gram Test		
Motility Wet Prep	Pos! very motile	
Motility Deep	Pos	
Oxidase	Slow Pos (30 sec)	
Catalase	Neg	
PLATES	**48 h**	**7 day**
Odor		Neg
Pigment on swab		Buff
Pigment on BAP		Grey
Morphology on BAP		Smooth
Beta hemolysis	Neg	Neg
Growth on Mac		Pos
DNase hydrolysis		Neg
Starch hydrolysis		Neg
Lecithinase		Neg
Lipase		Pos
Rapid PYR	Neg	
Rapid LAP	Pos	
Rapid ESC	Neg	
Sensitivity to:		
Penicillin (10 U)		R
Vancomycin (30 ug)		R
Colistin (10 mcg)		R
Polymyxin B (300 U)		R

Tubes	**48 h**	**7 day**
KIA		K/NC
H_2S		
Pseudo P		Neg
Pseudo F		Neg
NO_3 reduced		Neg
Gas from NO_3		Neg
NO_2 reduced		Neg
Gas from NO_2		Neg
OF Fructose		Yel/Grn
OF Dextrose		Yel
OF Lactose		Yel
OF Maltose		Yel
OF Mannitol		Yel/Grn
OF Xylose		Yel
OF Sucrose		Yel
Arginine		Neg
Lysine		Pos
Ornithine		Neg
Base Control		Neg
Acetamide		Neg
Esculin		Pos
Gelatin		Pos
Indole		Neg
Malonate		Pos
PAD		Neg
Urea __2 h		Pos - Slant only
6.5% NaCL		Neg
10% Lactose		Pos
ONPG		Pos
Growth 42^0		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 120: Burkholderia cepacia isolate 15-of-28.



Date Inoculated: 1-4-11

Final Identification: Burkholderia cepacia (GS I) #DNA

Yellow Comments: Yellow on Starch & Egg Yolk @ 3 DAYS

P.S. 1-14-11

1-7-11 1-12-11 8 DAYS

			Tubes	48 h	7 day
Gram Morph.			KIA	K/NC	K/K
Gram Test	24h		H_2S	Neg	Neg
Motility Wet Prep	Neg c/m of medium rods				
Motility Deep	Pos Pos		Pseudo P	Neg	Neg
Oxidase	Pos		Pseudo F	Neg	Neg
Catalase	slow Pos				
PLATES	**48 h**	**7 day**	NO_3 reduced		Neg
Odor	None	24h	Gas from NO_3	Neg	Neg
Pigment on swab	Butterscotch - flesh		NO_2 reduced		Neg
Pigment on BAP	Grey		Gas from NO_2	Neg	Neg
Morphology on BAP	Smooth - Metallic Sheen		OF Fructose	Blue	GRN/yel
Beta hemolysis	Pos		OF Dextrose	yel	yel
Growth on Mac	Pos	Pos	OF Lactose	GRN	yel
DNase hydrolysis	Neg	Neg	OF Maltose	Blue	yel
Starch hydrolysis	Neg	Neg	OF Mannitol	Blue	Blue/GRN
Lecithinase	Neg	Neg	OF Xylose	GRN	yel
Lipase	Pos	Pos !!	OF Sucrose	yel	yel
Rapid PYR	Neg				
Rapid LAP	Pos		Arginine	Neg	Neg
Rapid ESC	Pos		Lysine	Pos	Pos
Sensitivity to:			Ornithine	Neg	Neg
Penicillin (10 U)	R	R	Base Control	Neg	Neg
Vancomycin (30 ug)	R	R			
Colistin (10 mcg)	R	R	Acetamide	Neg	Neg
Polymyxin B (300 U)	R	R	Esculin	Pos	Pos
			Gelatin	wt	very very weak +
			Indole		Neg
			Malonate	Pos	Pos
			PAD		Pos/Neg
			Urea Neg 2 h	Pos slant	Pos
			6.5% NaCL	Neg	Neg
			10% Lactose	Pos	Pos
			ONPG	wt	Pos
			Growth 42°	Neg	Neg

Pink inoculum inoculum turned black after 7 days

slant & butt

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

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

Date Inoculated: 9-17-12

Final Identification: Burkholderia cepacie (Genomospecies I)

Comments: Yellow on KIA P.S. 9/26/12

					9/20
Gram Morph.			**Tubes**	**48 h**	**7 day**
Gram Test	48h		KIA		K/K
Motility Wet Prep	POS - few motile cells		H_2S		Neg
Motility Deep	POS		Pseudo P		Neg
Oxidase	POS (20 sec)		Pseudo F		Neg
Catalase	POS		NO_3 reduced		Neg
PLATES	**48 h**	**7 day**	Gas from NO_3		Tiny Bubble
Odor	Stinks		NO_2 reduced		Neg
Pigment on swab	light butterscotch		Gas from NO_2		Neg
Pigment on BAP	GREY		OF Fructose		Yel/GRN
Morphology on BAP	ENTIRE		OF Dextrose		Yel
Beta hemolysis	Neg		OF Lactose		Yel
Growth on Mac		POS - Deep Purple	OF Maltose		Yel
DNase hydrolysis		Neg	OF Mannitol		Yel/GRN
Starch hydrolysis		Neg	OF Xylose		Yel
Lecithinase		Neg	OF Sucrose		Yel
Lipase		POS !!	Arginine		Neg
Rapid PYR	W +		Lysine		POS
Rapid LAP	POS		Ornithine		POS
Rapid ESC	POS		Base Control		Neg
Sensitivity to:			Acetamide		POS
Penicillin (10 U)		R	Esculin		POS
Vancomycin (30 ug)		R	Gelatin		POS
Colistin (10 mcg)		R	+ Indole		POS *
Polymyxin B (300 U)		R	Malonate		POS
			PAD		Neg
			Urea ~~Neg~~ h	POS	POS
			6.5% NaCL		Neg
			10% Lactose		POS
			ONPG		POS
			Growth 42^0		POS

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

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

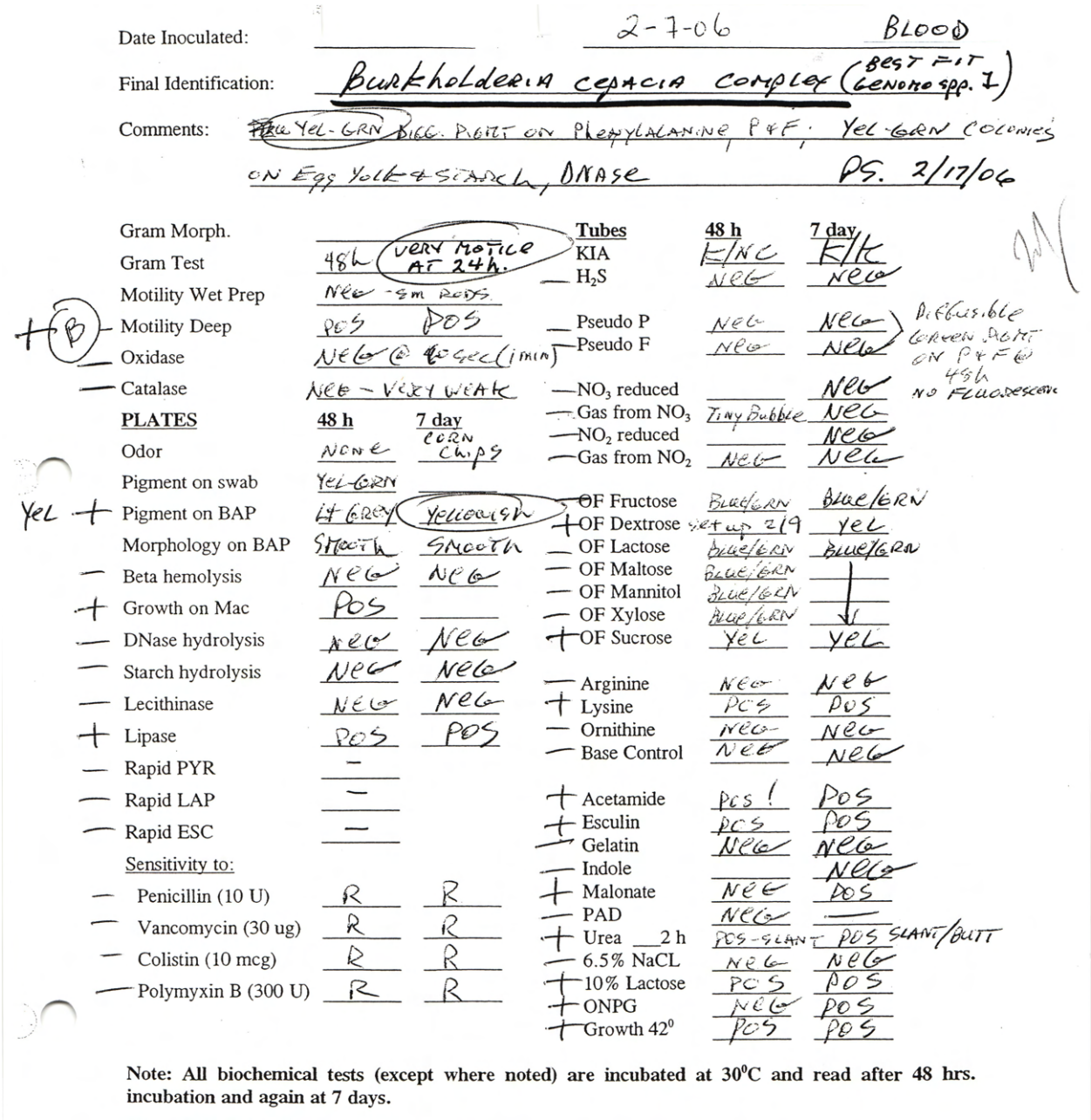


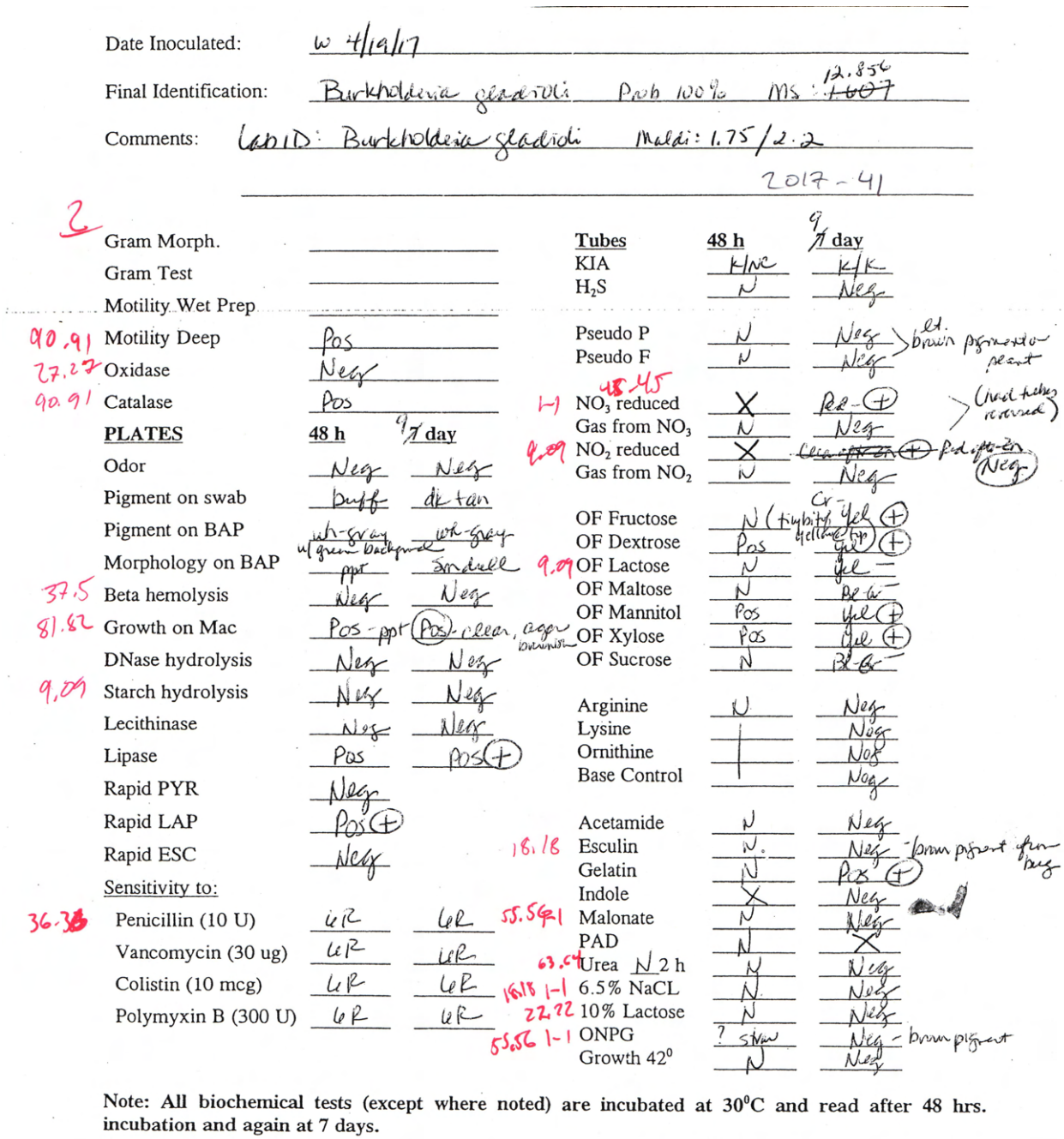
Figure 123: Burkholderia cepacia isolate 18-of-28.

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%**	**W95%**
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_3 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_2 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 (30μg)	0	11	0.00	12.94	Lysine	0	11	0.00	12.94
Colistin (10μg)	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: w 4/19/17

Final Identification: Burkholderia gladioli Prob 100% MS: ~~1.607~~ 12.856

Comments: Lab ID: Burkholderia gladioli Maldi: 1.75/2.2

2017-41

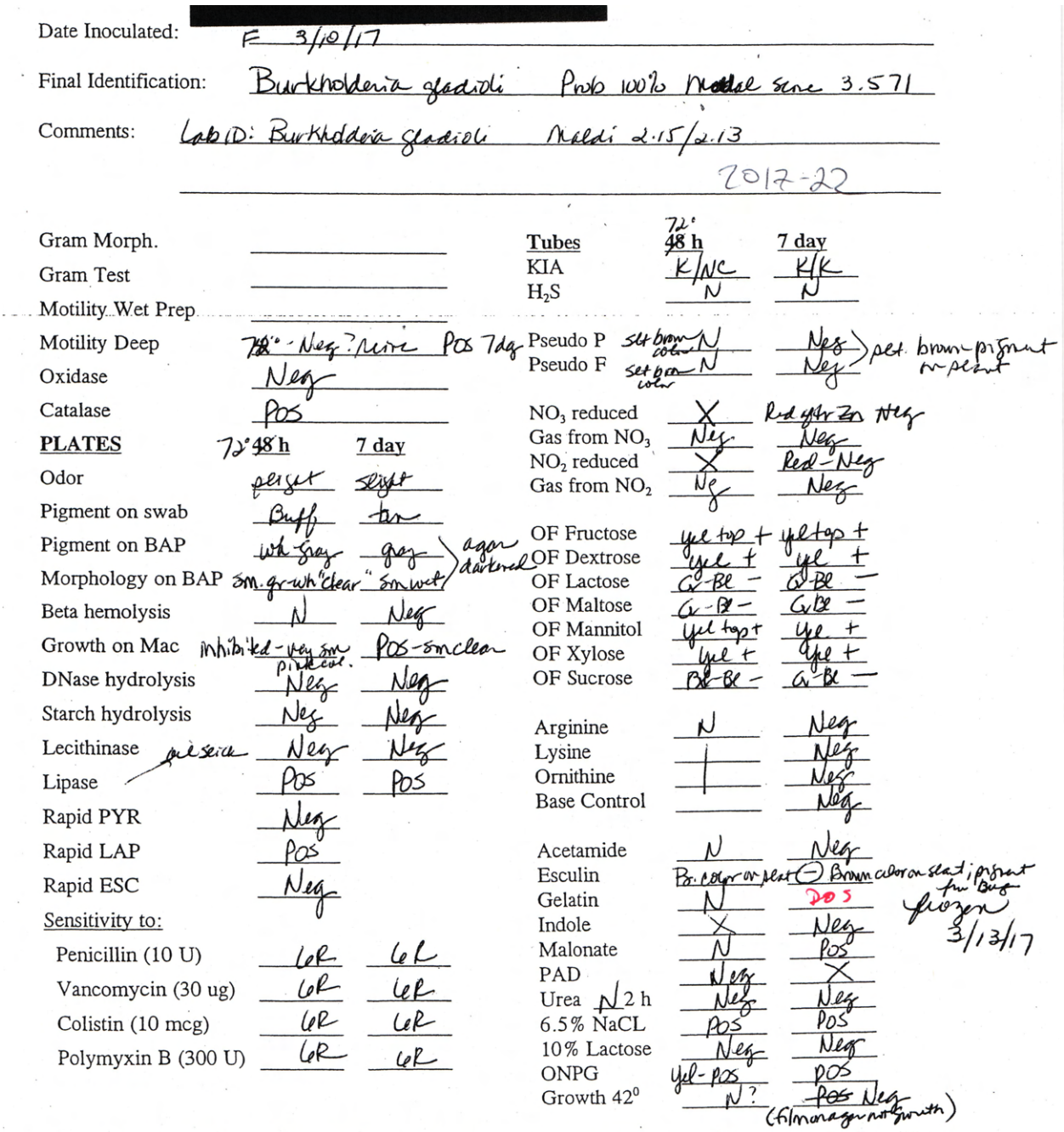
2

	Gram Morph.		
	Gram Test		
	Motility Wet Prep		
90.91	Motility Deep	Pos	
27.27	Oxidase	Neg	
90.91	Catalase	Pos	
	PLATES	**48 h**	**9 ~~7~~ day**
	Odor	Neg	Neg
	Pigment on swab	buff	dk tan
	Pigment on BAP	wh-gray w/ green background	wh-gray
	Morphology on BAP	ppt	Smdull
37.5	Beta hemolysis	Neg	Neg
81.82	Growth on Mac	Pos - ppt	(Pos) - clear, agar brownish
	DNase hydrolysis	Neg	Neg
9.09	Starch hydrolysis	Neg	Neg
	Lecithinase	Neg	Neg
	Lipase	Pos	Pos (+)
	Rapid PYR	Neg	
	Rapid LAP	Pos (+)	
	Rapid ESC	Neg	
	Sensitivity to:		
36.36	Penicillin (10 U)	6R	6R
	Vancomycin (30 ug)	6R	6R
	Colistin (10 mcg)	6R	6R
	Polymyxin B (300 U)	6R	6R

	Tubes	**48 h**	**9 ~~7~~ day**
	KIA	K/NC	K/K
	H_2S	N	Neg
	Pseudo P	N	Neg > lt. brown pigment on plant
	Pseudo F	N	Neg
1-1	NO_3 reduced (48.45)	X	Red - (+) > (had tubes reversed)
	Gas from NO_3	N	Neg
9.09	NO_2 reduced	X	~~Clear after Zn (+)~~ Red after Zn (Neg)
	Gas from NO_2	N	Neg
	OF Fructose	N (tiny bit of yellow tip)	Cr - Yel (+)
	OF Dextrose	Pos	Yel (+)
9.09	OF Lactose	N	Yel -
	OF Maltose	N	Bl-Gr -
	OF Mannitol	Pos	Yel (+)
	OF Xylose	Pos	Yel (+)
	OF Sucrose	N	Bl-Gr -
	Arginine	N	Neg
	Lysine		Neg
	Ornithine		Neg
	Base Control		Neg
	Acetamide	N	Neg
18.18	Esculin	N	Neg - brown pigment from bug
	Gelatin	N	Pos (+)
	Indole	X	Neg
55.56 1-1	Malonate	N	Neg
	PAD	N	X
63.64	Urea N 2 h	N	Neg
18.18 1-1	6.5% NaCL	N	Neg
22.22	10% Lactose	N	Neg
55.56 1-1	ONPG	? straw	Neg - brown pigment
	Growth 42°	N	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 124: Burkholderia gladioli isolate 1-of-11.


Date Inoculated: [redacted] F 3/10/17

Final Identification: Burkholderia gladioli Prob 100% Model score 3.571

Comments: Lab ID: Burkholderia gladioli Meldi 2.15/2.13

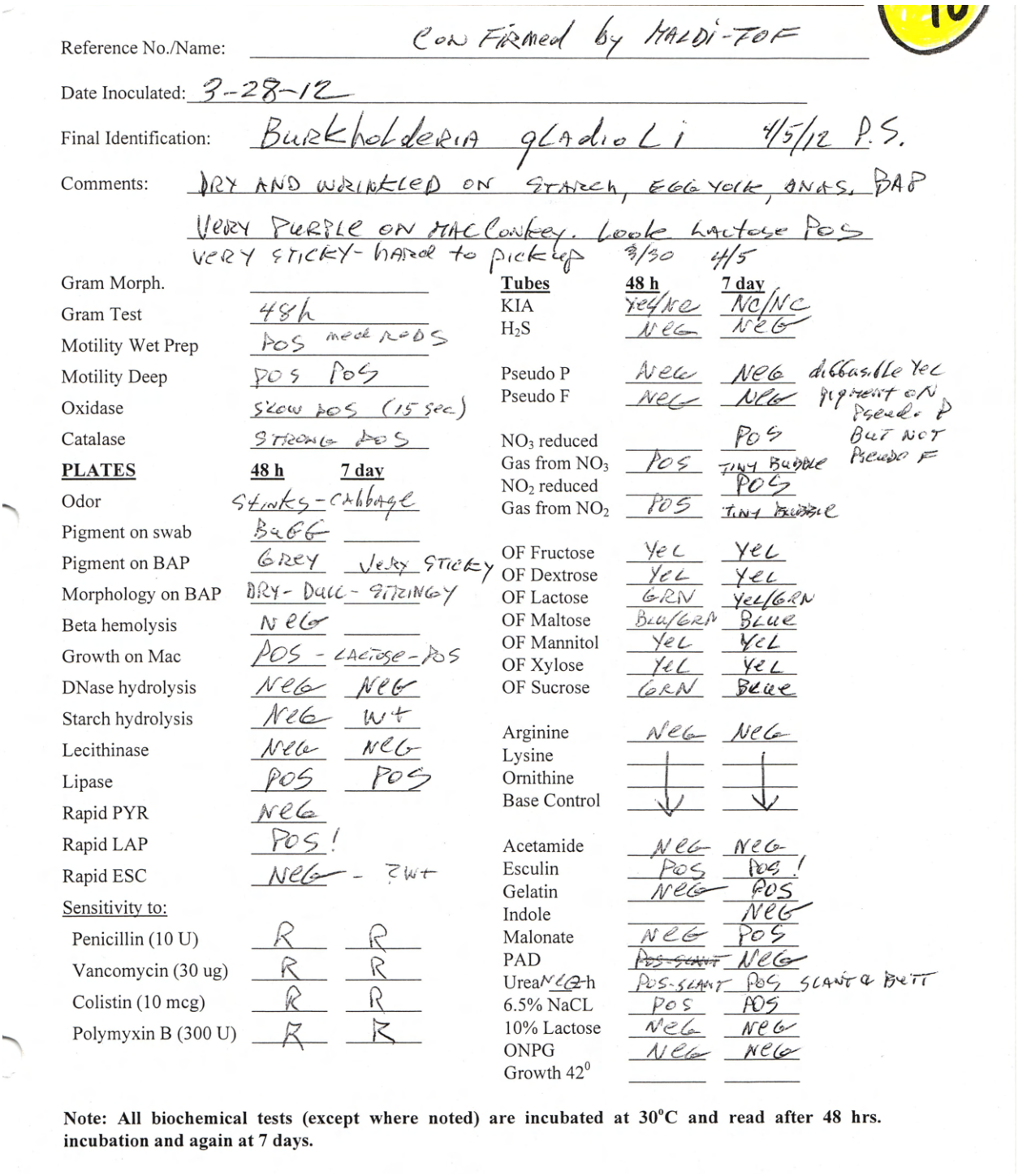
2017-22

Gram Morph.			**Tubes**	72° **48 h**	**7 day**
Gram Test			KIA	K/NC	K/K
Motility Wet Prep			H_2S	N	N
Motility Deep	72° - Neg ? more Pos 7dy		Pseudo P	slt brown color N	Neg > pel brown pigment in plant
Oxidase	Neg		Pseudo F	slt brown color N	Neg
Catalase	Pos		NO_3 reduced	X	Red after Zn Neg
PLATES	72° **48 h**	**7 day**	Gas from NO_3	Neg	Neg
Odor	pers slt	slight	NO_2 reduced	X	Red - Neg
Pigment on swab	Buff	tan	Gas from NO_2	Neg	Neg
Pigment on BAP	wh-gray	gray > agar darkened	OF Fructose	yel top +	yel top +
Morphology on BAP	sm. grwth "clear"	sm wet	OF Dextrose	yel +	yel +
Beta hemolysis	N	Neg	OF Lactose	Cr-Bl -	Cr-Bl -
Growth on Mac	inhibited - very sm pinpoint col.	Pos - sm clear	OF Maltose	Cr-Bl -	Cr-Bl -
DNase hydrolysis	Neg	Neg	OF Mannitol	yel top +	yel +
Starch hydrolysis	Neg	Neg	OF Xylose	yel +	yel +
Lecithinase	preserve Neg	Neg	OF Sucrose	Bl-Bl -	Cr-Bl -
Lipase	Pos	Pos	Arginine	N	Neg
Rapid PYR	Neg		Lysine		Neg
Rapid LAP	Pos		Ornithine		Neg
Rapid ESC	Neg		Base Control		Neg
Sensitivity to:			Acetamide	N	Neg
Penicillin (10 U)	LoR	LoR	Esculin	Br. color on slant (-)	Brown color on slant; pigment in Broth
Vancomycin (30 ug)	LoR	LoR	Gelatin	N	Pos
Colistin (10 mcg)	LoR	LoR	Indole	X	Neg
Polymyxin B (300 U)	LoR	LoR	Malonate	N	Pos
			PAD	Neg	X
			Urea N 2 h	Neg	Neg
			6.5% NaCL	Pos	Pos
			10% Lactose	Neg	Neg
			ONPG	Yel - Pos	Pos
			Growth 42°	N ?	~~Pos~~ Neg (filmy margin not growth)

frozen 3/13/17

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

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



Reference No./Name: CONFIRMED by MALDI-TOF

Date Inoculated: 3-28-12

Final Identification: Burkholderia gladioli 4/5/12 P.S.

Comments: DRY AND WRINKLED ON STARCH, EGG YOLK, ONAS, BAP
VERY PURPLE ON MAC Conkey. Look Lactose Pos
VERY STICKY- HARD to pick up 3/30 4/5

Gram Morph.	
Gram Test	48h
Motility Wet Prep	POS mod RODS
Motility Deep	POS POS
Oxidase	SLOW POS (15 sec)
Catalase	STRONG POS

PLATES	48 h	7 day
Odor	STINKY - CABBAGE	
Pigment on swab	BrGG	
Pigment on BAP	GREY	VERY STICKY
Morphology on BAP	DRY - DULL - SIZINGY	
Beta hemolysis	NEG	
Growth on Mac	POS - LACTOSE - POS	
DNase hydrolysis	NEG	NEG
Starch hydrolysis	NEG	WT
Lecithinase	NEG	NEG
Lipase	POS	POS
Rapid PYR	NEG	
Rapid LAP	POS!	
Rapid ESC	NEG - ?WT	
Sensitivity to:		
Penicillin (10 U)	R	R
Vancomycin (30 ug)	R	R
Colistin (10 mcg)	R	R
Polymyxin B (300 U)	R	R

Tubes	48 h	7 day
KIA	Yel/Neg	NC/NC
H_2S	NEG	NEG
Pseudo P	NEG	NEG diffusible Yel
Pseudo F	NEG	NEG pigment on Pseudo P but not Pseudo F
NO_3 reduced		POS
Gas from NO_3	POS	TINY Bubble
NO_2 reduced		POS
Gas from NO_2	POS	TINY Bubble
OF Fructose	Yel	Yel
OF Dextrose	Yel	Yel
OF Lactose	GRN	Yel/GRN
OF Maltose	Blu/GRN	Blue
OF Mannitol	Yel	Yel
OF Xylose	Yel	Yel
OF Sucrose	GRN	Blue
Arginine	NEG	NEG
Lysine	↓	↓
Ornithine	↓	↓
Base Control	↓	↓
Acetamide	NEG	NEG
Esculin	POS	POS!
Gelatin	NEG	POS
Indole		NEG
Malonate	NEG	POS
PAD	~~POS SLANT~~	NEG
Urea NEG-h	POS-SLANT	POS SLANT & BUTT
6.5% NaCL	POS	POS
10% Lactose	NEG	NEG
ONPG	NEG	NEG
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 126: Burkholderia gladioli isolate 3-of-11.

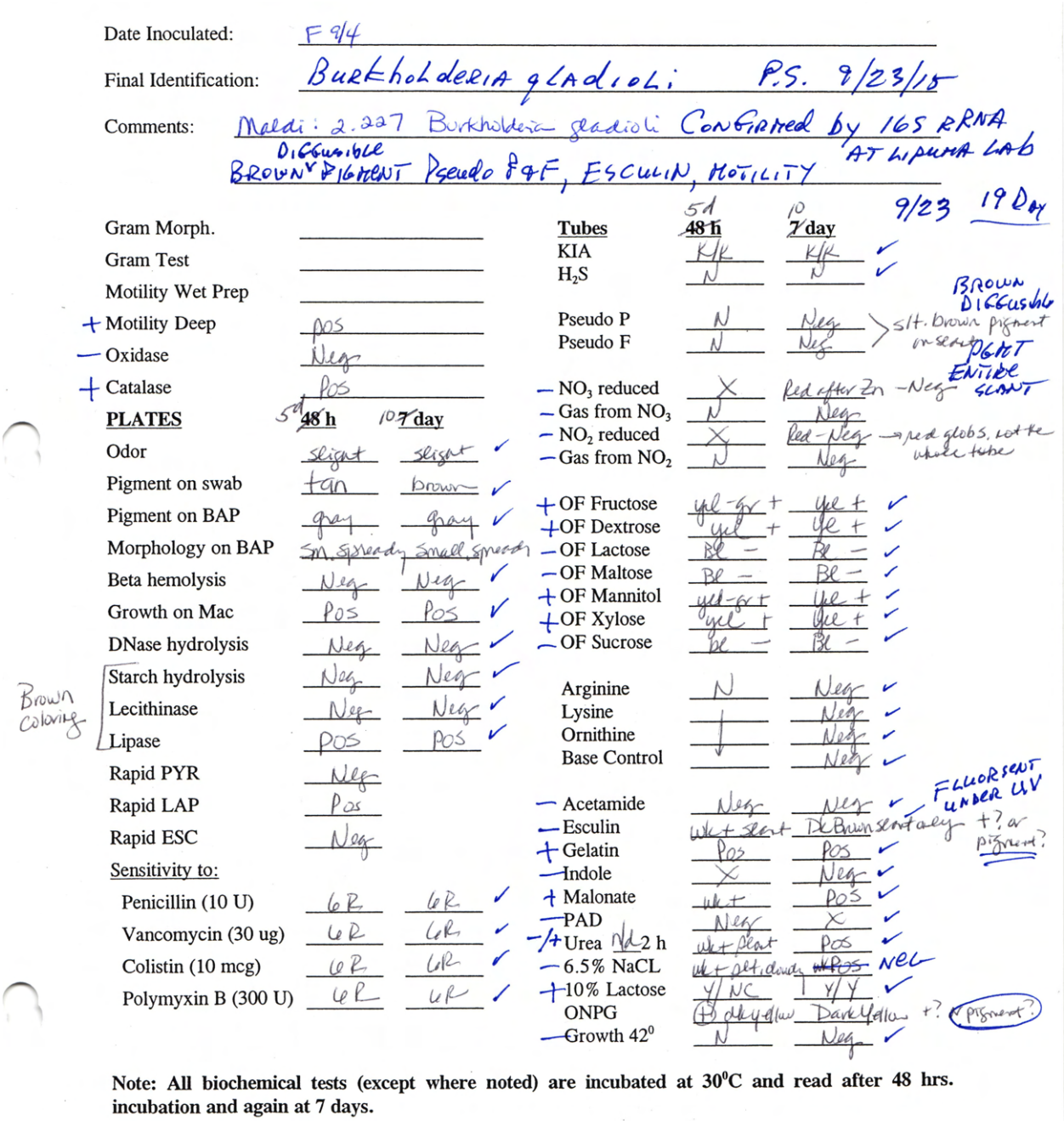
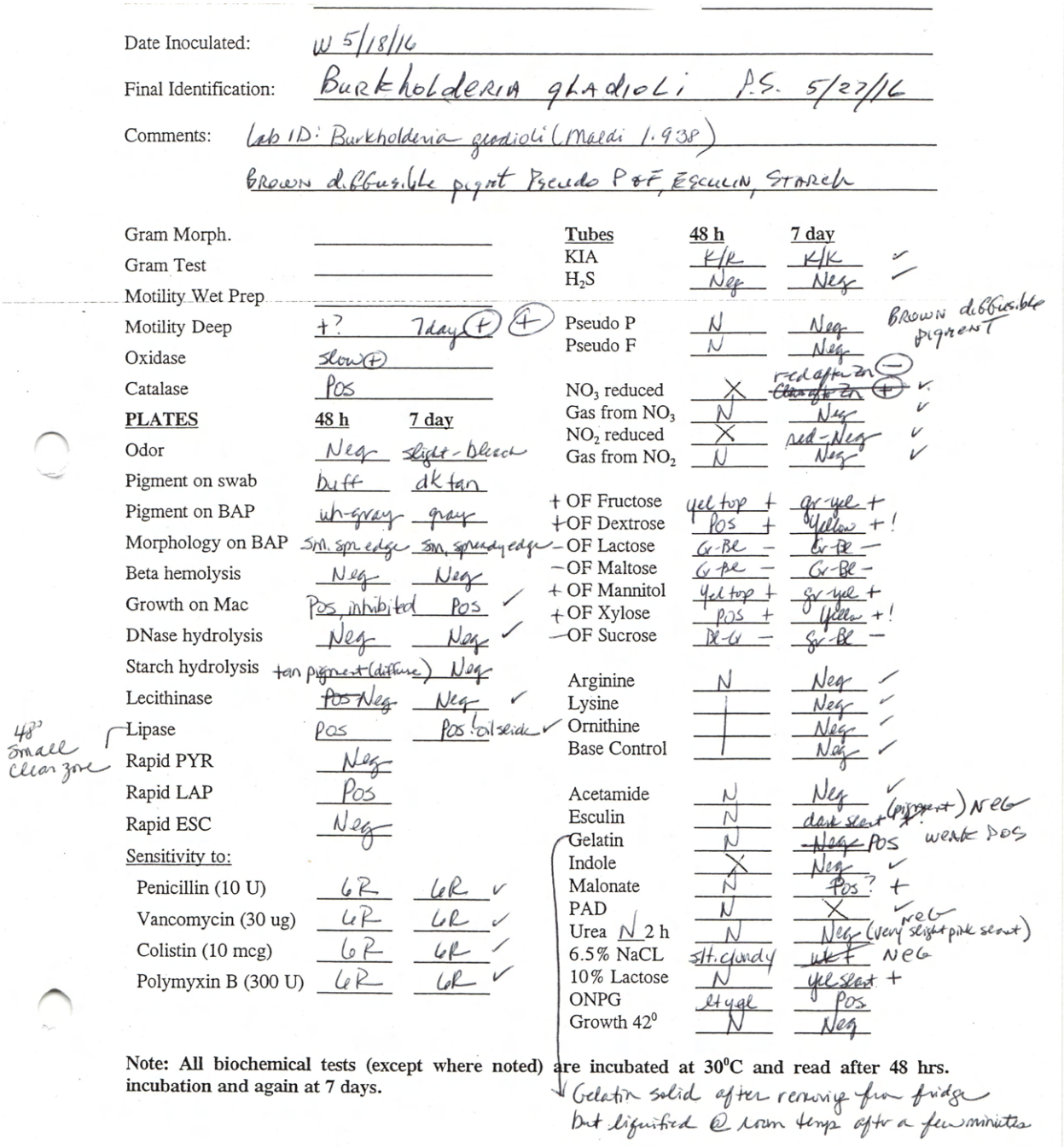


Figure 127: Burkholderia gladioli isolate 4-of-11.


Date Inoculated: W 5/18/16

Final Identification: Burkholderia gladioli P.S. 5/27/16

Comments: Lab ID: Burkholderia gladioli (Migula) 1.938

Brown diffusible pigment Pseudo P & F, Esculin, Starch

Gram Morph.		
Gram Test		
Motility Wet Prep		
Motility Deep	+?	7day (+) (+)
Oxidase	slow (+)	
Catalase	Pos	

PLATES	48 h	7 day
Odor	Neg	slight-bleach
Pigment on swab	buff	dk tan
Pigment on BAP	wh-gray	gray
Morphology on BAP	sm. spr. edge	sm. spready edge
Beta hemolysis	Neg	Neg
Growth on Mac	Pos, inhibited	Pos ✓
DNase hydrolysis	Neg	Neg ✓
Starch hydrolysis	tan pigment (diffuse)	Neg
Lecithinase	Pos Neg	Neg ✓
Lipase	Pos	Pos oil slick ✓
Rapid PYR	Neg	
Rapid LAP	Pos	
Rapid ESC	Neg	

48° small clear zone

Sensitivity to:

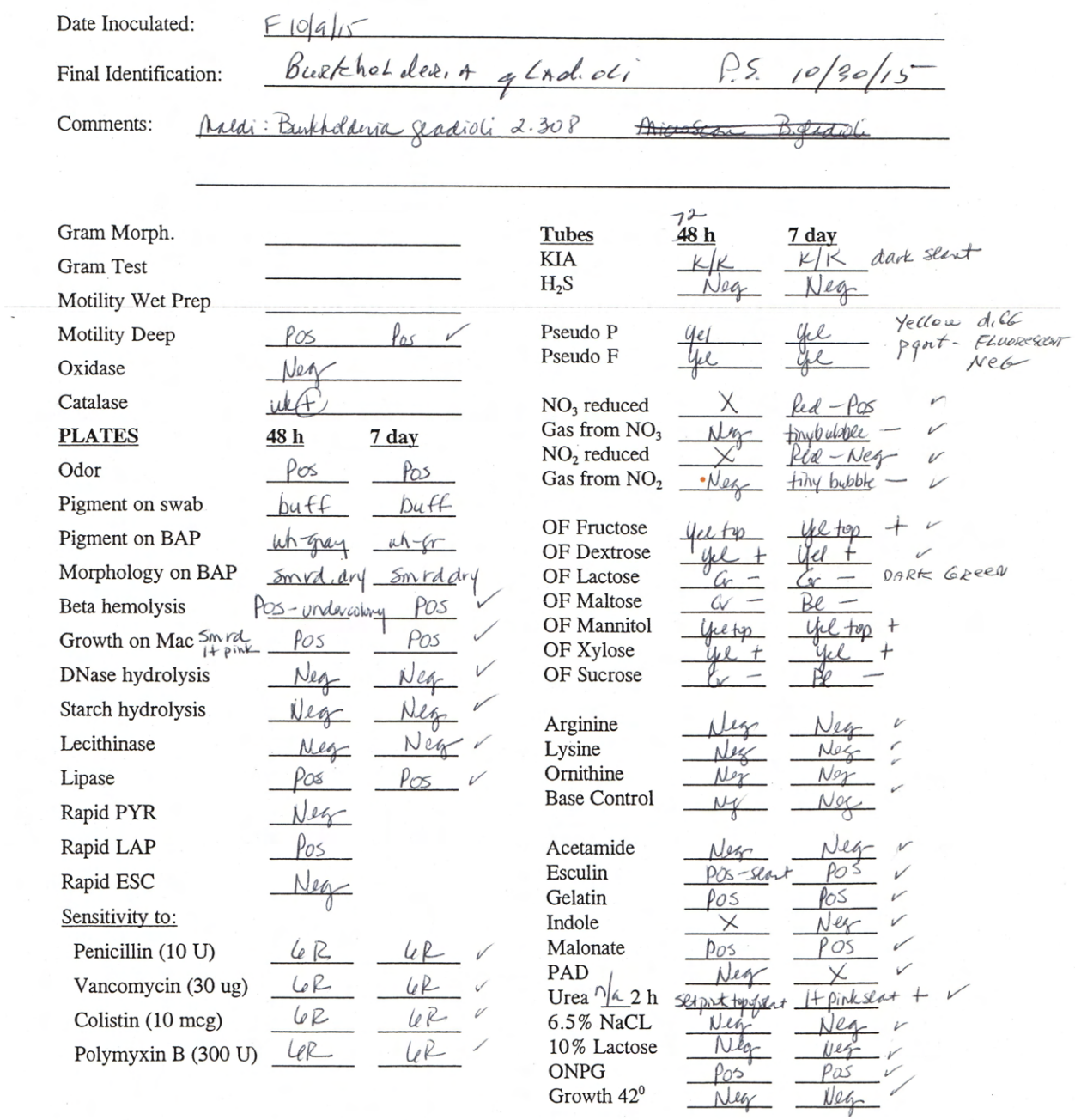
Penicillin (10 U)	6R	6R ✓
Vancomycin (30 ug)	6R	6R ✓
Colistin (10 mcg)	6R	6R ✓
Polymyxin B (300 U)	6R	6R ✓

Tubes	48 h	7 day
KIA	K/R	K/K ✓
H_2S	Neg	Neg ✓
Pseudo P	N	Neg Brown diffusible pigment
Pseudo F	N	Neg
NO_3 reduced	X	red after Zn (−) ~~Clear after Zn~~ (+) ✓
Gas from NO_3	N	Neg ✓
NO_2 reduced	X	red-Neg ✓
Gas from NO_2	N	Neg ✓
+ OF Fructose	yel top +	gr-yel +
+ OF Dextrose	Pos +	Yellow + !
− OF Lactose	Gr-Bl −	Gr-Bl −
− OF Maltose	Gr-Bl −	Gr-Bl −
+ OF Mannitol	yel top +	gr-yel +
+ OF Xylose	Pos +	Yellow + !
− OF Sucrose	Bl-Gr −	Gr-Bl −
Arginine	N	Neg ✓
Lysine		Neg ✓
Ornithine		Neg ✓
Base Control		Neg ✓
Acetamide	N	Neg ✓
Esculin	N	dark slant (pigment) Neg
Gelatin	N	~~Neg~~ Pos weak Pos
Indole	X	Neg ✓
Malonate	N	Pos? +
PAD	N	X ✓ Neg
Urea N 2 h	N	Neg (very slight pink slant)
6.5% NaCL	slt. cloudy	wk + Neg
10% Lactose	N	yel slant +
ONPG	Hygal	Pos
Growth 42°	N	Neg

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

Gelatin solid after removing from fridge but liquified @ room temp after a few minutes

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



Date Inoculated: F 10/9/15

Final Identification: Burkholderia gladioli P.S. 10/30/15

Comments: Maldi: Burkholderia gladioli 2.308 ~~Microscan B.gladioli~~

Gram Morph.		
Gram Test		
Motility Wet Prep		
Motility Deep	Pos	Pos ✓
Oxidase	Neg	
Catalase	wk (+)	
PLATES	**48 h**	**7 day**
Odor	Pos	Pos
Pigment on swab	buff	buff
Pigment on BAP	wh-gray	wh-gr
Morphology on BAP	Smrd. dry	Smrd dry
Beta hemolysis	Pos-undercolony	Pos ✓
Growth on Mac Smrd lt pink	Pos	Pos ✓
DNase hydrolysis	Neg	Neg ✓
Starch hydrolysis	Neg	Neg ✓
Lecithinase	Neg	Neg ✓
Lipase	Pos	Pos ✓
Rapid PYR	Neg	
Rapid LAP	Pos	
Rapid ESC	Neg	
Sensitivity to:		
Penicillin (10 U)	6R	6R ✓
Vancomycin (30 ug)	6R	6R ✓
Colistin (10 mcg)	6R	6R ✓
Polymyxin B (300 U)	6R	6R ✓

Tubes	**72 48 h**	**7 day**	
KIA	K/K	K/K	dark slant
H_2S	Neg	Neg	
Pseudo P	Yel	Yel	Yellow diff pgmt - FLUORESCENT
Pseudo F	Yel	Yel	NEG
NO_3 reduced	X	Red - Pos	✓
Gas from NO_3	Neg	tiny bubble -	✓
NO_2 reduced	X	Red - Neg	✓
Gas from NO_2	Neg	tiny bubble -	✓
OF Fructose	Yel top	Yel top +	✓
OF Dextrose	Yel +	Yel +	✓
OF Lactose	Gr -	Gr -	DARK GREEN
OF Maltose	Gr -	Bl -	
OF Mannitol	Yel top	Yel top +	
OF Xylose	Yel +	Yel +	
OF Sucrose	Gr -	Bl -	
Arginine	Neg	Neg	✓
Lysine	Neg	Neg	✓
Ornithine	Neg	Neg	✓
Base Control	Neg	Neg	✓
Acetamide	Neg	Neg	✓
Esculin	Pos-slant	Pos	✓
Gelatin	Pos	Pos	✓
Indole	X	Neg	✓
Malonate	Pos	Pos	✓
PAD	Neg	X	✓
Urea n/a 2 h	slt pink top of slant	lt pink slant +	✓
6.5% NaCL	Neg	Neg	✓
10% Lactose	Neg	Neg	✓
ONPG	Pos	Pos	✓
Growth 42^0	Neg	Neg	✓

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

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%**	**W95%**
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_3 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_2 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 (30μg)	0	21	0.00	7.73	Lysine	6	15	28.57	31.89
Colistin (10μg)	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°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.

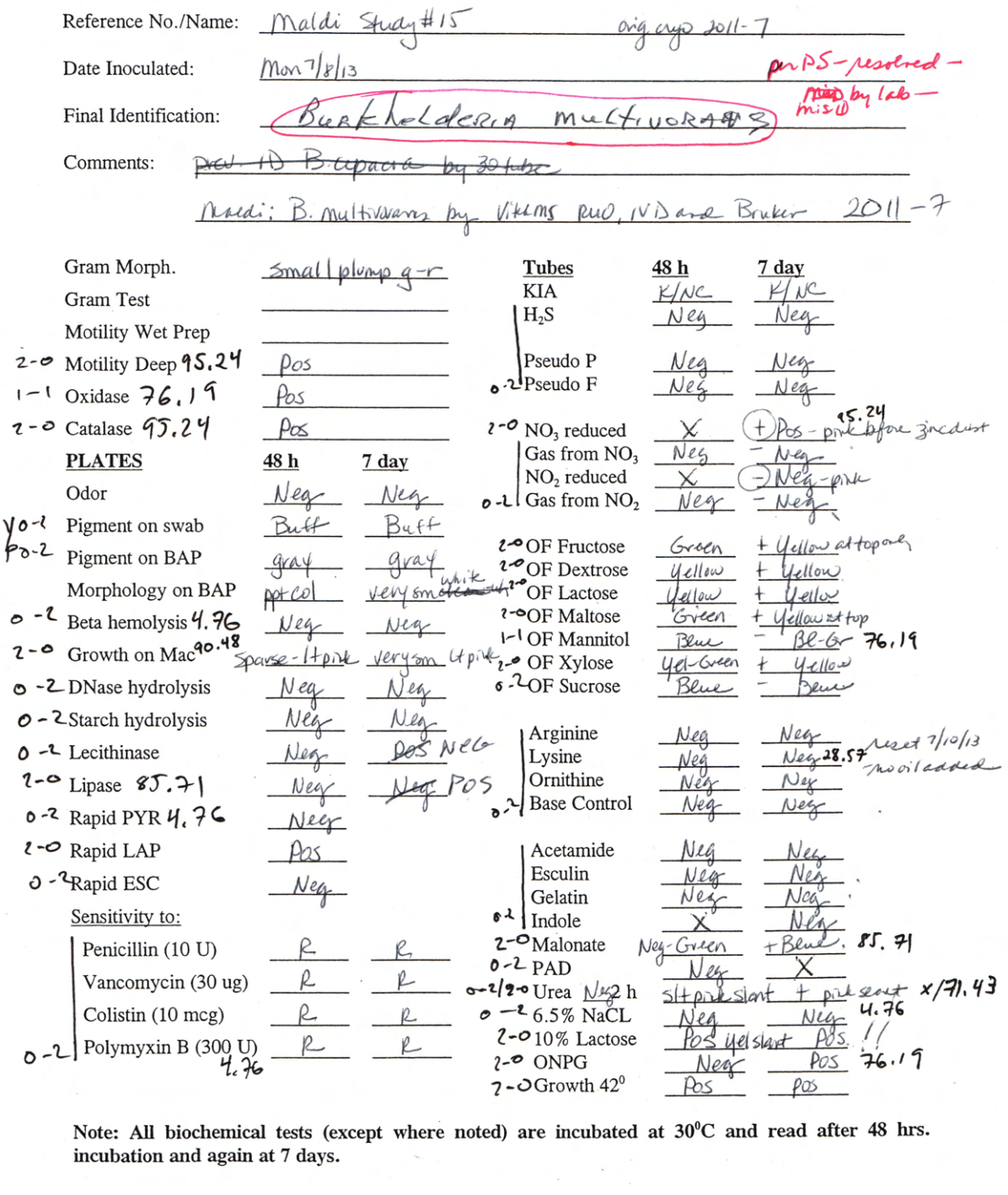
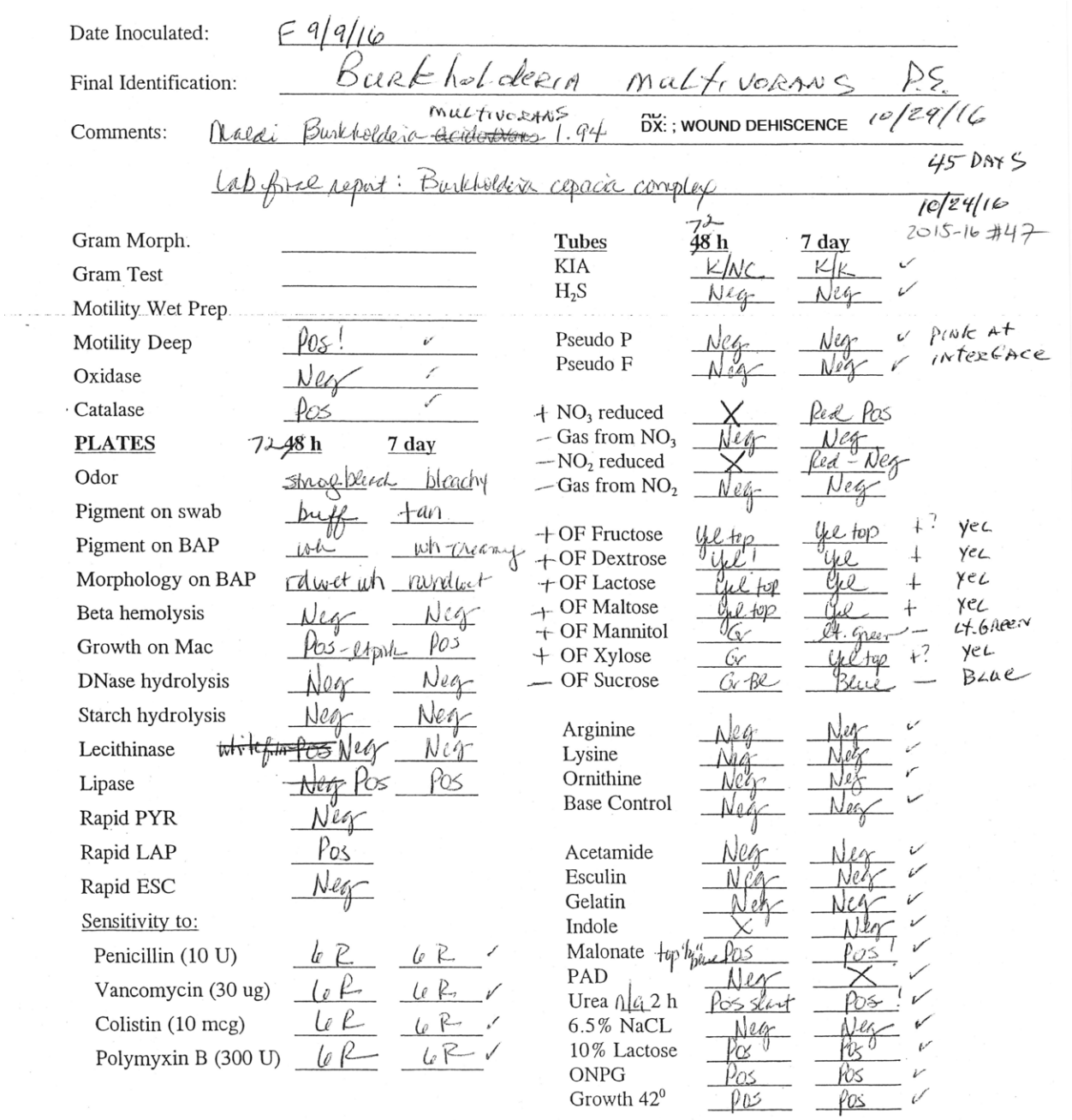


Figure 130: Burkholderia multivorans isolate 1-of-21.



Date Inoculated: F 9/9/16

Final Identification: Burkholderia multivorans P.S.

Comments: Maldi Burkholderia ~~acidovorans~~ multivorans 1.94 DX: ; WOUND DEHISCENCE 10/29/16

Lab final report: Burkholderia cepacia complex 45 DAYS 10/24/16 2015-16 #47

Gram Morph.		
Gram Test		
Motility Wet Prep		
Motility Deep	Pos!	✓
Oxidase	Neg	✓
Catalase	Pos	✓

PLATES	72 ~~48~~ h	7 day
Odor	strong bleach	bleachy
Pigment on swab	buff	tan
Pigment on BAP	wh	wh-creamy
Morphology on BAP	rd wet wh	round wet
Beta hemolysis	Neg	Neg
Growth on Mac	Pos - lt pink	Pos
DNase hydrolysis	Neg	Neg
Starch hydrolysis	Neg	Neg
Lecithinase	~~white film Pos~~ Neg	Neg
Lipase	~~Neg~~ Pos	Pos
Rapid PYR	Neg	
Rapid LAP	Pos	
Rapid ESC	Neg	

Sensitivity to:

Penicillin (10 U)	6 R	6 R	✓
Vancomycin (30 ug)	6 R	6 R	✓
Colistin (10 mcg)	6 R	6 R	✓
Polymyxin B (300 U)	6 R	6 R	✓

Tubes	72 ~~48~~ h	7 day		
KIA	K/NC	K/K	✓	
H_2S	Neg	Neg	✓	
Pseudo P	Neg	Neg	✓	pink at interface
Pseudo F	Neg	Neg	✓	
+ NO_3 reduced	X	Red Pos		
− Gas from NO_3	Neg	Neg		
− NO_2 reduced	X	Red - Neg		
− Gas from NO_2	Neg	Neg		
+ OF Fructose	Yel top	Yel top	+?	yel
+ OF Dextrose	Yel!	Yel	+	yel
+ OF Lactose	Yel top	Yel	+	yel
+ OF Maltose	Yel top	Yel	+	yel
+ OF Mannitol	Gr	lt. green	−	lt. green
+ OF Xylose	Gr	Yel top	+?	yel
− OF Sucrose	Gr-Bl	Blue	−	Blue
Arginine	Neg	Neg	✓	
Lysine	Neg	Neg	✓	
Ornithine	Neg	Neg	✓	
Base Control	Neg	Neg	✓	
Acetamide	Neg	Neg	✓	
Esculin	Neg	Neg	✓	
Gelatin	Neg	Neg	✓	
Indole	X	Neg	✓	
Malonate top "by" blue	Pos	Pos!	✓	
PAD	Neg	X	✓	
Urea n/a 2 h	Pos slant	Pos!	✓	
6.5% NaCL	Neg	Neg	✓	
10% Lactose	Pos	Pos	✓	
ONPG	Pos	Pos	✓	
Growth 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 131: Burkholderia multivorans isolate 2-of-21.

Date Inoculated: 6-18-07

Final Identification: Burkholderia multivorans Genomospecies II

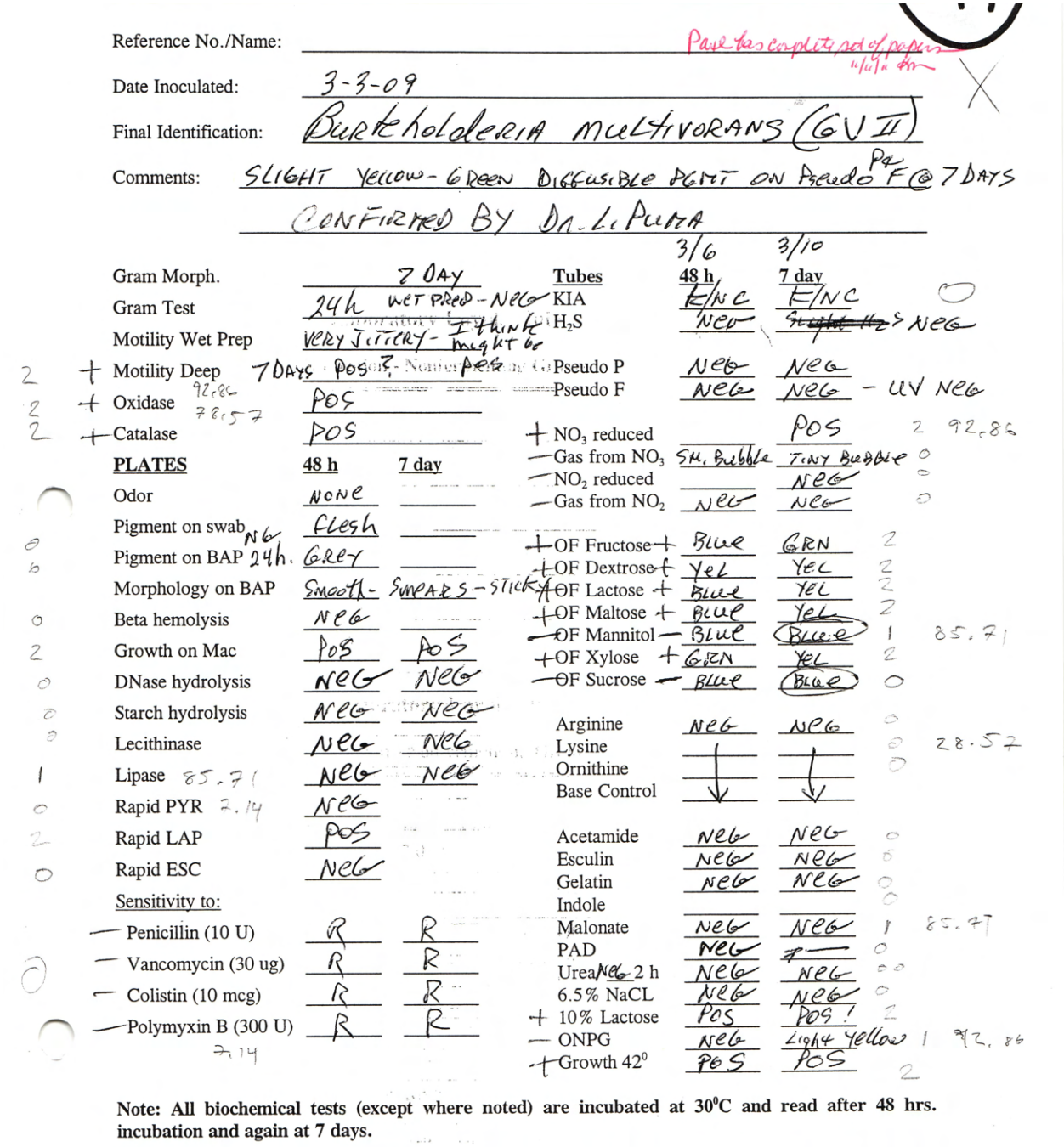
Comments: 6/25/07 P.S.

Gram Morph.		
Gram Test	24h	
Motility Wet Prep	POS - SM. RODS very motile	
Motility Deep	POS POS	
Oxidase	NEG (DELAYED POS)	
Catalase	STRONG POS	
PLATES	~~24 48 h~~	7 day
Odor	NONE	
Pigment on swab	BUFF	
Pigment on BAP	GREY	
Morphology on BAP	SMOOTH	
Beta hemolysis	NEG	
Growth on Mac	POS	POS
DNase hydrolysis	NEG	NEG
Starch hydrolysis	NEG	NEG
Lecithinase	NEG	NEG
Lipase	POS	POS !
Rapid PYR	NEG	
Rapid LAP	POS	
Rapid ESC	NEG	
Sensitivity to:		
Penicillin (10 U)	R	R
Vancomycin (30 ug)	R	R
Colistin (10 mcg)	R	R
Polymyxin B (300 U)	R	R

Tubes	48 h	7 day
KIA	K/NC	K/NC
H_2S	NEG	NEG
Pseudo P	NEG	NEG
Pseudo F	NEG	NEG
NO_3 reduced		NEG
Gas from NO_3	NEG	NEG
NO_2 reduced		NEG
Gas from NO_2	NEG	NEG
OF Fructose	GRN/YEL	YEL
OF Dextrose	YEL	YEL
OF Lactose	YEL	YEL
OF Maltose	YEL	YEL
OF Mannitol	GRN/YEL	GRN/YEL
OF Xylose	GRN/YEL	YEL
OF Sucrose	BLUE	BLUE
Arginine	NEG	NEG
*Lysine	POS	POS
Ornithine	NEG	NEG
Base Control	NEG	NEG
Acetamide	NEG	NEG
Esculin	NEG	NEG
Gelatin	NEG	NEG
Indole		
Malonate	NEG	POS
PAD	NEG	—
Urea NEG 2 h	POS - SLANT	POS - SLANT & BUTT
6.5% NaCL	NEG	NEG
10% Lactose	POS	POS
ONPG	W +	POS
Growth 42^0	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: Dave has complete set of papers

Date Inoculated: 3-3-09

Final Identification: Burkholderia multivorans (GV II)

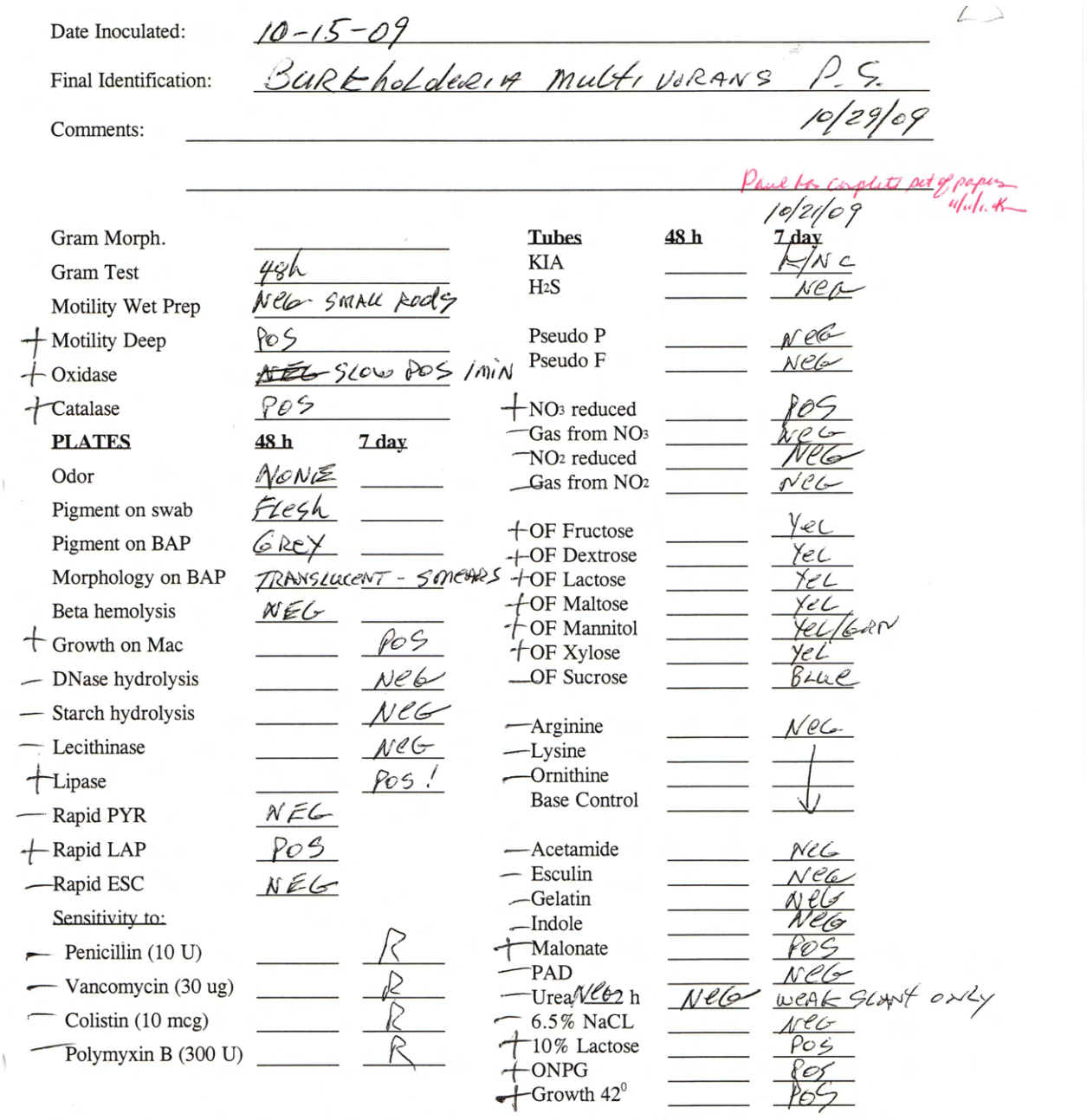
Comments: SLIGHT Yellow-Green DIFFUSIBLE PIGMT ON Pseudo Pg F @ 7 DAYS

CONFIRMED BY DA. LiPUMA

					3/6	3/10	
Gram Morph.	7 DAY		Tubes		48 h	7 day	
Gram Test	24h WET PREP - NEG		KIA		K/NC	K/NC	
Motility Wet Prep	VERY JITTERY - I think might be		H_2S		NEG	~~Slight Hz~~ > NEG	
+ Motility Deep	7 DAYS POS		Pseudo P		NEG	NEG	
+ Oxidase 92.86 78.57	POS		Pseudo F		NEG	NEG - UV NEG	
+ Catalase	POS		+ NO_3 reduced			POS	2 92.86
PLATES	**48 h**	**7 day**	— Gas from NO_3		SM. Bubble	TINY BUBBLE	0
Odor	NONE		— NO_2 reduced			NEG	0
Pigment on swab NG	Flesh		— Gas from NO_2		NEG	NEG	0
Pigment on BAP 24h.	GREY		+ OF Fructose	+	Blue	GRN	2
Morphology on BAP	SMOOTH - SMEARS - STICKY		+ OF Dextrose	+	Yel	Yel	2
Beta hemolysis	NEG		+ OF Lactose	+	Blue	Yel	2
Growth on Mac	POS	POS	+ OF Maltose	+	Blue	Yel	2
DNase hydrolysis	NEG	NEG	— OF Mannitol	—	Blue	Blue	1 85.71
Starch hydrolysis	NEG	NEG	+ OF Xylose	+	GRN	Yel	2
Lecithinase	NEG	NEG	— OF Sucrose	—	Blue	Blue	0
Lipase 85.71	NEG	NEG	Arginine		NEG	NEG	0
Rapid PYR 2.14	NEG		Lysine				0 28.57
Rapid LAP	POS		Ornithine				0
Rapid ESC	NEG		Base Control				
Sensitivity to:			Acetamide		NEG	NEG	0
— Penicillin (10 U)	R	R	Esculin		NEG	NEG	0
— Vancomycin (30 ug)	R	R	Gelatin		NEG	NEG	0
— Colistin (10 mcg)	R	R	Indole				0
— Polymyxin B (300 U)	R	R	Malonate		NEG	NEG	1 85.71
2.14			PAD		NEG	—	0
			Urea NEG 2 h		NEG	NEG	0 0
			6.5% NaCL		NEG	NEG	0
			+ 10% Lactose		POS	POS !	2
			— ONPG		NEG	Light Yellow	1 92.86
			+ Growth 42°		POS	POS	2

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

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



Date Inoculated: 10-15-09

Final Identification: BURKholderia multivorans P.S. 10/29/09

Comments:

Panel to complete set of papers 10/21/09

Gram Morph.			**Tubes**	**48 h**	**7 day**
Gram Test	48h		KIA		K/NC
Motility Wet Prep	NEG SMALL RODS		H_2S		NEG
+ Motility Deep	POS		Pseudo P		NEG
+ Oxidase	~~NEG~~ SLOW POS 1MIN		Pseudo F		NEG
+ Catalase	POS		+ NO_3 reduced		POS
PLATES	**48 h**	**7 day**	— Gas from NO_3		NEG
Odor	NONE		— NO_2 reduced		NEG
Pigment on swab	FLESH		— Gas from NO_2		NEG
Pigment on BAP	GREY		+ OF Fructose		YEL
Morphology on BAP	TRANSLUCENT - SMEARS		+ OF Dextrose		YEL
Beta hemolysis	NEG		+ OF Lactose		YEL
+ Growth on Mac		POS	+ OF Maltose		YEL
— DNase hydrolysis		NEG	+ OF Mannitol		YEL/GRN
— Starch hydrolysis		NEG	+ OF Xylose		YEL
— Lecithinase		NEG	— OF Sucrose		BLUE
+ Lipase		POS !	— Arginine		NEG
— Rapid PYR	NEG		— Lysine		
+ Rapid LAP	POS		— Ornithine		
— Rapid ESC	NEG		Base Control		
Sensitivity to:			— Acetamide		NEG
— Penicillin (10 U)		R	— Esculin		NEG
— Vancomycin (30 ug)		R	— Gelatin		NEG
— Colistin (10 mcg)		R	— Indole		NEG
— Polymyxin B (300 U)		R	+ Malonate		POS
			— PAD		NEG
			— Urea ~~NEG 2 h~~	NEG	WEAK SLANT ONLY
			— 6.5% NaCL		NEG
			+ 10% Lactose		POS
			+ ONPG		POS
			+ Growth 42°		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 134: Burkholderia multivorans isolate 5-of-21.

Date Inoculated: 7-14-10

Final Identification: Burkholderia multivorans (GS II)

Comments: Confirmed by Dr. LiPuma

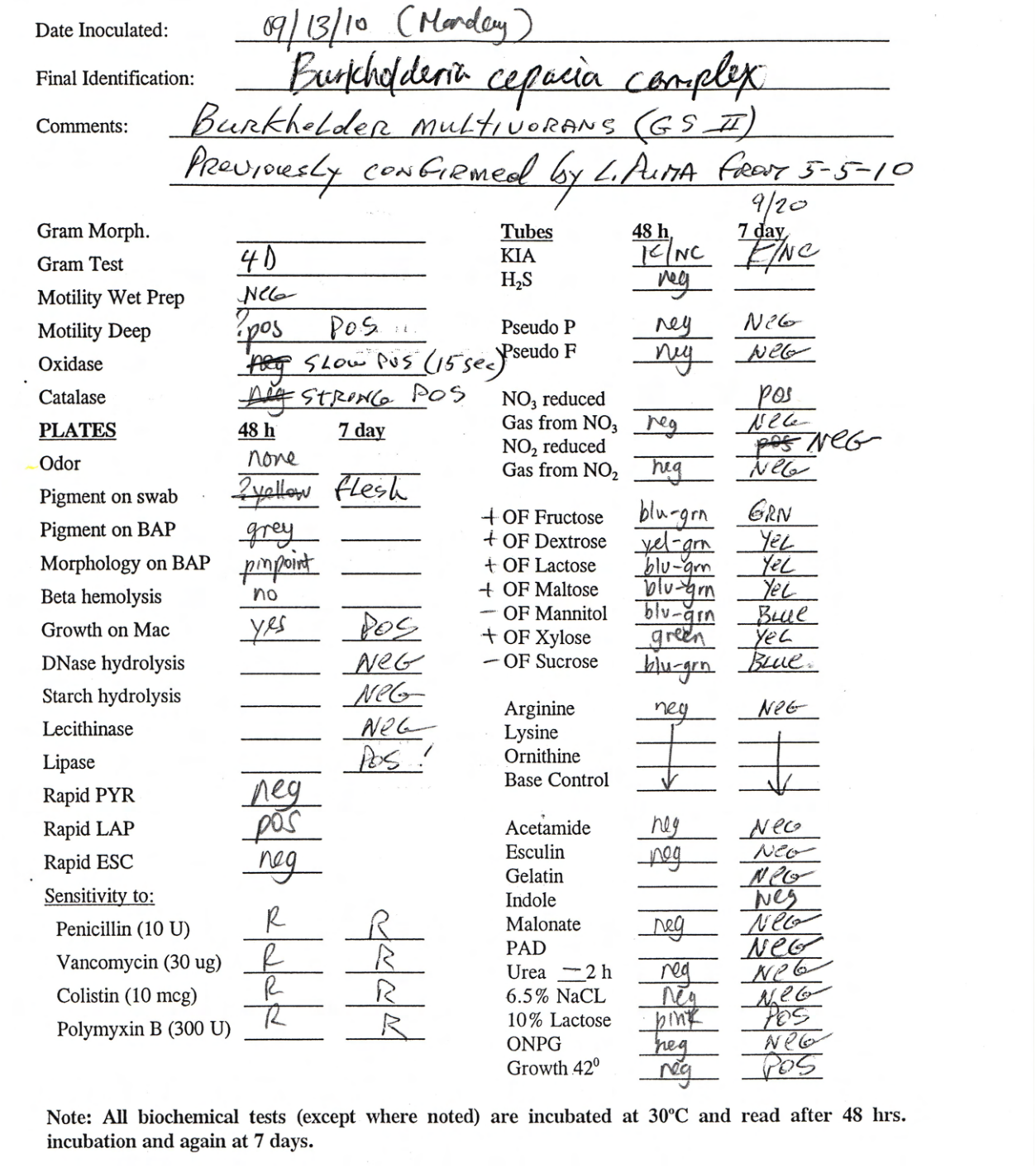
7/19/10

Gram Morph.		
Gram Test	48h	
Motility Wet Prep	Neg - Tiny Rods	
Motility Deep	POS	POS
Oxidase	SLOW POS	
Catalase	STRONG	POS
PLATES	**48 h**	**7 day**
Odor	Stinks	
Pigment on swab	Flesh	
Pigment on BAP	Grey	
Morphology on BAP	Smooth	
Beta hemolysis	Neg	
Growth on Mac	POS	POS
DNase hydrolysis	Neg	Neg
Starch hydrolysis	Neg	Neg
Lecithinase	Neg	Neg
Lipase	Neg	Neg
Rapid PYR	Neg	
Rapid LAP	POS	
Rapid ESC	Neg	
Sensitivity to:		
Penicillin (10 U)	R	R
Vancomycin (30 ug)	R	R
Colistin (10 mcg)	R	R
Polymyxin B (300 U)	R	R

Tubes	**48 h**	**7 day**
KIA	K/NC	K/NC
H_2S	Neg	Neg
Pseudo P	Neg	Neg
Pseudo F	Neg	Neg
NO_3 reduced		POS
Gas from NO_3	Neg	Neg
NO_2 reduced		Neg
Gas from NO_2	TINY BUBBLE	TINY BUBBLE
OF Fructose	GRN	Yel/GRN
OF Dextrose	Yel	Yel
OF Lactose	Yel	Yel
OF Maltose	Yel	Yel
OF Mannitol	GRN	Yel/GRN
OF Xylose	GRN	Yel/GRN
OF Sucrose	Blue	Blue
Arginine	Neg	Neg
Lysine	POS	POS
Ornithine	Neg	Neg
Base Control	Neg	Neg
Acetamide	Neg	Neg
Esculin	Neg	Neg
Gelatin	Neg	Neg
Indole		Neg
Malonate	POS	POS
PAD	Neg	
Urea Neg 7h	POS SLANT	POS SLANT & BUTT
6.5% NaCL	Neg	Neg
10% Lactose	POS	POS
ONPG	Neg	POS
Growth 42^0	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: 09/13/10 (Monday)

Final Identification: Burkholderia cepacia complex

Comments: Burkholder multivorans (GS II)
Previously confirmed by L. Puma from 5-5-10

Gram Morph.		
Gram Test	4D	
Motility Wet Prep	NEG	
Motility Deep	?pos	POS
Oxidase	~~neg~~ SLOW POS (15 sec)	
Catalase	~~neg~~ STRONG POS	
PLATES	**48 h**	**7 day**
Odor	none	
Pigment on swab	~~?yellow~~	flesh
Pigment on BAP	grey	
Morphology on BAP	pinpoint	
Beta hemolysis	no	
Growth on Mac	yes	POS
DNase hydrolysis		NEG
Starch hydrolysis		NEG
Lecithinase		NEG
Lipase		POS !
Rapid PYR	neg	
Rapid LAP	pos	
Rapid ESC	neg	
Sensitivity to:		
Penicillin (10 U)	R	R
Vancomycin (30 ug)	R	R
Colistin (10 mcg)	R	R
Polymyxin B (300 U)	R	R

Tubes	48 h	7 day 9/20
KIA	K/NC	K/NC
H_2S	neg	
Pseudo P	neg	NEG
Pseudo F	neg	NEG
NO_3 reduced		POS
Gas from NO_3	neg	NEG
NO_2 reduced		~~pos~~ NEG
Gas from NO_2	neg	NEG
+ OF Fructose	blu-grn	GRN
+ OF Dextrose	yel-grn	YEL
+ OF Lactose	blu-grn	YEL
+ OF Maltose	blu-grn	YEL
− OF Mannitol	blu-grn	BLUE
+ OF Xylose	green	YEL
− OF Sucrose	blu-grn	BLUE
Arginine	neg	NEG
Lysine	↓	↓
Ornithine	↓	↓
Base Control	↓	↓
Acetamide	neg	NEG
Esculin	neg	NEG
Gelatin		NEG
Indole		NEG
Malonate	neg	NEG
PAD		NEG
Urea − 2 h	neg	NEG
6.5% NaCL	neg	NEG
10% Lactose	pink	POS
ONPG	neg	NEG
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 136: Burkholderia multivorans isolate 7-of-21.

Date Inoculated: 11-29-10

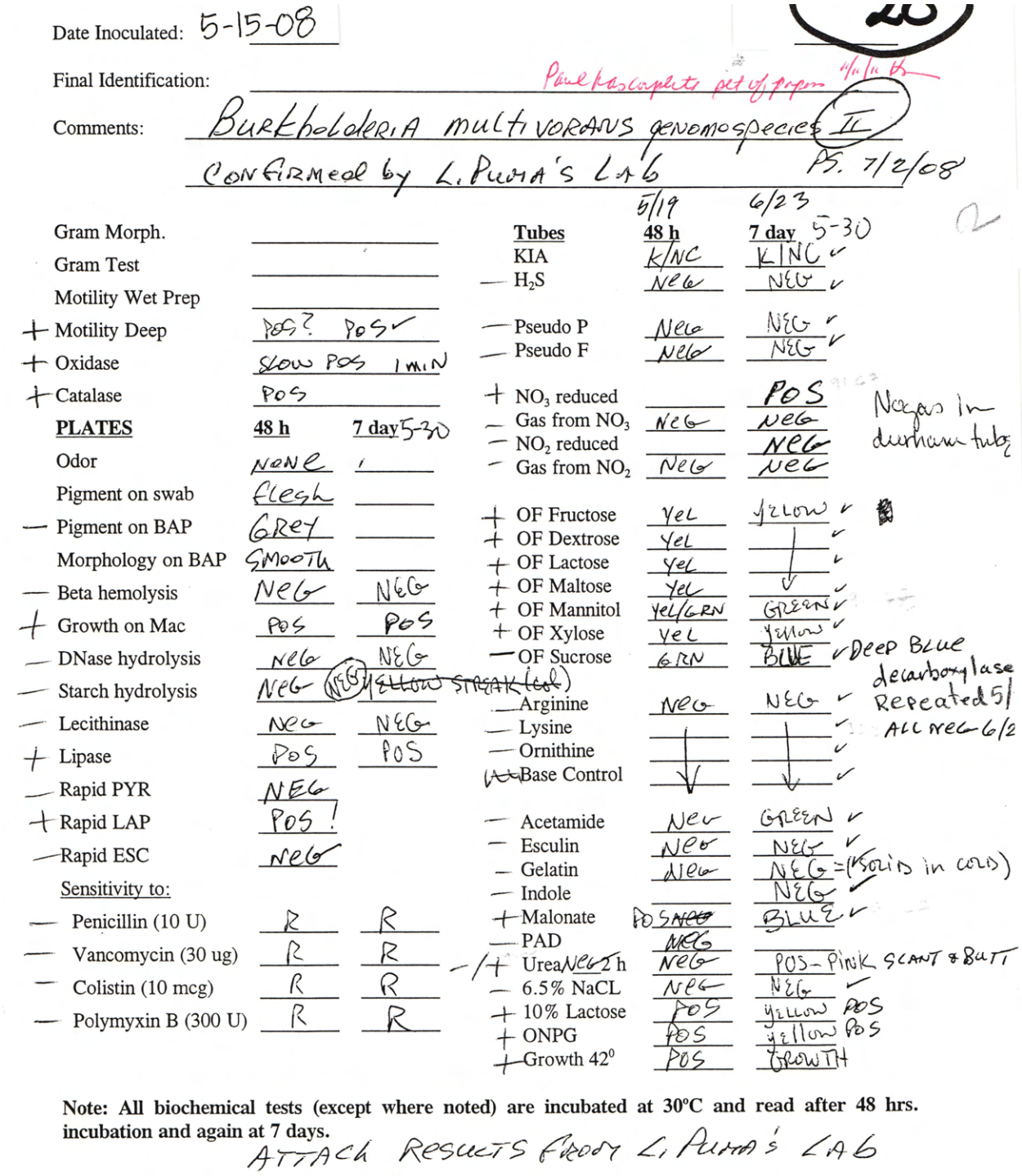
Final Identification: Burkholderia multivorans (GS II)

Comments: P.S. 12/6/10

				12/2	
Gram Morph.			**Tubes**	**48 h**	**7 day**
Gram Test	24h		KIA	K/NC	K/K
Motility Wet Prep	Neg - cb		H_2S	Neg	Neg
Motility Deep	Pos? Pos		Pseudo P	Neg	Neg } Diffusible yellow pgmt
Oxidase	Pos		Pseudo F	Neg	Neg
Catalase	Neg	7 DAYS DELAYED TINY +	NO_3 reduced		Pos
PLATES	**48 h**	**7 day**	Gas from NO_3	Neg	Neg
Odor	NONE		NO_2 reduced		Neg
Pigment on swab	Buff		Gas from NO_2	Neg	Neg
Pigment on BAP	Grey		OF Fructose	Yel/GRN	Yel/GRN
Morphology on BAP	TRANSLUCENT	poor growth 7 DAYS	OF Dextrose	Yel	Yel
Beta hemolysis	Neg		OF Lactose	Yel/GRN	Yel
Growth on Mac	Inhibited growth		OF Maltose	Yel/GRN	Yel
DNase hydrolysis	Neg	Neg	OF Mannitol	Blue	GRN/Blue
Starch hydrolysis	Neg	Neg	OF Xylose	Yel	Yel
Lecithinase	Neg	Neg	OF Sucrose	Blue	Blue
Lipase	Pos	Pos	Arginine	Neg	Neg
Rapid PYR	Neg		Lysine		
Rapid LAP	Pos		Ornithine		
Rapid ESC	Neg		Base Control		
Sensitivity to:			Acetamide	Neg	Neg
Penicillin (10 U)	R	R	Esculin	Neg	Neg
Vancomycin (30 ug)	R	R	Gelatin	Neg	Neg
Colistin (10 mcg)	R	R	Indole		Neg
Polymyxin B (300 U)	R	R	Malonate	Neg	Pos
			PAD	Neg	—
			Urea Neg 2 h	Wt (SLANT)	Pos - SLANT ONLY
			6.5% NaCL	Neg	Neg
			10% Lactose	Pos	Pos
			ONPG	Neg	Pos
			Growth 42^0	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 137: Burkholderia multivorans isolate 8-of-21.



Date Inoculated: 5-15-08

Final Identification: Paul has complete set of papers 11/11/11

Comments: Burkholderia multivorans genomospecies II
Confirmed by L. Puma's Lab PS. 7/2/08

Gram Morph.		
Gram Test		
Motility Wet Prep		
+ Motility Deep	POS? POS ✓	
+ Oxidase	SLOW POS 1 MIN	
+ Catalase	POS	
PLATES	**48 h**	**7 day** 5-30
Odor	NONE	
Pigment on swab	flesh	
— Pigment on BAP	GREY	
Morphology on BAP	SMOOTH	
— Beta hemolysis	NEG	NEG
+ Growth on Mac	POS	POS
— DNase hydrolysis	NEG	NEG
— Starch hydrolysis	NEG	NEG ~~YELLOW STREAK (col)~~
— Lecithinase	NEG	NEG
+ Lipase	POS	POS
— Rapid PYR	NEG	
+ Rapid LAP	POS!	
— Rapid ESC	NEG	
Sensitivity to:		
— Penicillin (10 U)	R	R
— Vancomycin (30 ug)	R	R
— Colistin (10 mcg)	R	R
— Polymyxin B (300 U)	R	R

Tubes	5/19 48 h	6/23 7 day 5-30
KIA	K/NC	K/NC ✓
— H_2S	NEG	NEG ✓
— Pseudo P	NEG	NEG ✓
— Pseudo F	NEG	NEG ✓
+ NO_3 reduced		POS
— Gas from NO_3	NEG	NEG
— NO_2 reduced		NEG
— Gas from NO_2	NEG	NEG
+ OF Fructose	YEL	YELLOW ✓
+ OF Dextrose	YEL	✓
+ OF Lactose	YEL	✓
+ OF Maltose	YEL	✓
+ OF Mannitol	YEL/GRN	GREEN ✓
+ OF Xylose	YEL	YELLOW ✓
— OF Sucrose	GRN	BLUE ✓
— Arginine	NEG	NEG ✓
— Lysine		✓
— Ornithine		✓
— Base Control		✓
— Acetamide	NEG	GREEN ✓
— Esculin	NEG	NEG ✓
— Gelatin	NEG	NEG = (✓ SOLID in COLD)
— Indole		NEG ✓
+ Malonate	POS ~~NEG~~	BLUE ✓
— PAD	NEG	
—/+ Urea NEG 2 h	NEG	POS - PINK SLANT & BUTT
— 6.5% NaCL	NEG	NEG ✓
+ 10% Lactose	POS	YELLOW POS
+ ONPG	POS	YELLOW POS
+ Growth 42°	POS	GROWTH

No gas in durham tube

Deep Blue decarboxylase Repeated 5/ ALL NEG 6/2

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. PUMA'S LAB

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

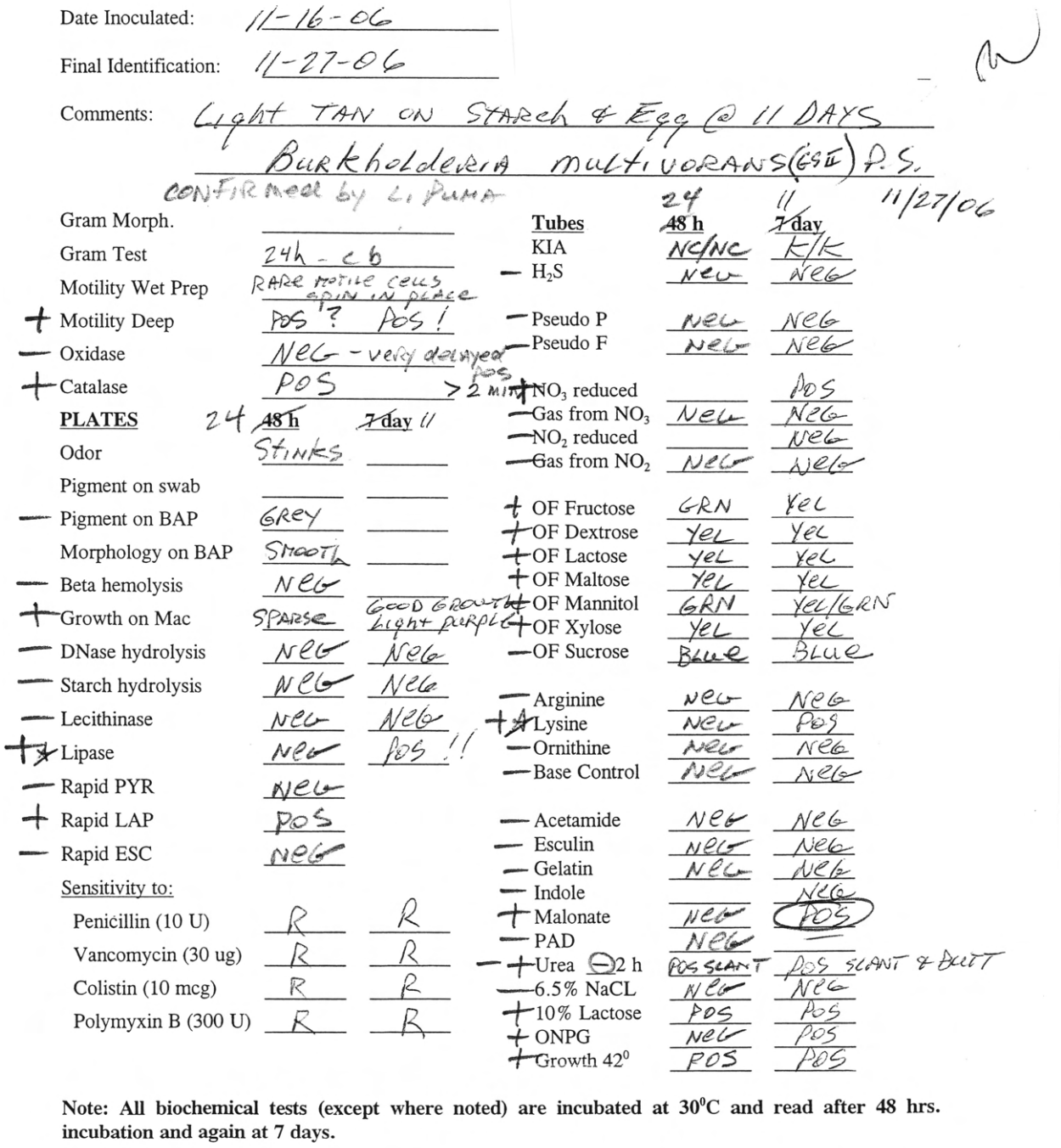


Figure 139: Burkholderia multivorans isolate 10-of-21.

Date Inoculated: 2-14-07

Final Identification: 2-22-07 Burkholderia multivorans (GS II)

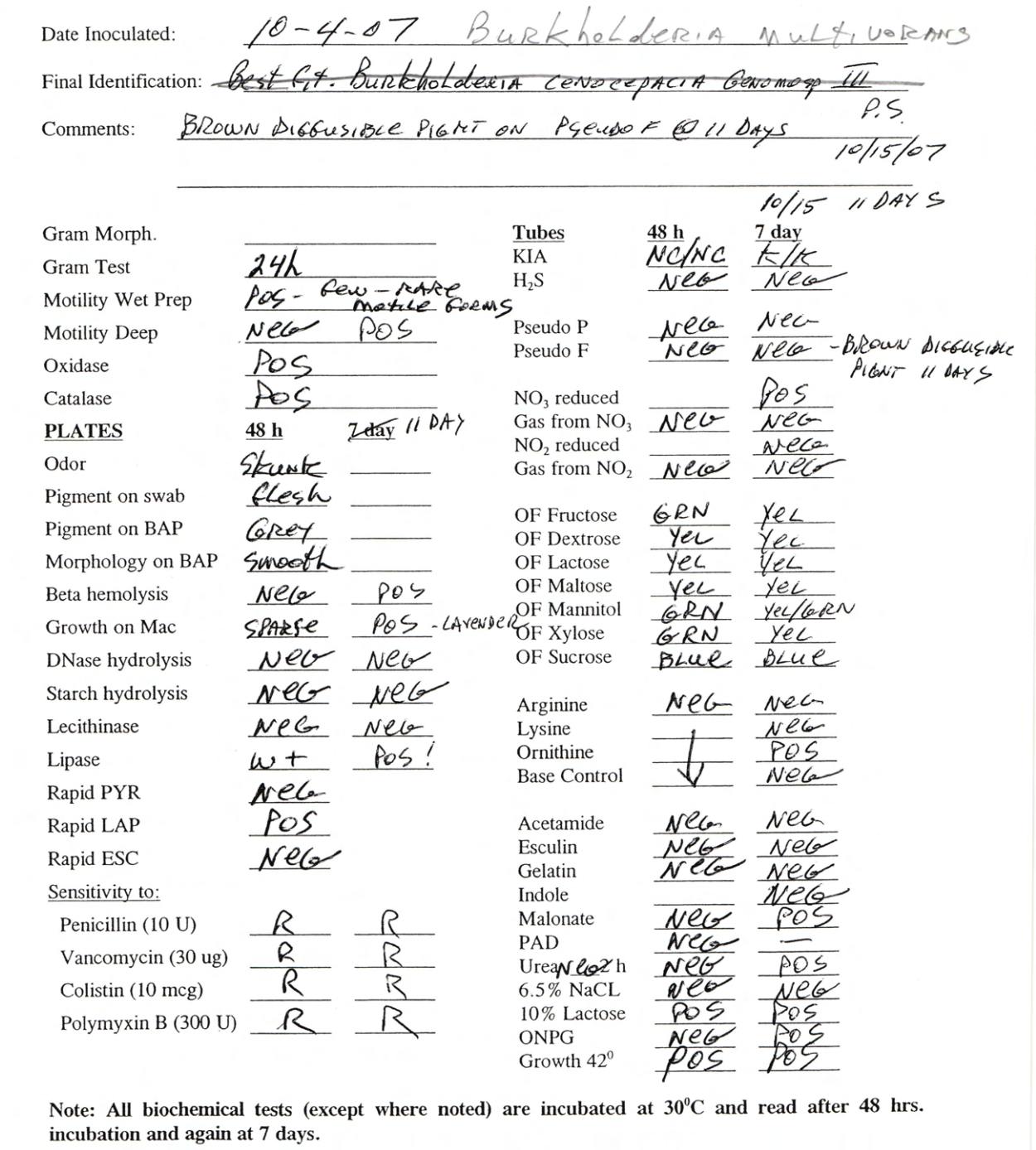
Comments: Light Butterscotch on Egg + Starch P.S. 2-23-07

Gram Morph.		
Gram Test	48h	
Motility Wet Prep	POS - Sm. Rods	
Motility Deep	POS	POS
Oxidase	NEG	
Catalase	Strong	POS
PLATES	**48 h**	**7 day**
Odor	Skunk	
Pigment on swab	Flesh	
Pigment on BAP	Grey	
Morphology on BAP	Smooth	
Beta hemolysis	NEG	
Growth on Mac	POS - BRIGHT PURPLE	POS
DNase hydrolysis	NEG	NEG
Starch hydrolysis	NEG	NEG
Lecithinase	NEG	NEG
Lipase	POS	POS !
Rapid PYR	NEG	
Rapid LAP	POS	
Rapid ESC	NEG	
Sensitivity to:		
Penicillin (10 U)	R	R
Vancomycin (30 ug)	R	R
Colistin (10 mcg)	R	R
Polymyxin B (300 U)	R	R

Tubes	**48 h**	**7 day**	
KIA	K/NC	K/NC	
H_2S	NEG	NEG	
Pseudo P	NEG	NEG	BROWN DIFFUSIBLE PIGMENT
Pseudo F	NEG	NEG -	
NO_3 reduced		POS	
Gas from NO_3	NEG	NEG	
NO_2 reduced		NEG	
Gas from NO_2	NEG	NEG	
OF Fructose	GRN	YEL/GRN	
OF Dextrose	YEL	YEL	
OF Lactose	YEL	YEL	
OF Maltose	YEL	YEL	
OF Mannitol	YEL	YEL/GRN	
OF Xylose	YEL	YEL	
OF Sucrose	BLU	BLUE	
Arginine	NEG	NEG	
Lysine			
Ornithine			
Base Control			
Acetamide	NEG	NEG	
Esculin	NEG	NEG	
Gelatin	NEG	NEG	
Indole		NEG	
Malonate	LT. BLUE	BLUE	
PAD	NEG		
Urea 2 h	POS - SLANT	ONLY POS	SLANT & BUTT
6.5% NaCL	NEG	NEG	
10% Lactose	POS	POS !	
ONPG	NEG	POS	
Growth 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 140: Burkholderia multivorans isolate 11-of-21.



Date Inoculated: 10-4-07 Burkholderia multivorans

Final Identification: ~~Best Cf. Burkholderia cenocepacia Genomosp III~~ P.S. 10/15/07

Comments: Brown diffusible pigment on Pseudo F @ 11 Days

10/15 11 DAYS

Gram Morph.		
Gram Test	24h	
Motility Wet Prep	POS - few - rare motile forms	
Motility Deep	Neg	POS
Oxidase	POS	
Catalase	POS	
PLATES	**48 h**	~~7day~~ 11 DAY
Odor	Skunk	
Pigment on swab	flesh	
Pigment on BAP	Grey	
Morphology on BAP	smooth	
Beta hemolysis	Neg	POS
Growth on Mac	SPARSE	POS - LAVENDER
DNase hydrolysis	Neg	Neg
Starch hydrolysis	Neg	Neg
Lecithinase	Neg	Neg
Lipase	w+	POS!
Rapid PYR	Neg	
Rapid LAP	POS	
Rapid ESC	Neg	
Sensitivity to:		
Penicillin (10 U)	R	R
Vancomycin (30 ug)	R	R
Colistin (10 mcg)	R	R
Polymyxin B (300 U)	R	R

Tubes	**48 h**	**7 day**
KIA	NC/NC	K/K
H_2S	Neg	Neg
Pseudo P	Neg	Neg
Pseudo F	Neg	Neg - BROWN DIFFUSIBLE PIGMT 11 DAYS
NO_3 reduced		POS
Gas from NO_3	Neg	Neg
NO_2 reduced		Neg
Gas from NO_2	Neg	Neg
OF Fructose	GRN	Yel
OF Dextrose	Yel	Yel
OF Lactose	Yel	Yel
OF Maltose	Yel	Yel
OF Mannitol	GRN	Yel/GRN
OF Xylose	GRN	Yel
OF Sucrose	BLUE	BLUE
Arginine	Neg	Neg
Lysine		Neg
Ornithine	↓	POS
Base Control	↓	Neg
Acetamide	Neg	Neg
Esculin	Neg	Neg
Gelatin	Neg	Neg
Indole		Neg
Malonate	Neg	POS
PAD	Neg	—
Urea Neg 2 h	Neg	POS
6.5% NaCL	Neg	Neg
10% Lactose	POS	POS
ONPG	Neg	POS
Growth 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 141: Burkholderia multivorans isolate 12-of-21.

Final Identification: Burkholderia ~~cepacia~~ multivorans genomospecies 2

Comments: Confirmed by LiPuma's Lab as B. multivorans P.S. 5/29/07

Gram Morph.		
Gram Test	48 h	
Motility Wet Prep	Pos sm rods	
Motility Deep	Pos	Pos
Oxidase	slow Pos	
Catalase	Pos	
PLATES	**48 h**	**7 day**
Odor	none	
Pigment on swab	flesh	
Pigment on BAP	Grey	
Morphology on BAP	Smooth	
Beta hemolysis	Neg	
Growth on Mac	Pos	Pos
DNase hydrolysis	Neg	Neg
Starch hydrolysis	Neg	Neg
Lecithinase	Neg	Neg
Lipase	Neg	Neg
Rapid PYR	Neg	
Rapid LAP	Pos	LB
Rapid ESC	Neg	
Sensitivity to:		
Penicillin (10 U)	R	R
Vancomycin (30 ug)	R	R
Colistin (10 mcg)	R	R
Polymyxin B (300 U)	R	R

Tubes	**48 h**	**7 day**
KIA	K/NC	K/NC
H_2S	Neg	Neg
Pseudo P	Neg	Neg
Pseudo F	Neg	Neg
NO_3 reduced		Pos
Gas from NO_3	Neg	Neg
NO_2 reduced		Neg
Gas from NO_2	Tiny bubble	Tiny bubble
OF Fructose	Yel	Yel
OF Dextrose	↓	↓
OF Lactose	↓	↓
OF Maltose	↓	↓
OF Mannitol	↓	↓
OF Xylose	↓	↓
OF Sucrose	Blue	Blue
Arginine	Neg	Neg
★Lysine	Pos	Pos
Ornithine	Neg	Neg
Base Control	Neg	Neg
Acetamide	Neg	Neg
Esculin	Neg	Neg
Gelatin	Neg	Neg
Indole		Neg
Malonate	Neg	Pos
PAD	Neg	
Urea Neg 2 h	Pos (slant)	Pos (slant)
6.5% NaCL	Neg	Neg
10% Lactose	Pos	Pos
ONPG	Neg	Pos
Growth 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 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%**	**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_3 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 (30μg)	0	1	0.00	39.67	Lysine	0	1	0.00	39.67
Colistin (10μg)	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

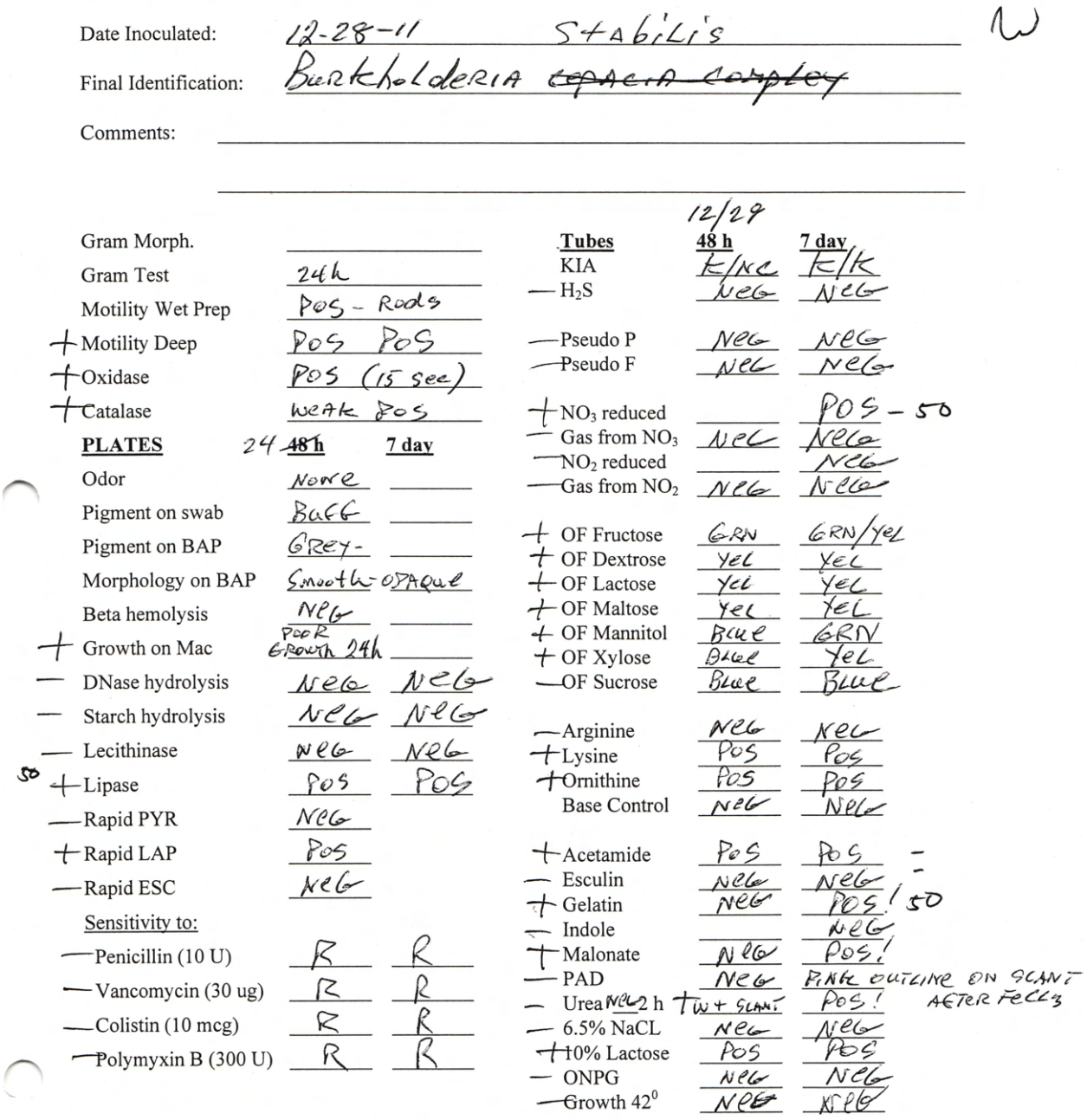
Table 30: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as $n_+/(n_+ + n_-)$, where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which 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%**	**W95%**	**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_3 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 (30μg)	0	2	0.00	32.88	Lysine	2	0	100.00	67.12
Colistin (10μg)	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: 12-28-11 STABILI'S

Final Identification: Burkholderia ~~cepacia complex~~

Comments:

				Tubes	12/29 48 h	7 day
	Gram Morph.			KIA	K/NC	K/K
	Gram Test	24h		— H_2S	Neg	Neg
	Motility Wet Prep	Pos - Rods				
+	Motility Deep	Pos Pos		—Pseudo P	Neg	Neg
+	Oxidase	Pos (15 sec)		—Pseudo F	Neg	Neg
+	Catalase	weak Pos		+ NO_3 reduced		Pos - 50
	PLATES	24 ~~48 h~~	7 day	— Gas from NO_3	Neg	Neg
	Odor	None		—NO_2 reduced		Neg
	Pigment on swab	Buff		—Gas from NO_2	Neg	Neg
	Pigment on BAP	Grey-				
	Morphology on BAP	Smooth-Opaque		+ OF Fructose	GRN	GRN/Yel
	Beta hemolysis	Neg		+ OF Dextrose	Yel	Yel
+	Growth on Mac	Poor Growth 24h		+ OF Lactose	Yel	Yel
—	DNase hydrolysis	Neg	Neg	+ OF Maltose	Yel	Yel
—	Starch hydrolysis	Neg	Neg	+ OF Mannitol	Blue	GRN
—	Lecithinase	Neg	Neg	+ OF Xylose	Blue	Yel
50 +	Lipase	Pos	Pos	—OF Sucrose	Blue	Blue
—	Rapid PYR	Neg		—Arginine	Neg	Neg
+	Rapid LAP	Pos		+Lysine	Pos	Pos
—	Rapid ESC	Neg		+Ornithine	Pos	Pos
	Sensitivity to:			Base Control	Neg	Neg
—	Penicillin (10 U)	R	R	+Acetamide	Pos	Pos -
—	Vancomycin (30 ug)	R	R	— Esculin	Neg	Neg
—	Colistin (10 mcg)	R	R	+ Gelatin	Neg	Pos! / 50
—	Polymyxin B (300 U)	R	R	— Indole		Neg
				+ Malonate	Neg	Pos!
				— PAD	Neg	PINK OUTLINE ON SLANT AFTER FECL3
				— Urea Neg 2 h	+ TW + SLANT	Pos!
				— 6.5% NaCL	Neg	Neg
				+10% Lactose	Pos	Pos
				— ONPG	Neg	Neg
				—Growth 42^0	Neg	Neg

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

Figure 143: Burkholderia stabilis isolate 1-of-2.

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%**	**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_3 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 (30μg)	0	1	0.00	39.67	Lysine	0	1	0.00	39.67
Colistin (10μg)	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.

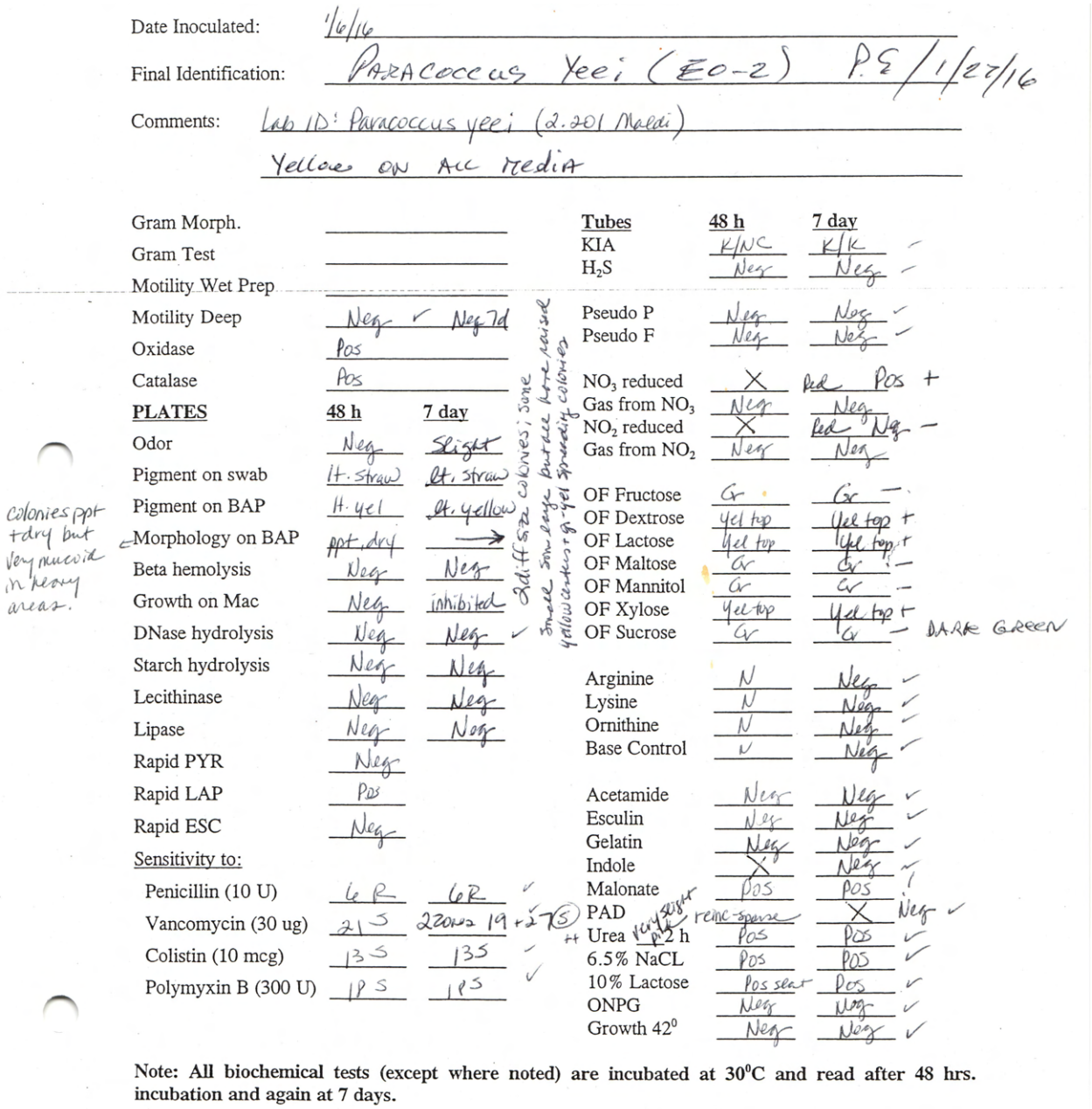
13 ASSORTED CDC GROUPS

13.1 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%**	**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	5	0	100.00	78.28	NO_3 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_2 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 (30μg)	5	0	100.00	78.28	Lysine	0	5	0.00	21.72
Colistin (10μg)	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.



Date Inoculated: 1/6/16

Final Identification: PARACOCCUS Yeei (EO-2) P.E / 1/27/16

Comments: Lab ID: Paracoccus yeei (2.201 Maldi)
Yellow on All media

Gram Morph.		
Gram Test		
Motility Wet Prep		
Motility Deep	Neg ✓	Neg 7d
Oxidase	Pos	
Catalase	Pos	

PLATES	48 h	7 day
Odor	Neg	Slight
Pigment on swab	lt. straw	lt. straw
Pigment on BAP	lt. yel	lt. yellow
Morphology on BAP	ppt, dry	→
Beta hemolysis	Neg	Neg
Growth on Mac	Neg	inhibited
DNase hydrolysis	Neg	Neg ✓
Starch hydrolysis	Neg	Neg
Lecithinase	Neg	Neg
Lipase	Neg	Neg
Rapid PYR	Neg	
Rapid LAP	Pos	
Rapid ESC	Neg	
Sensitivity to:		
Penicillin (10 U)	6 R	6R ✓
Vancomycin (30 ug)	21 S	22 ones 19 + 27 (S) ✓
Colistin (10 mcg)	13 S	13 S ✓
Polymyxin B (300 U)	18 S	18 S ✓

colonies ppt + dry but very mucoid in heavy areas.

2 diff size colonies; some small sm large but all have raised yellow centers + gr-yel spreading colonies

Tubes	48 h	7 day
KIA	K/NC	K/K ✓
H_2S	Neg	Neg ✓
Pseudo P	Neg	Neg ✓
Pseudo F	Neg	Neg ✓
NO_3 reduced	X	Red Pos +
Gas from NO_3	Neg	Neg
NO_2 reduced	X	Red Neg −
Gas from NO_2	Neg	Neg
OF Fructose	Gr	Gr −
OF Dextrose	Yel top	Yel top +
OF Lactose	Yel top	Yel top +
OF Maltose	Gr	Gr −
OF Mannitol	Gr	Gr −
OF Xylose	Yel top	Yel top +
OF Sucrose	Gr	Gr − DARK GREEN
Arginine	N	Neg ✓
Lysine	N	Neg ✓
Ornithine	N	Neg ✓
Base Control	N	Neg ✓
Acetamide	Neg	Neg ✓
Esculin	Neg	Neg ✓
Gelatin	Neg	Neg ✓
Indole	X	Neg ✓
Malonate	Pos	Pos ✓
PAD	very slight pink reinc-sparse	X Neg ✓
Urea ++ 2 h	Pos	Pos ✓
6.5% NaCL	Pos	Pos ✓
10% Lactose	Pos slat	Pos ✓
ONPG	Neg	Neg ✓
Growth 42°	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 144: CDC Group EO-2 isolate 1-of-5.

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%**	**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_3 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_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	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 (30μg)	0	1	0.00	39.67	Lysine	0	1	0.00	39.67
Colistin (10μg)	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%**	**W95%**	**Test**	+	−	**Raw%**	**W95%**
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_3 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_2 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 (30μg)	0	4	0.00	24.50	Lysine	0	4	0.00	24.50
Colistin (10μg)	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_3 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_2 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 (30μg)	6	0	100.00	80.48	Lysine	0	6	0.00	19.52
Colistin (10μg)	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%**	**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_3 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_2 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 (30μg)	6	0	100.00	80.48	Lysine	0	6	0.00	19.52
Colistin (10μg)	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%**	**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_3 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_2 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 (30μg)	0	5	0.00	21.72	Lysine	0	5	0.00	21.72
Colistin (10μg)	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%**	**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_3 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	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 (30μg)	5	0	100.00	78.28	Lysine	0	5	0.00	21.72
Colistin (10μg)	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%**	**W95%**	**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_3 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 (30μg)	1	0	100.00	60.33	Lysine	0	1	0.00	39.67
Colistin (10μg)	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.

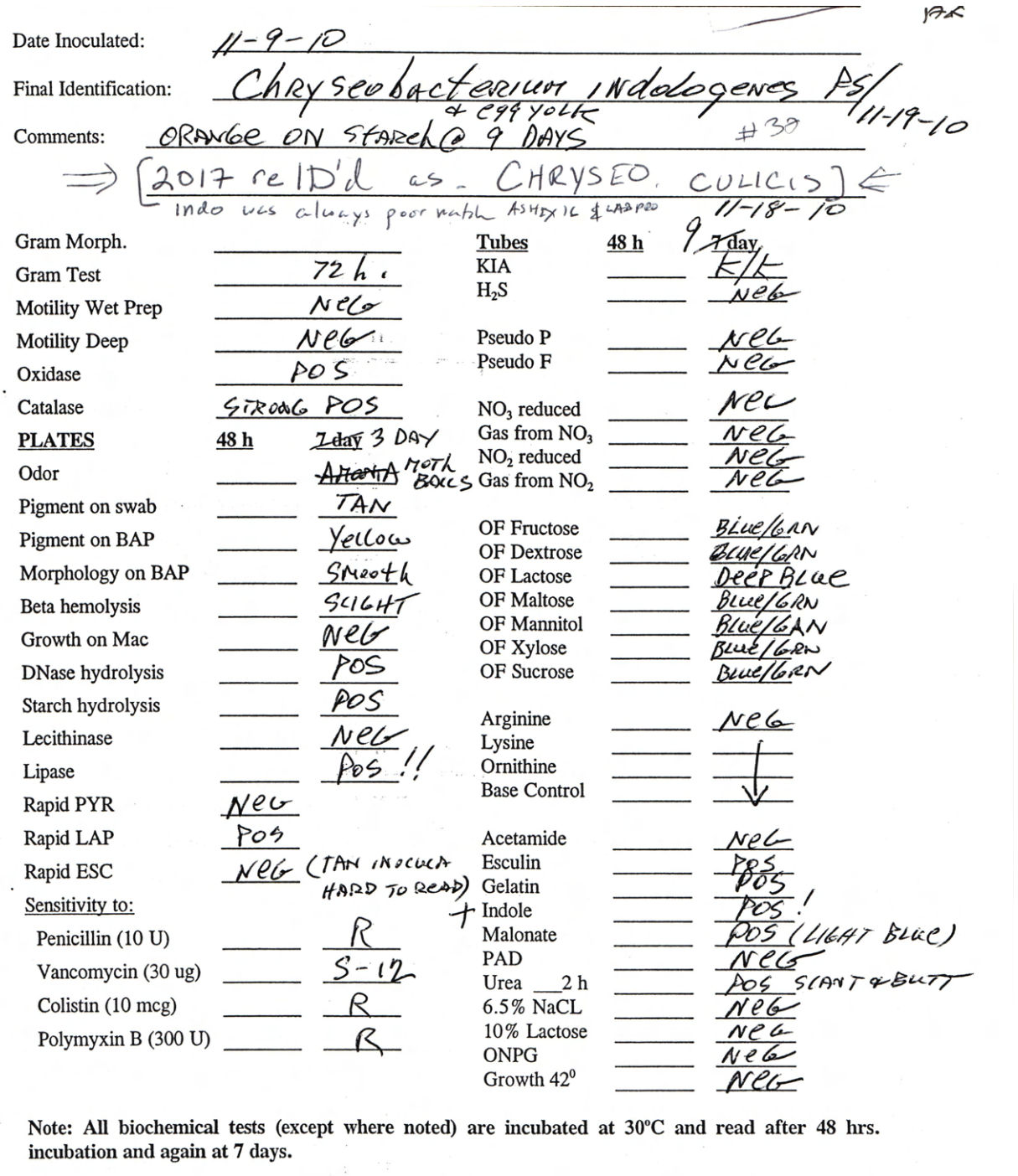
14 GENUS CHRYSEOBACTERIUM

14.1 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%**	**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_3 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	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 (30μg)	1	0	100.00	60.33	Lysine	0	1	0.00	39.67
Colistin (10μg)	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°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.



Date Inoculated: 11-9-10

Final Identification: Chryseobacterium indologenes PS/ 11-19-10
& egg yolk

Comments: ORANGE ON STARCH @ 9 DAYS #38

⇒ [2017 reID'd as CHRYSEO. CULICIS] ⇐
indo was always poor match ASHEX 16 & LAB PRO 11-18-10

Gram Morph.		
Gram Test		72 h.
Motility Wet Prep		NEG
Motility Deep		NEG
Oxidase		POS
Catalase		STRONG POS
PLATES	**48 h**	~~7 day~~ 3 DAY
Odor		~~AMONIA~~ MOTH BALLS
Pigment on swab		TAN
Pigment on BAP		Yellow
Morphology on BAP		Smooth
Beta hemolysis		SLIGHT
Growth on Mac		NEG
DNase hydrolysis		POS
Starch hydrolysis		POS
Lecithinase		NEG
Lipase		POS !!
Rapid PYR	NEG	
Rapid LAP	POS	
Rapid ESC	NEG	(TAN INOCULA HARD TO READ)
Sensitivity to:		
Penicillin (10 U)		R
Vancomycin (30 ug)		S-12
Colistin (10 mcg)		R
Polymyxin B (300 U)		R

Tubes	**48 h**	9 ~~7 day~~
KIA		K/K
H_2S		NEG
Pseudo P		NEG
Pseudo F		NEG
NO_3 reduced		NEG
Gas from NO_3		NEG
NO_2 reduced		NEG
Gas from NO_2		NEG
OF Fructose		BLUE/GRN
OF Dextrose		BLUE/GRN
OF Lactose		DEEP BLUE
OF Maltose		BLUE/GRN
OF Mannitol		BLUE/GRN
OF Xylose		BLUE/GRN
OF Sucrose		BLUE/GRN
Arginine		NEG
Lysine		↓
Ornithine		↓
Base Control		↓
Acetamide		NEG
Esculin		POS
Gelatin		POS
+ Indole		POS !
Malonate		POS (LIGHT BLUE)
PAD		NEG
Urea ___2 h		POS SLANT & BUTT
6.5% NaCL		NEG
10% Lactose		NEG
ONPG		NEG
Growth 42°		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 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%**	**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	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 (30μg)	2	2	50.00	50.00	Lysine	0	4	0.00	24.50
Colistin (10μg)	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: 10-3-12

Final Identification: Chryseobacterium gleum

Comments: CONFIRMED by MALDI-TOF

10/14/12

Gram Morph.			**Tubes**	**48 h**	**7 day**
Gram Test	72h		KIA		K/K
Motility Wet Prep	NEG	VERY-LONG RODS	H_2S		NEG
Motility Deep	NEG		Pseudo P		NEG
Oxidase	POS		Pseudo F		NEG
Catalase	POS		NO_3 reduced		NEG
PLATES	**48 h**	**7 day**	Gas from NO_3		NEG
Odor	STINKS - AMONIA		NO_2 reduced		NEG
Pigment on swab	YEL		Gas from NO_2		NEG
Pigment on BAP	YEL		+ OF Fructose		GRN
Morphology on BAP	SMOOTH - ENTIRE		− OF Dextrose		GRN - DARK
Beta hemolysis	NEG		− OF Lactose		DARK BLUE
Growth on Mac		NEG	− OF Maltose		GRN - DARK
DNase hydrolysis		POS	+ OF Mannitol		YEL/GRN
Starch hydrolysis		POS	− OF Xylose		LIGHT BLUE
Lecithinase		NEG	− OF Sucrose		LIGHT BLUE
Lipase		POS	Arginine		NEG
Rapid PYR	NEG		Lysine		↓
Rapid LAP	POS		Ornithine		↓
Rapid ESC	NEG		Base Control		↓
Sensitivity to:			Acetamide		NEG
Penicillin (10 U)		R	Esculin		POS
Vancomycin (30 ug)		R	Gelatin		POS
Colistin (10 mcg)		R	Indole		POS
Polymyxin B (300 U)		R	Malonate		NEG
			PAD		NEG
			Urea ~~NEG~~ 2 h		POS
			6.5% NaCL		NEG
			10% Lactose		NEG
			ONPG		POS
			Growth 42^0		NEG

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

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

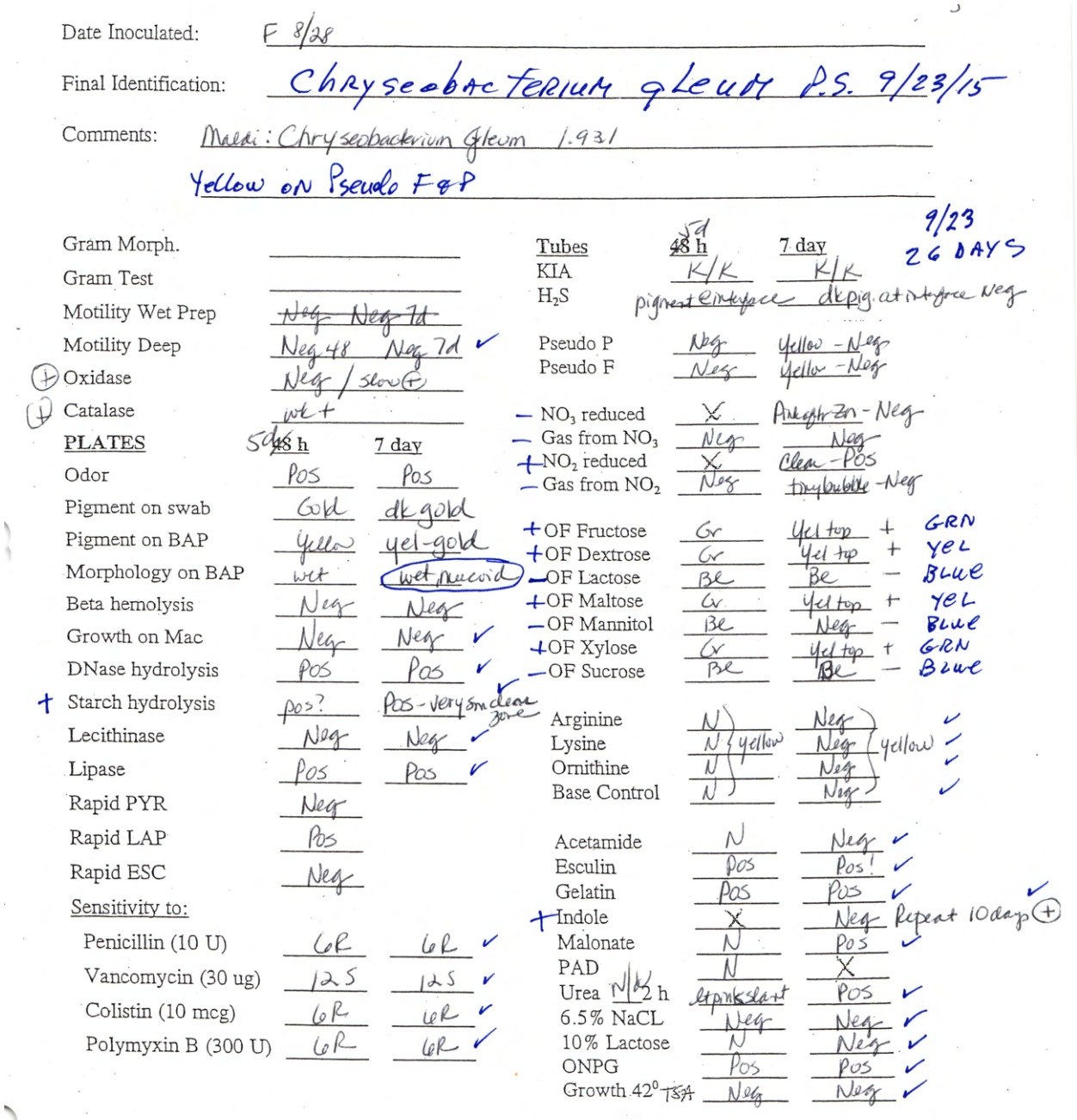


Figure 147: Chryseobacterium gleum isolate 2-of-4.

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_3 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_2 Reduced	0	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 (30μg)	9	0	100.00	85.04	Lysine	0	9	0.00	14.96
Colistin (10μg)	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%**	**W95%**
Motility	0	35	0.00	4.95	H_2S	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_3 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_2 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 (30μg)	31	4	88.57	84.76	Lysine	0	35	0.00	4.95
Colistin (10μg)	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.

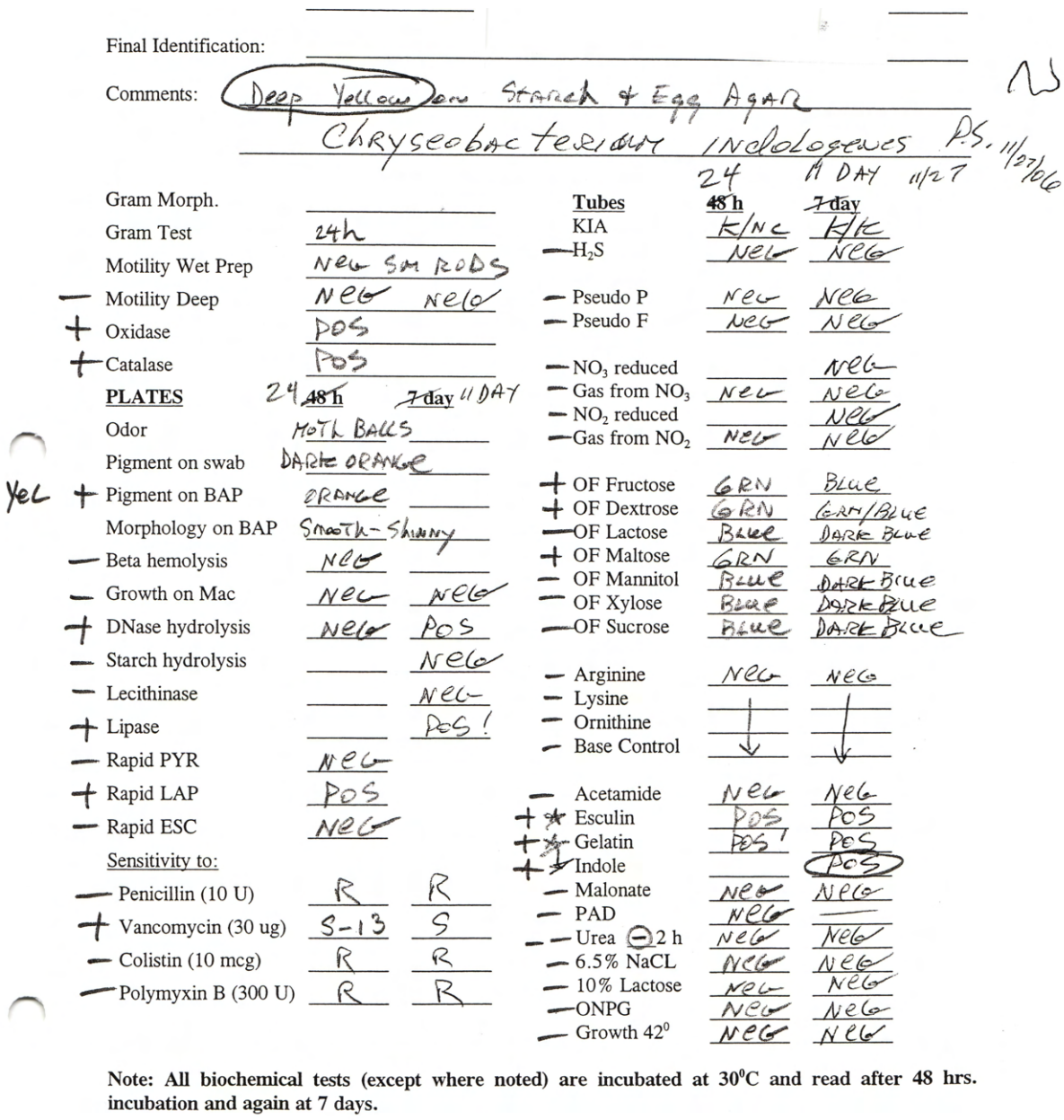
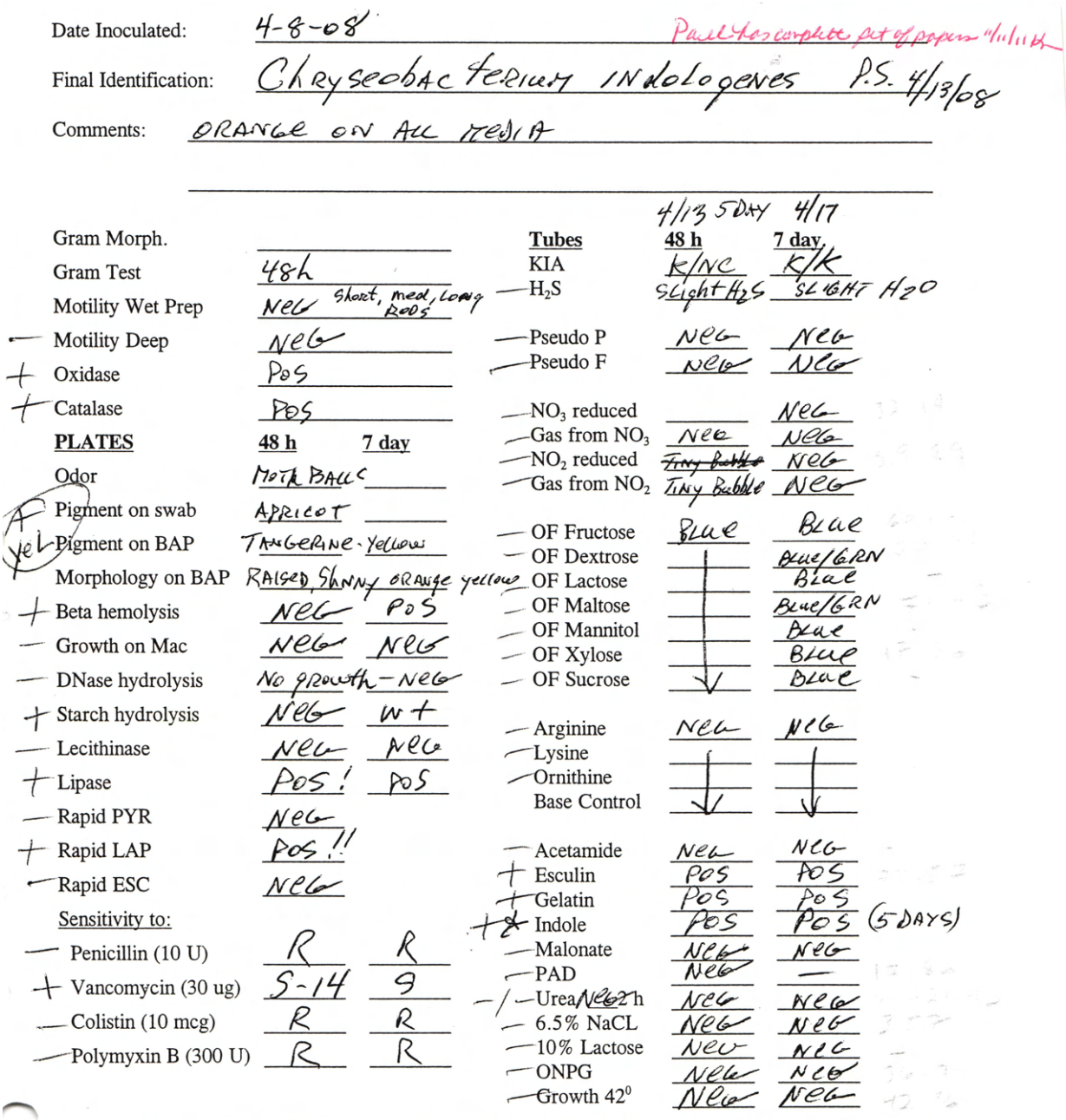


Figure 148: Chryseobacterium indologenes isolate 1-of-35.



Date Inoculated: 4-8-08 Paul has complete set of papers 4/11/11 K

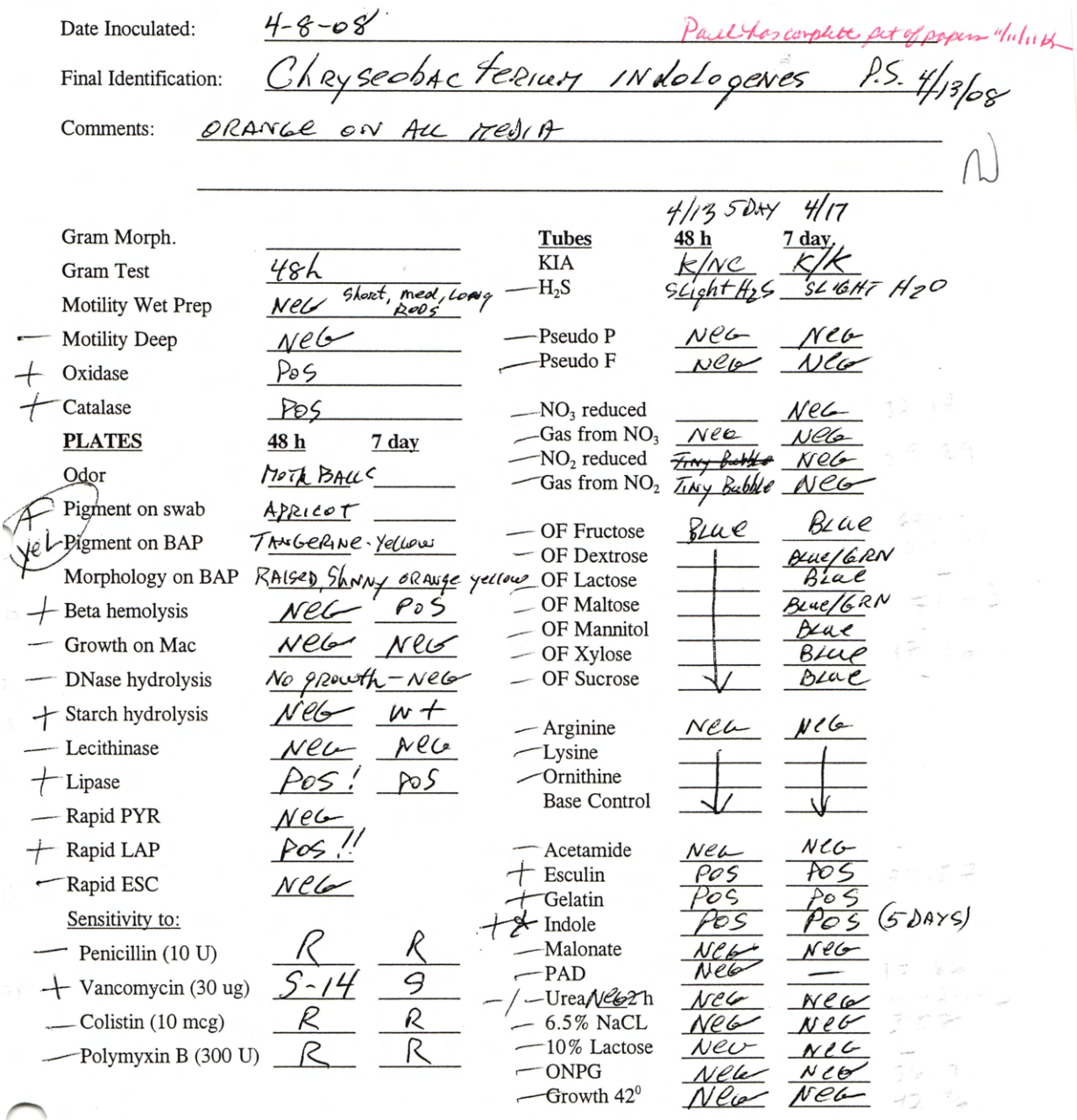
Final Identification: Chryseobacterium indologenes P.S. 4/13/08

Comments: ORANGE ON ALL MEDIA

					4/13 5 DAY	4/17
	Gram Morph.			**Tubes**	**48 h**	**7 day**
	Gram Test	48h		KIA	K/NC	K/K
	Motility Wet Prep	NEG	short, med, long RODS	H_2S	slight H_2S	SLIGHT H_2O
—	Motility Deep	NEG		Pseudo P	NEG	NEG
+	Oxidase	POS		Pseudo F	NEG	NEG
+	Catalase	POS		NO_3 reduced		NEG
	PLATES	**48 h**	**7 day**	Gas from NO_3	NEG	NEG
	Odor	MOTH BALL		NO_2 reduced	~~Tiny Bubble~~	NEG
A	Pigment on swab	APRICOT		Gas from NO_2	TINY Bubble	NEG
yel	Pigment on BAP	TANGERINE - YELLOW		OF Fructose	BLUE	BLUE
	Morphology on BAP	RAISED, SHINY ORANGE YELLOW		OF Dextrose		BLUE/GRN
+	Beta hemolysis	NEG	POS	OF Lactose		BLUE
—	Growth on Mac	NEG	NEG	OF Maltose		BLUE/GRN
—	DNase hydrolysis	NO GROWTH - NEG		OF Mannitol		BLUE
+	Starch hydrolysis	NEG	W+	OF Xylose		BLUE
—	Lecithinase	NEG	NEG	OF Sucrose		BLUE
+	Lipase	POS!	POS	Arginine	NEG	NEG
—	Rapid PYR	NEG		Lysine		
+	Rapid LAP	POS!!		Ornithine		
—	Rapid ESC	NEG		Base Control		
	Sensitivity to:			Acetamide	NEG	NEG
—	Penicillin (10 U)	R	R	+ Esculin	POS	POS
+	Vancomycin (30 ug)	S-14	9	+ Gelatin	POS	POS
—	Colistin (10 mcg)	R	R	+ Indole	POS	POS (5 DAYS)
—	Polymyxin B (300 U)	R	R	Malonate	NEG	NEG
				PAD	NEG	—
				— / — Urea ~~NEG 2 h~~	NEG	NEG
				6.5% NaCL	NEG	NEG
				10% Lactose	NEG	NEG
				ONPG	NEG	NEG
				Growth 42^0	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 149: Chryseobacterium indologenes isolate 2-of-35.


Date Inoculated: 4-8-08 Paul has complete set of papers 4/11/11 KK

Final Identification: Chryseobacterium indologenes P.S. 4/13/08

Comments: ORANGE ON ALL MEDIA

				Tubes	4/13 5 DAY 48 h	4/17 7 day
	Gram Morph.			KIA	K/NC	K/K
	Gram Test	48h		H_2S	SLIGHT H_2S	SLIGHT H_2O
	Motility Wet Prep	NEG	short, med, long RODS			
—	Motility Deep	NEG		Pseudo P	NEG	NEG
+	Oxidase	POS		Pseudo F	NEG	NEG
+	Catalase	POS		NO_3 reduced		NEG
	PLATES	**48 h**	**7 day**	Gas from NO_3	NEG	NEG
	Odor	MOTH BALL		NO_2 reduced	~~Tiny Bubble~~	NEG
A	Pigment on swab	APRICOT		Gas from NO_2	TINY Bubble	NEG
yel	Pigment on BAP	TANGERINE-YELLOW		OF Fructose	BLUE	BLUE
	Morphology on BAP	RAISED, SHINY ORANGE YELLOW		OF Dextrose		BLUE/GRN
+	Beta hemolysis	NEG	POS	OF Lactose		BLUE
—	Growth on Mac	NEG	NEG	OF Maltose		BLUE/GRN
—	DNase hydrolysis	NO GROWTH - NEG		OF Mannitol		BLUE
+	Starch hydrolysis	NEG	W+	OF Xylose		BLUE
—	Lecithinase	NEG	NEG	OF Sucrose		BLUE
+	Lipase	POS!	POS	Arginine	NEG	NEG
—	Rapid PYR	NEG		Lysine		
+	Rapid LAP	POS!!		Ornithine		
—	Rapid ESC	NEG		Base Control		
	Sensitivity to:			Acetamide	NEG	NEG
—	Penicillin (10 U)	R	R	+ Esculin	POS	POS
+	Vancomycin (30 ug)	S-14	9	+ Gelatin	POS	POS
—	Colistin (10 mcg)	R	R	+ Indole	POS	POS (5 DAYS)
—	Polymyxin B (300 U)	R	R	Malonate	NEG	NEG
				PAD	NEG	—
				— / — Urea ~~NEG 2~~ h	NEG	NEG
				6.5% NaCL	NEG	NEG
				10% Lactose	NEG	NEG
				ONPG	NEG	NEG
				Growth 42^0	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 150: Chryseobacterium indologenes isolate 3-of-35.

Date Inoculated: 1-20-10

Final Identification: Chryseobacterium indologenes 2/2/10 P.S.

Comments: ORANGE, FRUITY

Gram Morph.		
Gram Test	24h	
Motility Wet Prep	Neg - med. rods	
Motility Deep	Neg	Neg
Oxidase	POS	
Catalase	POS	
PLATES	**48 h**	~~7 day~~ 12 DAYS
Odor	Fruity	
Pigment on swab	ORANGE	
Pigment on BAP	ORANGE	
Morphology on BAP	Smooth-shinny	
Beta hemolysis	Neg	
Growth on Mac	Neg	Neg
DNase hydrolysis	Neg	Neg
Starch hydrolysis	Neg	POS
Lecithinase	Neg	Neg
Lipase	POS	POS !!
Rapid PYR	Neg	
Rapid LAP	POS !	
Rapid ESC	POS	
Sensitivity to:		
Penicillin (10 U)	R	R
Vancomycin (30 ug)	S-12	S
Colistin (10 mcg)	R	R
Polymyxin B (300 U)	R	R

			2/1/10
	Tubes	**48 h**	~~7 day~~ 12 DAYS
	KIA	K/Nc	K/K
	H_2S	Neg	Neg
	Pseudo P	Neg	Neg
	Pseudo F	Neg	Neg
+	NO_3 reduced		POS (After zinc)
−	Gas from NO_3	Sm Bubble	Neg
+	NO_2 reduced		~~Neg~~ POS
−	Gas from NO_2	Neg	Neg
	OF Fructose	Blue	Yel
	OF Dextrose	↓	Yel
	OF Lactose	↓	Blue
	OF Maltose	↓	Yel
	OF Mannitol	↓	Blue
	OF Xylose	↓	Blue
	OF Sucrose	↓	Blue
	Arginine	Neg	All yellow
	Lysine	↓	↓
	Ornithine	↓	↓
	Base Control	↓	↓
	Acetamide	Neg	Neg
	Esculin	POS !	POS
	Gelatin	POS	POS
+	Indole		POS
	Malonate	Neg	POS
	PAD	Neg	—
	Urea Neg h	W+ SLANT	POS SLANT & BUTT
	6.5% NaCL	W+	POS !
	10% Lactose	Neg	Neg
	ONPG	Neg	POS
	Growth 42^0	POS	POS

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

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

Date Inoculated: 5-12-10

Final Identification: CHRYSEOBACTERIUM INDOLOGENES

Comments: Yellow ON ALL MEDIA

BRIGHT ORANGE ON EGG YOLK & STARCH

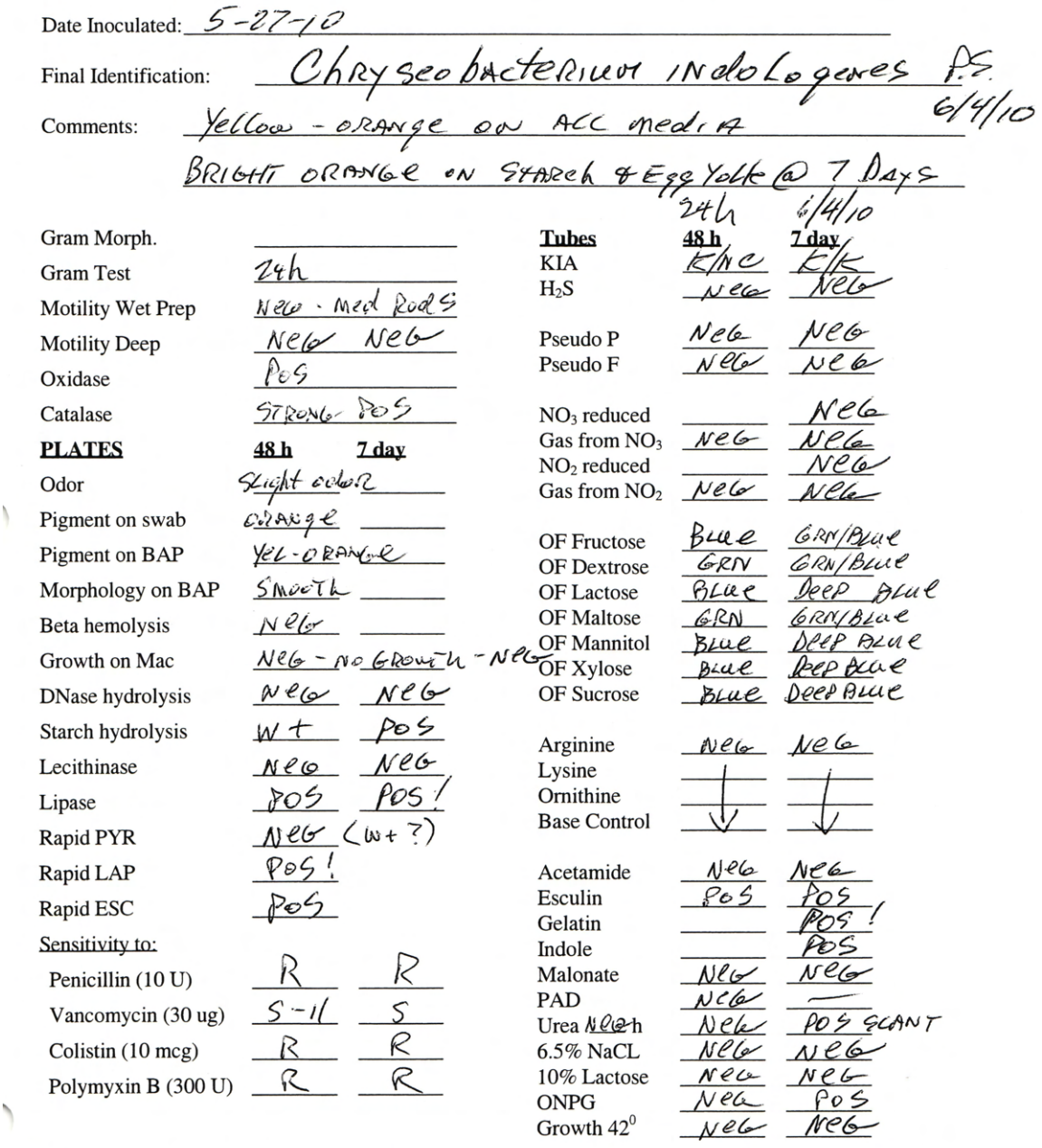
Gram Morph.		
Gram Test	48 h	
Motility Wet Prep	NEG - SM RODS	
Motility Deep	NEG NEG	
Oxidase	POS	
Catalase	STRONG POS	
PLATES	**48 h**	**7 day**
Odor	MOTH BALLS	
Pigment on swab	BROWN	DARK BROWN
Pigment on BAP	Yellow	DEEP YELLOW
Morphology on BAP	Smooth	SMOOTH
Beta hemolysis	POS	POS
Growth on Mac	NO GROWTH	
DNase hydrolysis	POS	POS
Starch hydrolysis	POS	POS
Lecithinase	NEG	NEG
Lipase	POS	POS
Rapid PYR	NEG	
Rapid LAP	POS	
Rapid ESC	NEG (BROWN PIGMT)	
Sensitivity to:		
Penicillin (10 U)	R	R
Vancomycin (30 ug)	S-11	S-10mm
Colistin (10 mcg)	R	R
Polymyxin B (300 U)	R	R

5/14

Tubes	**48 h**	**7 day**
KIA	K/NC	K/K
H_2S	NEG	SLIGHT H_2S
Pseudo P	NEG	NEG
Pseudo F	NEG	NEG
NO_3 reduced		
Gas from NO_3	NEG	NEG
NO_2 reduced		
Gas from NO_2	NEG	NEG
OF Fructose	BLUE	GRN/BLUE
OF Dextrose	GRN	GRN/BLUE
OF Lactose	BLUE	BLUE
OF Maltose	GRN	GRN/BLUE
OF Mannitol	BLUE	BLUE
OF Xylose	BLUE	BLUE
OF Sucrose	BLUE	BLUE
Arginine	NEG	NEG
Lysine	↓	↓
Ornithine	↓	↓
Base Control	↓	↓
Acetamide	NEG	NEG
Esculin	POS	POS !
Gelatin	POS	POS
Indole		POS
Malonate	NEG	NEG
PAD	NEG	
Urea NEG 2 h	NEG	SLIGHT PINK SLANT
6.5% NaCL	NEG	NEG
10% Lactose	NEG	NEG
ONPG	NEG	POS
Growth 42^0	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 152: Chryseobacterium indologenes isolate 5-of-35.



Date Inoculated: 5-27-10

Final Identification: Chryseobacterium indologenes P.S. 6/4/10

Comments: Yellow - orange on ACC media
BRIGHT ORANGE on Starch & Egg Yolk @ 7 Days

				24h	6/4/10
Gram Morph.			**Tubes**	**48 h**	**7 day**
Gram Test	24h		KIA	K/NC	K/K
Motility Wet Prep	Neg - Med Rods		H_2S	Neg	Neg
Motility Deep	Neg	Neg	Pseudo P	Neg	Neg
Oxidase	Pos		Pseudo F	Neg	Neg
Catalase	STRONG POS		NO_3 reduced		Neg
PLATES	**48 h**	**7 day**	Gas from NO_3	Neg	Neg
Odor	Slight odor		NO_2 reduced		Neg
Pigment on swab	Orange		Gas from NO_2	Neg	Neg
Pigment on BAP	Yel-Orange		OF Fructose	Blue	GRN/Blue
Morphology on BAP	Smooth		OF Dextrose	GRN	GRN/Blue
Beta hemolysis	Neg		OF Lactose	Blue	Deep Blue
Growth on Mac	Neg - No Growth - Neg		OF Maltose	GRN	GRN/Blue
DNase hydrolysis	Neg	Neg	OF Mannitol	Blue	Deep Blue
Starch hydrolysis	W+	Pos	OF Xylose	Blue	Deep Blue
Lecithinase	Neg	Neg	OF Sucrose	Blue	Deep Blue
Lipase	Pos	Pos!	Arginine	Neg	Neg
Rapid PYR	Neg (W+?)		Lysine		
Rapid LAP	Pos!		Ornithine		
Rapid ESC	Pos		Base Control		
Sensitivity to:			Acetamide	Neg	Neg
Penicillin (10 U)	R	R	Esculin	Pos	Pos
Vancomycin (30 ug)	S-I	S	Gelatin		Pos!
Colistin (10 mcg)	R	R	Indole		Pos
Polymyxin B (300 U)	R	R	Malonate	Neg	Neg
			PAD	Neg	—
			Urea ~~Neg~~ h	Neg	Pos Slant
			6.5% NaCL	Neg	Neg
			10% Lactose	Neg	Neg
			ONPG	Neg	Pos
			Growth 42^0	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 153: Chryseobacterium indologenes isolate 6-of-35.

Date Inoculated: 11-15-10

Final Identification: Chryseobacterium indologenes PS. 11-19-10

Comments: MUSTARD YELLOW ON ALL MEDIA

				3 D	11/23/10
Gram Morph.			**Tubes**	~~48 h~~	**7 day**
Gram Test	72h		KIA	K/NC	K/K
Motility Wet Prep	NEG - MED RODS		H_2S	NEG	
Motility Deep	NEG NEG		Pseudo P	NEG	NEG
Oxidase	POS		Pseudo F	NEG	NEG
Catalase	STRONG POS		NO_3 reduced		NEG
PLATES	3D ~~48 h~~	**7 day**	Gas from NO_3	NEG	NEG
Odor	~~AMON. A~~ MOTH BALLS		NO_2 reduced		NEG
Pigment on swab	ORANGE		Gas from NO_2	NEG	NEG
Pigment on BAP	DEEP YELLOW		OF Fructose	GRN	YEL
Morphology on BAP	smooth ~~DEEP YELLOW DEEP YELLOW~~		OF Dextrose	GRN	YEL
Beta hemolysis	NEG ~~SMOOTH~~		OF Lactose	BLUE	BLUE
Growth on Mac	NEG	NEG	OF Maltose	GRN	YEL
DNase hydrolysis	POS	POS	OF Mannitol	BLUE	BLUE
Starch hydrolysis	W +	POS	OF Xylose	GRN	BLUE
Lecithinase	NEG	NEG	OF Sucrose	BLUE	BLUE
Lipase	POS	POS !	Arginine	NEG	NEG
Rapid PYR	NEG		Lysine		
Rapid LAP	POS		Ornithine		
Rapid ESC	POS		Base Control		
Sensitivity to:			Acetamide	NEG	NEG
Penicillin (10 U)	R	R	Esculin	POS	POS !
Vancomycin (30 ug)	S-10.5	S	Gelatin	POS	POS
Colistin (10 mcg)	R	R	Indole		POS
Polymyxin B (300 U)	R	R	Malonate	NEG	NEG
			PAD	POS	—
			Urea/NEG 2 h	NEG	NEG
			6.5% NaCL	NEG	NEG
			10% Lactose	NEG	NEG
			ONPG	NEG	NEG (LIGHT YELLOW G.
			Growth 42°	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 154: Chryseobacterium indologenes isolate 7-of-35.

Date Inoculated: 11-9-11

Final Identification: Chryseobacterium indologenes 12/1/11 P.S.

Comments: Yel-orange on all media

AS: strong modal; low P% @ ~91% | WBM C. in... strongly pulls based on stats

11/17/11 8 DAYS

Gram Morph.		
Gram Test	24 h	
Motility Wet Prep	Neg - small to medium rods	
Motility Deep	Neg	Neg
Oxidase	Pos	
Catalase	Strong Pos	
PLATES	**48 h**	**7 day**
Odor	None	
Pigment on swab	Orange	
Pigment on BAP	Yel/orange	
Morphology on BAP	Rubbery - sticks to agar	
Beta hemolysis	Neg	
Growth on Mac	Neg	Neg
DNase hydrolysis	Pos	Pos
Starch hydrolysis	Neg	Wt
Lecithinase	Neg	Neg
Lipase	Pos	Pos
Rapid PYR	Neg	
Rapid LAP	Pos!	
Rapid ESC	Neg	
Sensitivity to:		
Penicillin (10 U)	R	R
Vancomycin (30 ug)	S-12	S
Colistin (10 mcg)	R	R
Polymyxin B (300 U)	R	R

Tubes	**48 h**	**7 day**
KIA	K/Nc	K/K
H_2S	Neg	Neg
Pseudo P	Neg	Neg
Pseudo F	Neg	Neg
NO_3 reduced		Pos after zinc
Gas from NO_3	Neg	Neg
NO_2 reduced		Pos
Gas from NO_2	Neg	Neg
OF Fructose	Blue	Blue
OF Dextrose	↓	Blue/Grn
OF Lactose	↓	Blue
OF Maltose	↓	Blue/Green
OF Mannitol	↓	Blue
OF Xylose	↓	Blue
OF Sucrose	↓	Blue
Arginine	Neg	Neg
Lysine	↓	↓
Ornithine	↓	↓
Base Control	↓	↓
Acetamide	Neg	Neg
Esculin	Pos	Pos
Gelatin	Pos	Pos
+Indole		Pos
Malonate	Neg	Neg
PAD	Neg	—
Urea Neg 2 h	Neg	Neg
6.5% NaCL	Neg	Neg
10% Lactose	Neg	Neg
ONPG	Neg	Neg
Growth 42^0	Neg	Neg

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

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

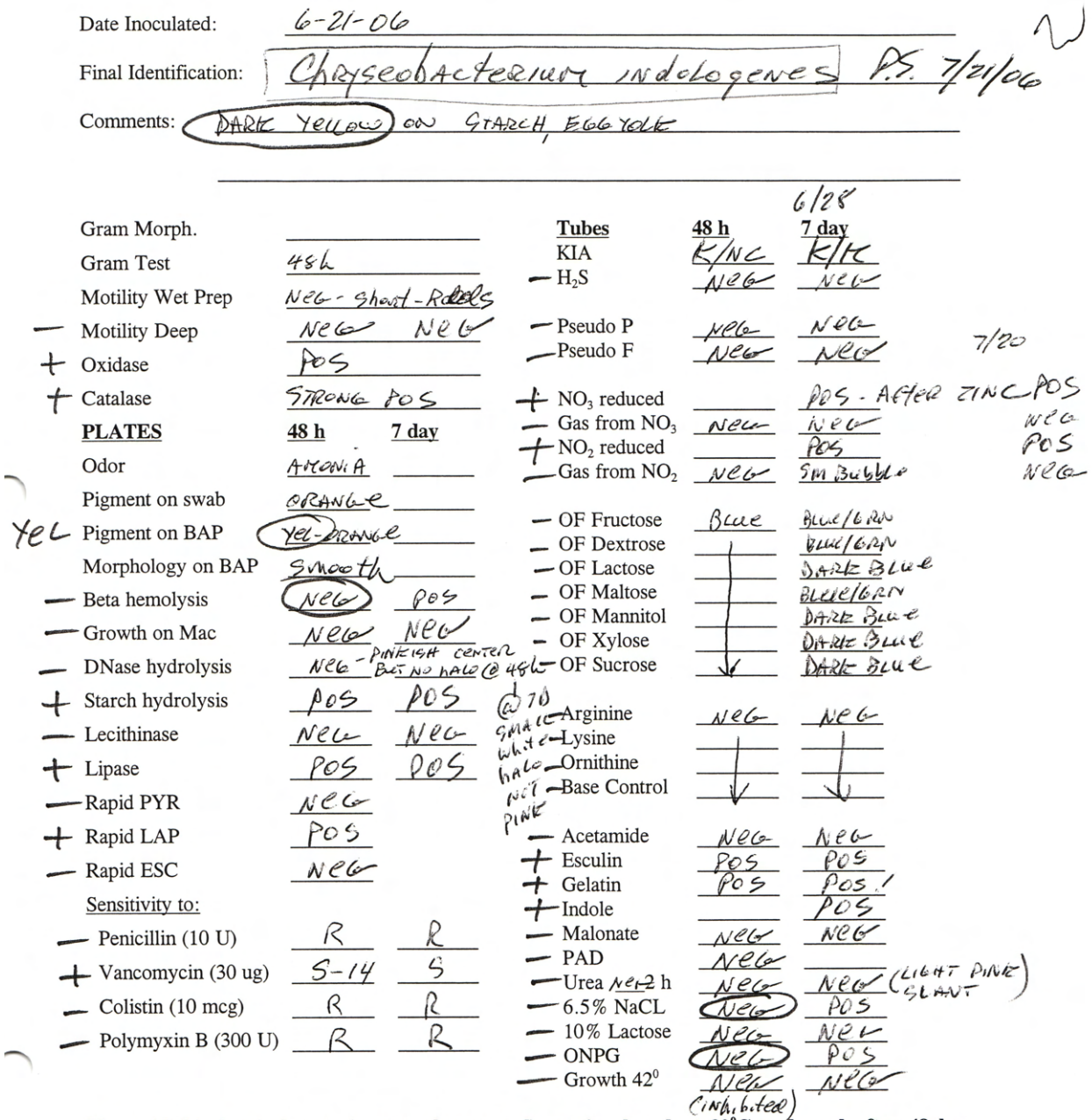


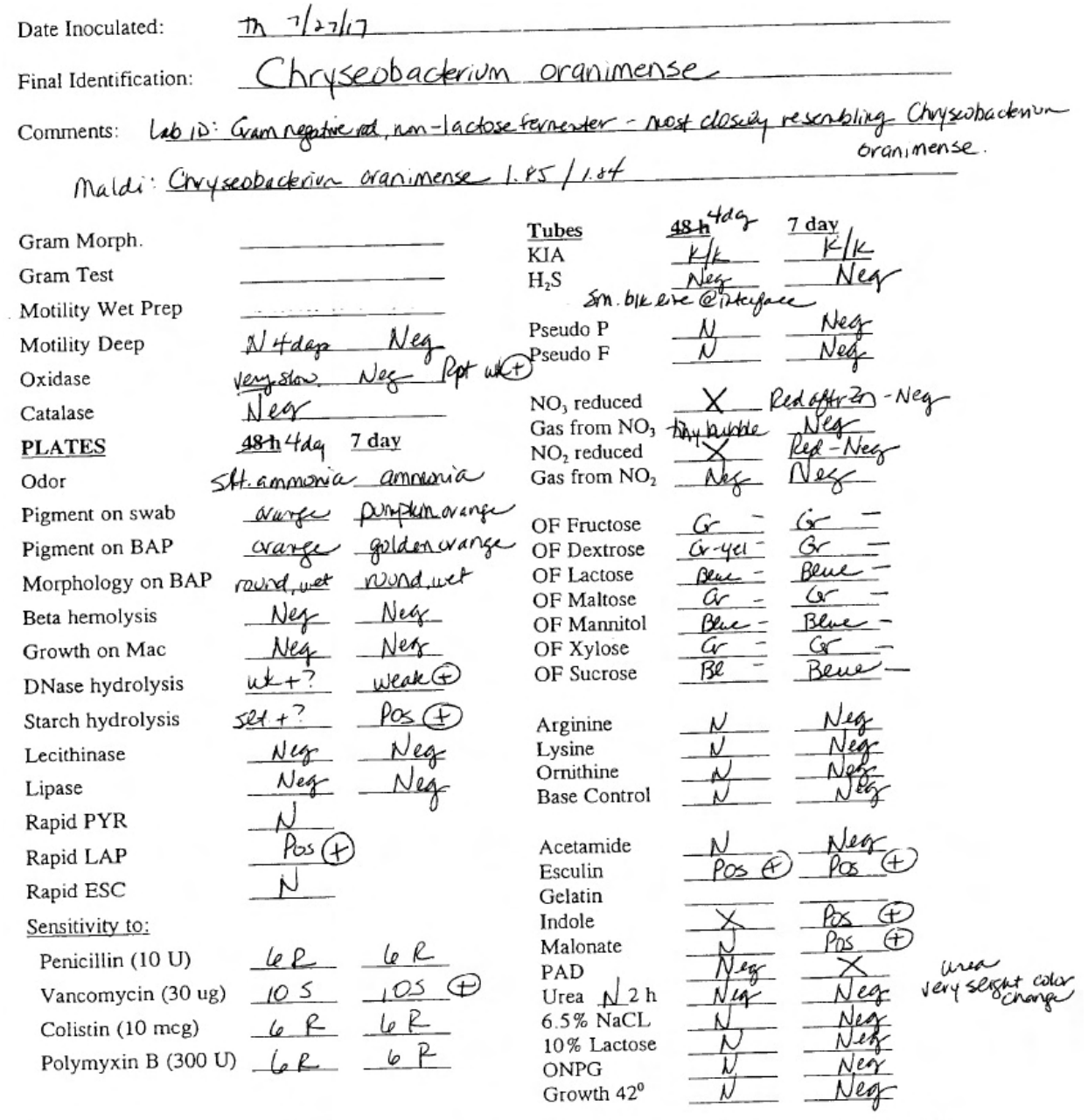
Figure 156: Chryseobacterium indologenes isolate 9-of-35.

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_3 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	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 (30μg)	1	0	100.00	60.33	Lysine	0	1	0.00	39.67
Colistin (10μg)	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 oranimense

Comments: Lab ID: Gram negative rod, non-lactose fermenter - most closely resembling Chryseobacterium oranimense.

Maldi: Chryseobacterium oranimense 1.85 / 1.84

Gram Morph.		
Gram Test		
Motility Wet Prep		
Motility Deep	N 4 days	Neg
Oxidase	very slow	Neg Rpt wk +
Catalase	Neg	
PLATES	~~48 h~~ 4 dq	7 day
Odor	slt. ammonia	ammonia
Pigment on swab	orange	pumpkin orange
Pigment on BAP	orange	golden orange
Morphology on BAP	round, wet	round, wet
Beta hemolysis	Neg	Neg
Growth on Mac	Neg	Neg
DNase hydrolysis	wk + ?	weak +
Starch hydrolysis	slt + ?	Pos +
Lecithinase	Neg	Neg
Lipase	Neg	Neg
Rapid PYR	N	
Rapid LAP	Pos +	
Rapid ESC	N	
Sensitivity to:		
Penicillin (10 U)	6 R	6 R
Vancomycin (30 ug)	10 S	10 S +
Colistin (10 mcg)	6 R	6 R
Polymyxin B (300 U)	6 R	6 R

Tubes	~~48 h~~ 4dq	7 day
KIA	K/K	K/K
H_2S	Neg	Neg
	Sm. blk ppt @ interface	
Pseudo P	N	Neg
Pseudo F	N	Neg
NO_3 reduced	X	Red after Zn - Neg
Gas from NO_3	tiny bubble	Neg
NO_2 reduced	X	Red - Neg
Gas from NO_2	Neg	Neg
OF Fructose	Gr -	Gr -
OF Dextrose	Gr - slt	Gr -
OF Lactose	Blue -	Blue -
OF Maltose	Gr -	Gr -
OF Mannitol	Blue -	Blue -
OF Xylose	Gr -	Gr -
OF Sucrose	Bl -	Blue -
Arginine	N	Neg
Lysine	N	Neg
Ornithine	N	Neg
Base Control	N	Neg
Acetamide	N	Neg
Esculin	Pos +	Pos +
Gelatin		
Indole	X	Pos +
Malonate	N	Pos +
PAD	Neg	X
Urea N 2 h	Neg	Neg
6.5% NaCL	N	Neg
10% Lactose	N	Neg
ONPG	N	Neg
Growth 42°	N	Neg

urea very slight color change

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%**	**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	2	7	22.22	30.53	Pseudo F	0	9	0.00	14.96
Yellow Pigment	0	9	0.00	14.96	NO_3 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	2	7	22.22	30.53	NO_2 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 (30μg)	0	9	0.00	14.96	Lysine	0	9	0.00	14.96
Colistin (10μg)	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.

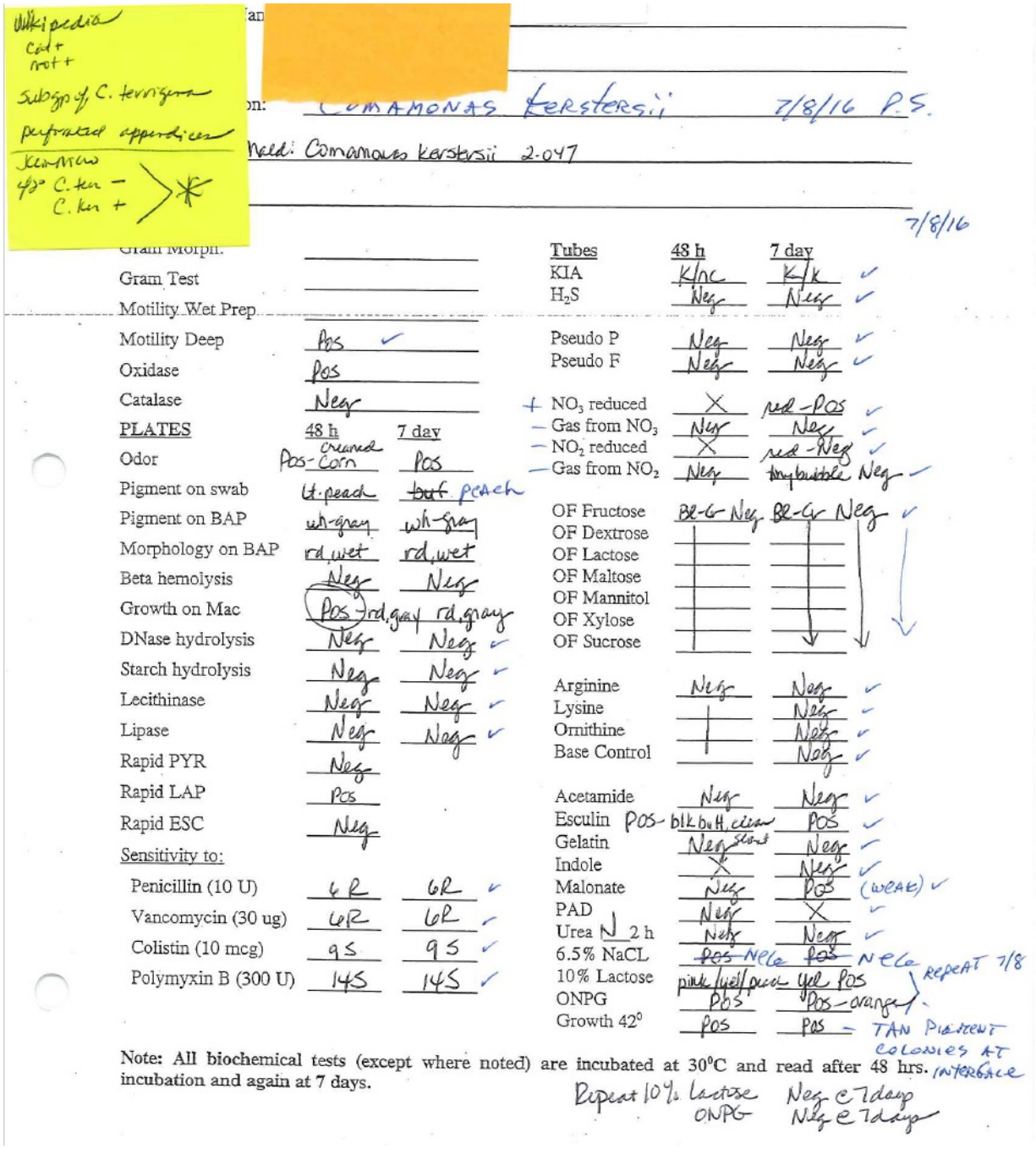
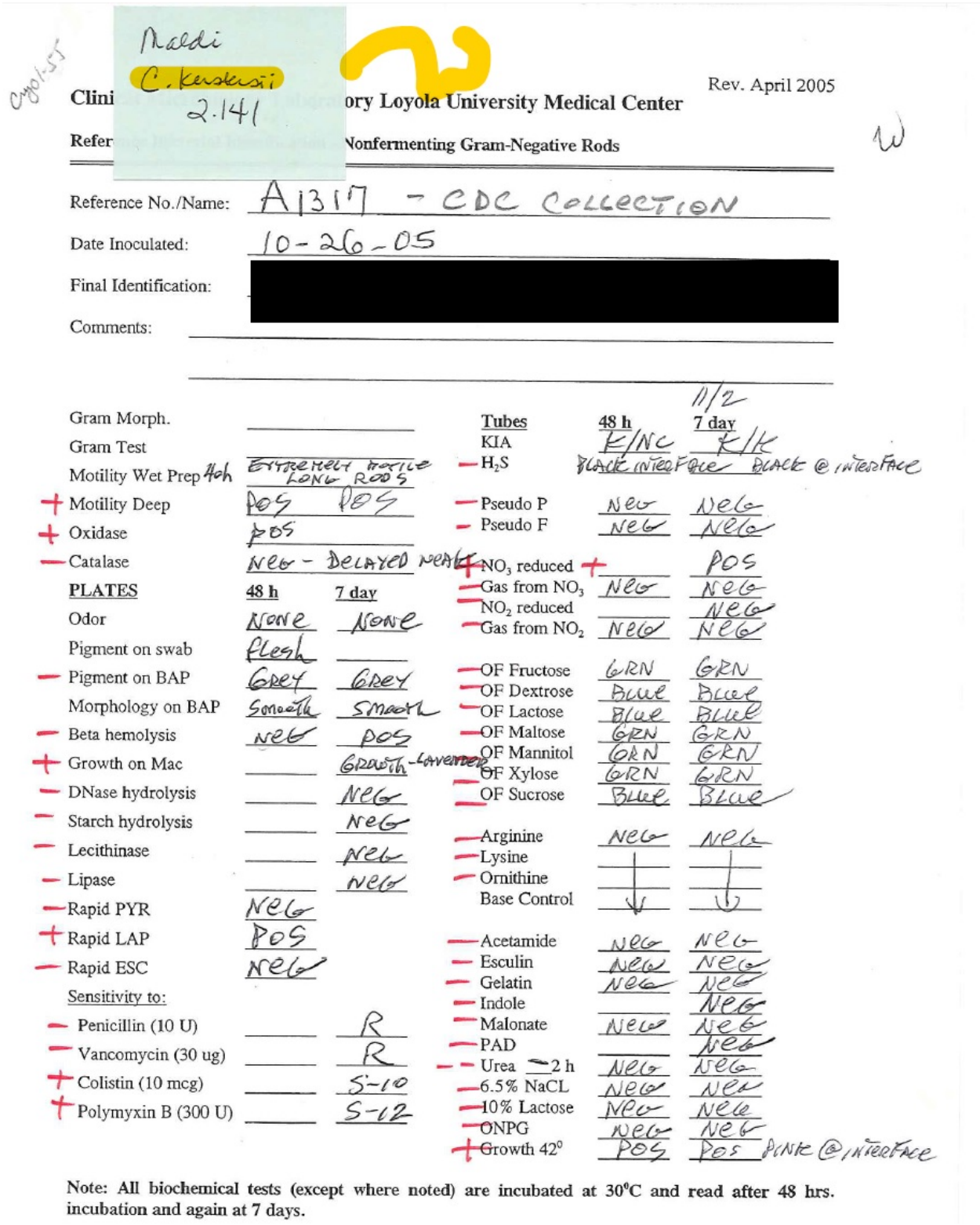


Figure 158: Comamonas kerstersii isolate 1-of-9.


Naldi
C. kerstersii
2.141

Clini ory Loyola University Medical Center Rev. April 2005

Refer Nonfermenting Gram-Negative Rods

Reference No./Name: A1317 - CDC COLLECTION

Date Inoculated: 10-26-05

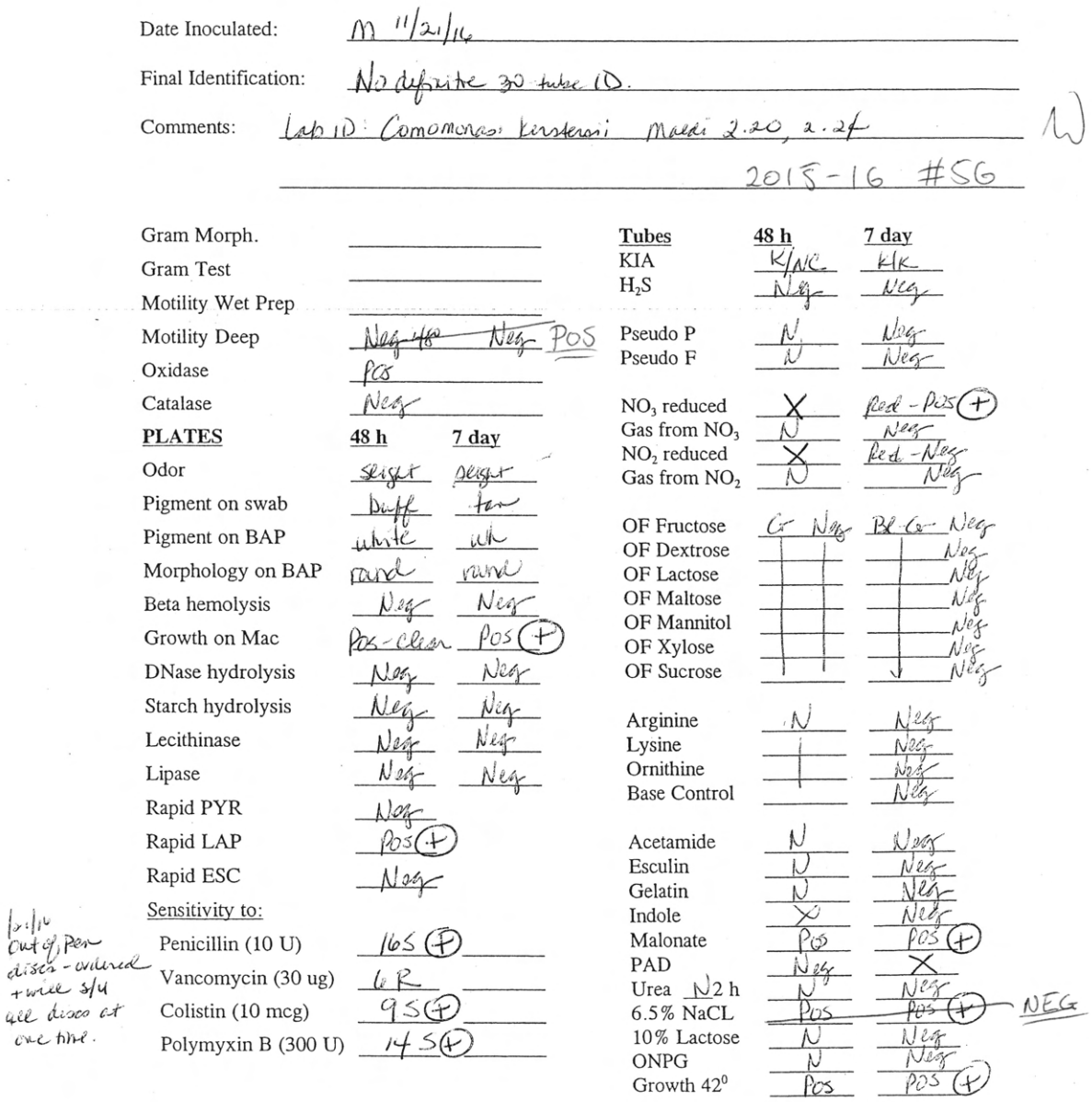
Final Identification: [redacted]

Comments:

	Gram Morph.			Tubes	48 h	7 day
	Gram Test			KIA	K/NC	K/K
	Motility Wet Prep 48h	EXTREMELY MOTILE LONG RODS	−	H_2S	BLACK INTERFACE	BLACK @ INTERFACE
+	Motility Deep	POS POS	−	Pseudo P	Neg	Neg
+	Oxidase	POS	−	Pseudo F	Neg	Neg
−	Catalase	Neg - DELAYED WEAK	+	NO_3 reduced	+	POS
	PLATES	48 h 7 day	−	Gas from NO_3	Neg	Neg
	Odor	NONE NONE	−	NO_2 reduced		Neg
	Pigment on swab	flesh	−	Gas from NO_2	Neg	Neg
−	Pigment on BAP	Grey Grey	−	OF Fructose	GRN	GRN
	Morphology on BAP	Smooth Smooth	−	OF Dextrose	Blue	Blue
−	Beta hemolysis	Neg POS	−	OF Lactose	Blue	Blue
+	Growth on Mac	GROWTH-Lavender	−	OF Maltose	GRN	GRN
−	DNase hydrolysis	Neg	−	OF Mannitol	GRN	GRN
−	Starch hydrolysis	Neg	−	OF Xylose	GRN	GRN
−	Lecithinase	Neg	−	OF Sucrose	Blue	Blue
−	Lipase	Neg	−	Arginine	Neg	Neg
−	Rapid PYR	Neg	−	Lysine		
+	Rapid LAP	POS	−	Ornithine		
−	Rapid ESC	Neg		Base Control		
	Sensitivity to:		−	Acetamide	Neg	Neg
−	Penicillin (10 U)	R	−	Esculin	Neg	Neg
−	Vancomycin (30 ug)	R	−	Gelatin	Neg	Neg
+	Colistin (10 mcg)	S-10	−	Indole		Neg
+	Polymyxin B (300 U)	S-12	−	Malonate	Neg	Neg
			−	PAD		Neg
			−	Urea 2 h	Neg	Neg
			−	6.5% NaCL	Neg	Neg
			−	10% Lactose	Neg	Neg
			−	ONPG	Neg	Neg
			+	Growth 42°	POS	Pos PINK @ INTERFACE

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

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



Date Inoculated: M 11/21/16

Final Identification: No definite 30 tube ID.

Comments: Lab ID: Comomonas kerstersii Maldi 2.20, 2.24 W

2015-16 #56

Gram Morph.		
Gram Test		
Motility Wet Prep		
Motility Deep	~~Neg 48~~ ~~Neg~~ POS	
Oxidase	Pos	
Catalase	Neg	
PLATES	**48 h**	**7 day**
Odor	slight	slight
Pigment on swab	buff	tan
Pigment on BAP	white	wh
Morphology on BAP	round	round
Beta hemolysis	Neg	Neg
Growth on Mac	Pos-clear	Pos (+)
DNase hydrolysis	Neg	Neg
Starch hydrolysis	Neg	Neg
Lecithinase	Neg	Neg
Lipase	Neg	Neg
Rapid PYR	Neg	
Rapid LAP	Pos (+)	
Rapid ESC	Neg	
Sensitivity to:		
Penicillin (10 U)	16S (+)	
Vancomycin (30 ug)	6R	
Colistin (10 mcg)	9S (+)	
Polymyxin B (300 U)	14S (+)	

1/21/16 out of Pen discs - ordered + will s/u all discs at one time.

Tubes	**48 h**	**7 day**
KIA	K/NC	K/K
H_2S	Neg	Neg
Pseudo P	N	Neg
Pseudo F	N	Neg
NO_3 reduced	X	Red - Pos (+)
Gas from NO_3	N	Neg
NO_2 reduced	X	Red - Neg
Gas from NO_2	N	Neg
OF Fructose	G Neg	Bl G Neg
OF Dextrose		Neg
OF Lactose		Neg
OF Maltose		Neg
OF Mannitol		Neg
OF Xylose		Neg
OF Sucrose		Neg
Arginine	N	Neg
Lysine		Neg
Ornithine		Neg
Base Control		Neg
Acetamide	N	Neg
Esculin	N	Neg
Gelatin	N	Neg
Indole	X	Neg
Malonate	Pos	Pos (+)
PAD	Neg	X
Urea N 2 h	N	Neg
6.5% NaCL	~~Pos~~	~~Pos (+)~~ NEG
10% Lactose	N	Neg
ONPG	N	Neg
Growth 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.

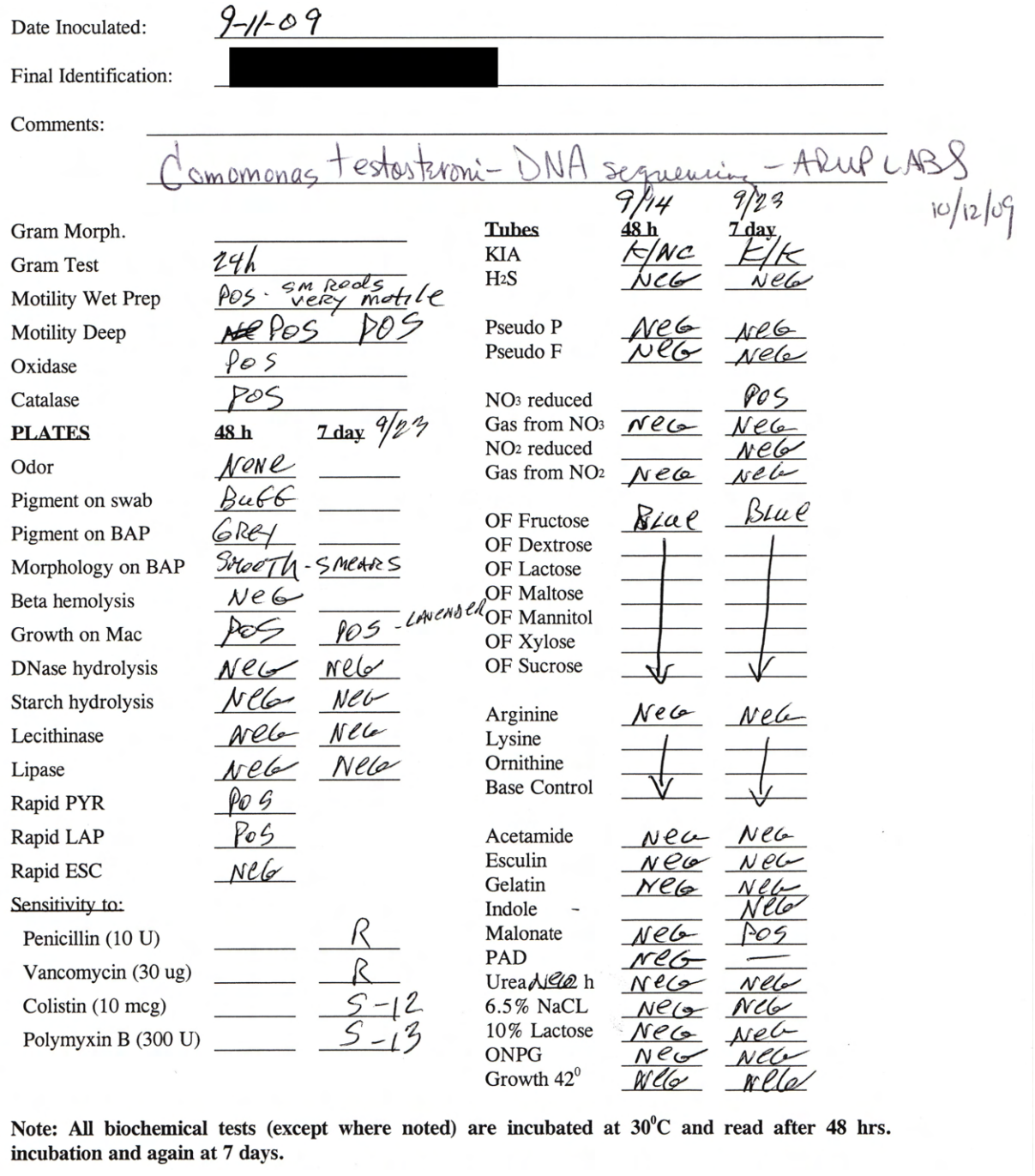
Figure 160: Comamonas kerstersii isolate 3-of-9.

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%**	**W95%**	**Test**	+	−	**Raw%**	**W95%**
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_3 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_2 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 (30μg)	0	3	0.00	28.08	Lysine	0	3	0.00	28.08
Colistin (10μg)	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.



Date Inoculated: 9-11-09

Final Identification: [redacted]

Comments: Comamonas testosteroni - DNA sequencing - ARUP LABS 10/12/09

				9/14	9/23
Gram Morph.			**Tubes**	**48 h**	**7 day**
Gram Test	24h		KIA	K/NC	K/K
Motility Wet Prep	POS - SM Rods very motile		H_2S	Neg	Neg
Motility Deep	~~Neg~~ POS	POS	Pseudo P	Neg	Neg
Oxidase	POS		Pseudo F	Neg	Neg
Catalase	POS		NO_3 reduced		POS
PLATES	**48 h**	**7 day** 9/23	Gas from NO_3	Neg	Neg
Odor	NONE		NO_2 reduced		Neg
Pigment on swab	BuGG		Gas from NO_2	Neg	Neg
Pigment on BAP	GREY		OF Fructose	Blue	Blue
Morphology on BAP	SMOOTH - SMEARS		OF Dextrose	↓	↓
Beta hemolysis	Neg		OF Lactose		
Growth on Mac	POS	POS - LAVENDER	OF Maltose		
DNase hydrolysis	Neg	Neg	OF Mannitol		
Starch hydrolysis	Neg	Neg	OF Xylose		
Lecithinase	Neg	Neg	OF Sucrose		
Lipase	Neg	Neg	Arginine	Neg	Neg
Rapid PYR	POS		Lysine		
Rapid LAP	POS		Ornithine	↓	↓
Rapid ESC	Neg		Base Control		
Sensitivity to:			Acetamide	Neg	Neg
Penicillin (10 U)		R	Esculin	Neg	Neg
Vancomycin (30 ug)		R	Gelatin	Neg	Neg
Colistin (10 mcg)		S-12	Indole	-	Neg
Polymyxin B (300 U)		S-13	Malonate	Neg	POS
			PAD	Neg	—
			Urea Neg h	Neg	Neg
			6.5% NaCL	Neg	Neg
			10% Lactose	Neg	Neg
			ONPG	Neg	Neg
			Growth 42°	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 161: Comamonas testosteroni isolate 1-of-3.

16 GENUS CUPRIAVIDUS

16.1 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%**	**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_3 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 (30μg)	0	1	0.00	39.67	Lysine	0	1	0.00	39.67
Colistin (10μg)	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 Pseudomonas alcaligenes~~ PS 6/4/10

Comments: Cupriavidus campenensis

Confirmed by DNA Sequencing

				5/28	6/4/10
Gram Morph.			**Tubes**	**48 h**	**7 day**
Gram Test	24h 48- Neg		KIA	K/NC	K/K
Motility Wet Prep	Neg cocci & rods		H_2S	Neg	Neg
Motility Deep	Pos ! Pos		Pseudo P	Neg	Neg
Oxidase	Pos		Pseudo F	Neg	Neg
Catalase	Strong Pos		NO_3 reduced		Pos
PLATES	~~48 h~~	**7 day**	Gas from NO_3	Neg	Neg
Odor	None		NO_2 reduced		Neg
Pigment on swab	Flesh		Gas from NO_2	Neg	Neg
Pigment on BAP	Grey		OF Fructose	Blue	Deep Blue
Morphology on BAP	Smooth - sparse @ 24 h		OF Dextrose	↓	↓
Beta hemolysis	Neg		OF Lactose	↓	↓
Growth on Mac	Pos	Pos	OF Maltose	↓	↓
DNase hydrolysis	Neg	Neg	OF Mannitol	↓	↓
Starch hydrolysis	Neg	Neg	OF Xylose	↓	↓
Lecithinase	Neg	Neg	OF Sucrose	↓	↓
Lipase	Neg	Neg	Arginine	Neg	Neg
Rapid PYR	Pos		Lysine	↓	↓
Rapid LAP	Pos		Ornithine	↓	↓
Rapid ESC	Neg		Base Control	↓	↓
Sensitivity to:			Acetamide	Neg	Neg
Penicillin (10 U)	R	R	Esculin	Neg	Neg
Vancomycin (30 ug)	R	R	Gelatin		Neg
Colistin (10 mcg)	S - 14	S	Indole		Neg
Polymyxin B (300 U)	S - 17	S	Malonate	Neg	Pos
			PAD	Neg	—
			Urea ~~Neg 2~~ h	N+ slant only	6/4 Pos slant & butt
			6.5% NaCL	Neg	Neg
			10% Lactose	Neg	Neg
			ONPG	Neg	Neg
			Growth 42^0	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 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%**	**W95%**	**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_3 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	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 (30μg)	0	2	0.00	32.88	Lysine	0	2	0.00	32.88
Colistin (10μg)	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 Cupriavidus gilardii

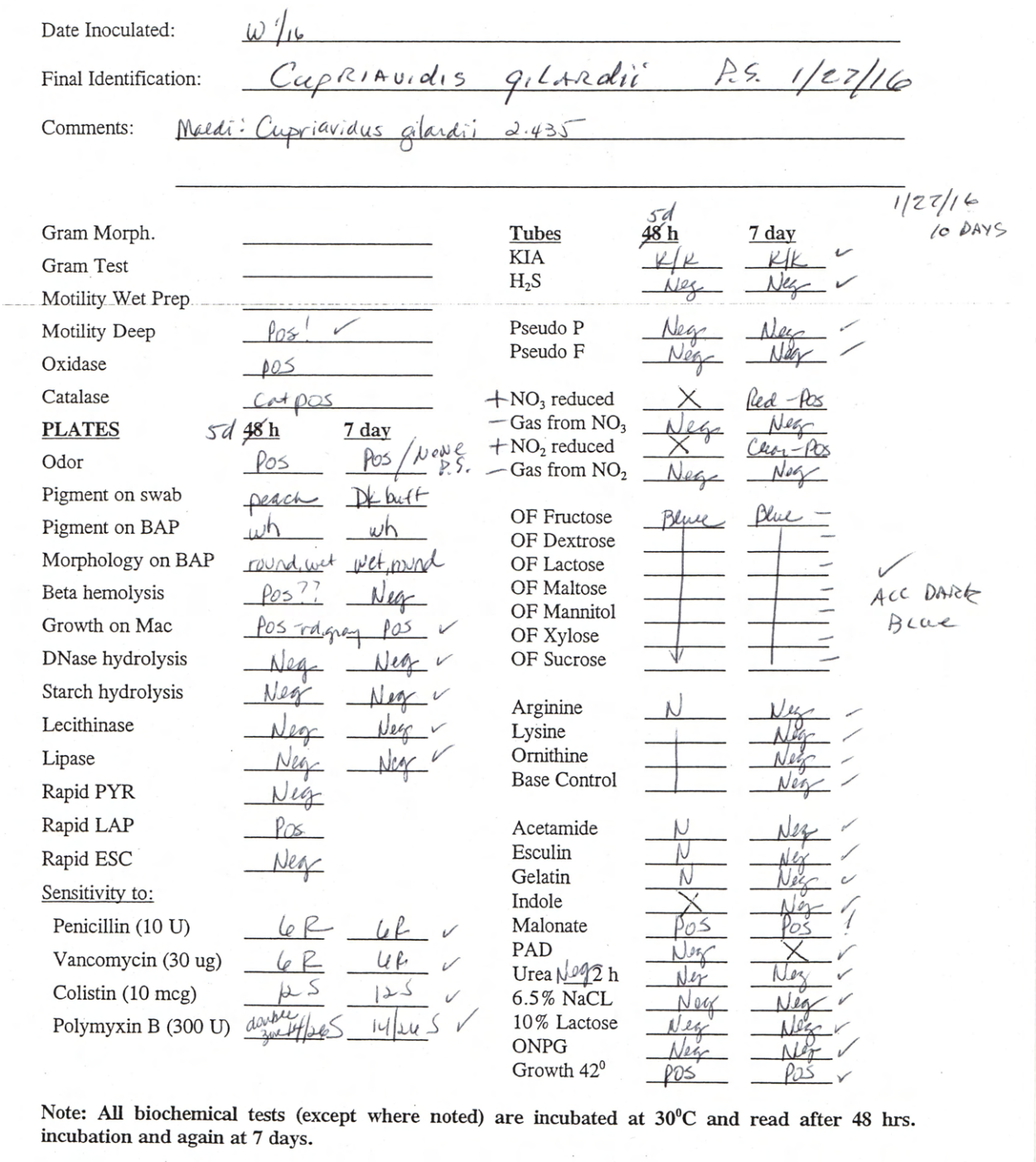
Comments: confirmed by DNA sequencing 2/23/10 P.S.

Gram Morph.		
Gram Test	48h	
Motility Wet Prep	POS coccoid to small rods	
Motility Deep	POS	POS
Oxidase	POS	
Catalase	STRONG POS	
PLATES	**48 h**	~~7 day~~ 13
Odor	NONE	
Pigment on swab	FLESH	
Pigment on BAP	GREY	
Morphology on BAP	SMOOTH	
Beta hemolysis	NEG	
Growth on Mac	POS	POS
DNase hydrolysis	NEG	NEG
Starch hydrolysis	NEG	NEG
Lecithinase	NEG	NEG
Lipase	NEG	NEG
Rapid PYR	NEG	
Rapid LAP	POS	
Rapid ESC	NEG	
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

Tubes	**48 h**	~~7 day~~ 13
KIA	K/NC	K/K
H_2S	NEG	NEG
Pseudo P	NEG	NEG
Pseudo F	NEG	NEG
NO_3 reduced		NEG
Gas from NO_3	NEG	NEG
NO_2 reduced		NEG
Gas from NO_2	NEG	NEG
OF Fructose	BLUE	BLUE!
OF Dextrose	↓	↓
OF Lactose	↓	↓
OF Maltose	↓	↓
OF Mannitol	↓	↓
OF Xylose	↓	↓
OF Sucrose	↓	↓
Arginine	NEG	NEG
Lysine	↓	↓
Ornithine	↓	↓
Base Control	↓	↓
Acetamide	NEG	NEG
Esculin	NEG	NEG
Gelatin	NEG	NEG
Indole		NEG
Malonate	NEG	POS!
PAD	NEG	
Urea ~~NEG~~ 2 h	NEG	NEG
6.5% NaCL	NEG	NEG
10% Lactose	NEG	NEG
ONPG	NEG	NEG
Growth 42^0	POS	POS

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

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



Date Inoculated: W 1/16

Final Identification: Cupriavidis gilardii P.S. 1/27/16

Comments: Maldi: Cupriavidus gilardii 2.435

1/27/16
10 DAYS

Gram Morph.		
Gram Test		
Motility Wet Prep		
Motility Deep	Pos! ✓	
Oxidase	pos	
Catalase	Cat pos	
PLATES	5d ~~48~~ h	7 day
Odor	Pos	Pos / None P.S.
Pigment on swab	peach	Dk buff
Pigment on BAP	wh	wh
Morphology on BAP	round, wet	wet, round
Beta hemolysis	Pos??	Neg
Growth on Mac	Pos - rd, gray	Pos ✓
DNase hydrolysis	Neg	Neg ✓
Starch hydrolysis	Neg	Neg ✓
Lecithinase	Neg	Neg ✓
Lipase	Neg	Neg ✓
Rapid PYR	Neg	
Rapid LAP	Pos	
Rapid ESC	Neg	
Sensitivity to:		
Penicillin (10 U)	6R	6R ✓
Vancomycin (30 ug)	6R	6R ✓
Colistin (10 mcg)	12S	12S ✓
Polymyxin B (300 U)	double zone 14/26S	14/26S ✓

Tubes	5d ~~48~~ h	7 day
KIA	K/K	K/K ✓
H_2S	Neg	Neg ✓
Pseudo P	Neg	Neg ✓
Pseudo F	Neg	Neg ✓
+ NO_3 reduced	X	Red - Pos
− Gas from NO_3	Neg	Neg
+ NO_2 reduced	X	Clear - Pos
− Gas from NO_2	Neg	Neg
OF Fructose	Blue	Blue −
OF Dextrose		−
OF Lactose		−
OF Maltose		−
OF Mannitol		−
OF Xylose		−
OF Sucrose		−
Arginine	N	Neg ✓
Lysine		Neg ✓
Ornithine		Neg ✓
Base Control		Neg ✓
Acetamide	N	Neg ✓
Esculin	N	Neg ✓
Gelatin	N	Neg ✓
Indole	X	Neg ✓
Malonate	Pos	Pos !
PAD	Neg	X ✓
Urea Neg 2 h	Neg	Neg ✓
6.5% NaCL	Neg	Neg ✓
10% Lactose	Neg	Neg ✓
ONPG	Neg	Neg ✓
Growth 42°	Pos	Pos ✓

✓ ACC DARK BLUE

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.

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_3 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 (30μg)	0	1	0.00	39.67	Lysine	0	1	0.00	39.67
Colistin (10μg)	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

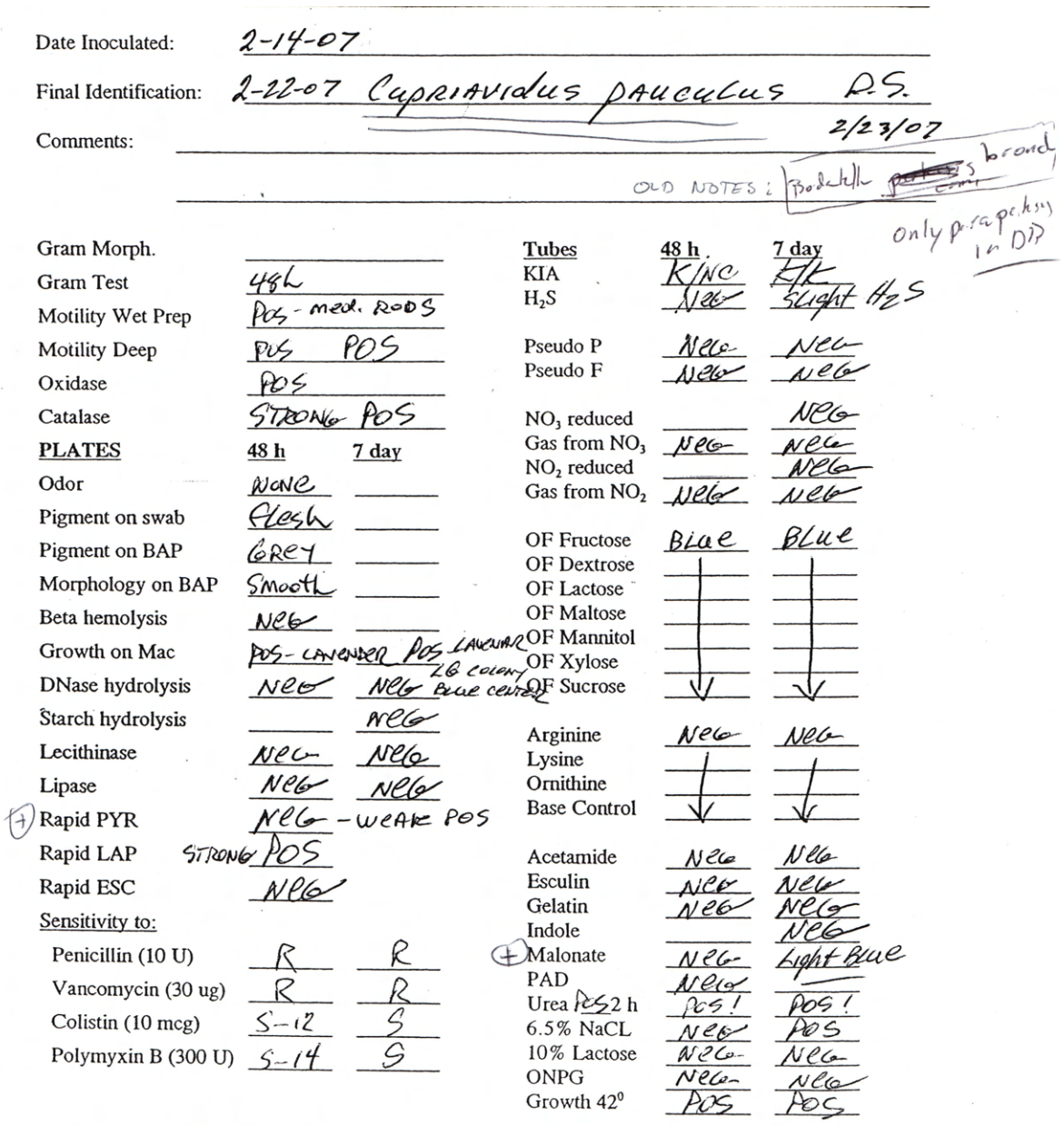
Table 50: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as $n_+/(n_+ + n_-)$, where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which 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%**	**W95%**	**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_3 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_2 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 (30μg)	0	11	0.00	12.94	Lysine	0	11	0.00	12.94
Colistin (10μg)	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

Final Identification: 2-22-07 Cupriavidus pauculus D.S.

Comments: 2/23/07

OLD NOTES: Bodatella ~~[illegible]~~ broad

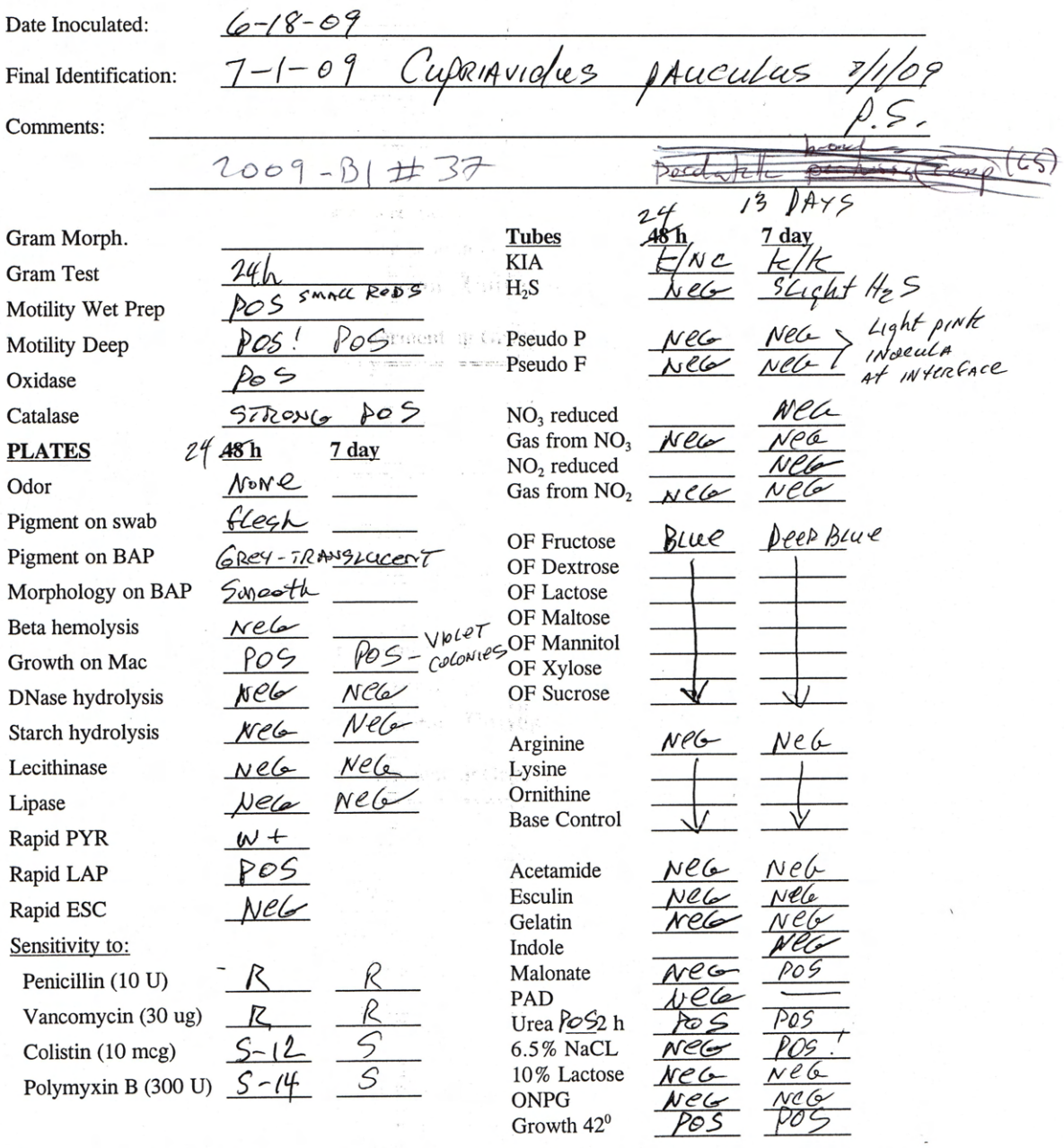
only para pertussis in DP

Gram Morph.		
Gram Test	48h	
Motility Wet Prep	POS - med. RODS	
Motility Deep	POS	POS
Oxidase	POS	
Catalase	STRONG POS	
PLATES	**48 h**	**7 day**
Odor	NONE	
Pigment on swab	Flesh	
Pigment on BAP	GREY	
Morphology on BAP	Smooth	
Beta hemolysis	NEG	
Growth on Mac	POS - LAVENDER	POS LAVENAR LG COLONY
DNase hydrolysis	NEG	NEG BLUE CENTER
Starch hydrolysis		NEG
Lecithinase	NEG	NEG
Lipase	NEG	NEG
(+) Rapid PYR	NEG - WEAK POS	
Rapid LAP	STRONG POS	
Rapid ESC	NEG	
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

Tubes	48 h	7 day
KIA	K/NC	K/K
H_2S	NEG	Slight H_2S
Pseudo P	NEG	NEG
Pseudo F	NEG	NEG
NO_3 reduced		NEG
Gas from NO_3	NEG	NEG
NO_2 reduced		NEG
Gas from NO_2	NEG	NEG
OF Fructose	BLUE	BLUE
OF Dextrose	↓	↓
OF Lactose	↓	↓
OF Maltose	↓	↓
OF Mannitol	↓	↓
OF Xylose	↓	↓
OF Sucrose	↓	↓
Arginine	NEG	NEG
Lysine	↓	↓
Ornithine	↓	↓
Base Control	↓	↓
Acetamide	NEG	NEG
Esculin	NEG	NEG
Gelatin	NEG	NEG
Indole		NEG
(+) Malonate	NEG	Light Blue
PAD	NEG	
Urea POS 2 h	POS!	POS!
6.5% NaCL	NEG	POS
10% Lactose	NEG	NEG
ONPG	NEG	NEG
Growth 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 165: Cupriavidus pauculus isolate 1-of-11.



Date Inoculated: 6-18-09

Final Identification: 7-1-09 Cupriavidus pauculas 7/1/09 P.S.

Comments: 2009-B1 #37 Food Jelly pathway temp (TS)

				24 48 h	13 DAYS 7 day
Gram Morph.			**Tubes**		
Gram Test	24h		KIA	K/NC	K/K
Motility Wet Prep	POS SMALL RODS		H_2S	Neg	Slight H_2S
Motility Deep	POS! POS		Pseudo P	Neg	Neg > Light pink inocula at interface
Oxidase	POS		Pseudo F	Neg	Neg
Catalase	STRONG POS		NO_3 reduced		Neg
PLATES	24 48 h	7 day	Gas from NO_3	Neg	Neg
Odor	None		NO_2 reduced		Neg
Pigment on swab	flesh		Gas from NO_2	Neg	Neg
Pigment on BAP	GREY-TRANSLUCENT		OF Fructose	Blue	Deep Blue
Morphology on BAP	Smooth		OF Dextrose	↓	↓
Beta hemolysis	Neg		OF Lactose		
Growth on Mac	POS	POS - Violet colonies	OF Maltose		
DNase hydrolysis	Neg	Neg	OF Mannitol		
Starch hydrolysis	Neg	Neg	OF Xylose		
Lecithinase	Neg	Neg	OF Sucrose	↓	↓
Lipase	Neg	Neg	Arginine	Neg	Neg
Rapid PYR	W+		Lysine	↓	↓
Rapid LAP	POS		Ornithine		
Rapid ESC	Neg		Base Control	↓	↓
Sensitivity to:			Acetamide	Neg	Neg
Penicillin (10 U)	R	R	Esculin	Neg	Neg
Vancomycin (30 ug)	R	R	Gelatin	Neg	Neg
Colistin (10 mcg)	S-12	S	Indole		Neg
Polymyxin B (300 U)	S-14	S	Malonate	Neg	POS
			PAD	Neg	—
			Urea POS 2 h	POS	POS
			6.5% NaCL	Neg	POS!
			10% Lactose	Neg	Neg
			ONPG	Neg	Neg
			Growth 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 166: Cupriavidus pauculus isolate 2-of-11.

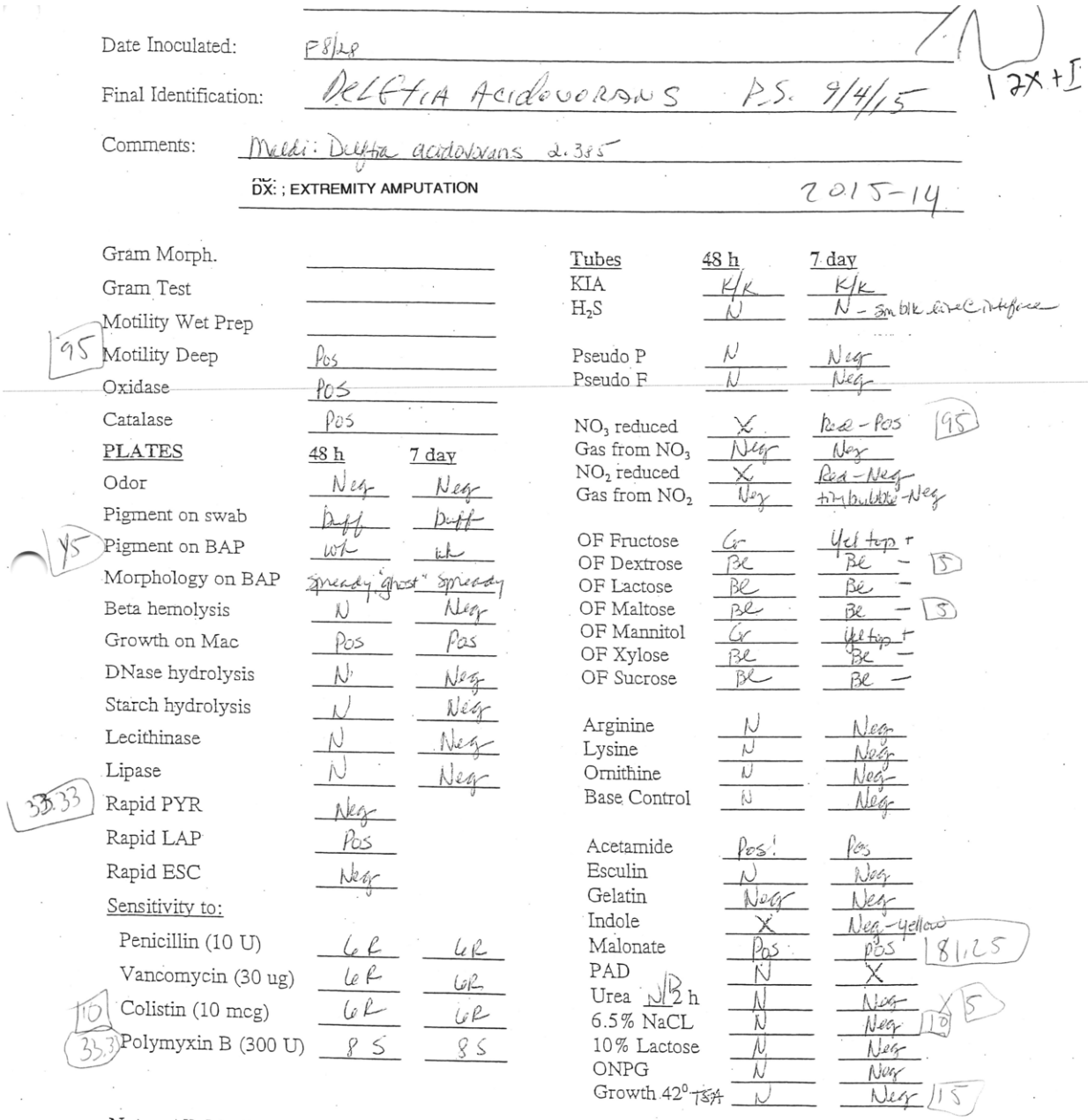
17 GENUS DELFTIA

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%**	**W95%**
Motility	20	1	95.24	88.24	H_2S	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_3 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_2 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 (30μg)	0	21	0.00	7.73	Lysine	0	21	0.00	7.73
Colistin (10μg)	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 Inoculated: 8/28

Final Identification: DELFTIA ACIDOVORANS P.S. 9/4/15

Comments: Meldi: Delftia acidovorans 2.385

DX: ; EXTREMITY AMPUTATION 2015-14

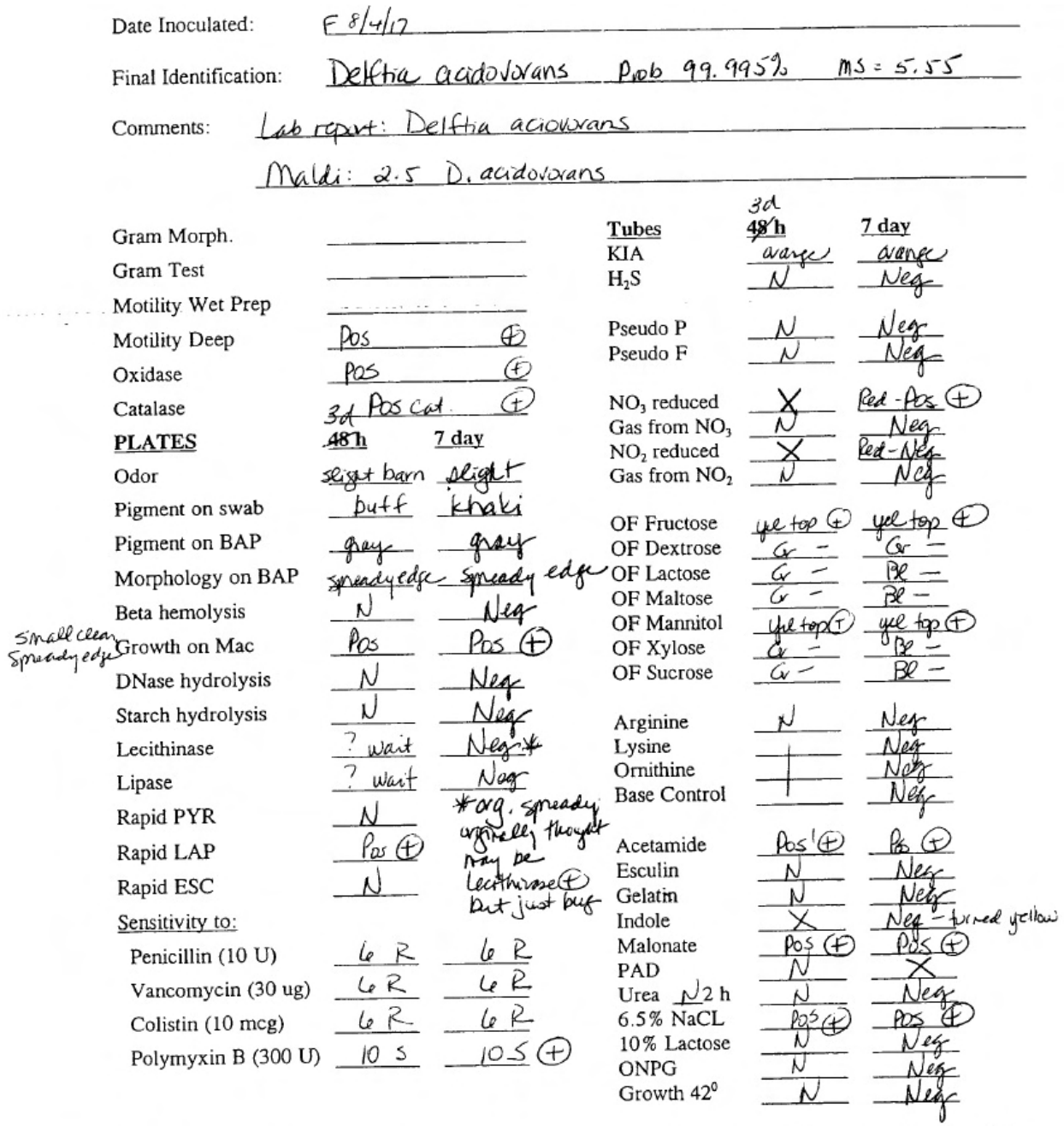
Gram Morph.	
Gram Test	
Motility Wet Prep	
Motility Deep	Pos
Oxidase	Pos
Catalase	Pos

PLATES	48 h	7 day
Odor	Neg	Neg
Pigment on swab	Buff	Buff
Pigment on BAP	wh	wh
Morphology on BAP	Spready "ghost"	Spready
Beta hemolysis	N	Neg
Growth on Mac	Pos	Pos
DNase hydrolysis	N	Neg
Starch hydrolysis	N	Neg
Lecithinase	N	Neg
Lipase	N	Neg
Rapid PYR	Neg	
Rapid LAP	Pos	
Rapid ESC	Neg	
Sensitivity to:		
Penicillin (10 U)	GR	GR
Vancomycin (30 ug)	GR	GR
Colistin (10 mcg)	GR	GR
Polymyxin B (300 U)	S	S

Tubes	48 h	7 day
KIA	K/K	K/K
H_2S	N	N - sm blk line at interface
Pseudo P	N	Neg
Pseudo F	N	Neg
NO_3 reduced	X	Red - Pos
Gas from NO_3	Neg	Neg
NO_2 reduced	X	Red - Neg
Gas from NO_2	Neg	tiny bubble - Neg
OF Fructose	Gr	Yel top +
OF Dextrose	Be	Be -
OF Lactose	Be	Be -
OF Maltose	Be	Be -
OF Mannitol	Gr	Yel top +
OF Xylose	Be	Be -
OF Sucrose	Be	Be -
Arginine	N	Neg
Lysine	N	Neg
Ornithine	N	Neg
Base Control	N	Neg
Acetamide	Pos!	Pos
Esculin	N	Neg
Gelatin	Neg	Neg
Indole	X	Neg - yellow
Malonate	Pos	Pos
PAD	N	X
Urea NR 2 h	N	Neg
6.5% NaCL	N	Neg
10% Lactose	N	Neg
ONPG	N	Neg
Growth 42° TSA	N	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 167: Delftia acidovorans isolate 1-of-21.



Date Inoculated: F 8/4/17

Final Identification: Delftia acidovorans Prob 99.995% MS = 5.55

Comments: Lab report: Delftia aciovorans

Maldi: 2.5 D. acidovorans

			Tubes	3d 48 h	7 day
Gram Morph.			KIA	orange	orange
Gram Test			H_2S	N	Neg
Motility Wet Prep					
Motility Deep	Pos	⊕	Pseudo P	N	Neg
Oxidase	Pos	⊕	Pseudo F	N	Neg
Catalase	3d Pos cat	⊕	NO_3 reduced	X	Red - Pos ⊕
PLATES	**48 h**	**7 day**	Gas from NO_3	N	Neg
Odor	slight barn	slight	NO_2 reduced	X	Red - Neg
Pigment on swab	buff	khaki	Gas from NO_2	N	Neg
Pigment on BAP	gray	gray	OF Fructose	yel top ⊕	yel top ⊕
Morphology on BAP	spreadyedge	spready edge	OF Dextrose	Gr −	Gr −
Beta hemolysis	N	Neg	OF Lactose	Gr −	Bl −
Growth on Mac	Pos	Pos ⊕	OF Maltose	Gr −	Bl −
DNase hydrolysis	N	Neg	OF Mannitol	yel top ⊕	yel top ⊕
Starch hydrolysis	N	Neg	OF Xylose	Gr −	Bl −
Lecithinase	? wait	Neg *	OF Sucrose	Gr −	Bl −
Lipase	? wait	Neg	Arginine	N	Neg
Rapid PYR	N		Lysine		Neg
Rapid LAP	Pos ⊕		Ornithine		Neg
Rapid ESC	N		Base Control		Neg
Sensitivity to:			Acetamide	Pos ⊕	Pos ⊕
Penicillin (10 U)	6 R	6 R	Esculin	N	Neg
Vancomycin (30 ug)	6 R	6 R	Gelatin	N	Neg
Colistin (10 mcg)	6 R	6 R	Indole	X	Neg - turned yellow
Polymyxin B (300 U)	10 S	10 S ⊕	Malonate	Pos ⊕	Pos ⊕
			PAD	N	X
			Urea N 2 h	N	Neg
			6.5% NaCL	Pos ⊕	Pos ⊕
			10% Lactose	N	Neg
			ONPG	N	Neg
			Growth 42°	N	Neg

small clear spready edge

* org. spready originally thought may be lecithinase ⊕ but just bug

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.

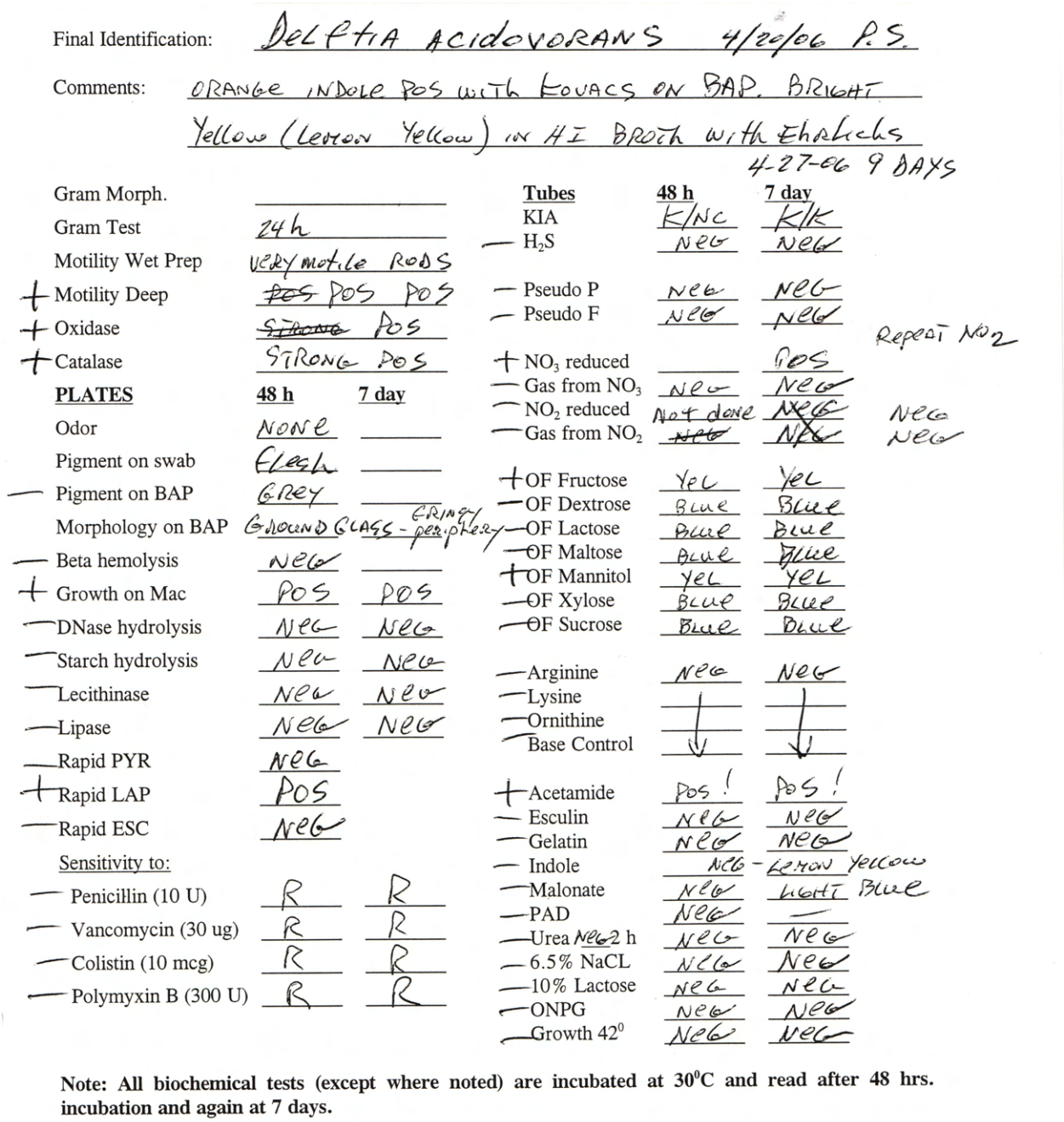


Figure 169: Delftia acidovorans isolate 3-of-21.

Date Inoculated: 6-18-07

Final Identification: DELFTIA ACIDOVORANS 6/25/07 PS.

Comments:

Gram Morph.		
Gram Test	24h 48h - NEG	
Motility Wet Prep	NEG- mod Rods j. Heavy	
Motility Deep	POS	POS
Oxidase	POS	
Catalase	STRONG POS	
PLATES	**48 h**	**7 day**
Odor	NONE	
Pigment on swab	BEIGE	
Pigment on BAP	GREY	
Morphology on BAP	SHINY- SMEARS	
Beta hemolysis	NEG	NEG
Growth on Mac	POS	POS
DNase hydrolysis	NEG	NEG- Blue
Starch hydrolysis	NEG	NEG
Lecithinase	NEG	NEG
Lipase	NEG	NEG
Rapid PYR	NEG	
Rapid LAP	POS	
Rapid ESC	NEG	
Sensitivity to:		
Penicillin (10 U)	R	R
Vancomycin (30 ug)	R	R
Colistin (10 mcg)	R	R
Polymyxin B (300 U)	R	R

Tubes	**48 h**	**7 day**
KIA	K/NC	K/NC
H_2S	NEG	slight H_2S
Pseudo P	NEG	NEG
Pseudo F	NEG	NEG
NO_3 reduced		POS
Gas from NO_3	NEG	NEG
NO_2 reduced		NEG
Gas from NO_2	NEG	NEG
OF Fructose	YEL	YEL
OF Dextrose	BLUE	BLUE
OF Lactose	BLUE	BLUE
OF Maltose	BLUE	BLUE
OF Mannitol	YEL	YEL
OF Xylose	BLUE	BLUE
OF Sucrose	BLUE	BLUE
Arginine	NEG	NEG
Lysine	↓	↓
Ornithine		
Base Control	↓	↓
Acetamide	POS !	POS
Esculin	NEG	NEG
Gelatin	NEG	NEG
Indole		
Malonate	NEG	POS
PAD	NEG	—
Urea NEG 2h	NEG	POS - SLANT ONLY
6.5% NaCL	NEG	NEG
10% Lactose	NEG	NEG
ONPG	NEG	NEG
Growth 42°	SPARSE	NEG (FAINT)

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

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

Date Inoculated: 8-19-08

Final Identification: Delftia Acidovorans 9/2/08 P.S.

Comments: Yellow indole with Ehrlichs

orange indole on BAP with Kovacs

Brown diffusible pgmt on Pseudo F & Starch @14D 24 9/2/08 14 DAYS

Gram Morph.		
Gram Test	24h	
Motility Wet Prep	POS- very motile darting, spinning	
Motility Deep	POS	
Oxidase	POS	
Catalase	STRONG POS	
PLATES	**48 h**	**7 day**
Odor	None	
Pigment on swab	Flesh	
Pigment on BAP	Grey	
Morphology on BAP	Smooth-smears	
Beta hemolysis	neg	neg
Growth on Mac	Pos	Pos
DNase hydrolysis	Neg	neg
Starch hydrolysis	neg	neg
Lecithinase	Neg	Neg
Lipase	Neg	Neg
Rapid PYR	W+ (light pink)	
Rapid LAP	Strong Pos	
Rapid ESC	Neg	
Sensitivity to:		
Penicillin (10 U)	R	R
Vancomycin (30 ug)	R	R
Colistin (10 mcg)	R	R
Polymyxin B (300 U)	S-9	S

Tubes	**48 h**	**7 day**	
KIA	K/NC	K/K	
H_2S	Neg	Neg	
Pseudo P	Neg	Neg	
Pseudo F	Neg	Neg	Brownish diffusible pigmt on top of slant
NO_3 reduced		Pos	
Gas from NO_3	Neg	Neg	
NO_2 reduced		Neg	
Gas from NO_2	Neg	Neg	
+ OF Fructose	GRN/Yel	GRN	
- OF Dextrose	Blue	Blue	
- OF Lactose	Blue	Blue	
- OF Maltose	Blue	Blue	
+ OF Mannitol	GRN/Yel	GRN	
- OF Xylose	Blue	Blue	
- OF Sucrose	Blue	Blue	
Arginine	Neg	Neg	
Lysine			
Ornithine			
Base Control			
Acetamide	Pos!	Pos!	
Esculin	Neg	Neg	
Gelatin	Neg	Neg	
Indole		Yel	indole
Malonate	Neg	Pos	
PAD	Neg	-	
Urea Neg 2 h	Neg	Neg	
6.5% NaCL	Neg	Neg	
10% Lactose	Neg	Neg	
ONPG	Neg	Neg	
Growth 42°	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 171: Delftia acidovorans isolate 5-of-21.

Date Inoculated: 10-6-09

Final Identification: DELFTIA ACIDOVORANS P.S. 10/29/09

Comments:

Gram Morph.		
Gram Test	24h	
Motility Wet Prep	POS medium Rods	
Motility Deep	POS	POS
Oxidase	POS	
Catalase	STRONG POS	
PLATES	**48 h**	**7 day**
Odor	fireworks	
Pigment on swab	flesh	
Pigment on BAP	GREY	
Morphology on BAP	Smooth -	smears
Beta hemolysis	NEG	
Growth on Mac	POS	POS
DNase hydrolysis	NEG	NEG DARK BLUE
Starch hydrolysis	NEG	NEG SKINNY
Lecithinase	NEG	NEG
Lipase	NEG	NEG
Rapid PYR	POS	
Rapid LAP	POS !!	
Rapid ESC	NEG	
Sensitivity to:		
Penicillin (10 U)	R	R
Vancomycin (30 ug)	R	R
Colistin (10 mcg)	R	R
Polymyxin B (300 U)	R	R

	10/9	~~10/29~~ 10/21
Tubes	**48 h**	**7 day**
KIA	K/NC	K/K
H_2S	SLIGHT H_2S	NEG
Pseudo P	NEG	NEG > PINK
Pseudo F	NEG	NEG INOCULUM
		VERY FAINT FLUORESCENCE SLIGHT YEL
NO_3 reduced		POS
Gas from NO_3	TINY BUBBLE	TINY BUBBLE
NO_2 reduced		NEG
Gas from NO_2	TINY BUBBLE	TINY BUBBLE
OF Fructose	YEL	GRN/YEL
OF Dextrose	BLUE	BLUE
OF Lactose	BLUE	BLUE
OF Maltose	BLUE	BLUE
OF Mannitol	YEL	GRN/YEL
OF Xylose	BLUE	BLUE
OF Sucrose	BLUE	BLUE
Arginine	NEG	NEG
Lysine	↓	↓
Ornithine		
Base Control	↓	↓
Acetamide	POS !	POS !
Esculin	NEG	NEG
Gelatin	NEG	NEG
Indole		NEG - NO ORANGE
Malonate	NEG	POS
PAD		NEG
Urea ~~NEG~~ h	NEG	POS - SLANT
6.5% NaCL	NEG	NEG
10% Lactose	NEG	NEG
ONPG	NEG	NEG
Growth 42^0	NEG	NEG

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

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

Date Inoculated: 1-5-10

Final Identification: DELFTIA ACIDOVORANS P.S. 1/20/10

Comments: POSITIVE FOR ORANGE INDOLE BAP @ 72 HRS.

Gram Morph.			**Tubes**	**48 h**	**7 day**	
Gram Test	48 h		KIA	K/NC	K/K	
Motility Wet Prep	POS SMALL RODS		H_2S	NEG	NEG	
Motility Deep	POS	POS	Pseudo P	NEG	NEG	NEG 1/18/10
Oxidase	POS		Pseudo F	NEG	NEG	
Catalase	STRONG POS		NO_3 reduced		POS	
PLATES	**48 h**	**7 day**	Gas from NO_3	TINY BUBBLE	TINY BUBBLE	
Odor	NONE		NO_2 reduced		NEG	
Pigment on swab	FLESH		Gas from NO_2	NEG	NEG	
Pigment on BAP	GREY		OF Fructose	GRN/YEL	GRN/YEL	
Morphology on BAP	SPREADY-	COLONIES HAVE SWEATY APPEARANCE	OF Dextrose	BLUE	BLUE	
Beta hemolysis	NEG		OF Lactose	BLUE	BLUE	
Growth on Mac	POS	POS	OF Maltose	BLUE	BLUE	
DNase hydrolysis	NEG	NEG	OF Mannitol	YEL/GRN	GRN/YEL	
Starch hydrolysis	NEG	NEG	OF Xylose	BLUE	BLUE	
Lecithinase	NEG	NEG	OF Sucrose	BLUE	BLUE	
Lipase	NEG	NEG	Arginine	NEG	NEG	
Rapid PYR	NEG		Lysine	↓	↓	
Rapid LAP	POS		Ornithine			
Rapid ESC	NEG		Base Control	↓	↓	
~~Sensitivity to:~~			Acetamide	POS!	POS!	
Penicillin (10 U)	R	R	Esculin	NEG	NEG	
Vancomycin (30 ug)	R	R	Gelatin	NEG	NEG	YELLOW IN HI W/ BLACKS
Colistin (10 mcg)	R	R	Indole		NEG	ORANGE INDOLE + ON BAP
Polymyxin B (300 U)	R (double zone)	R	Malonate	LT BLUE	POS	
			PAD	NEG	—	
			Urea ~~NEG~~ 2 h	NEG	NEG	
			6.5% NaCL	NEG	NEG	
			10% Lactose	NEG	NEG	
			ONPG	NEG	NEG	
			Growth 42°	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 173: Delftia acidovorans isolate 7-of-21.

Date Inoculated: 8-25-11

Final Identification: Delftia Acidovorans PS. / 9/2/11

Comments: Bruker called Delftia Acidovorans 1.824

Gram Morph.			**Tubes**	~~24~~ **48 h**	**7 day**
Gram Test	24 h		KIA	K/NC	K/K
Motility Wet Prep	Pos- very motile sm. rods		H_2S	Neg	Neg
Motility Deep	Pos!	Pos	Pseudo P	Neg	Neg
Oxidase	Pos		Pseudo F	Neg	Neg
Catalase	Strong Pos		NO_3 reduced		Pos
PLATES	24 ~~48 h~~	**7 day**	Gas from NO_3	Neg	Neg
Odor	Slight odor		NO_2 reduced		Neg
Pigment on swab	flesh		Gas from NO_2	Neg	Neg
Pigment on BAP	Grey		OF Fructose	GRN	Yel/GRN
Morphology on BAP	Smooth		OF Dextrose	GRN	GRN/Blue
Beta hemolysis	Neg	Neg	OF Lactose	Blue	Blue
Growth on Mac	Pos	Pos	OF Maltose	Blue	Blue
DNase hydrolysis	Neg	Neg	OF Mannitol	GRN/yel	Yel/GRN
Starch hydrolysis	Neg	Neg	OF Xylose	Blue	Blue
Lecithinase	Neg	Neg	OF Sucrose	Blue	Blue
Lipase	Neg	Neg	Arginine	Neg	Neg
Rapid PYR	Neg/wt		Lysine		
Rapid LAP	Pos		Ornithine		
Rapid ESC	Neg		Base Control		
Sensitivity to:			Acetamide	Pos	Pos!
Penicillin (10 U)	R	R	Esculin	Neg	Neg
Vancomycin (30 ug)	R	R	Gelatin	Neg	Neg
Colistin (10 mcg)	R	R	Indole		Neg orange indol
Polymyxin B (300 U)	R	R	Malonate	Neg	Pos
			PAD	Neg	—
			Urea Neg 2 h	Neg	Neg
			6.5% NaCL	Neg	Neg
			10% Lactose	Neg	Neg
			ONPG	Neg	Neg
			Growth 42^0	Neg	Neg

Note: All biochemical tests (except where noted) are incubated at 30^0C 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 Acidovorans P.S. 1/6/12

Comments: Looks Like A. faecalis on plate - turns Agar Green
No fruity odor. Blue Colonies on DNAse
72h 1/6 1/11/12

Gram Morph.		
Gram Test	72h	
Motility Wet Prep	Pos med Rods	
Motility Deep	POS POS	
Oxidase	POS	
Catalase	STRONG POS	
PLATES	**48 h**	**7 day**
Odor	Slight	
Pigment on swab	flesh	
Pigment on BAP	Grey	
Morphology on BAP	Smooth	
Beta hemolysis	Neg	
Growth on Mac	POS	POS Blue colonies
DNase hydrolysis	NEG	NEG
Starch hydrolysis	NEG	NEG
Lecithinase	NEG	NEG
Lipase	NEG	NEG
Rapid PYR	NEG	
Rapid LAP	POS	
Rapid ESC	NEG	
Sensitivity to:		
Penicillin (10 U)	R	R
Vancomycin (30 ug)	R	R
Colistin (10 mcg)	R	R
Polymyxin B (300 U)	R	R

Tubes	**48 h**	**7 day**
KIA	K/NC	K/K
H_2S	Neg	Neg
Pseudo P	Neg	Neg
Pseudo F	Neg	Neg
NO_3 reduced		
Gas from NO_3	2 TINY BUBBLES	TINY BUBBLE
NO_2 reduced		
Gas from NO_2	Neg	Neg
OF Fructose	Yel/GRN	GRN
OF Dextrose	Blue/GRN	Blue
OF Lactose	Blue	Blue
OF Maltose	Blue	Blue
OF Mannitol	Yel/GRN	Yel
OF Xylose	Blue	Blue
OF Sucrose	Blue	Blue
Arginine	Neg	Neg
Lysine	↓	↓
Ornithine		
Base Control	↓	↓
Acetamide	Pos!	POS
Esculin	Neg	Neg
Gelatin	Neg	Neg
Indole		
Malonate	POS	POS
PAD	Neg	
Urea Neg 2 h	Neg	Neg
6.5% NaCL	Neg	Neg
10% Lactose	Neg	Neg
ONPG	Neg	Neg
Growth 42°	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 175: Delftia acidovorans isolate 9-of-21.

Date Inoculated: F 8/28

Final Identification: DELFTIA ACIDOVORANS P.S. 9/4/15

Comments: Meldi: Delftia acidovorans 2.385

Gram Morph.		
Gram Test		
Motility Wet Prep		
Motility Deep	Pos	
Oxidase	POS	
Catalase	POS	
PLATES	48 h	7 day
Odor	Neg	Neg
Pigment on swab	buff	buff
Pigment on BAP	wh	wh
Morphology on BAP	spready, ghost	spready
Beta hemolysis	N	Neg
Growth on Mac	Pos	Pos
DNase hydrolysis	N	Neg
Starch hydrolysis	N	Neg
Lecithinase	N	Neg
Lipase	N	Neg
Rapid PYR	Neg	
Rapid LAP	Pos	
Rapid ESC	Neg	
Sensitivity to:		
Penicillin (10 U)	GR	GR
Vancomycin (30 ug)	GR	GR
Colistin (10 mcg)	GR	GR
Polymyxin B (300 U)	S	S

Tubes	48 h	7 day
KIA	K/K	K/K
H_2S	N	N - sm blk area @ interface
Pseudo P	N	Neg
Pseudo F	N	Neg
NO_3 reduced	X	Red - Pos
Gas from NO_3	Neg	Neg
NO_2 reduced	X	Red - Neg
Gas from NO_2	Neg	tr bubble - Neg
OF Fructose	Gr	Yel top +
OF Dextrose	Be	Be -
OF Lactose	Be	Be -
OF Maltose	Be	Be -
OF Mannitol	Gr	Yel top +
OF Xylose	Be	Be -
OF Sucrose	Be	Be -
Arginine	N	Neg
Lysine	N	Neg
Ornithine	N	Neg
Base Control	N	Neg
Acetamide	Pos!	Pos
Esculin	N	Neg
Gelatin	Neg	Neg
Indole	X	Neg - yellow
Malonate	Pos	pos
PAD	N	X
Urea N/2 h	N	Neg
6.5% NaCL	N	Neg
10% Lactose	N	Neg
ONPG	N	Neg
Growth 42° ~~TSA~~	N	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 176: Delftia acidovorans isolate 10-of-21.

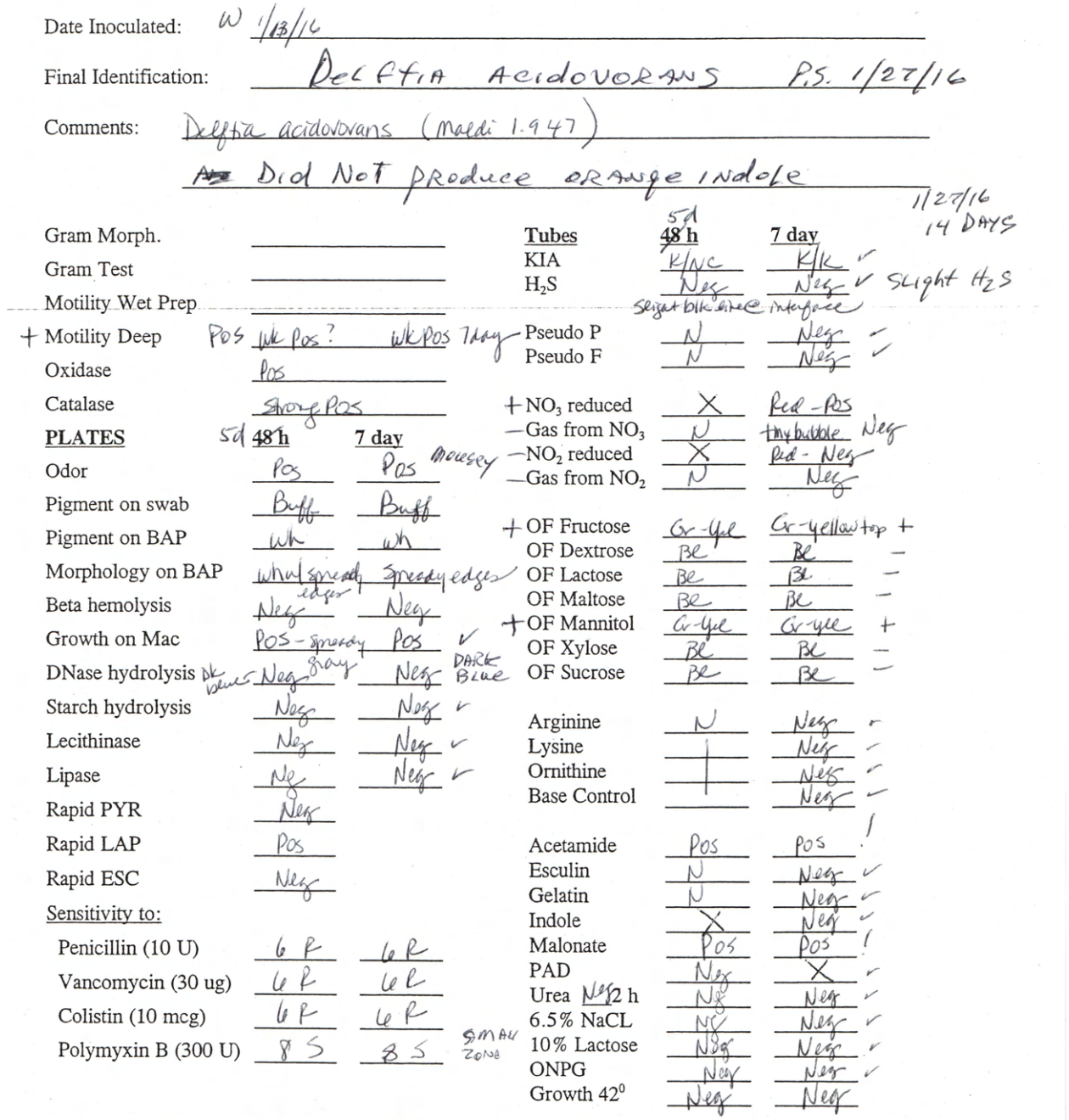


Figure 177: Delftia acidovorans isolate 11-of-21.

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_2S	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_3 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_2 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 (30μg)	27	1	96.43	90.83	Lysine	0	28	0.00	6.03
Colistin (10μg)	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.

Date Inoculated: 11-18-05

Final Identification: Chryseobacterium meningosepticum

Comments:

					11/20	11/23
	Gram Morph.	GNR		Tubes set up 11/18	48 h	7 day
	Gram Test			KIA	K/NC	K/-
	Motility Wet Prep	Medium-Long Rods - NEG		H_2S	NEG	NEG
—	Motility Deep	NEG NEG	—	Pseudo P	NEG	NEG
+	Oxidase	POS	—	Pseudo F	NEG	NEG
+	Catalase	STRONG POS	—	NO_3 reduced		NEG
	PLATES	**48 h** **7 day**	—	Gas from NO_3	~~POS~~	~~POS~~
	Odor	Moth Balls	+	NO_2 reduced		POS
	Pigment on swab	Cream tinge of pink — Flesh	—	Gas from NO_2	NEG	NEG
—	Pigment on BAP	Grey	+	OF Fructose	GRN	Yel
	Morphology on BAP	Smooth	+	OF Dextrose	Blu/GRN	Yel
—	Beta hemolysis	neg	—	OF Lactose	Blue	Blue
—	Growth on Mac	neg	+	OF Maltose	Blu/GRN	GRN
+	DNase hydrolysis	POS! POS	+	OF Mannitol	GRN	GRN
—	Starch hydrolysis	NEG NEG	—	OF Xylose	Blue	Blue
—	Lecithinase inhibited	NEG NEG	+	OF Sucrose	Yel/GRN	Yel
—	Lipase	NEG NEG	—	Arginine	NO OIL	
—	Rapid PYR	NEG	—	Lysine	NEG	NEG
+	Rapid LAP	POS!	—	Ornithine	NEG	NEG
+	Rapid ESC	POS	—	Base Control	NEG	NEG
	Sensitivity to: set up 11/18		—	Acetamide	NEG	NEG
—	Penicillin (10 U)	6 R	+	Esculin	POS	POS
+	Vancomycin (30 ug)	15 S	—	Gelatin	NEG	
—	Colistin (10 mcg)	6 R	+	Indole		POS
—	Polymyxin B (300 U)	6 R	—	Malonate	NEG	NEG
			—	PAD	NEG	
			—	Urea NEG 2 h	NEG	NEG
			—	6.5% NaCL	NEG	NEG
			—	10% Lactose	NEG	NEG
			+	ONPG	POS	POS
			—	Growth 42^0	NEG	NEG

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

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

Date Inoculated: 2-22-06

Final Identification: Chryseobacterium meningosepticum D.S. 3/9/06

Comments: White on Starch

		48 h	7 day
Gram Morph.			
Gram Test	24h		
Motility Wet Prep	Neg - long GNB		
— Motility Deep	Neg	Neg	
+ Oxidase	Pos		
+ Catalase	Strong Pos		
PLATES	**48 h**	**7 day**	
Odor	~~Aeonic~~ Amonia		
Pigment on swab	Flesh		
— Pigment on BAP	Grey		
Morphology on BAP	Smooth		
— Beta hemolysis	Neg		
— Growth on Mac	~~Neg~~ ~~Pos~~	~~Pos~~ Neg	
+ DNase hydrolysis	Pos	Pos	
— Starch hydrolysis	Neg	Neg	
— Lecithinase	Neg	Neg	
— Lipase	Neg	Neg	
— Rapid PYR	Neg		
+ Rapid LAP	Pos!		
+ Rapid ESC	W+		
Sensitivity to:			
— Penicillin (10 U)	R	R	
+ Vancomycin (30 ug)	S-12	S	
— Colistin (10 mcg)	R	R	
— Polymyxin B (300 U)	R	R	

2-24-06

Tubes	48 h	7 day
KIA	Yel/org	Yel/Yel/org
— H_2S	Neg	Neg
— Pseudo P	Neg	Neg
— Pseudo F	Neg	Neg
— NO_3 reduced		Neg
— Gas from NO_3	Neg	Neg
— NO_2 reduced		Neg
— Gas from NO_2	Neg	Neg
+ OF Fructose	Yel	Yel
+ OF Dextrose	Blue	Grn
— OF Lactose	Blue	Blue
+ OF Maltose	Yel	Grn
+ OF Mannitol	Yel	Grn
— OF Xylose	Blue	Blue
— OF Sucrose	Yel/Grn	Blue
— Arginine	Neg	Neg
— Lysine		
— Ornithine		
— Base Control		
— Acetamide	Neg	Neg
+ Esculin	Pos	Pos
+ Gelatin	Pos	Pos
+ ~~+~~ Indole		Pos
— Malonate	Neg	Neg
— PAD	Neg	
— Urea Neg 2 h	Neg	Neg
— 6.5% NaCL	Neg	Neg
— 10% Lactose	Lt: Yel Slant	Neg
+ ONPG	Pos	Pos
+ Growth 42°	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 179: Elizabethkingia meningoseptica isolate 2-of-28.

Date Inoculated: 10-20-06

Final Identification: 10-27-06 ELIZABETHKINGIA MENINGOSEPTICA DS

Comments: SLIGHT PINK ON STARCH AT 3 DAYS & 7 DAYS
LIGHT PINK ON EGG @ 7 DAYS 10/27/06

	Gram Morph.			Tubes	3D 48 h / 7 day
	Gram Test	3D		KIA	K/NC / K/K
	Motility Wet Prep	NEG SM RODS		— H_2S	NEG / NEG
—	Motility Deep	NEG NEG		— Pseudo P	NEG / NEG
+	Oxidase	POS		— Pseudo F	NEG / NEG
+	Catalase	POS		— NO_3 reduced	/ NEG
	PLATES	**48 h**	**7 day**	— Gas from NO_3	NEG / NEG
	Odor	AMONIA		+ NO_2 reduced	/ POS
	Pigment on swab	FLESH		— Gas from NO_2	NEG / NEG
—	Pigment on BAP	GREY		+ OF Fructose	YEL / YEL
	Morphology on BAP	SMOOTH		+ OF Dextrose	GRN / YEL/GRN
+	Beta hemolysis	POS		— OF Lactose	BLUE / BLUE
—	Growth on Mac	NEG NEG		+ OF Maltose	GRN / YEL/GRN
+	DNase hydrolysis	POS POS		+ OF Mannitol	GRN / YEL/GRN
+	Starch hydrolysis	NEG (POS)		— OF Xylose	BLUE / BLUE
—	Lecithinase	NEG NEG		— OF Sucrose	BLUE / BLUE
—	Lipase	NEG NEG		— Arginine	NEG / NEG
+	Rapid PYR	POS		— Lysine	/
+	Rapid LAP	POS (VERY STRONG)		— Ornithine	/
+	Rapid ESC	POS		— Base Control	↓ / ↓
	Sensitivity to:			— Acetamide	NEG / NEG
—	Penicillin (10 U)	R R		+ Esculin	POS / POS
+	Vancomycin (30 ug)	S-12 S		+ Gelatin	POS / POS
—	Colistin (10 mcg)	R R		+ ☆ Indole	/ (POS)
—	Polymyxin B (300 U)	R R		— Malonate	NEG / NEG
				— PAD	NEG / —
				— Urea NEG 2 h	NEG / NEG
				— 6.5% NaCL	NEG / NEG
				— 10% Lactose	NEG / NEG
				+ ONPG	POS / POS
				— Growth 42°	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 180: Elizabethkingia meningoseptica isolate 3-of-28.

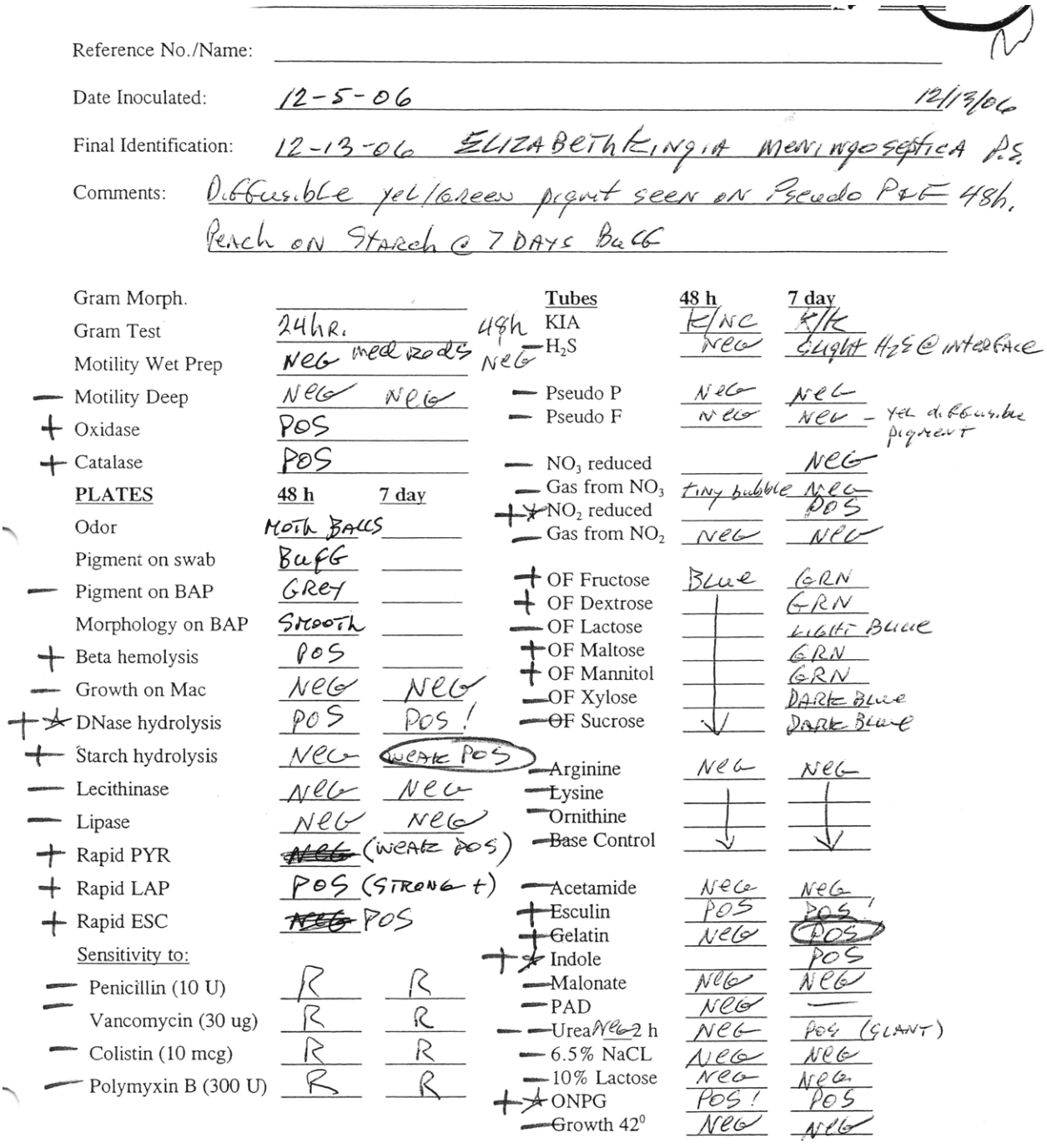


Figure 181: Elizabethkingia meningoseptica isolate 4-of-28.

Date Inoculated: 9-18-07

Final Identification: ELIZABETH KINGIA MENINGOSEPTICA P.S. 9/28/07

Comments: Yel diffusible pigment on Pseudo P @ 48h
ROSE COLOR ON STARCH & EGG YOLK @ 7 DAYS 9/26

Gram Morph.		
Gram Test	24h	
Motility Wet Prep	NEG - SM Rods	
Motility Deep	NEG	NEG
Oxidase	POS	
Catalase	STRONG	POS
PLATES	**48 h**	**7 day**
Odor	NONE	MOTH BALLS
Pigment on swab	FLESH	
Pigment on BAP	BRIGHT GREY	
Morphology on BAP	SMOOTH	
Beta hemolysis	NEG	POS
Growth on Mac	NEG	NEG
DNase hydrolysis	POS	POS
Starch hydrolysis	NEG	NEG
Lecithinase	NEG	NEG
Lipase	NEG	NEG
Rapid PYR	POS (WEAK)	
Rapid LAP	POS (STRONG)	
Rapid ESC	POS	
Sensitivity to:		
Penicillin (10 U)	R	R
Vancomycin (30 ug)	S-16	S
Colistin (10 mcg)	R	R
Polymyxin B (300 U)	R	R

Tubes	**48 h**	**7 day**	
KIA	K/NC	K/K	
H_2S	NEG	SLIGHT	H_2S
Pseudo P	NEG	NEG	YEL DIFF PIGMT
Pseudo F	NEG	NEG	INOCULUM PINK @ 7 DAYS
NO_3 reduced		NEG	
Gas from NO_3	NEG	NEG	
NO_2 reduced		NEG	
Gas from NO_2	NEG	NEG	
OF Fructose	YEL	YEL	
OF Dextrose	YEL	YEL	
OF Lactose	BLUE	GRN/BLUE	
OF Maltose	GRN	YEL	
OF Mannitol	YEL	YEL	
OF Xylose	BLUE	BLUE	
OF Sucrose	BLUE	BLUE	
Arginine	NEG	NEG	
Lysine	↓	↓	
Ornithine	↓	↓	
Base Control	↓	↓	
Acetamide	NEG	NEG	
★Esculin	POS	POS	
Gelatin	POS	POS	
★Indole		POS	
Malonate	NEG	NEG	
PAD	NEG	—	
Urea NEG 2 h	NEG	NEG	
6.5% NaCL	NEG	NEG	
10% Lactose	NEG	NEG	
ONPG	POS!	POS	
Growth 42°	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 182: Elizabethkingia meningoseptica isolate 5-of-28.

Date Inoculated: 9-25-07

Final Identification: Elizabethkingia meningoseptica 10/5/07 P.S.

Comments: Peach colored on Egg Yolk & Starch @ 72h

Gram Morph.			**Tubes**	**48 h**	**7 day**
Gram Test	48hR 24h		KIA	K/NC	K/K
Motility Wet Prep	Neg- Sm. Rods	Neg	H_2S	slight H_2S	slight H_2S
Motility Deep	Neg Neg		Pseudo P	Neg	Neg Yel diff right on Pseudo P
Oxidase	Pos		Pseudo F	Neg	Neg
Catalase	Strong Pos		NO_3 reduced		Neg
PLATES	**48 h**	**7 day**	Gas from NO_3	Neg	Neg
Odor	None		NO_2 reduced		Neg
Pigment on swab	flesh		Gas from NO_2	Neg	Neg
Pigment on BAP	Grey- slight yel center		OF Fructose	Yel	Yel
Morphology on BAP	Smooth - entire		OF Dextrose	Yel	Yel
Beta hemolysis	Neg		OF Lactose	Blue	Yel/Grn
Growth on Mac	Neg	Neg	OF Maltose	Yel	Yel
DNase hydrolysis	Pos	Pos	OF Mannitol	Yel	Yel
Starch hydrolysis	Neg	~~Neg~~ Wt	OF Xylose	Blue	Blue
Lecithinase	Neg	Neg	OF Sucrose	Blue	Blue
Lipase	Neg	Neg	Arginine	Neg	Neg
Rapid PYR	NEG		Lysine		
Rapid LAP	Pos!		Ornithine		
Rapid ESC	Pos		Base Control		
Sensitivity to:			Acetamide	Neg	Neg
Penicillin (10 U)	R	R	Esculin	Pos!	Pos
Vancomycin (30 ug)	S-10	S	Gelatin	Pos	Pos!
Colistin (10 mcg)	R	R	*Indole		Pos
Polymyxin B (300 U)	R	R	Malonate	Neg	Neg
			PAD	Neg	—
			Urea ~~Neg~~ h	Neg	Neg
			6.5% NaCL	Wt	very weak +
			10% Lactose	Neg	Neg
			ONPG	Pos	Pos
			Growth 42^0	Neg	Neg

9/28

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

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

ELIZABETHKINGIA MENINGOSEPTICA

Comments: Yellow diffusible pigment Pseudo P 3 DAYS P.S. 10/18/08

LIGHT SALMON COLOR STARCH & EGG YOLK @ 3 DAYS

				10/10/08	10/18/08
Gram Morph.			**Tubes**	**48 h**	~~1 day~~ 11 DAY
Gram Test			KIA	K/NC	K/K
Motility Wet Prep	Neg - sm rods		H_2S	Neg	SLIGHT H_2S
Motility Deep	Neg	Neg	Pseudo P	Neg	Neg
Oxidase	Pos		Pseudo F	Neg	Neg
Catalase	Pos		NO_3 reduced		Neg
PLATES	**48 h**	~~1 day~~ 11 DAY	Gas from NO_3	Neg	Neg
Odor	Moth Balls	Moth Balls	NO_2 reduced		Neg
Pigment on swab	Light Pink		Gas from NO_2	Neg	Neg
Pigment on BAP	Grey	Fresh	OF Fructose	Yel	Yel
Morphology on BAP	Smooth	dull	OF Dextrose	Yel	Yel
Beta hemolysis	Neg	Pos	OF Lactose	Blue	Yel/Grn
Growth on Mac	Neg	Neg	OF Maltose	Yel	Yel
DNase hydrolysis	Pos	Pos	OF Mannitol	Yel	Yel
Starch hydrolysis	Neg	Pos	OF Xylose	Blue	Yel/Grn
Lecithinase	Neg		OF Sucrose	Blue	Blue
Lipase	Neg		Arginine	Neg	Neg
Rapid PYR	Neg		Lysine		
Rapid LAP	Pos		Ornithine		
Rapid ESC	Pos		Base Control		
Sensitivity to:			Acetamide	Neg	Neg
Penicillin (10 U)	R	R	Esculin	Pos!	Pos
Vancomycin (30 ug)	S-16	S	Gelatin	Wk	Pos!
Colistin (10 mcg)	R	R	Indole		Pos
Polymyxin B (300 U)	R	R	Malonate	Neg	Neg
			PAD	Neg	—
			Urea Neg 2 h	Neg	Neg
			6.5% NaCL	Neg	Neg
			10% Lactose	Neg	Neg
			ONPG	Pos!	ORANGE
			Growth 42^0	Pos	—

Yellow diffusible pigmt Pseudo P
PINK INOCULA ON BOTH TUBES

Note: All biochemical tests (except where noted) are incubated at 30^0C 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: ELIZABETHKINGIA MENINGOSEPTICA P.S. 12/10/10

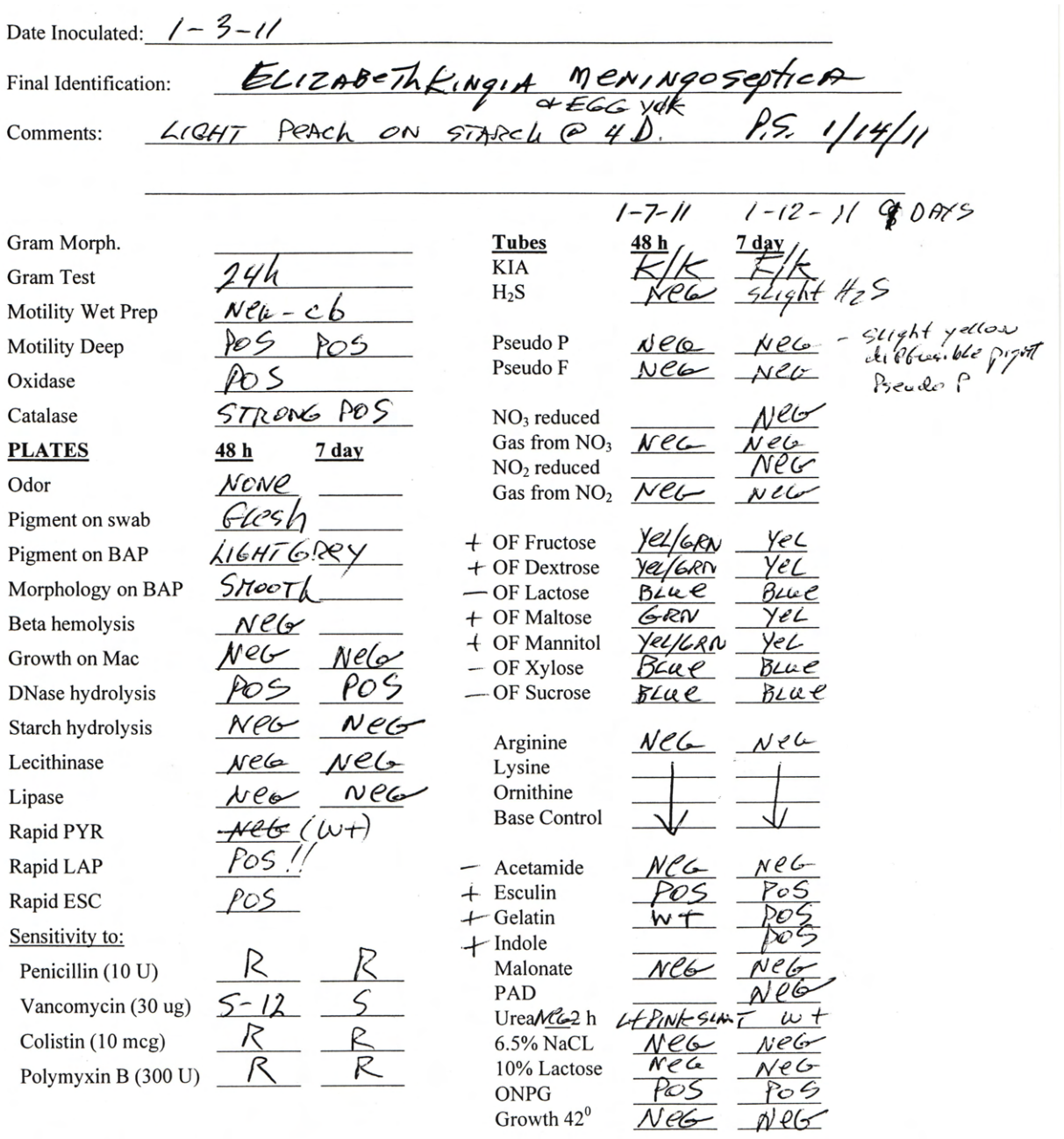
Comments: ~~Rectal~~ APRICOT COLOR ON STARCH & Egg Yolk

				12/6 72h	
Gram Morph.			**Tubes**	~~48 h~~	**7 day**
Gram Test	72h		KIA	E/NC	K/K
Motility Wet Prep	NEG - SM. RODS		H_2S	NEG	slight H_2S
Motility Deep	NEG	NEG	Pseudo P	NEG	NEG
Oxidase	SLOW POS/then strong		Pseudo F	NEG	NEG
Catalase	POS		NO_3 reduced		NEG
PLATES	72 ~~48 h~~	**7 day**	Gas from NO_3	NEG	NEG
Odor	AMONIA		NO_2 reduced		NEG
Pigment on swab	flesh		Gas from NO_2	NEG	NEG
Pigment on BAP	GREY		OF Fructose	YEL	YEL
Morphology on BAP	Smooth - Shiny		OF Dextrose	YEL	YEL
Beta hemolysis	NEG		OF Lactose	BLUE	BLUE
Growth on Mac	NEG	NEG	OF Maltose	YEL	YEL
DNase hydrolysis	POS	POS	OF Mannitol	YEL	YEL
Starch hydrolysis	NEG	NEG (wt)	OF Xylose	BLUE	BLUE
Lecithinase	NEG	NEG	OF Sucrose	BLUE	BLUE
Lipase	NEG	NEG	Arginine	NEG	NEG
Rapid PYR	NEG		Lysine		
Rapid LAP	POS		Ornithine		
Rapid ESC	NEG (Perhaps wt)		Base Control	V	V
Sensitivity to:			Acetamide	NEG	NEG
Penicillin (10 U)	R	R	Esculin	POS	POS
Vancomycin (30 ug)	S-11	S	Gelatin	NEG	POS !
Colistin (10 mcg)	R	R	Indole		POS
Polymyxin B (300 U)	R	R	Malonate	NEG	NEG
			PAD	NEG	
			Urea NEG 2 h	POS - SLANT	wt SLANT ONLY
			6.5% NaCL	NEG	NEG
			10% Lactose	NEG	NEG
			ONPG	POS !	POS
			Growth 42^0	NEG	NEG

Yel diffuses blue pigment ON Pseudo P

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

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



Date Inoculated: 1-3-11

Final Identification: ELIZABETHKINGIA MENINGOSEPTICA & EGG yolk

Comments: LIGHT PEACH ON STARCH @ 4 D. P.S. 1/14/11

				1-7-11	1-12-11 @ 9 DAYS
Gram Morph.			**Tubes**	**48 h**	**7 day**
Gram Test	24h		KIA	K/K	K/K
Motility Wet Prep	Neg - cb		H_2S	Neg	slight H_2S
Motility Deep	POS	POS	Pseudo P	Neg	Neg - slight yellow diffusible pigment Pseudo P
Oxidase	POS		Pseudo F	Neg	Neg
Catalase	STRONG POS		NO_3 reduced		Neg
PLATES	**48 h**	**7 day**	Gas from NO_3	Neg	Neg
Odor	NONE		NO_2 reduced		Neg
Pigment on swab	Flesh		Gas from NO_2	Neg	Neg
Pigment on BAP	LIGHT GREY		+ OF Fructose	Yel/GRN	Yel
Morphology on BAP	SMOOTH		+ OF Dextrose	Yel/GRN	Yel
Beta hemolysis	Neg		— OF Lactose	Blue	Blue
Growth on Mac	Neg	Neg	+ OF Maltose	GRN	Yel
DNase hydrolysis	POS	POS	+ OF Mannitol	Yel/GRN	Yel
Starch hydrolysis	Neg	Neg	— OF Xylose	Blue	Blue
Lecithinase	Neg	Neg	— OF Sucrose	Blue	Blue
Lipase	Neg	Neg	Arginine	Neg	Neg
Rapid PYR	~~Neg~~ (wt)		Lysine		
Rapid LAP	POS!!		Ornithine		
Rapid ESC	POS		Base Control		
Sensitivity to:			— Acetamide	Neg	Neg
Penicillin (10 U)	R	R	+ Esculin	POS	POS
Vancomycin (30 ug)	S-12	S	+ Gelatin	wt	POS
Colistin (10 mcg)	R	R	+ Indole		POS
Polymyxin B (300 U)	R	R	Malonate	Neg	Neg
			PAD		Neg
			Urea Neg 2 h	LT PINK SLANT	wt
			6.5% NaCL	Neg	Neg
			10% Lactose	Neg	Neg
			ONPG	POS	POS
			Growth 42^0	Neg	Neg

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

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

Date Inoculated: 11-9-11

Final Identification: Elizabethkingia meningoseptica 12/1/11 P.S.

Comments:

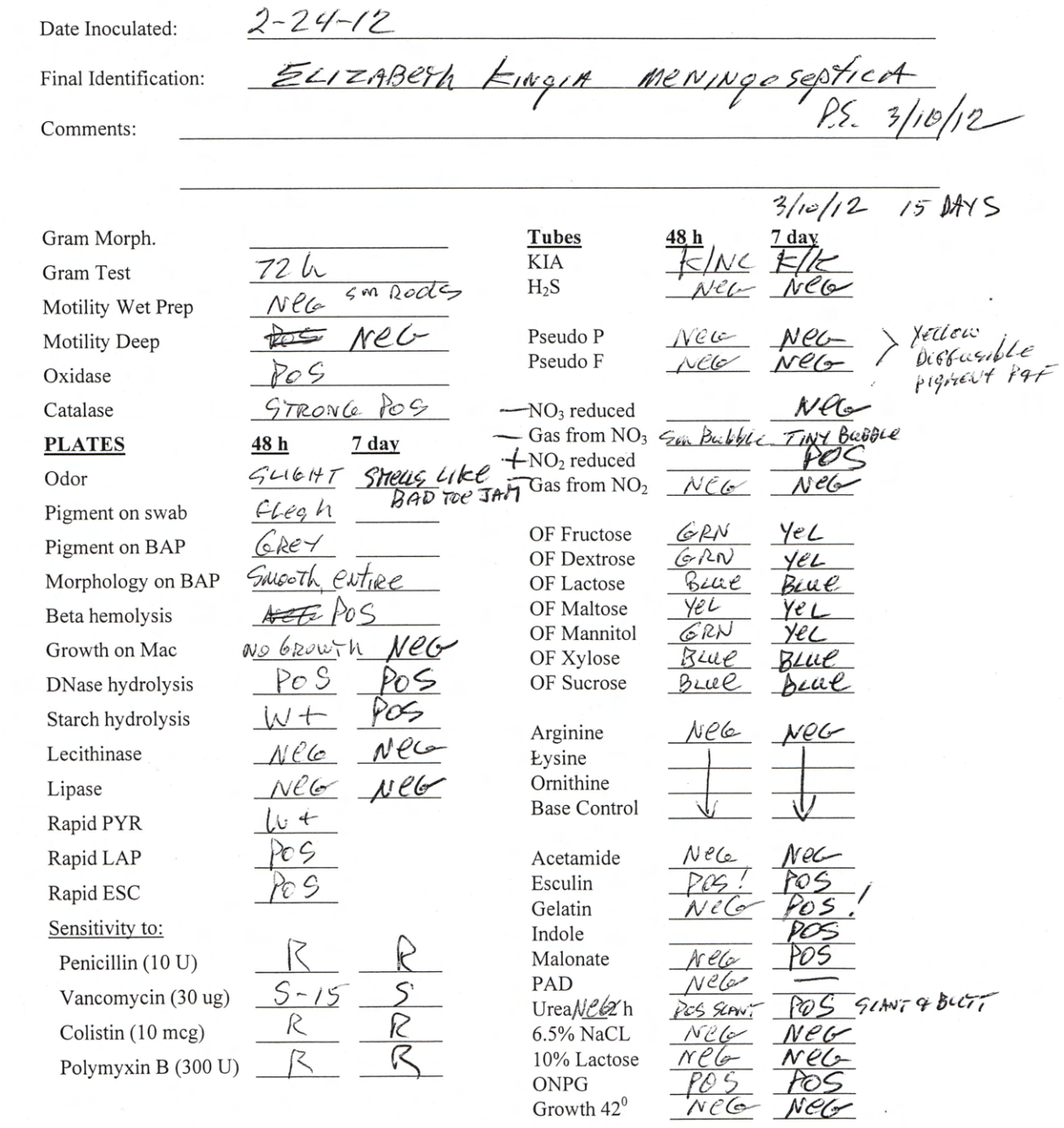
11/17/11 8 DAYS

Gram Morph.		
Gram Test	24h	
Motility Wet Prep	Neg - Sm-med Rods	
Motility Deep	Neg	Neg
Oxidase	Pos	
Catalase	Strong Pos	
PLATES	**48 h**	**7 day**
Odor	None	
Pigment on swab	Flesh	
Pigment on BAP	Grey	
Morphology on BAP	Smooth	
Beta hemolysis	Neg	
Growth on Mac	Neg	Neg
DNase hydrolysis	Pos	Pos
Starch hydrolysis	Neg	W+
Lecithinase	Neg	Neg
Lipase	Neg	Neg
Rapid PYR	Neg	
Rapid LAP	Pos!	
Rapid ESC	Neg	
Sensitivity to:		
Penicillin (10 U)	R	R
Vancomycin (30 ug)	S 10.5	S
Colistin (10 mcg)	R	R
Polymyxin B (300 U)	R	R

	Tubes	**48 h**	**7 day**
	KIA	K/NC	K/NC
–	H_2S	Neg	~~Pos~~
	Pseudo P	Neg	Neg
	Pseudo F	Neg	Neg
	NO_3 reduced		Neg
	Gas from NO_3	Neg	Neg
	NO_2 reduced		Neg
	Gas from NO_2	Neg	Neg
	OF Fructose	GRN	GRN
+	OF Dextrose	Blue	Yel
+	OF Lactose	Blue	Yel
+	OF Maltose	GRN	Yel
	OF Mannitol	GRN	GRN
-	OF Xylose	Blue	Deep Blue
–	OF Sucrose	Blue	Deep Blue
	Arginine	neg	Neg
	Lysine	↓	↓
	Ornithine	↓	↓
	Base Control	↓	↓
	Acetamide	Neg	Neg
	Esculin	Pos!	Pos
	Gelatin	Neg	Pos
+	Indole		Pos
	Malonate	Neg	Neg
	PAD	Neg	—
	Urea ~~Neg~~ 2h	Neg	Neg
	6.5% NaCL	Neg	Neg
	10% Lactose	Neg	Neg
	ONPG	Pos	Pos
	Growth 42^0	neg	Neg

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

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



Date Inoculated: 2-24-12

Final Identification: ELIZABETH KINGIA MENINGOSEPTICA P.E. 3/10/12

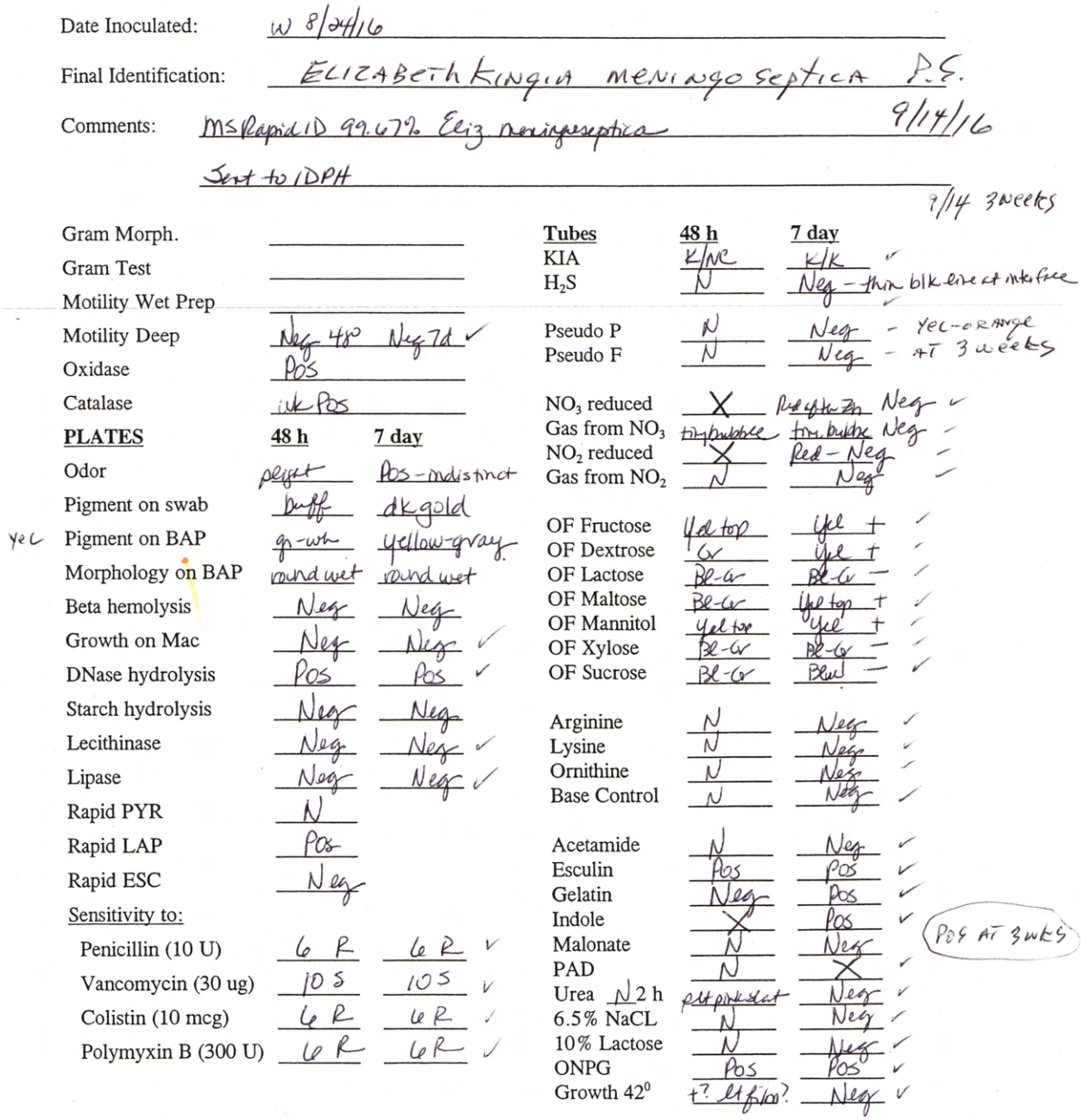
Comments:

3/10/12 15 DAYS

			Tubes	48 h	7 day	
Gram Morph.			KIA	K/NC	K/K	
Gram Test	72 h		H_2S	Neg	Neg	
Motility Wet Prep	Neg	sm Rods				
Motility Deep	~~Pos~~	Neg	Pseudo P	Neg	Neg	> Yellow Diffusible pigment P&F
Oxidase	Pos		Pseudo F	Neg	Neg	
Catalase	STRONG Pos		—NO_3 reduced		Neg	
PLATES	**48 h**	**7 day**	— Gas from NO_3	Sm Bubble	TINY Bubble	
Odor	SLIGHT	Smells like BAD TOE JAM	+NO_2 reduced		Pos	
Pigment on swab	Flesh		— Gas from NO_2	Neg	Neg	
Pigment on BAP	Grey		OF Fructose	GRN	Yel	
Morphology on BAP	Smooth, entire		OF Dextrose	GRN	Yel	
Beta hemolysis	~~Alfa~~ Pos		OF Lactose	Blue	Blue	
Growth on Mac	No Growth	Neg	OF Maltose	Yel	Yel	
DNase hydrolysis	Pos	Pos	OF Mannitol	GRN	Yel	
Starch hydrolysis	W+	Pos	OF Xylose	Blue	Blue	
Lecithinase	Neg	Neg	OF Sucrose	Blue	Blue	
Lipase	Neg	Neg	Arginine	Neg	Neg	
Rapid PYR	W+		Łysine	↓	↓	
Rapid LAP	Pos		Ornithine	↓	↓	
Rapid ESC	Pos		Base Control	↓	↓	
Sensitivity to:			Acetamide	Neg	Neg	
Penicillin (10 U)	R	R	Esculin	Pos!	Pos	
Vancomycin (30 ug)	S-15	S	Gelatin	Neg	Pos!	
Colistin (10 mcg)	R	R	Indole		Pos	
Polymyxin B (300 U)	R	R	Malonate	Neg	Pos	
			PAD	Neg	—	
			Urea ~~Neg~~ h	Pos SLANT	Pos SLANT & BUTT	
			6.5% NaCL	Neg	Neg	
			10% Lactose	Neg	Neg	
			ONPG	Pos	Pos	
			Growth 42^0	Neg	Neg	

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

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



Date Inoculated: W 8/24/16

Final Identification: ELIZABETHKINGIA MENINGOSEPTICA P.E. 9/14/16

Comments: MS Rapid ID 99.67% Eliz. meningoseptica

Sent to IDPH 9/14 3 weeks

Gram Morph.		
Gram Test		
Motility Wet Prep		
Motility Deep	Neg 48° Neg 7d ✓	
Oxidase	Pos	
Catalase	wk Pos	

PLATES	48 h	7 day
Odor	pepsi	Pos – indistinct
Pigment on swab	buff	dk gold
Pigment on BAP	gr-wh	yellow-gray
Morphology on BAP	round wet	round wet
Beta hemolysis	Neg	Neg
Growth on Mac	Neg	Neg ✓
DNase hydrolysis	Pos	Pos ✓
Starch hydrolysis	Neg	Neg
Lecithinase	Neg	Neg ✓
Lipase	Neg	Neg ✓
Rapid PYR	N	
Rapid LAP	Pos	
Rapid ESC	Neg	
Sensitivity to:		
Penicillin (10 U)	6 R	6 R ✓
Vancomycin (30 ug)	10 S	10 S ✓
Colistin (10 mcg)	6 R	6 R ✓
Polymyxin B (300 U)	6 R	6 R ✓

Tubes	48 h	7 day
KIA	K/NC	K/K ✓
H_2S	N	Neg – thin blk line at interface ✓
Pseudo P	N	Neg – yel-orange
Pseudo F	N	Neg – at 3 weeks
NO_3 reduced	X	Red to Zn Neg ✓
Gas from NO_3	tiny bubble	tiny bubble Neg –
NO_2 reduced	X	Red – Neg –
Gas from NO_2	N	Neg ✓
OF Fructose	Yel top	Yel + ✓
OF Dextrose	Gr	Yel + –
OF Lactose	Bl-Gr	Bl-Gr – ✓
OF Maltose	Bl-Gr	Yel top + ✓
OF Mannitol	Yel top	Yel + ✓
OF Xylose	Bl-Gr	Bl-Gr – ✓
OF Sucrose	Bl-Gr	Blue – ✓
Arginine	N	Neg ✓
Lysine	N	Neg ✓
Ornithine	N	Neg ✓
Base Control	N	Neg ✓
Acetamide	N	Neg ✓
Esculin	Pos	Pos ✓
Gelatin	Neg	Pos ✓
Indole	X	Pos ✓
Malonate	N	Neg ✓
PAD	N	X ✓
Urea N 2 h	pk pink at	Neg ✓
6.5% NaCL	N	Neg ✓
10% Lactose	N	Neg ✓
ONPG	Pos	Pos ✓
Growth 42°	+? lt film?	Neg ✓

Pos at 3 wks

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

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

Date Inoculated: m 6/20/16 Sent for sequencing

Final Identification: ELIZABETHKINGIA MENINGOSEPTICA

Comments: Maldi - E. meningoseptica - 2.1 7/1/16 P.S.

Gram Morph.			**Tubes**	**48 h**	**7 day**	
Gram Test			KIA	K/NC	K/K	✓
Motility Wet Prep			H_2S	N	Neg	✓
Motility Deep	48 Neg	Neg 7days ✓	Pseudo P	N	Neg	✓ ~~slight~~ Pink at interface
Oxidase	Pos		Pseudo F	N	Neg	✓
Catalase	Pos		NO_3 reduced	X	Red after Zn - Neg	✓
PLATES	~~24h~~ **48 h**	**7 day**	Gas from NO_3	N	Neg	✓
Odor	Set ammonia	slight ammonia	NO_2 reduced	X	Red - Neg	✓
Pigment on swab	~~Lt~~ peach	tan	Gas from NO_2	N	~~Red - Neg~~ Neg	✓
Pigment on BAP (yellow)	wh	yel-gr	OF Fructose	yel top +	Pos	
Morphology on BAP	wet rd.	wet round	OF Dextrose	yel top +	Pos	
Beta hemolysis	N	Neg	OF Lactose	Be-Gr -	Gr Neg	Lt. Blue
Growth on Mac	N	Neg ✓	OF Maltose	Gr -	Pos	
DNase hydrolysis	Pos	Pos ✓	OF Mannitol	Gr -	Pos	
Starch hydrolysis	N	Neg ✓	OF Xylose	Be-Gr -	Gr Neg	Lt. Blue
Lecithinase	N	Neg ✓	OF Sucrose	Be-Gr -	Be Neg	Deep Blue
Lipase	N	Neg ✓	Arginine	N	Neg	
Rapid PYR	Pos - lt pink		Lysine		Neg	
Rapid LAP	Pos		Ornithine		Neg	
Rapid ESC	Pos		Base Control		Neg	
Sensitivity to:			Acetamide	N	Neg	✓
Penicillin (10 U)	6R	6R ✓	Esculin	Pos	Pos	✓
Vancomycin (30 ug)	12S	12S ✓	Gelatin	N	Pos	✓
Colistin (10 mcg)	6R	6R ✓	Indole	X	very pale pink Neg ?	Neg
Polymyxin B (300 U)	6R	6R ✓	Malonate	N	Pos	✓
			PAD	N	X	✓
			Urea N 2 h	N	Neg	✓
			6.5% NaCL	N	Neg	✓
			10% Lactose	N	Neg	✓
			ONPG	Pos	Pos	✓
			Growth 42^0	N	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 190: Elizabethkingia meningoseptica isolate 13-of-28.

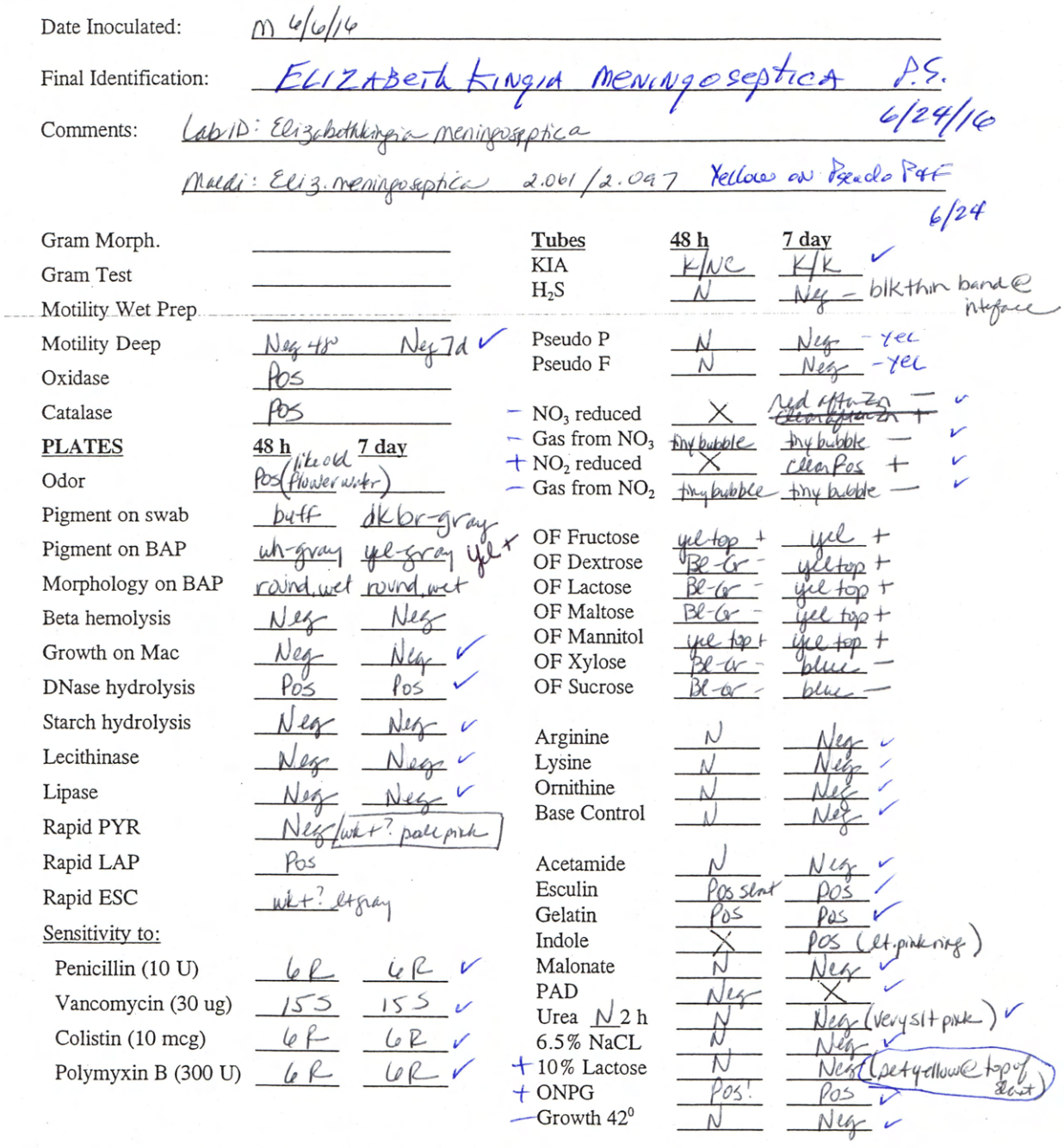


Figure 191: Elizabethkingia meningoseptica isolate 14-of-28.

19 GENUS EMPEDOBACTER

19.1 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%**	**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	0	1	0.00	39.67	NO_3 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 (30μg)	1	0	100.00	60.33	Lysine	0	1	0.00	39.67
Colistin (10μg)	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 INQUILINUS

20.1 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_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_3 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	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 (30μg)	0	1	0.00	39.67	Lysine	0	1	0.00	39.67
Colistin (10μg)	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 CACHE UNKNOWN

Final Identification: INQUILINUS limosus

Comments:

	Gram Morph.			**Tubes**	**48 h** (5/14)	**7 day**
	Gram Test	48h		KIA	K/Neg	K/Neg
	Motility Wet Prep	Neg - cocci - single & pairs		H_2S	Neg	Neg
−	Motility Deep	Neg Pos?		Pseudo P	Neg	Neg
	Oxidase	Pos		Pseudo F	Neg	Neg
	Catalase	Pos		NO_3 reduced		Neg
	PLATES	**48 h**	**7 day**	− Gas from NO_3	Neg	Tiny Bubble
	Odor	None		NO_2 reduced		Neg
	Pigment on swab	white-cream		Gas from NO_2	Neg	Neg
	Pigment on BAP	white		+ OF Fructose	GRN	Yel
	Morphology on BAP	opaque-pasty		+ OF Dextrose	GRN	GRN
	Beta hemolysis	Neg		− OF Lactose	Blue	Blue
	Growth on Mac	Neg - No Growth		− OF Maltose	Blue	Blue
	DNase hydrolysis	Neg	Neg	+ OF Mannitol	GRN	Yel
	Starch hydrolysis	Neg	Neg	− OF Xylose	GRN	Blue
	Lecithinase	Neg	Neg	− OF Sucrose	Blue	Blue
	Lipase	Neg	Neg	Arginine	Neg	~~Light~~ Neg Purple repeat 6/14/10
	Rapid PYR	Pos		Lysine		Neg 72 70
	Rapid LAP	Pos		Ornithine		Neg Neg Neg
	Rapid ESC	Pos		Base Control	↓	Neg
	Sensitivity to:			Acetamide	Neg	Neg
	Penicillin (10 U)	R	R	+ Esculin	Pos	Pos !
	Vancomycin (30 ug)	R	R	Gelatin	Neg	Neg
	Colistin (10 mcg)	R	R	Indole		Neg
	Polymyxin B (300 U)	R	R	+ Malonate	Neg	Pos
				PAD	Neg	—
				Urea ~~Neg~~ h	Neg	slight pink slant
				− 6.5% NaCL	Neg	~~Pos~~
				10% Lactose	Neg	Neg
				ONPG	Pos	Pos
				Growth 42^0	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.

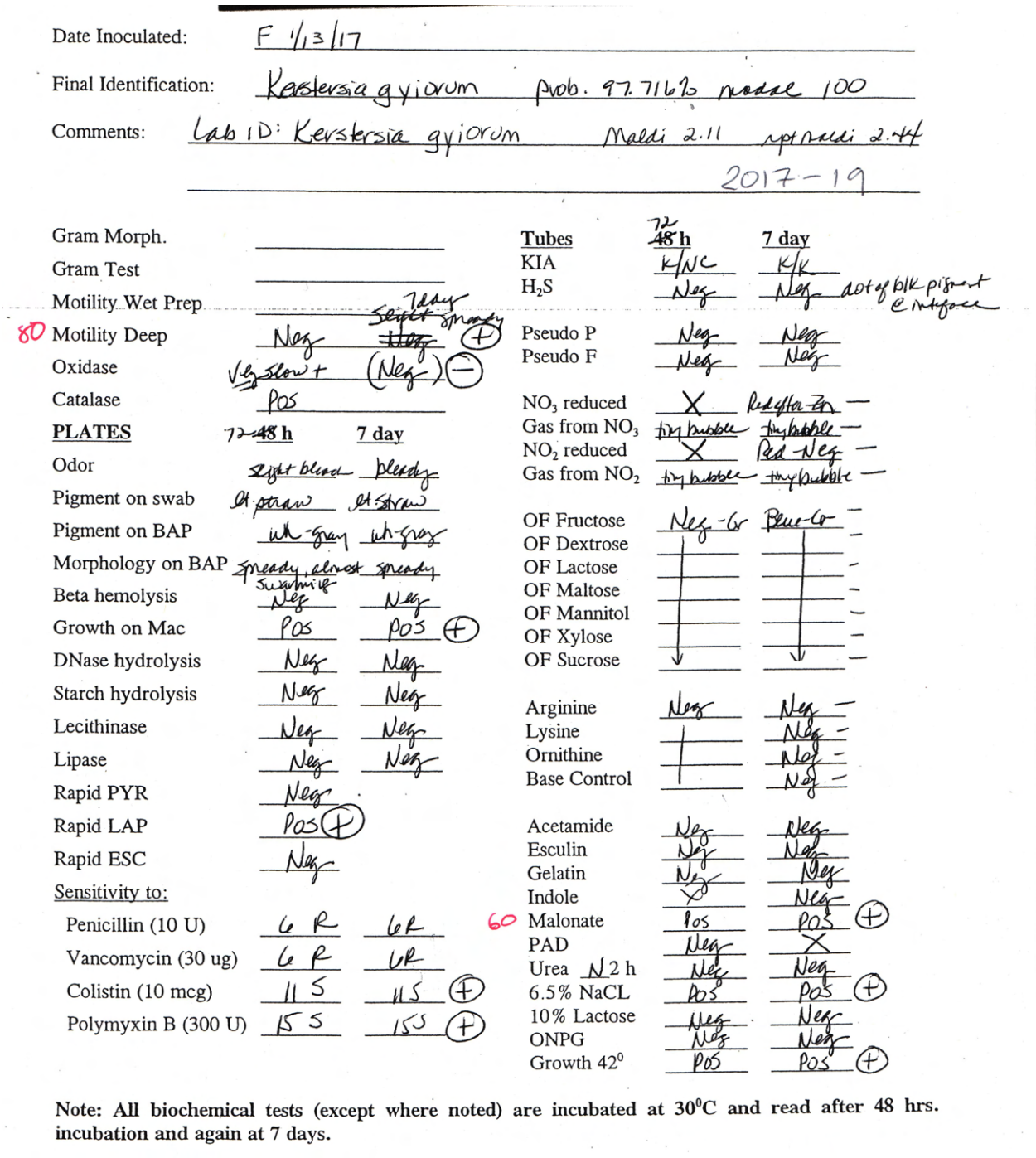
21 GENUS KERSTERSIA

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%**	**W95%**	**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_3 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	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 (30μg)	0	6	0.00	19.52	Lysine	0	6	0.00	19.52
Colistin (10μg)	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: Kerstersia gyiorum prob. 97.716% modal 100

Comments: Lab ID: Kerstersia gyiorum Maldi 2.11 rpt maldi 2.44

2017-19

Gram Morph.		
Gram Test		
Motility Wet Prep		
80 Motility Deep	Neg	~~Neg~~ Slight 7 day spready (+)
Oxidase	Very slow +	(Neg) (−)
Catalase	Pos	

PLATES	72 ~~48~~ h	7 day
Odor	slight bleach	bleachy
Pigment on swab	lt. straw	lt straw
Pigment on BAP	wh-gray	wh-gray
Morphology on BAP	spready, almost swarming	spready
Beta hemolysis	Neg	Neg
Growth on Mac	Pos	Pos (+)
DNase hydrolysis	Neg	Neg
Starch hydrolysis	Neg	Neg
Lecithinase	Neg	Neg
Lipase	Neg	Neg
Rapid PYR	Neg	
Rapid LAP	Pos (+)	
Rapid ESC	Neg	
Sensitivity to:		
Penicillin (10 U)	6 R	6R
Vancomycin (30 ug)	6 R	6R
Colistin (10 mcg)	11 S	11S (+)
Polymyxin B (300 U)	15 S	15S (+)

Tubes	72 ~~48~~ h	7 day
KIA	K/NC	K/K
H_2S	Neg	Neg dot of blk pigment @ interface
Pseudo P	Neg	Neg
Pseudo F	Neg	Neg
NO_3 reduced	X	Red after Zn −
Gas from NO_3	tiny bubble	tiny bubble −
NO_2 reduced	X	Red-Neg −
Gas from NO_2	tiny bubble	tiny bubble −
OF Fructose	Neg-Gr	Blue-Gr −
OF Dextrose	↓	↓ −
OF Lactose	↓	↓ −
OF Maltose	↓	↓ −
OF Mannitol	↓	↓ −
OF Xylose	↓	↓ −
OF Sucrose	↓	↓ −
Arginine	Neg	Neg −
Lysine	↓	Neg −
Ornithine	↓	Neg −
Base Control	↓	Neg −
Acetamide	Neg	Neg
Esculin	Neg	Neg
Gelatin	Neg	Neg
Indole	X	Neg
60 Malonate	Pos	Pos (+)
PAD	Neg	X
Urea N 2 h	Neg	Neg
6.5% NaCL	Pos	Pos (+)
10% Lactose	Neg	Neg
ONPG	Neg	Neg
Growth 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 193: Kerstersia gyiorum isolate 1-of-6.

Date Inoculated: W 8/23/17

Final Identification: Kerstersia gyiorum Prob 97.7/16% MS = 100

Comments: Lab ID: Kerstersia gyiorum

Maldi: Kerstersia gyiorum 2.45

Gram Morph.		
Gram Test		
Motility Wet Prep		
Motility Deep	Pos ⊕	
Oxidase	Neg	
Catalase	Pos ⊕	

PLATES	48 h	7 day
Odor		Fritos smell
Pigment on swab		buff
Pigment on BAP		White
Morphology on BAP		spready "ghost"
Beta hemolysis		Neg
Growth on Mac		Pos ⊕
DNase hydrolysis		Neg
Starch hydrolysis		Neg
Lecithinase		Neg
Lipase		Neg
Rapid PYR	Neg	
Rapid LAP	Pos ⊕	> 1 day
Rapid ESC	Neg	
Sensitivity to:		
Penicillin (10 U)		6 R
Vancomycin (30 ug)		6 R
Colistin (10 mcg)		13 S ⊕
Polymyxin B (300 U)		13 S ⊕

Tubes	48 h	7 day
KIA		K/K
H_2S		Neg
Pseudo P		Neg
Pseudo F		Neg
NO_3 reduced	X	Red after Zn Neg
Gas from NO_3		Neg
NO_2 reduced	X	Red Neg
Gas from NO_2		Neg
OF Fructose		Neg
OF Dextrose		Neg
OF Lactose		Neg
OF Maltose		Neg
OF Mannitol		Neg
OF Xylose		Neg
OF Sucrose		Neg
Arginine		Neg
Lysine		Neg
Ornithine		Neg
Base Control		Neg
Acetamide		Neg
Esculin		Neg
Gelatin		Neg
Indole	X	Neg
Malonate		Pos ⊕
PAD		X
Urea 2 h		Neg
6.5% NaCL		Pos ⊕
10% Lactose		Neg
ONPG		Neg
Growth 42°		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 194: Kerstersia gyiorum isolate 2-of-6.

22 GENUS LARIBACTER

22.1 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%**	**W95%**	**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_3 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_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	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 (30μg)	0	2	0.00	32.88	Lysine	0	2	0.00	32.88
Colistin (10μg)	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 METHYLOBACTERIUM

23.1 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%**	**W95%**	**Test**	+	−	**Raw%**	**W95%**
Motility	1	12	7.69	17.34	H_2S	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_3 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_2 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 (30μg)	0	13	0.00	11.41	Lysine	0	13	0.00	11.41
Colistin (10μg)	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: 12-14-09 Methylobacterium species

Comments: PINK COLONIES ON Pseudo P&F, STARCH, Egg Yolk @ 48h
Bright Red on Pseudo P&F @ 12 DAYS
STARCH & EGG 12/14 12 DAYS

Gram Morph.			**Tubes**	**48 h**	**7 day**
Gram Test	48h	4D	KIA	A/C/NC	K/K
Motility Wet Prep	Neg	Neg	H_2S	Neg	Neg
Motility Deep	Neg	Pos ?	Pseudo P	Neg	Neg
Oxidase	POS		Pseudo F	Neg	Neg
Catalase	POS		NO_3 reduced		Neg
PLATES	**48 h**	**7 day**	Gas from NO_3	Neg	Neg
Odor	NONE		NO_2 reduced		Neg
Pigment on swab	CRIMSON	RED	Gas from NO_2	Neg	Neg
Pigment on BAP	PINK		+ OF Fructose	Yel	Yel
Morphology on BAP	DRY		+ OF Dextrose	Yel	GRN
Beta hemolysis	Neg		− OF Lactose	GRN	Blue
Growth on Mac	Neg	Neg	− OF Maltose	GRN	Blue
DNase hydrolysis	Neg	Neg	− OF Mannitol	GRN	Blue
Starch hydrolysis	Neg	Pos	+ OF Xylose	GRN	GRN
Lecithinase	Neg	Neg	− OF Sucrose	GRN	Blue
Lipase	Neg	Neg	Arginine	Neg	Neg
Rapid PYR	Neg		Lysine	↓	↓
Rapid LAP	Pos		Ornithine		
Rapid ESC	Neg		Base Control	↓	↓
Sensitivity to:			Acetamide	Pos	Pos !
Penicillin (10 U)	R	R	Esculin	Neg	Neg
Vancomycin (30 ug)	R	R	Gelatin		Neg
Colistin (10 mcg)	R	R	Indole		Neg
Polymyxin B (300 U)	R	R	Malonate	Pos	Pos !
			PAD		Neg
			Urea 2 h	Pos (SLANT ONLY)	Pos SLANT & Butt
			6.5% NaCL	Neg	Neg
			10% Lactose	Neg	Neg
			ONPG	Neg	Neg
			Growth 42^0	Neg	Neg

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

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

24 GENUS MORAXELLA

24.1 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%**	**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_3 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 (30μg)	0	1	0.00	39.67	Lysine	0	1	0.00	39.67
Colistin (10μg)	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%**	**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_3 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_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)	2	3	40.00	44.34	Arginine	0	5	0.00	21.72
Vancomycin (30μg)	5	0	100.00	78.28	Lysine	0	5	0.00	21.72
Colistin (10μg)	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_3 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 (30μg)	0	1	0.00	39.67	Lysine	0	1	0.00	39.67
Colistin (10μg)	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

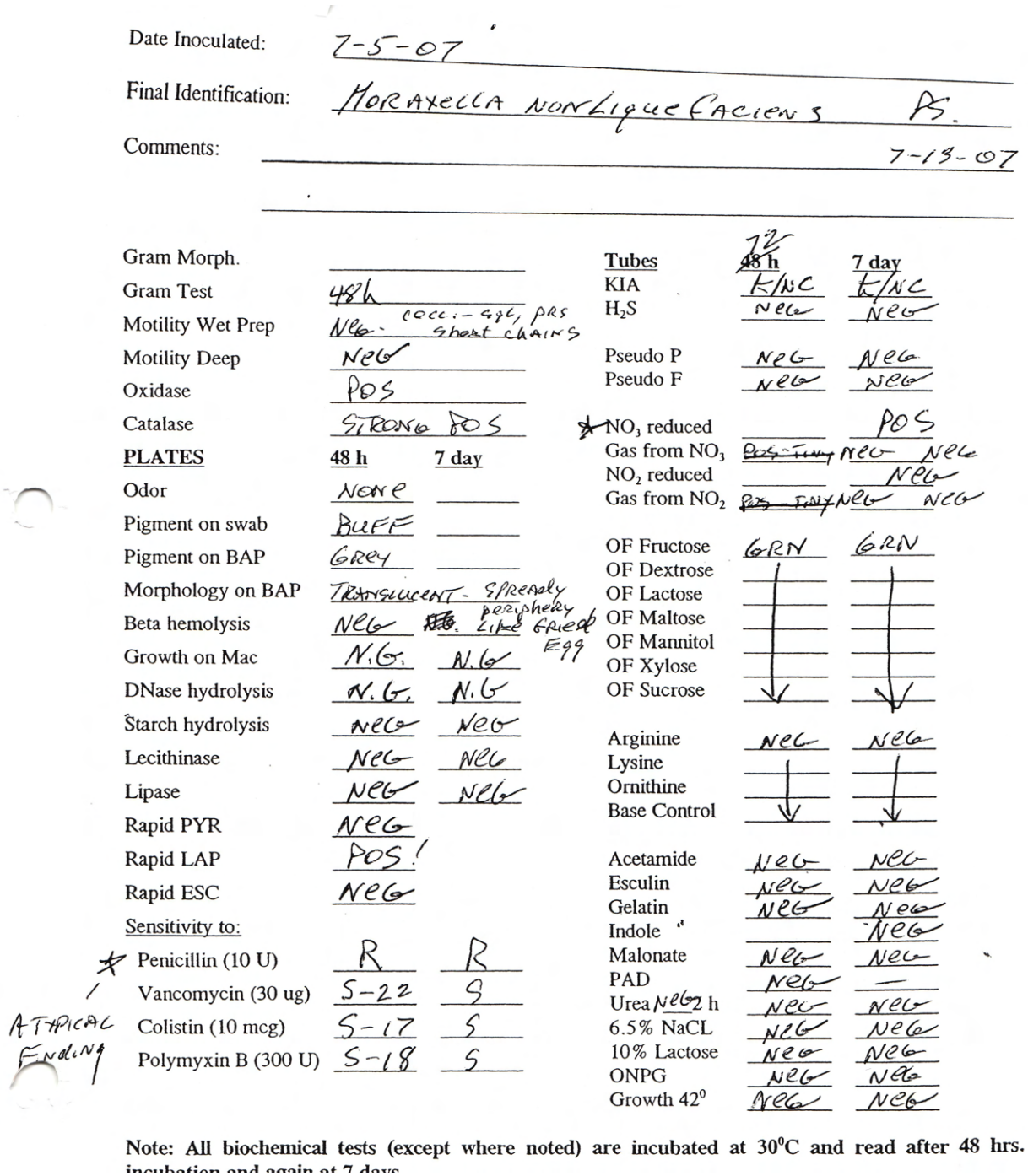
Table 61: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as $n_+/(n_+ + n_-)$, where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which 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%**	**W95%**	**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_3 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 (30μg)	6	1	85.71	73.06	Lysine	0	7	0.00	17.72
Colistin (10μg)	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: MORAXELLA NONLIQUEFACIENS PS. 7-13-07

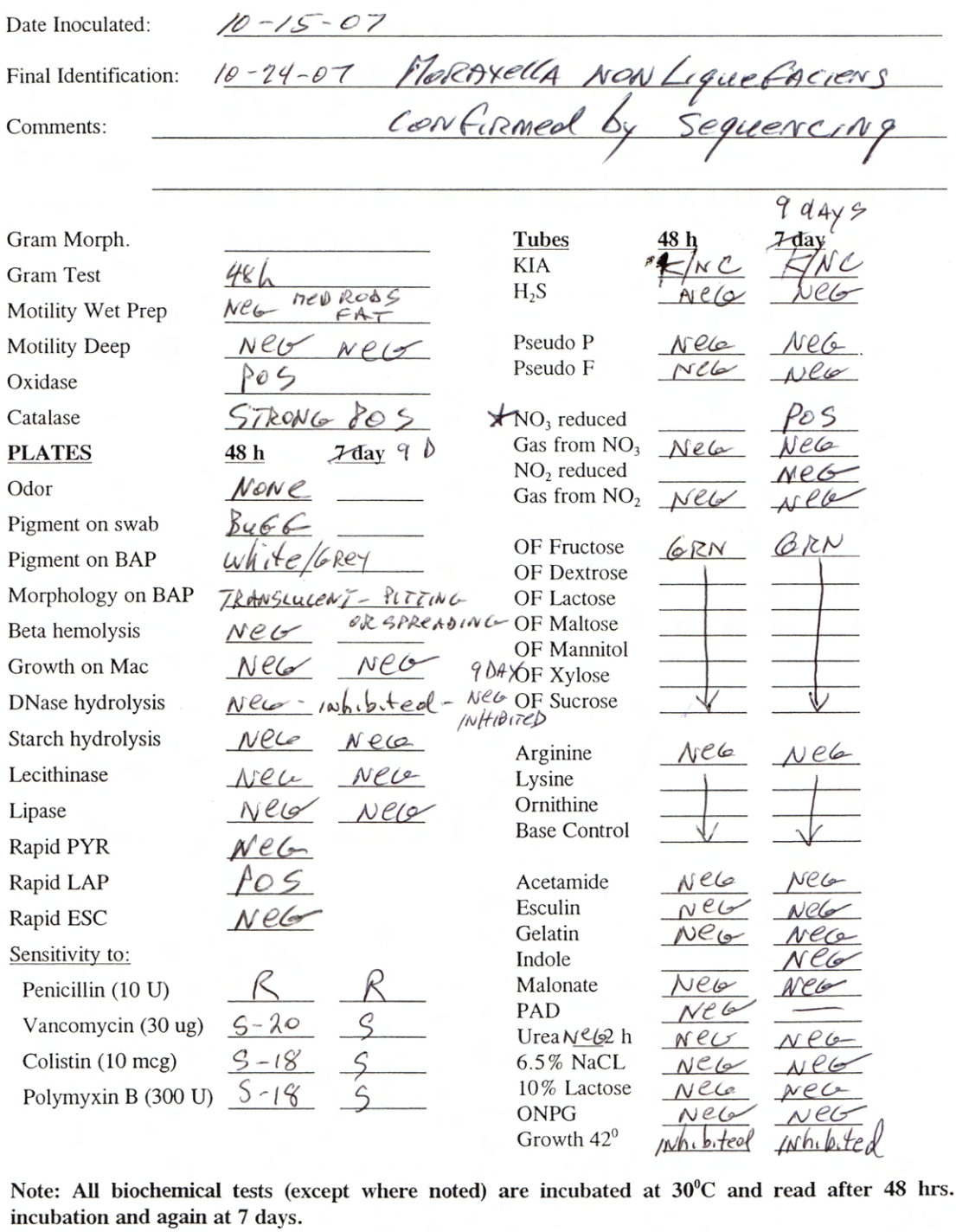
Comments:

Gram Morph.		
Gram Test	48h	
Motility Wet Prep	Neg. cocci - 48h, PRS short chains	
Motility Deep	Neg	
Oxidase	POS	
Catalase	STRONG POS	
PLATES	**48 h**	**7 day**
Odor	NONE	
Pigment on swab	BUFF	
Pigment on BAP	GREY	
Morphology on BAP	TRANSLUCENT - SPREADY peripheral like fried egg	
Beta hemolysis	NEG	
Growth on Mac	N.G.	N.G.
DNase hydrolysis	N.G.	N.G.
Starch hydrolysis	Neg	Neg
Lecithinase	Neg	Neg
Lipase	Neg	Neg
Rapid PYR	Neg	
Rapid LAP	POS!	
Rapid ESC	Neg	
Sensitivity to:		
★ Penicillin (10 U)	R	R
/ Vancomycin (30 ug)	S-22	S
ATYPICAL ENDING Colistin (10 mcg)	S-17	S
Polymyxin B (300 U)	S-18	S

Tubes	48 h	7 day
KIA	K/NC	K/NC
H_2S	Neg	Neg
Pseudo P	Neg	Neg
Pseudo F	Neg	Neg
★ NO_3 reduced		POS
Gas from NO_3	~~POS - TINY~~	Neg Neg
NO_2 reduced		Neg
Gas from NO_2	~~POS - TINY~~	Neg Neg
OF Fructose	GRN	GRN
OF Dextrose	↓	↓
OF Lactose	↓	↓
OF Maltose	↓	↓
OF Mannitol	↓	↓
OF Xylose	↓	↓
OF Sucrose	↓	↓
Arginine	Neg	Neg
Lysine	↓	↓
Ornithine	↓	↓
Base Control	↓	↓
Acetamide	Neg	Neg
Esculin	Neg	Neg
Gelatin	Neg	Neg
Indole		Neg
Malonate	Neg	Neg
PAD	Neg	—
Urea Neg 2 h	Neg	Neg
6.5% NaCL	Neg	Neg
10% Lactose	Neg	Neg
ONPG	Neg	Neg
Growth 42°	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 196: Moraxella nonliquefaciens isolate 1-of-7.



Date Inoculated: 10-15-07

Final Identification: 10-24-07 MORAXELLA NON LIQUEFACIENS

Comments: CONFIRMED BY SEQUENCING

Gram Morph.			**Tubes**	**48 h**	9 days **7 day**
Gram Test	48h		KIA	K/NC	K/NC
Motility Wet Prep	NEG MED RODS FAT		H_2S	NEG	NEG
Motility Deep	NEG	NEG	Pseudo P	NEG	NEG
Oxidase	POS		Pseudo F	NEG	NEG
Catalase	STRONG POS		NO_3 reduced		POS
PLATES	**48 h**	~~7 day~~ 9 D	Gas from NO_3	NEG	NEG
Odor	NONE		NO_2 reduced		NEG
Pigment on swab	BUFF		Gas from NO_2	NEG	NEG
Pigment on BAP	WHITE/GREY		OF Fructose	GRN	GRN
Morphology on BAP	TRANSLUCENT - PITTING		OF Dextrose	↓	↓
Beta hemolysis	NEG	OR SPREADING	OF Lactose	↓	↓
Growth on Mac	NEG	NEG	OF Maltose	↓	↓
DNase hydrolysis	NEG - INHIBITED	9 DAY NEG INHIBITED	OF Mannitol	↓	↓
Starch hydrolysis	NEG	NEG	OF Xylose	↓	↓
Lecithinase	NEG	NEG	OF Sucrose	↓	↓
Lipase	NEG	NEG	Arginine	NEG	NEG
Rapid PYR	NEG		Lysine	↓	↓
Rapid LAP	POS		Ornithine	↓	↓
Rapid ESC	NEG		Base Control	↓	↓
Sensitivity to:			Acetamide	NEG	NEG
Penicillin (10 U)	R	R	Esculin	NEG	NEG
Vancomycin (30 ug)	S-20	S	Gelatin	NEG	NEG
Colistin (10 mcg)	S-18	S	Indole		NEG
Polymyxin B (300 U)	S-18	S	Malonate	NEG	NEG
			PAD	NEG	—
			Urea NEG 2 h	NEG	NEG
			6.5% NaCL	NEG	NEG
			10% Lactose	NEG	NEG
			ONPG	NEG	NEG
			Growth 42°	INHIBITED	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 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_3 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_2 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 (30μg)	3	1	75.00	62.75	Lysine	0	4	0.00	24.50
Colistin (10μg)	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.

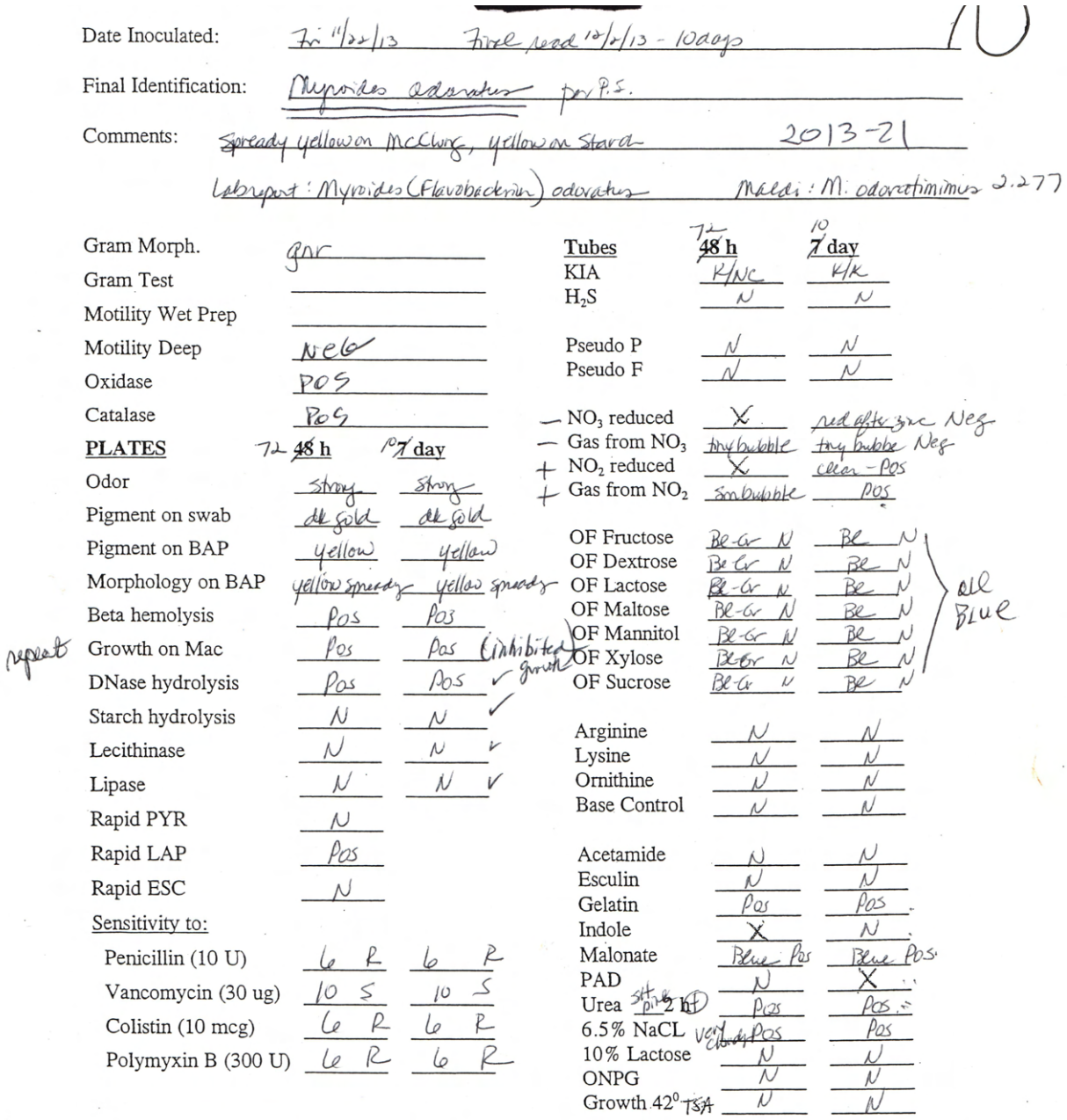
25 GENUS MYROIDES

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%**	**W95%**	**Test**	+	−	**Raw%**	**W95%**
Motility	0	19	0.00	8.41	H_2S	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_3 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_2 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 (30μg)	17	2	89.47	82.83	Lysine	0	19	0.00	8.41
Colistin (10μg)	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: Fri 11/22/13 Final read 12/2/13 - 10 days

Final Identification: Myroides odoratus per P.S.

Comments: Spready yellow on McConkey, yellow on Sheep 2013-21

Labreport: Myroides (Flavobacterium) odoratus Maldi: M. odoratimimus 2.277

Gram Morph.	gnr
Gram Test	
Motility Wet Prep	
Motility Deep	neg
Oxidase	pos
Catalase	pos

PLATES	72 ~~48 h~~	10 ~~7~~ day
Odor	strong	strong
Pigment on swab	dk gold	dk gold
Pigment on BAP	yellow	yellow
Morphology on BAP	yellow spready	yellow spready
Beta hemolysis	pos	pos
Growth on Mac	pos	pos (inhibited growth)
DNase hydrolysis	pos	pos ✓
Starch hydrolysis	N	N ✓
Lecithinase	N	N ✓
Lipase	N	N ✓
Rapid PYR	N	
Rapid LAP	pos	
Rapid ESC	N	
Sensitivity to:		
Penicillin (10 U)	6 R	6 R
Vancomycin (30 ug)	10 S	10 S
Colistin (10 mcg)	6 R	6 R
Polymyxin B (300 U)	6 R	6 R

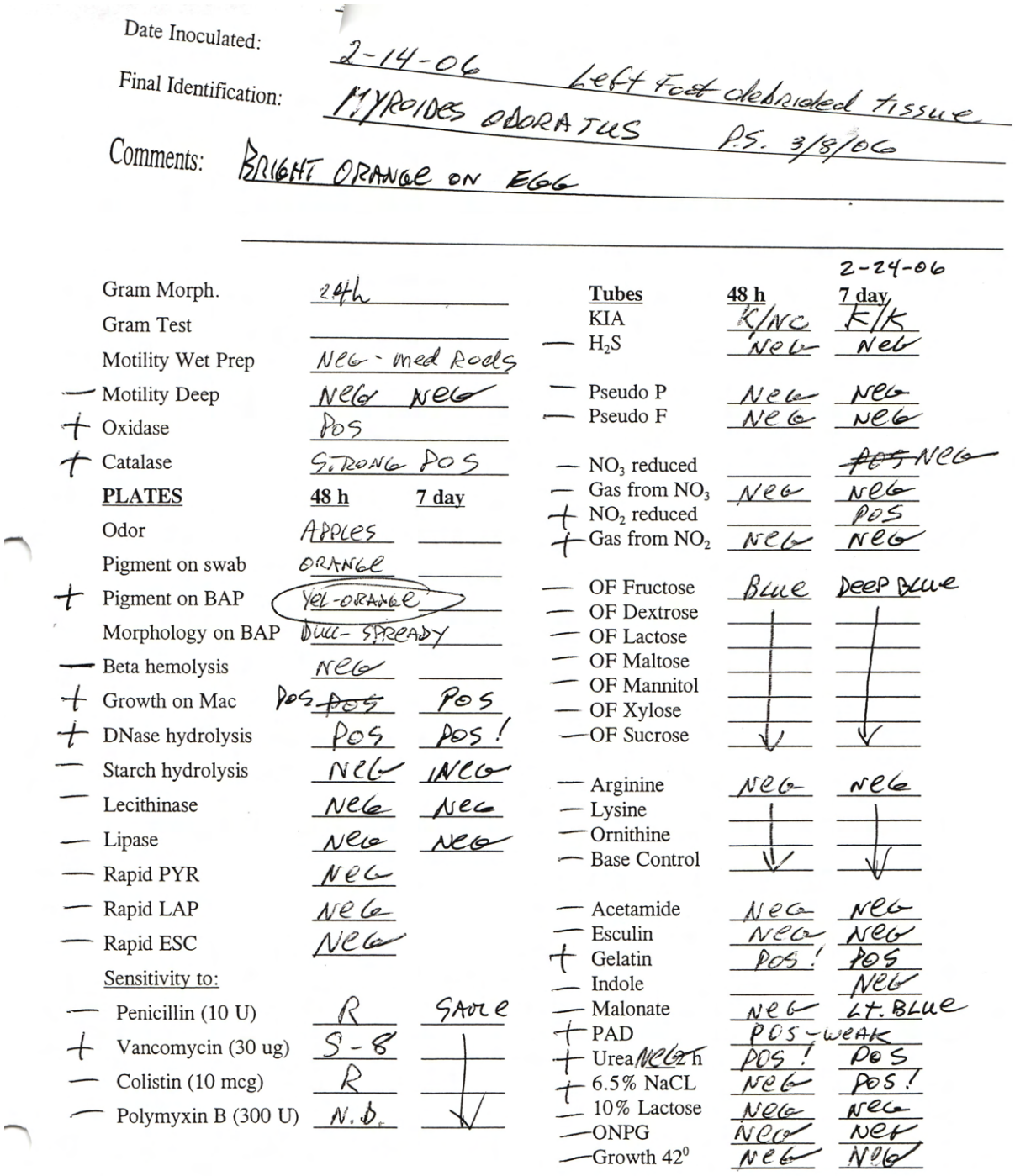
repeat

Tubes	~~48 h~~ 72	~~7~~ day 10
KIA	K/NC	K/K
H_2S	N	N
Pseudo P	N	N
Pseudo F	N	N
— NO_3 reduced	X	red after zinc Neg
— Gas from NO_3	tiny bubble	tiny bubble Neg
+ NO_2 reduced	X	clear - pos
+ Gas from NO_2	sm bubble	pos
OF Fructose	Be-Gr N	Be N
OF Dextrose	Be-Gr N	Be N
OF Lactose	Be-Gr N	Be N
OF Maltose	Be-Gr N	Be N
OF Mannitol	Be-Gr N	Be N
OF Xylose	Be-Gr N	Be N
OF Sucrose	Be-Gr N	Be N
Arginine	N	N
Lysine	N	N
Ornithine	N	N
Base Control	N	N
Acetamide	N	N
Esculin	N	N
Gelatin	pos	pos
Indole	X	N
Malonate	Blue Pos	Blue Pos
PAD	N	X
Urea sit pink 2 hr	pos	pos
6.5% NaCL very cloudy	pos	pos
10% Lactose	N	N
ONPG	N	N
Growth 42° ~~TSA~~	N	N

all Blue

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

Figure 198: Myroides odoratus isolate 1-of-19.



Date Inoculated: 2-14-06 Left Foot debrided tissue

Final Identification: M. MYROIDES ODORATUS P.S. 3/8/06

Comments: BRIGHT ORANGE ON EGG

		48 h	7 day
	Gram Morph.	24h	
	Gram Test		
	Motility Wet Prep	Neg - med Rods	
—	Motility Deep	Neg	Neg
+	Oxidase	Pos	
+	Catalase	STRONG POS	
	PLATES	**48 h**	**7 day**
	Odor	APPLES	
	Pigment on swab	ORANGE	
+	Pigment on BAP	YEL-ORANGE	
	Morphology on BAP	DULL- STREADY	
—	Beta hemolysis	neg	
+	Growth on Mac	~~POS~~ POS	POS
+	DNase hydrolysis	POS	POS !
—	Starch hydrolysis	Neg	Neg
—	Lecithinase	Neg	Neg
—	Lipase	Neg	Neg
—	Rapid PYR	Neg	
—	Rapid LAP	Neg	
—	Rapid ESC	Neg	
	Sensitivity to:		
—	Penicillin (10 U)	R	SAME
+	Vancomycin (30 ug)	S-8	
—	Colistin (10 mcg)	R	
—	Polymyxin B (300 U)	N.D.	

2-24-06

	Tubes	48 h	7 day
	KIA	K/NC	K/K
—	H_2S	Neg	Neg
—	Pseudo P	Neg	Neg
—	Pseudo F	Neg	Neg
—	NO_3 reduced		~~POS~~ Neg
—	Gas from NO_3	Neg	Neg
+	NO_2 reduced		POS
+	Gas from NO_2	Neg	Neg
—	OF Fructose	Blue	Deep Blue
—	OF Dextrose	↓	↓
—	OF Lactose	↓	↓
—	OF Maltose	↓	↓
—	OF Mannitol	↓	↓
—	OF Xylose	↓	↓
—	OF Sucrose	↓	↓
—	Arginine	Neg	neg
—	Lysine	↓	↓
—	Ornithine	↓	↓
—	Base Control	↓	↓
—	Acetamide	Neg	Neg
—	Esculin	Neg	Neg
+	Gelatin	POS !	POS
—	Indole		Neg
—	Malonate	Neg	Lt. Blue
+	PAD	POS - WEAK	
+	Urea ~~Neg~~ 2h	POS !	POS
+	6.5% NaCL	Neg	POS !
—	10% Lactose	Neg	Neg
—	ONPG	Neg	Neg
—	Growth 42^0	Neg	Neg

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

Figure 199: Myroides odoratus isolate 2-of-19.

Date Inoculated: 5-12-07

Final Identification: 5-17-07 MYROIDES ODORATUS A.E.

Comments: ORANGE ON ALL MEDIA

Gram Morph.		
Gram Test	24h	
Motility Wet Prep	Neg - Medium to Long Rods	
Motility Deep	Neg Neg	
Oxidase	POS	
Catalase	POS	
PLATES	**48 h**	**7 day**
Odor	FRUITY - AMONIA	
Pigment on swab	ORANGE	
Pigment on BAP	ORANGE	
Morphology on BAP	SMOOTH - ENTIRE	
Beta hemolysis	Neg	
Growth on Mac	Neg	Neg
DNase hydrolysis	POS	POS
Starch hydrolysis	WEAK	WEAK?
Lecithinase	Neg	Neg
Lipase	POS	POS
Rapid PYR	Neg	
Rapid LAP	POS	
Rapid ESC	Neg	
Sensitivity to:		
Penicillin (10 U)	R	R
Vancomycin (30 ug)	S-13	S
Colistin (10 mcg)	R	R
Polymyxin B (300 U)	R	R

Tubes	**48 h**	**7 day**
KIA	K/NC	K/K NC
H_2S	Neg	Slight H_2S
Pseudo P	Neg	Neg
Pseudo F	Neg	Neg
NO_3 reduced		
Gas from NO_3	Neg	Neg
NO_2 reduced		
Gas from NO_2	Neg	Neg
OF Fructose	Blue	Blue/GRN
OF Dextrose		Blue/GRN
OF Lactose		~~Blue/GRN~~ DARK BLUE
OF Maltose		~~DARK~~ Blue/GRN
OF Mannitol		DARK Blue
OF Xylose		DARK Blue
OF Sucrose		DARK Blue
Arginine	Neg	Neg
Lysine		
Ornithine		
Base Control		
Acetamide	Neg	Neg
Esculin	Neg Light BROWN	BROWN FLUORESCENT = ESCUL NEG
Gelatin	? POS	POS
Indole	Light PINK ~~Neg~~	Neg
Malonate	Neg	Neg
PAD	Neg	—
Urea Neg 2 h	Neg	Neg
6.5% NaCL	Neg	Neg
10% Lactose	Neg	Neg
ONPG	Neg	Neg
Growth 42°	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 200: Myroides odoratus isolate 3-of-19.

Date Inoculated: 7-7-09

Final Identification: Myroides odoratus 7/15/09 P.S.

Comments: Apricot on Starch and Egg Yolk

					7/14
Gram Morph.			**Tubes**	**48 h**	**7 day**
Gram Test			KIA	K/NC	K/K
Motility Wet Prep	Neg - sm rods coccobac.		H_2S	Neg	slight H_2S
Motility Deep	Neg	Neg	Pseudo P	Neg	Neg
Oxidase	Pos		Pseudo F	Neg	Neg
Catalase	Strong Pos		NO_3 reduced		Neg
PLATES	**48 h**	**7 day**	Gas from NO_3	Neg	Neg
Odor	Fruity		NO_2 reduced		Pos
Pigment on swab	Yellow		Gas from NO_2	Pos	Pos
Pigment on BAP	Yellow		OF Fructose	Blue	Blue
Morphology on BAP	Large Spready		OF Dextrose	↓	↓
Beta hemolysis	Neg		OF Lactose	↓	↓
Growth on Mac	Pos	Pos	OF Maltose	↓	↓
DNase hydrolysis	Pos!	Pos	OF Mannitol	↓	↓
Starch hydrolysis	Neg	Neg	OF Xylose	↓	↓
Lecithinase	Neg	Neg	OF Sucrose	↓	↓
Lipase	Neg	Neg	Arginine	Neg	Neg
Rapid PYR	Pos		Lysine	↓	↓
Rapid LAP	Pos		Ornithine	↓	↓
Rapid ESC	Neg		Base Control	↓	↓
Sensitivity to:			Acetamide	Neg	Neg
Penicillin (10 U)	R	R	Esculin	Neg	Neg
Vancomycin (30 ug)	S-11	S	Gelatin	Pos!	Pos
Colistin (10 mcg)	R	R	Indole		Neg
Polymyxin B (300 U)	R	R	Malonate	Pos	Pos
			PAD	Pos	—
			Urea ___2 h	Pos	Pos
			6.5% NaCL	Pos	Pos!
			10% Lactose	Neg	Neg
			ONPG	Neg	Neg
			Growth 42^0	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 201: Myroides odoratus isolate 4-of-19.

Date Inoculated: 7-12-11

Final Identification: MYROIDES ODORATUS 7/22/11 P.S.

Comments: Yellow on BAP, Starch, Egg Yolk 48h. Pseudo P+F

				7/14	7/20
Gram Morph.			**Tubes**	**48 h**	**7 day**
Gram Test	48h		KIA	K/NC	K/NC
Motility Wet Prep	Neg		H_2S	Neg	Pos at interface bottom of deep/butt
Motility Deep	Neg	Neg	Pseudo P	Neg	Neg
Oxidase	Pos		Pseudo F	Neg	Neg
Catalase	STRONG Pos		NO_3 reduced		Neg
PLATES	**48 h**	**7 day**	Gas from NO_3	Neg	Neg
Odor	Fruity		NO_2 reduced		Pos
Pigment on swab	Butterscotch		Gas from NO_2	Pos	Pos
Pigment on BAP	Yellow		OF Fructose	GRN	GRN/YEL
Morphology on BAP	Shiny - Spready		OF Dextrose	Blue	Blue
Beta hemolysis	Neg		OF Lactose	Blue	
Growth on Mac	No GRO with 24° Inhibited - Growth at 48h.	Neg	OF Maltose	Blue	
DNase hydrolysis	Pos	Pos	OF Mannitol	Blue	
Starch hydrolysis	Neg	Neg	OF Xylose	GRN/Blu	
Lecithinase	Neg	Neg	OF Sucrose	Blue	
Lipase	Neg	Neg	Arginine	Neg	~~Pos~~ Repeat 7/20 all Neg 7/22/11
Rapid PYR	Pos		Lysine		~~Neg~~
Rapid LAP	Pos		Ornithine		~~Neg~~ cont.
Rapid ESC	Neg		Base Control		~~Neg~~
Sensitivity to:			Acetamide	Neg	Neg
Penicillin (10 U)	R	R	Esculin	Neg	Neg
Vancomycin (30 ug)	S - 8.6	S	Gelatin	Pos	Pos !
Colistin (10 mcg)	R - 9	R	Indole		Neg
Polymyxin B (300 U)	R - 11	R	Malonate	GRN	Pos
			PAD	Pos	
			Urea __2 h	Pos slant & butt	Pos
			6.5% NaCL	Pos	Pos
			10% Lactose	Neg	Neg
			ONPG	Neg	Neg
			Growth 42°	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 202: Myroides odoratus isolate 5-of-19.

Date Inoculated: 9-15-11

Final Identification: MYROIDES ODORATUS 11-4-11 P.S.

Comments:

				24	9/27 12 DAYS
Gram Morph.			**Tubes**	~~48 h~~	**7 day**
Gram Test	24h		KIA	K/NC	K/K
Motility Wet Prep	NEG SW Rod		H_2S	NEG	NEG
Motility Deep	NEG NEG		Pseudo P	NEG	NEG
Oxidase	POS		Pseudo F	NEG	NEG
Catalase	STRONG POS		NO_3 reduced		NEG
PLATES	**48 h**	**7 day**	Gas from NO_3	NEG	NEG
Odor	Earthy		NO_2 reduced		POS
Pigment on swab	Yellow		Gas from NO_2	NEG	POS
Pigment on BAP	~~Color~~ Yellow		OF Fructose	Blue	Deep Blue
Morphology on BAP	Spready		OF Dextrose	↓	↓
Beta hemolysis	NEG		OF Lactose		
Growth on Mac	Inhibited NEG		OF Maltose		
DNase hydrolysis	POS	POS	OF Mannitol		
Starch hydrolysis	NEG		OF Xylose		
Lecithinase	NEG	NEG	OF Sucrose	↓	↓
Lipase	NEG	NEG	Arginine	NEG	NEG
Rapid PYR	~~NEG~~ wk +		Lysine		
Rapid LAP	POS		Ornithine		
Rapid ESC	NEG		Base Control	↓	↓
Sensitivity to:			Acetamide	NEG	NEG
Penicillin (10 U)		R	Esculin	NEG	NEG
Vancomycin (30 ug)		S-9	Gelatin		POS !
Colistin (10 mcg)		R	Indole		NEG
Polymyxin B (300 U)		R	Malonate	NEG	Blue
			PAD	NEG	
			Urea ~~NEG 4h~~	POS	POS SLANT & BUTT
			6.5% NaCL	W +	POS
			10% Lactose	NEG	NEG
			ONPG	NEG	NEG
			Growth 42^0	NEG	NEG

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

Figure 203: Myroides odoratus isolate 6-of-19.

Date Inoculated: 9-15-12

Final Identification: MYROIDES ODORATUS P.S. 9/26/12

Comments: Yellow on ALL MEDIA

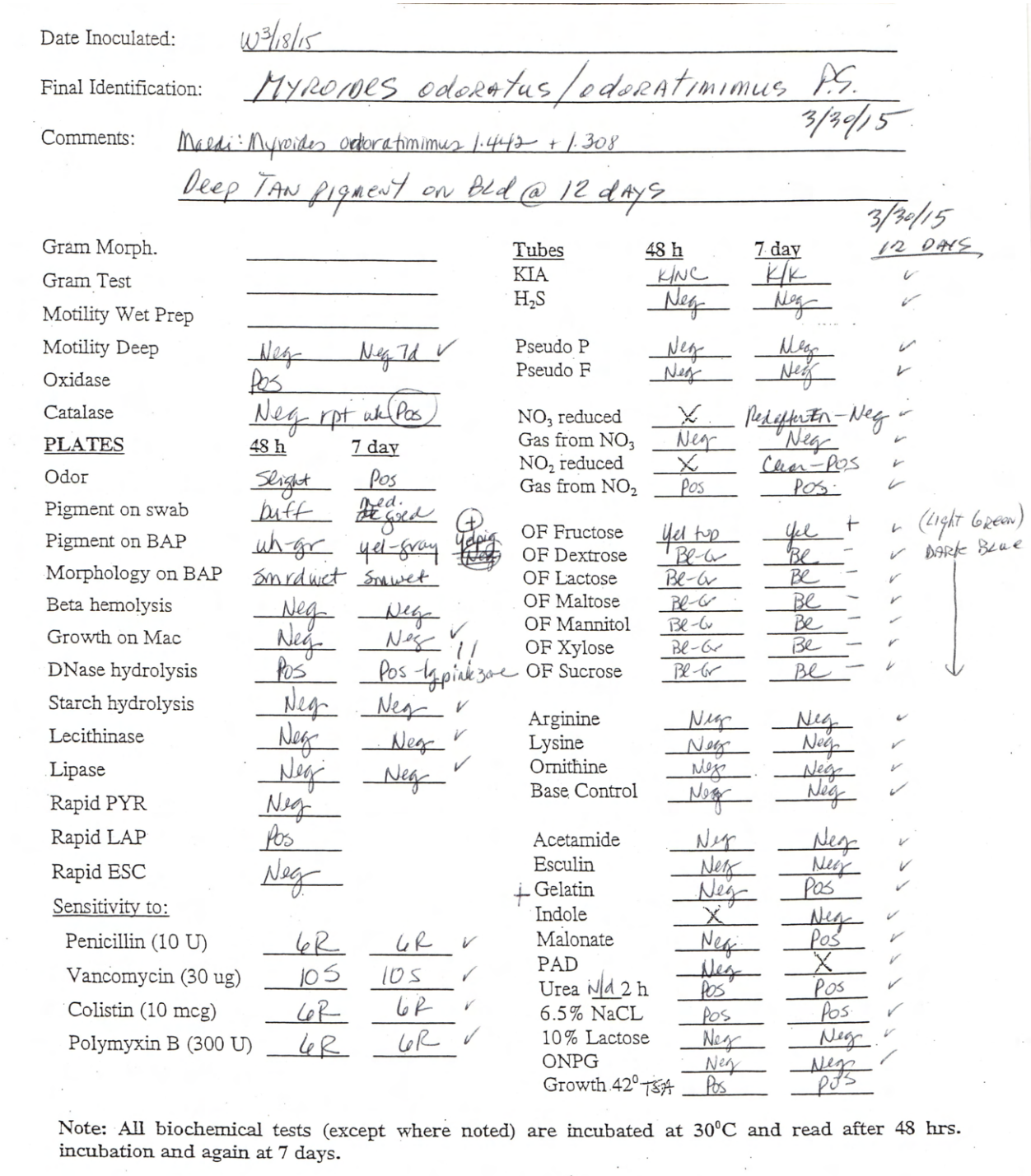
9/26 11 DAYS

Gram Morph.		
Gram Test	24h	
Motility Wet Prep	Neg SM-MEDIUM RODS	
Motility Deep	Neg Neg	
Oxidase	Pos	
Catalase	Pos	
PLATES	**48 h**	**7 day**
Odor	fruity	
Pigment on swab	Yellow	
Pigment on BAP	Yellow	
Morphology on BAP	SPREADY	
Beta hemolysis	Neg	
Growth on Mac	Neg	Neg
DNase hydrolysis	Pos !!	Pos
Starch hydrolysis	Neg	Neg
Lecithinase	Neg	Neg
Lipase	Neg	Neg
Rapid PYR	Neg	
Rapid LAP	Pos	
Rapid ESC	Neg	
Sensitivity to:		
Penicillin (10 U)	R	R
Vancomycin (30 ug)	S-9	S
Colistin (10 mcg)	R	R
Polymyxin B (300 U)	R	R

Tubes	**48 h**	**7 day**
KIA	K/NC	K/K
– H_2S	Neg	Slight H_2S
Pseudo P	Neg	Neg
Pseudo F	Neg	Neg
NO_3 reduced		Neg
Gas from NO_3	Neg	Neg
NO_2 reduced		Pos
Gas from NO_2	Pos	Pos
OF Fructose	Blue	Dark Blue
OF Dextrose	↓	↓
OF Lactose	↓	↓
OF Maltose	↓	↓
OF Mannitol	↓	↓
OF Xylose	↓	↓
OF Sucrose	↓	↓
Arginine	Neg	Neg
Lysine	↓	↓
Ornithine	↓	↓
Base Control	↓	↓
Acetamide	Neg	Neg
Esculin	Neg	Neg
Gelatin	Pos!	Pos
Indole		Neg
Malonate	Neg	Pos
PAD	Pos	
Urea Neg h	Pos	Pos
6.5% NaCL	Pos	Pos ?!
10% Lactose	Neg	Neg
ONPG	Neg	Neg
Growth 42^0	Neg	Neg

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

Figure 204: Myroides odoratus isolate 7-of-19.



Date Inoculated: W 3/18/15

Final Identification: Myroides odoratus/odoratimimus P.S. 3/30/15

Comments: Maldi: Myroides odoratimimus 1.442 + 1.308

Deep TAN pigment on BAP @ 12 days 3/30/15

			Tubes	48 h	7 day	12 DAYS
Gram Morph.			KIA	K/NC	K/K	✓
Gram Test			H_2S	Neg	Neg	✓
Motility Wet Prep						
Motility Deep	Neg	Neg 7d ✓	Pseudo P	Neg	Neg	✓
Oxidase	Pos		Pseudo F	Neg	Neg	✓
Catalase	Neg rpt wk (Pos)		NO_3 reduced	X	Red after Zn – Neg	✓
PLATES	**48 h**	**7 day**	Gas from NO_3	Neg	Neg	✓
Odor	Slight	Pos	NO_2 reduced	X	Clear – Pos	✓
Pigment on swab	buff	Red. Beige	Gas from NO_2	Pos	Pos	✓
Pigment on BAP	wh-gr	yel-gray (+) Yellow	OF Fructose	Yel top	Yel +	✓ (Light Green)
Morphology on BAP	Smrdwet	Smwet	OF Dextrose	Be-G	Be –	✓ Dark Blue
Beta hemolysis	Neg	Neg	OF Lactose	Be-G	Be –	✓
Growth on Mac	Neg	Neg ✓	OF Maltose	Be-G	Be –	✓
DNase hydrolysis	Pos	Pos – typical	OF Mannitol	Be-G	Be –	✓
Starch hydrolysis	Neg	Neg ✓	OF Xylose	Be-G	Be –	✓
Lecithinase	Neg	Neg ✓	OF Sucrose	Be-G	Be –	✓
Lipase	Neg	Neg ✓				
Rapid PYR	Neg		Arginine	Neg	Neg	✓
Rapid LAP	Pos		Lysine	Neg	Neg	✓
Rapid ESC	Neg		Ornithine	Neg	Neg	✓
Sensitivity to:			Base Control	Neg	Neg	✓
Penicillin (10 U)	6R	6R ✓	Acetamide	Neg	Neg	✓
Vancomycin (30 ug)	10S	10S ✓	Esculin	Neg	Neg	✓
Colistin (10 mcg)	6R	6R ✓	+ Gelatin	Neg	Pos	✓
Polymyxin B (300 U)	6R	6R ✓	Indole	X	Neg	✓
			Malonate	Neg	Pos	✓
			PAD	Neg	X	✓
			Urea N/d 2 h	Pos	Pos	✓
			6.5% NaCL	Pos	Pos	✓
			10% Lactose	Neg	Neg	✓
			ONPG	Neg	Neg	✓
			Growth 42° TSA	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 205: Myroides odoratus isolate 8-of-19.

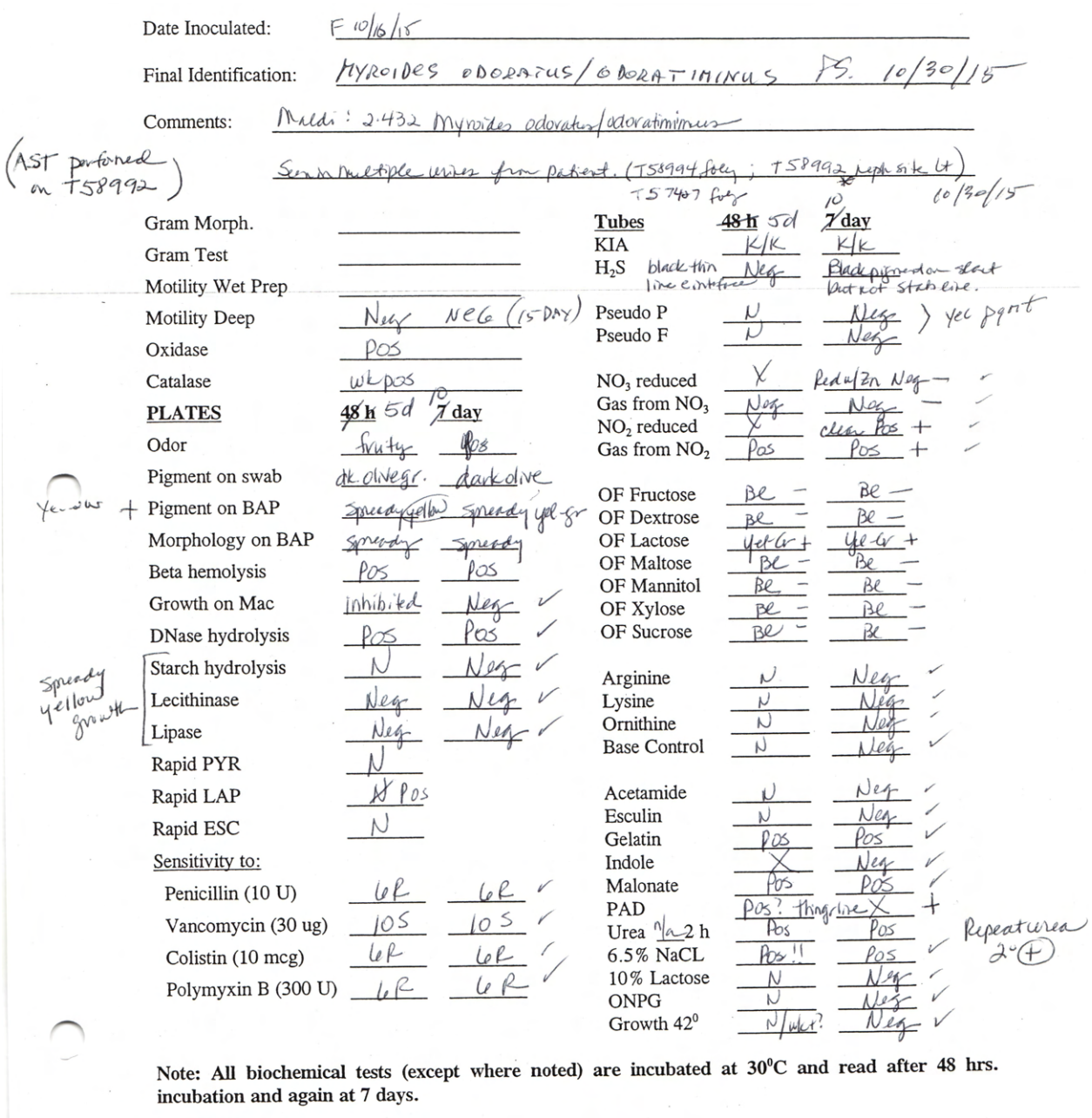


Figure 206: Myroides odoratus isolate 9-of-19.

Date Inoculated: W5/18/16

Final Identification: Myroides odoratus / odoratimimus F.S. 5/27/16

Comments: Maldi: Myroides odoratimimus 1.466 Myroides odoratus 1.408

(Lab report: gnr 4 var, no further work up)

Gram Morph.		
Gram Test		
Motility Wet Prep		
Motility Deep	Neg	7d Neg
Oxidase	Pos	
Catalase	wk pos	

PLATES	48 h	7 day	
Odor	AnaBap flowery	stinky feet	
Pigment on swab	lt peach	tan	
Pigment on BAP	~~yel~~ gray wet	gray wet	
Morphology on BAP	bullseye, dull	raised center	
Beta hemolysis	N	Pos?	+
Growth on Mac	N	Neg	✓
DNase hydrolysis	Pos!	Pos!	
Starch hydrolysis	N	Neg	✓
Lecithinase	N	Neg	✓
Lipase	N	Neg	✓
Rapid PYR	Neg		
Rapid LAP	Pos		
Rapid ESC	Neg		
Sensitivity to:			
Penicillin (10 U)	6R	6R	✓
Vancomycin (30 ug)	11S	11S	✓
Colistin (10 mcg)	6R	6R	✓
Polymyxin B (300 U)	6R/12	6/12 double zone	✓

Tubes	48 h	7 day	
KIA	K/NC	K/K	✓
H_2S	N	Neg	✓
Pseudo P	N	Neg	✓
Pseudo F	N	Neg	✓
NO_3 reduced	X	red after Zn Neg	✓
Gas from NO_3	N	Neg	✓
NO_2 reduced	X	Clear-Pos	✓
Gas from NO_2	Pos	Pos	✓
OF Fructose	Pos +	Pos +	✓
OF Dextrose	Bl-Gr −	Bl-Gr −	✓
OF Lactose	| −	| −	✓
OF Maltose	| −	| −	✓
OF Mannitol	| −	| −	✓
OF Xylose	| −	| −	✓
OF Sucrose	| −	| −	✓
Arginine	N	Neg	✓
Lysine	|	Neg	✓
Ornithine	|	Neg	✓
Base Control	|	Neg	✓
Acetamide	N	Neg	✓
Esculin	N	Neg	✓
Gelatin	N	Pos	✓
Indole	X	Neg	✓
Malonate	N	Pos	✓
PAD	N	X	✓
Urea N 2 h	Pos	Pos	✓
6.5% NaCL	Pos	Pos	✓
10% Lactose	N	Neg	✓
ONPG	N	Neg	✓
Growth 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 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%**	**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	0	3	0.00	28.08	Pseudo F	0	3	0.00	28.08
Yellow Pigment	0	3	0.00	28.08	NO_3 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_2 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 (30μg)	2	1	66.67	57.31	Lysine	0	3	0.00	28.08
Colistin (10μg)	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%**	**W95%**	**Test**	+	−	**Raw%**	**W95%**
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_3 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_2 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 (30μg)	2	0	100.00	67.12	Lysine	0	2	0.00	32.88
Colistin (10μg)	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°C	0	2	0.00	32.88

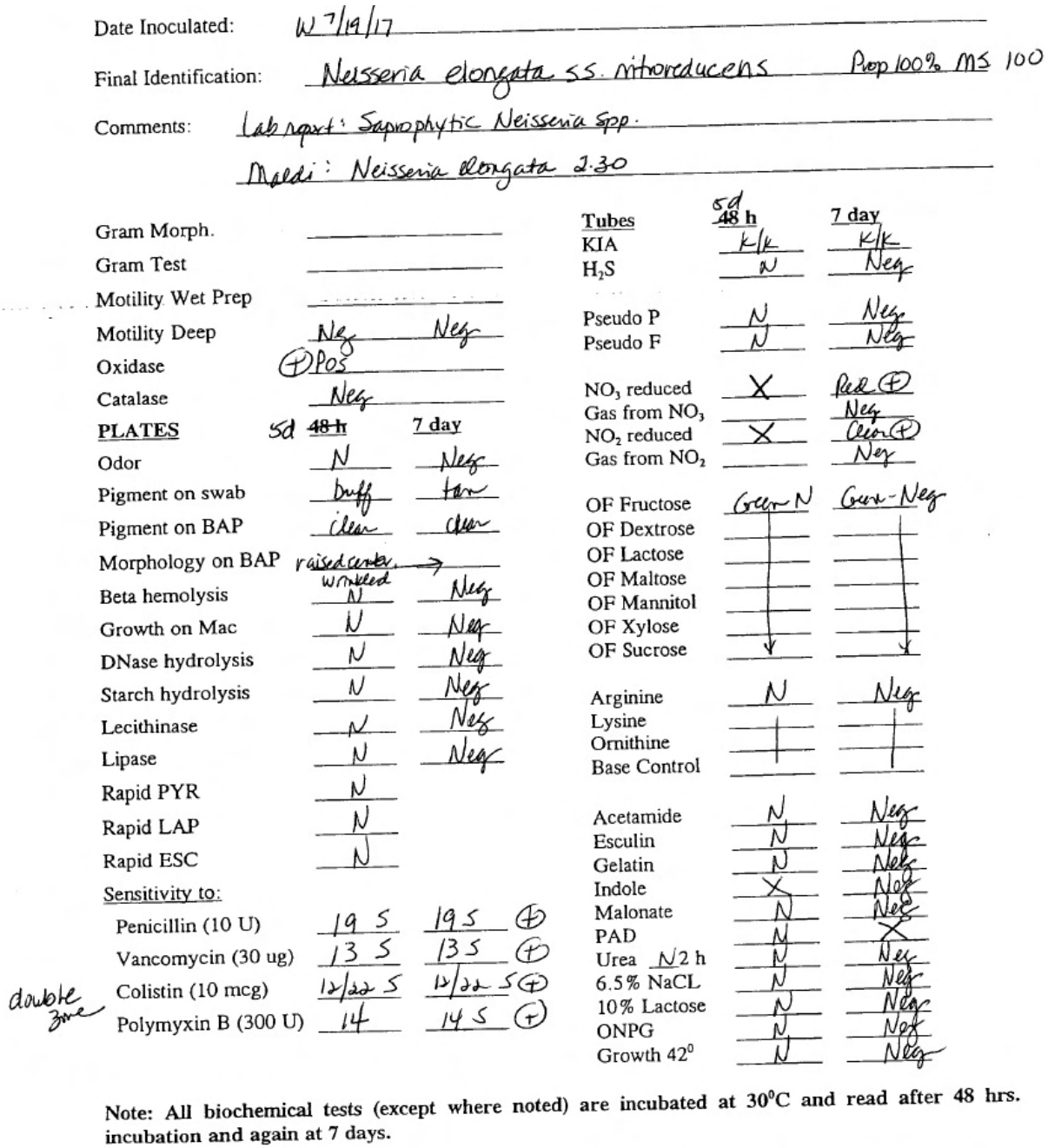
Table 66: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as $n_+/(n_+ + n_-)$, where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which 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_3 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 (30μg)	8	1	88.89	77.26	Lysine	0	9	0.00	14.96
Colistin (10μg)	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

Final Identification: Neisseria elongata ss. nitroreducens Prep 100% MS 100

Comments: Lab report: Saprophytic Neisseria spp.

Maldi: Neisseria elongata 2.30

Gram Morph.		
Gram Test		
Motility Wet Prep		
Motility Deep	Neg	Neg
Oxidase	(+) Pos	
Catalase	Neg	

PLATES	5d 48 h	7 day
Odor	N	Neg
Pigment on swab	buff	tan
Pigment on BAP	clear	clear
Morphology on BAP	raised center, wrinkled →	
Beta hemolysis	N	Neg
Growth on Mac	N	Neg
DNase hydrolysis	N	Neg
Starch hydrolysis	N	Neg
Lecithinase	N	Neg
Lipase	N	Neg
Rapid PYR	N	
Rapid LAP	N	
Rapid ESC	N	
Sensitivity to:		
Penicillin (10 U)	19 S	19 S (+)
Vancomycin (30 ug)	13 S	13 S (+)
Colistin (10 mcg) (double zone)	12/22 S	12/22 S (+)
Polymyxin B (300 U)	14	14 S (+)

Tubes	5d 48 h	7 day
KIA	K/K	K/K
H_2S	N	Neg
Pseudo P	N	Neg
Pseudo F	N	Neg
NO_3 reduced	X	Red (+)
Gas from NO_3		Neg
NO_2 reduced	X	Clear (+)
Gas from NO_2		Neg
OF Fructose	Green N	Green-Neg
OF Dextrose	↓	↓
OF Lactose	↓	↓
OF Maltose	↓	↓
OF Mannitol	↓	↓
OF Xylose	↓	↓
OF Sucrose	↓	↓
Arginine	N	Neg
Lysine		
Ornithine		
Base Control		
Acetamide	N	Neg
Esculin	N	Neg
Gelatin	N	Neg
Indole	X	Neg
Malonate	N	Neg
PAD	N	X
Urea N 2 h	N	Neg
6.5% NaCL	N	Neg
10% Lactose	N	Neg
ONPG	N	Neg
Growth 42°	N	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 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%**	**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	2	2	50.00	50.00	NO_3 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_2 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 (30μg)	4	0	100.00	75.50	Lysine	0	4	0.00	24.50
Colistin (10μg)	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

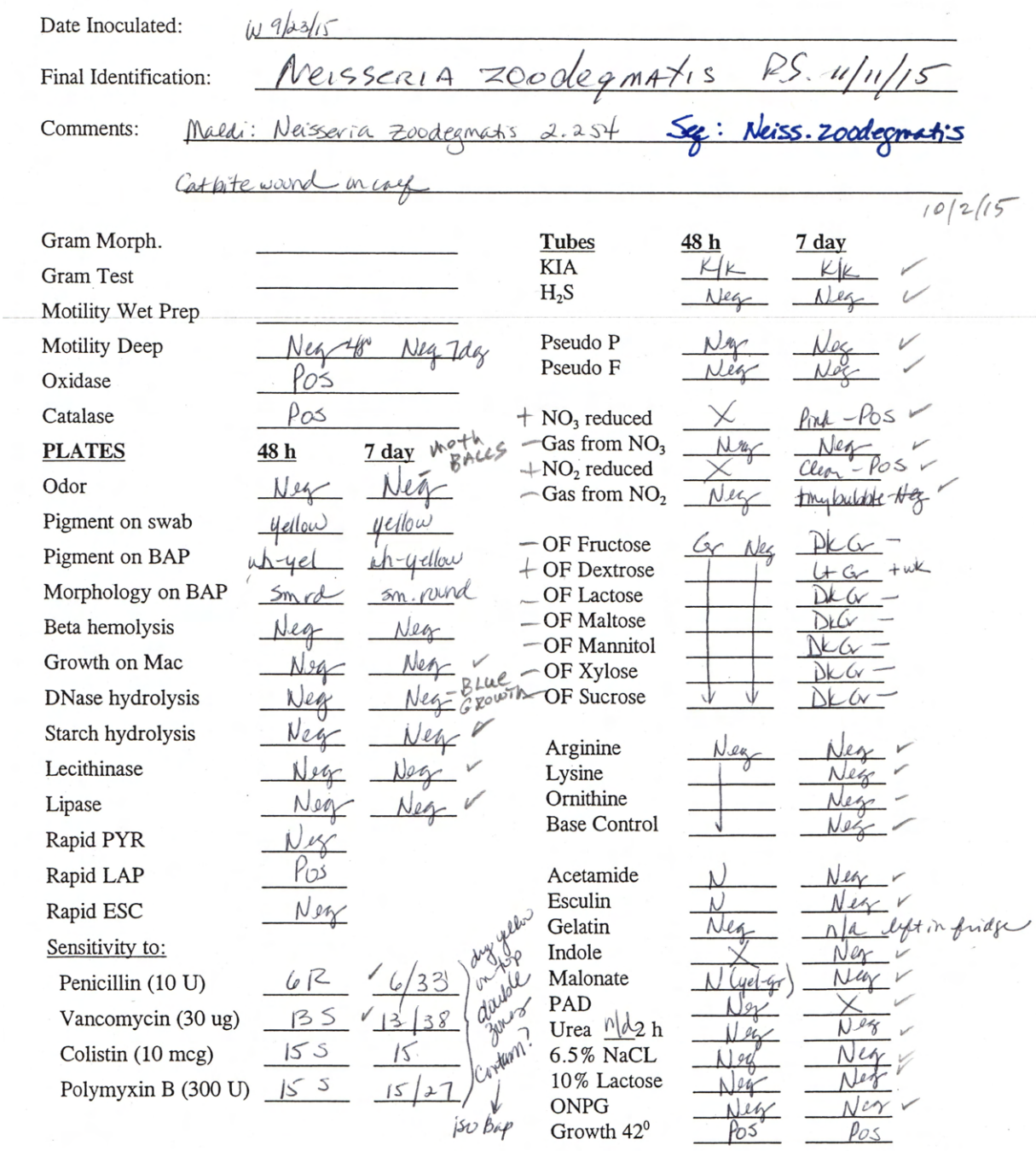
Table 68: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as $n_+/(n_+ + n_-)$, where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which 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_3 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 (30μg)	1	0	100.00	60.33	Lysine	0	1	0.00	39.67
Colistin (10μg)	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: Neisseria zoodegmatis RS. 11/11/15

Comments: Maldi: Neisseria zoodegmatis 2.254 Seq: Neiss. zoodegmatis

Cat bite wound on calf

10/2/15

Gram Morph.		
Gram Test		
Motility Wet Prep		
Motility Deep	Neg 48° Neg 7dg	
Oxidase	Pos	
Catalase	Pos	
PLATES	**48 h**	**7 day**
Odor	Neg	Neg moth BALLS
Pigment on swab	yellow	yellow
Pigment on BAP	wh-yel	wh-yellow
Morphology on BAP	sm rd	sm. round
Beta hemolysis	Neg	Neg
Growth on Mac	Neg	Neg ✓
DNase hydrolysis	Neg	Neg - BLUE GROWTH
Starch hydrolysis	Neg	Neg ✓
Lecithinase	Neg	Neg ✓
Lipase	Neg	Neg ✓
Rapid PYR	Neg	
Rapid LAP	Pos	
Rapid ESC	Neg	
Sensitivity to:		
Penicillin (10 U)	6R	✓ 6/33
Vancomycin (30 ug)	13S	✓ 13/38
Colistin (10 mcg)	15S	15
Polymyxin B (300 U)	15S	15/27

dry yellow on top double zones contam? ↓ iso Bap

Tubes	48 h	7 day	
KIA	K/K	K/K	✓
H_2S	Neg	Neg	✓
Pseudo P	Neg	Neg	✓
Pseudo F	Neg	Neg	✓
+ NO_3 reduced	X	Pink - Pos	✓
− Gas from NO_3	Neg	Neg	✓
+ NO_2 reduced	X	Clear - Pos	✓
− Gas from NO_2	Neg	tiny bubble - Neg	✓
− OF Fructose	Gr Neg	Dk Gr	−
+ OF Dextrose	↓	Lt Gr	+ wk
− OF Lactose	↓	Dk Gr	−
− OF Maltose	↓	Dk Gr	−
− OF Mannitol	↓	Dk Gr	−
− OF Xylose	↓	Dk Gr	−
− OF Sucrose	↓	Dk Gr	−
Arginine	Neg	Neg	✓
Lysine	↓	Neg	✓
Ornithine	↓	Neg	✓
Base Control	↓	Neg	✓
Acetamide	N	Neg	✓
Esculin	N	Neg	✓
Gelatin	Neg	n/a left in fridge	
Indole	X	Neg	✓
Malonate	N (yel-gr)	Neg	✓
PAD	Neg	X	✓
Urea n/d 2 h	Neg	Neg	✓
6.5% NaCL	Neg	Neg	✓
10% Lactose	Neg	Neg	✓
ONPG	Neg	Neg	✓
Growth 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 209: Neisseria zoodegmatis isolate 1-of-1.

27 GENUS OCHROBACTRUM

27.1 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%**	**W95%**	**Test**	+	−	**Raw%**	**W95%**
Motility	10	0	100.00	86.12	H_2S	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_3 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_2 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 (30μg)	0	10	0.00	13.88	Lysine	0	10	0.00	13.88
Colistin (10μg)	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.

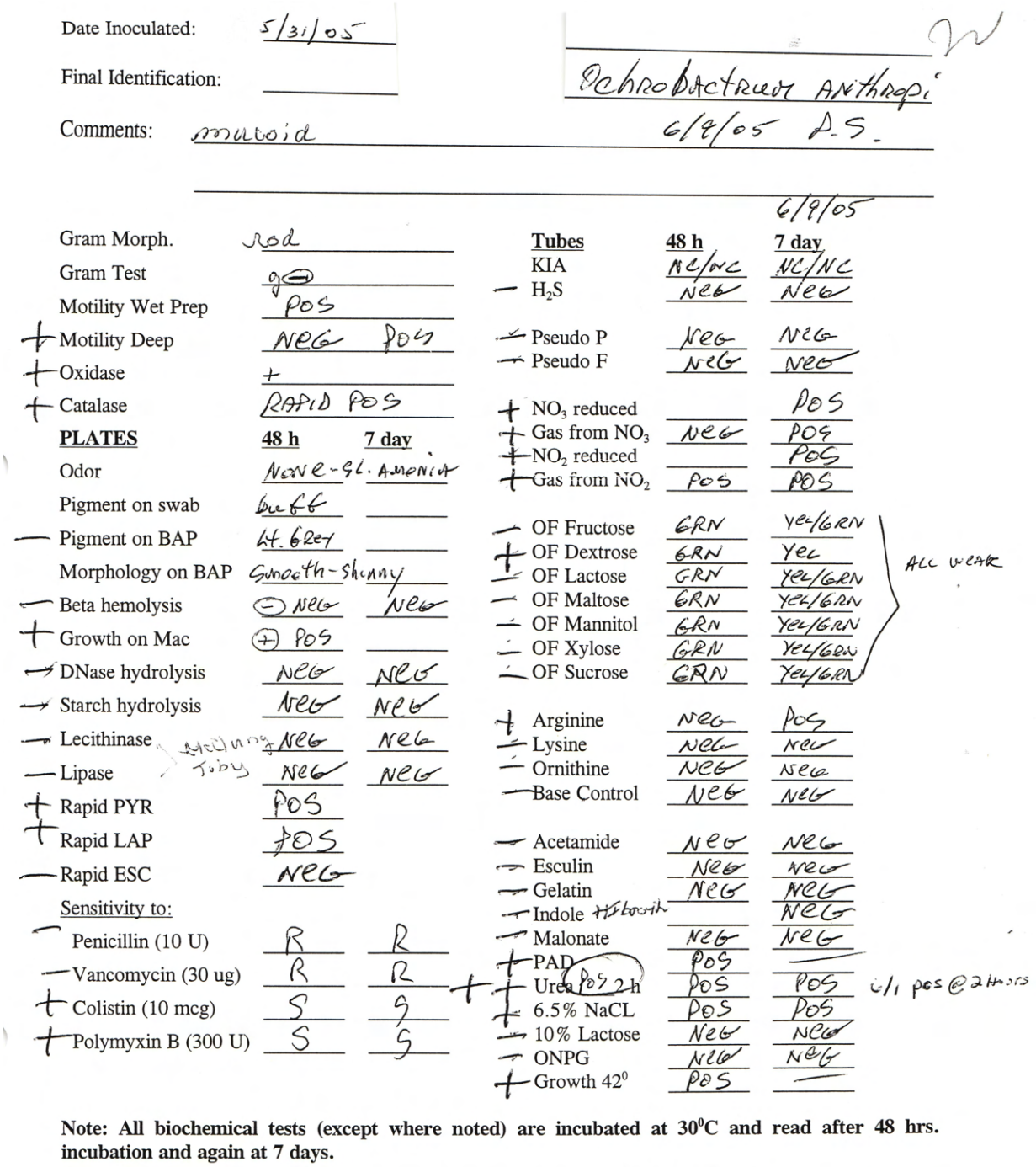


Figure 210: Ochrobactrum anthropi isolate 1-of-10.

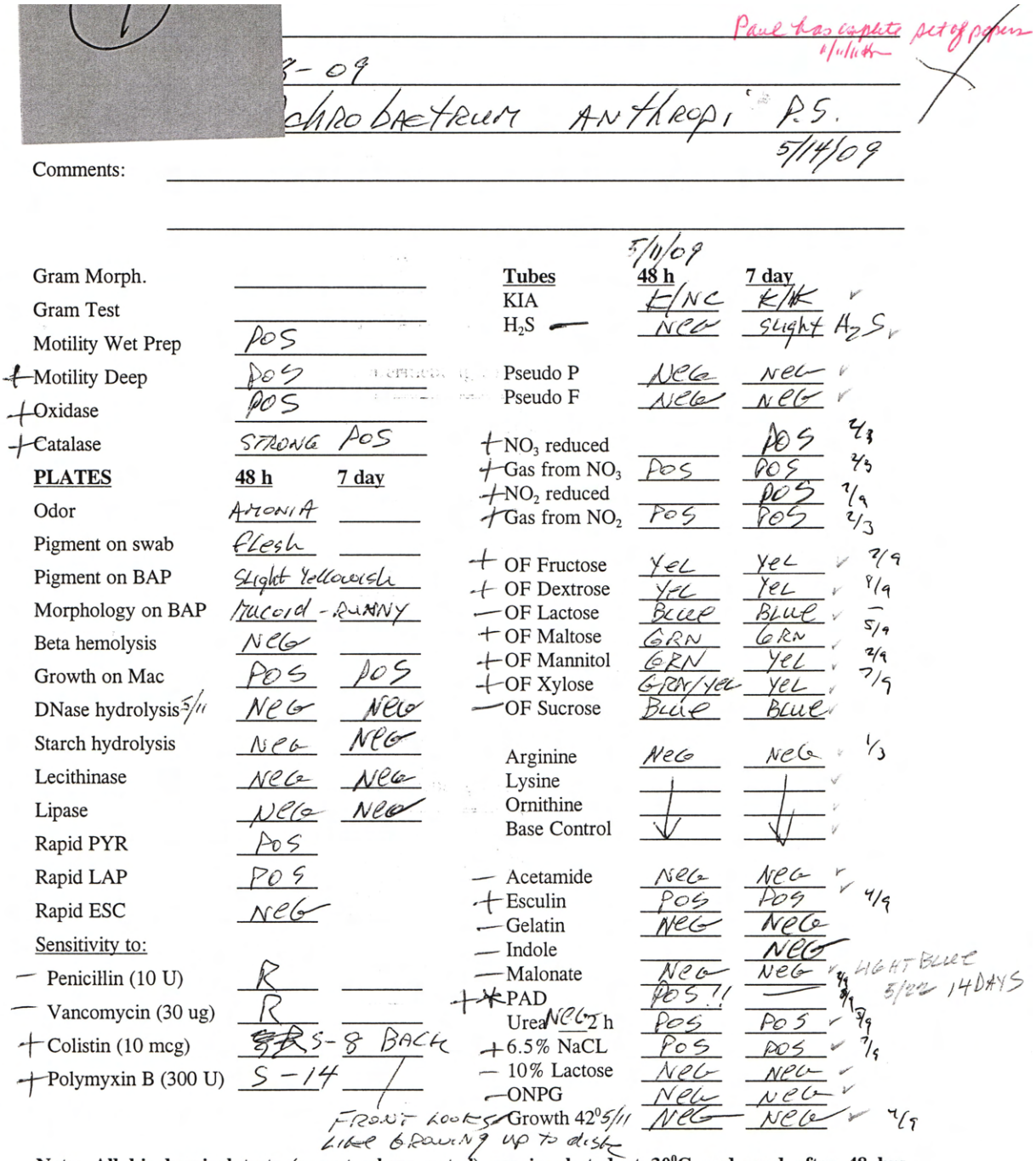


Figure 211: Ochrobactrum anthropi isolate 2-of-10.

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_2S	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_3 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_2 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 (30μg)	0	11	0.00	12.94	Lysine	0	11	0.00	12.94
Colistin (10μg)	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.

Date Inoculated: M 11/22/15

Final Identification: Ochrobactrum intermedium P.S. 12/1/15

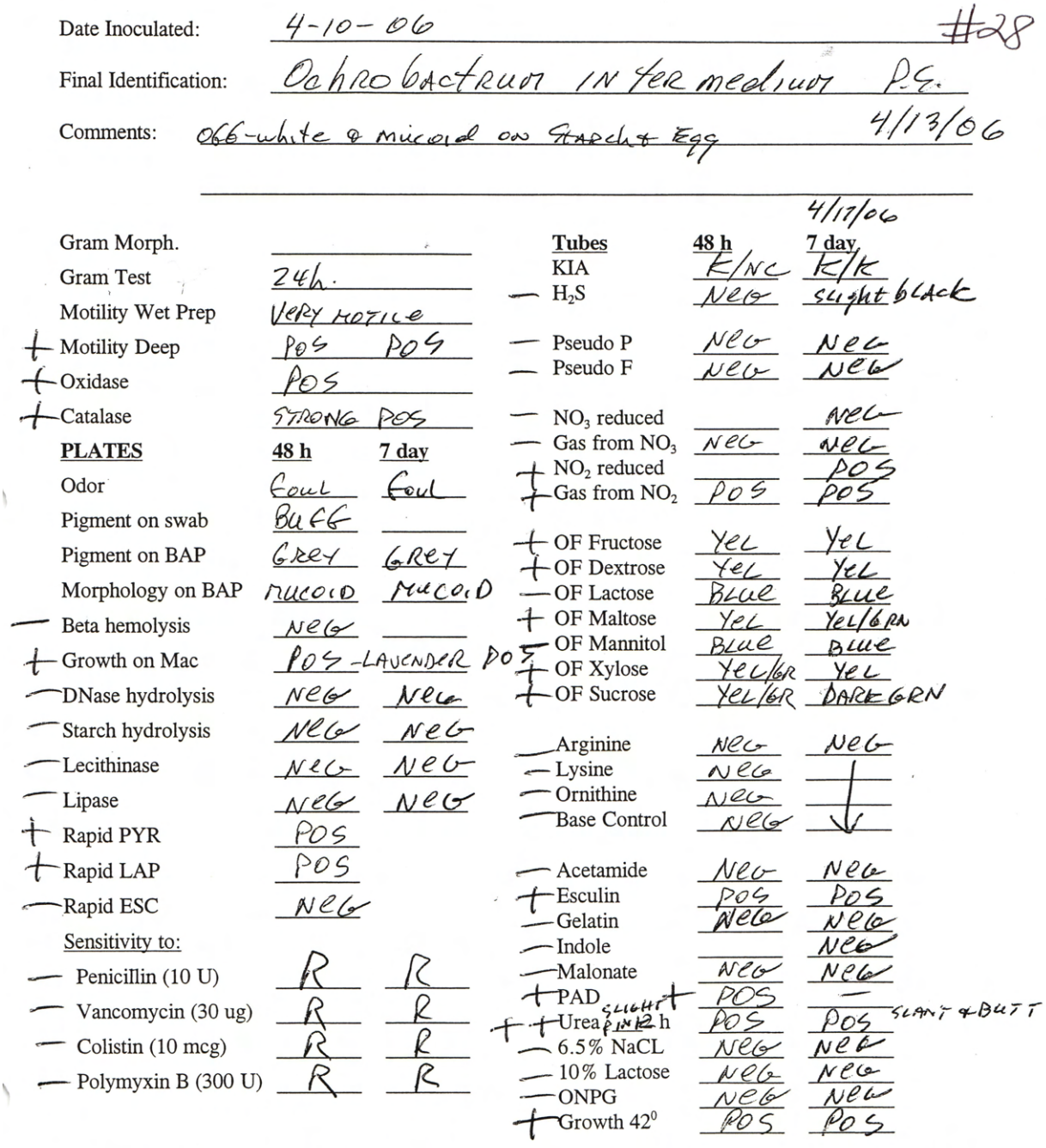
Comments: Multi: Ochrobactrum intermedium

2015-24

Gram Morph.				**Tubes**	**48 h**	**7 day**	
Gram Test				KIA	K/NC	K/K	
Motility Wet Prep				H_2S	Neg	Neg	slight H_2S
Motility Deep	Pos	Pos	✓	Pseudo P	Neg	Neg	✓
Oxidase	Pos			Pseudo F	Neg	Neg	✓
Catalase 90.91	Pos			NO_3 reduced	X	Clear after Pos	+ 81.82
PLATES	**48 h**	**7 day**		Gas from NO_3	Neg	Neg	− 42.86
Odor	Pos	Pos		NO_2 reduced	X	Clear - Pos	+ 90.91
Pigment on swab	Buff	Buff		Gas from NO_2	Neg	Neg	− 57.14
Pigment on BAP	white	white		OF Fructose	Cr	Cr	− 45.45
Morphology on BAP	mucoid	mucoid		OF Dextrose	Cr	Cr-Be	− 90.91
Beta hemolysis 14.29	Neg	Neg		OF Lactose	Cr	Be	−
Growth on Mac	Pos	Pos - LAC USED	✓	OF Maltose	Cr	Be	− 18.18
DNase hydrolysis	Neg	Neg	✓	OF Mannitol	Cr	Be	− 9.09
Starch hydrolysis	Neg	Neg	✓	OF Xylose	Set yellow top	Yel	+
Lecithinase	Neg	Neg	✓	OF Sucrose	Cr	Be	− 40
Lipase	Neg	Neg	✓	Arginine	Neg	Neg	
Rapid PYR	Pos			Lysine	Neg	Neg	
Rapid LAP 80	Pos			Ornithine	Neg	Neg	
Rapid ESC	Neg			Base Control	Neg	Neg	
Sensitivity to:				Acetamide	Neg	Neg	✓
Penicillin (10 U)	UR	UR	✓	Esculin	Pos	Pos	✓ 63.64
Vancomycin (30 ug)	UR	UR	✓	Gelatin	Neg	Neg	✓
Colistin (10 mcg)	UR	UR	✓	Indole	X	Neg	✓
Polymyxin B (300 U) 14-29	UR	UR	✓	Malonate	Neg	Pos	✓ 9.09
				PAD	Pos	X	✓
				Urea (+) 2 h	Pos	Pos	✓ 72.73
				6.5% NaCL	Neg	Pos	✓ 63.64
				10% Lactose	~~Pos~~ Neg	~~Pos~~ Neg	
				ONPG	Neg	Neg	−
				Growth 42°	Pos	Pos	✓ 72.73

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

Figure 212: Ochrobactrum intermedium isolate 1-of-11.



Date Inoculated: 4-10-06 #28

Final Identification: Ochrobactrum intermedium P.S.

Comments: 066-white & mucoid on Starch & Egg 4/13/06

4/17/06

Gram Morph.			**Tubes**	**48 h**	**7 day**
Gram Test	24h.		KIA	K/NC	K/K
Motility Wet Prep	VERY MOTILE		— H_2S	NEG	slight black
+ Motility Deep	POS	POS	— Pseudo P	NEG	NEG
+ Oxidase	POS		— Pseudo F	NEG	NEG
+ Catalase	STRONG	POS	— NO_3 reduced		NEG
PLATES	**48 h**	**7 day**	— Gas from NO_3	NEG	NEG
Odor	Foul	Foul	+ NO_2 reduced		POS
Pigment on swab	BUFF		+ Gas from NO_2	POS	POS
Pigment on BAP	GREY	GREY	+ OF Fructose	YEL	YEL
Morphology on BAP	MUCOID	MUCOID	+ OF Dextrose	YEL	YEL
— Beta hemolysis	NEG		— OF Lactose	BLUE	BLUE
+ Growth on Mac	POS - LAVENDER	POS	+ OF Maltose	YEL	YEL/GRN
— DNase hydrolysis	NEG	NEG	— OF Mannitol	BLUE	BLUE
— Starch hydrolysis	NEG	NEG	+ OF Xylose	YEL/GR	YEL
— Lecithinase	NEG	NEG	+ OF Sucrose	YEL/GR	DARK GRN
— Lipase	NEG	NEG	— Arginine	NEG	NEG
+ Rapid PYR	POS		— Lysine	NEG	
+ Rapid LAP	POS		— Ornithine	NEG	
— Rapid ESC	NEG		— Base Control	NEG	
Sensitivity to:			— Acetamide	NEG	NEG
— Penicillin (10 U)	R	R	+ Esculin	POS	POS
— Vancomycin (30 ug)	R	R	— Gelatin	NEG	NEG
— Colistin (10 mcg)	R	R	— Indole		NEG
— Polymyxin B (300 U)	R	R	— Malonate	NEG	NEG
			+ PAD	SLIGHT + POS	—
			+ + Urea @ 1 & 2 h	POS	POS SLANT & BUTT
			— 6.5% NaCL	NEG	NEG
			— 10% Lactose	NEG	NEG
			— ONPG	NEG	NEG
			+ Growth 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 213: Ochrobactrum intermedium isolate 2-of-11.

Date Inoculated: 3-26-08

Final Identification: Ochrobactrum intermedium 4/5/08 P.S.

Comments:

Gram Morph.		
Gram Test	24h	
Motility Wet Prep	Pos - sm. rods / c b	
Motility Deep	Pos Pos	
Oxidase	Slow pos > 1 min	
Catalase	Strong pos	
PLATES	**48 h**	**7 day**
Odor	Amonia	
Pigment on swab	Light Yellow, Light butterscotch	
Pigment on BAP	Grey	
Morphology on BAP	Smooth	
Beta hemolysis	Neg	
Growth on Mac	Pos	Pos
DNase hydrolysis	Neg	Neg
Starch hydrolysis	Neg	
Lecithinase	Neg	Neg
Lipase	Neg	Neg
Rapid PYR	Pos	
Rapid LAP	Neg (very faint)	
Rapid ESC	Neg	
Sensitivity to:		
Penicillin (10 U)	R	R
Vancomycin (30 ug)	R	R
Colistin (10 mcg)	R	R
Polymyxin B (300 U)	R	R

Tubes	3/28 **48 h**	4/5 **7 day**
KIA	K/NC	K/K
H_2S	Neg	Slight H_2S
Pseudo P	Neg	Neg
Pseudo F	Neg	Neg
NO_3 reduced		Pos
Gas from NO_3	Neg	Tiny bubble
NO_2 reduced		Pos
Gas from NO_2	Neg	Neg
OF Fructose	Green	Yel
OF Dextrose	Yel	Yel
OF Lactose	Blue	Blue
OF Maltose	Blue	Grn
OF Mannitol	Blue	Yel/Grn
OF Xylose	Yel/Grn	Yel
OF Sucrose	Blue	Grn
Arginine	Neg	Neg
Lysine	↓	↓
Ornithine	↓	↓
Base Control	↓	↓
Acetamide	Neg	Neg
Esculin	Neg	Neg
Gelatin		Neg
Indole		Neg
Malonate	Neg	Neg
PAD		Pos!
Urea ___2 h	Pos slant & butt	Pos slant & butt
6.5% NaCL	Faint	Pos
10% Lactose	Neg	Neg
ONPG	Neg	Neg
Growth 42^0	Neg	Neg

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

Figure 214: Ochrobactrum intermedium isolate 3-of-11.

28 GENUS OLIGELLA

28.1 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_3 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 (30μg)	0	3	0.00	28.08	Lysine	0	3	0.00	28.08
Colistin (10μg)	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

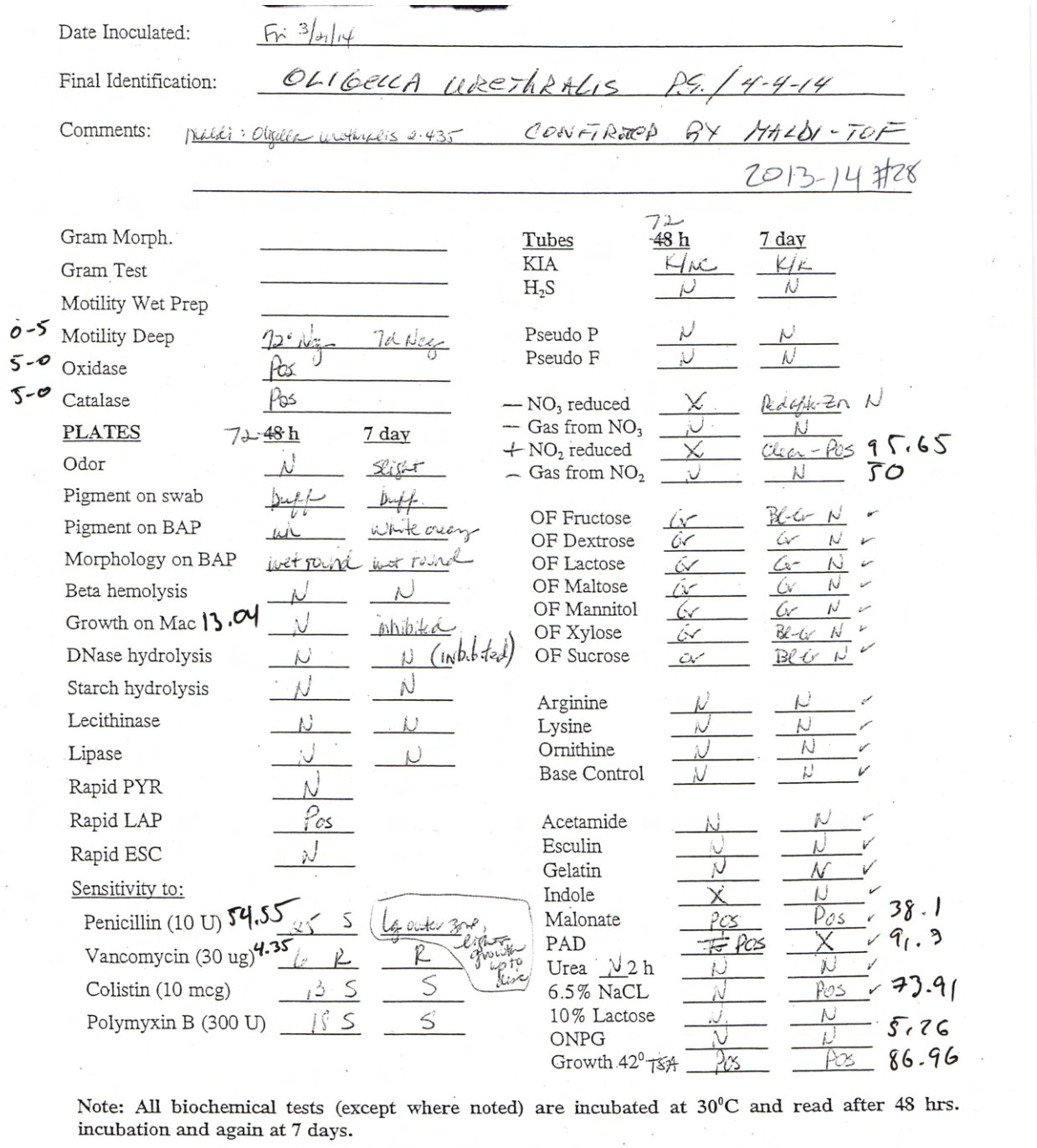
Table 72: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as $n_+/(n_+ + n_-)$, where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which 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_2S	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_3 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_2 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 (30μg)	1	24	4.00	10.13	Lysine	0	25	0.00	6.66
Colistin (10μg)	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.



Date Inoculated: Fri 3/21/14

Final Identification: OLIGELLA URETHRALIS P.S. / 4-4-14

Comments: Maldi: Oligella urethralis 2.435 CONFIRMED BY MALDI-TOF

2013-14 #28

	Gram Morph.		
	Gram Test		
	Motility Wet Prep		
0-5	Motility Deep	72° Neg	7d Neg
5-0	Oxidase	Pos	
5-0	Catalase	Pos	

PLATES	72 ~~48~~ h	7 day
Odor	N	slight
Pigment on swab	buff	buff
Pigment on BAP	wh	white creamy
Morphology on BAP	wet round	wet round
Beta hemolysis	N	N
Growth on Mac 13.04	N	inhibited
DNase hydrolysis	N	N (inhibited)
Starch hydrolysis	N	N
Lecithinase	N	N
Lipase	N	N
Rapid PYR	N	
Rapid LAP	Pos	
Rapid ESC	N	

Sensitivity to:

Penicillin (10 U) 54.55	25 S		Lg outer zone, lighter growth up to disc
Vancomycin (30 ug) 4.35	6 R	R	
Colistin (10 mcg)	13 S	S	
Polymyxin B (300 U)	18 S	S	

Tubes	72 ~~48~~ h	7 day	
KIA	K/NC	K/K	
H_2S	N	N	
Pseudo P	N	N	
Pseudo F	N	N	
— NO_3 reduced	X	Red after Zn	N
— Gas from NO_3	N	N	
+ NO_2 reduced	X	Clear - Pos	95.65
— Gas from NO_2	N	N	50
OF Fructose	Gr	Bl-Gr N	✓
OF Dextrose	Gr	Gr N	✓
OF Lactose	Gr	Gr N	✓
OF Maltose	Gr	Gr N	✓
OF Mannitol	Gr	Gr N	✓
OF Xylose	Gr	Bl-Gr N	✓
OF Sucrose	Gr	Bl-Gr N	✓
Arginine	N	N	✓
Lysine	N	N	✓
Ornithine	N	N	✓
Base Control	N	N	✓
Acetamide	N	N	✓
Esculin	N	N	✓
Gelatin	N	N	✓
Indole	X	N	✓
Malonate	Pos	Pos	✓ 38.1
PAD	~~N~~ Pos	X	✓ 91.3
Urea N 2 h	N	N	✓
6.5% NaCL	N	Pos	✓ 73.91
10% Lactose	N	N	5.26
ONPG	N	N	
Growth 42° TSA	Pos	Pos	86.96

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

Figure 215: Oligella urethralis isolate 1-of-25.

Date Inoculated: W 11/19/14

Final Identification: OLIGELLA URETHRALIS

Comments: Maldi: Oligella urethralis 2.284 P.S. 12/1/14

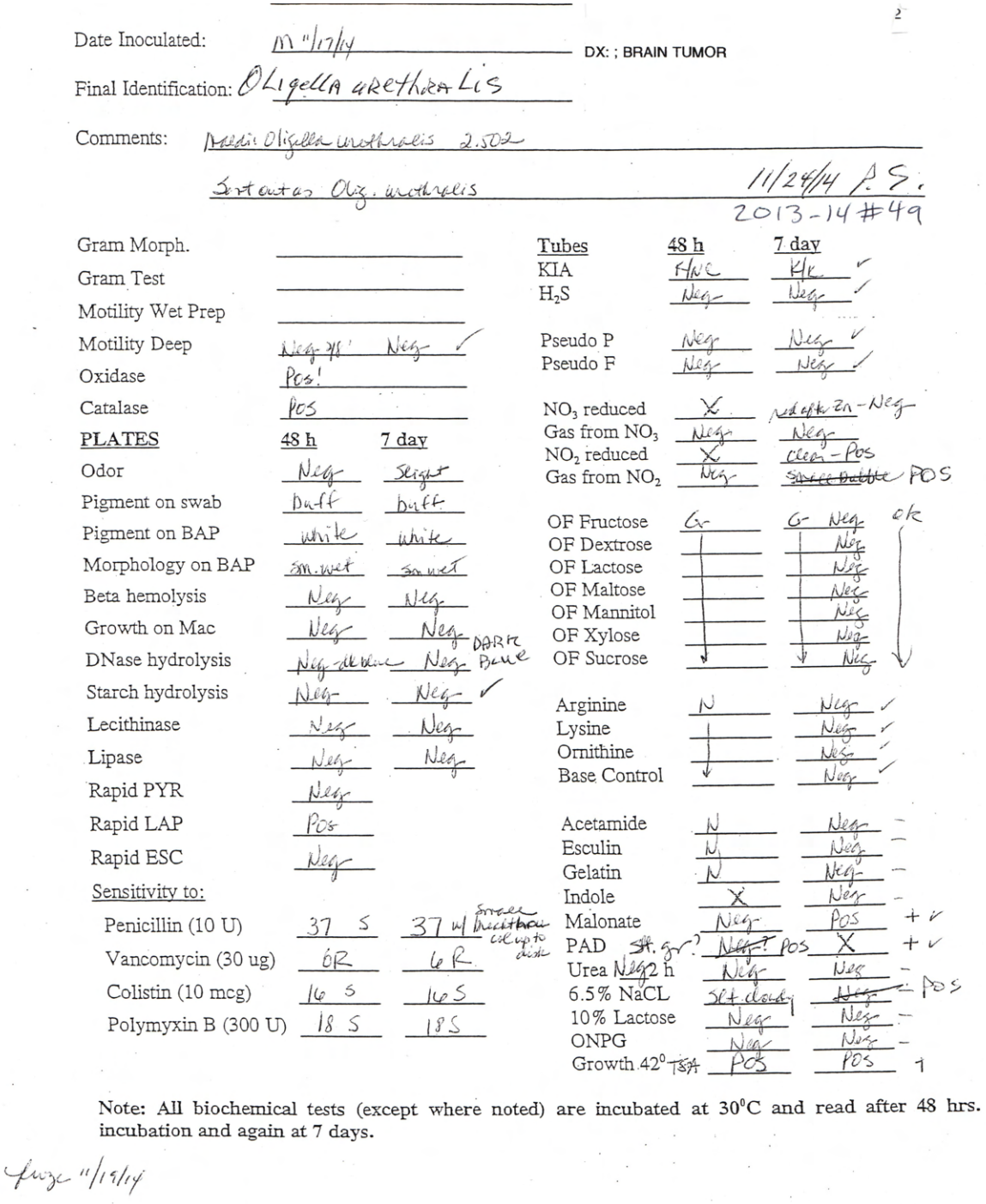
2013-14 #50

Gram Morph.		
Gram Test		
Motility Wet Prep		
Motility Deep	Neg 48°	Neg 7d ✓
Oxidase	Pos	
Catalase	Pos	
PLATES	**48 h**	**7 day**
Odor	Neg	Slight
Pigment on swab	buff	dk buff
Pigment on BAP	wh	yd-wh
Morphology on BAP	Sm wet	round wet
Beta hemolysis	Neg	Neg
Growth on Mac	Neg	very inhibited growth Neg ✓
DNase hydrolysis	Neg	Neg - inhibited
Starch hydrolysis	Neg	Neg (dark peach growth)
Lecithinase	Neg	Neg ✓
Lipase	Neg	Neg ✓
Rapid PYR	Neg	
Rapid LAP	Pos	
Rapid ESC	Neg	
Sensitivity to:		
Penicillin (10 U)	6 R	6 R ✓
Vancomycin (30 ug)	6 R	6 R ✓
Colistin (10 mcg)	15 S	15 S ✓
Polymyxin B (300 U)	19 S	19 S ✓

Tubes	48 h	7 day
KIA	K/NC	K/K ✓
H_2S	Neg	Neg ✓
Pseudo P	N	Neg
Pseudo F	N	Neg
NO_3 reduced	X	red after Zn - Neg
Gas from NO_3	N	Neg
NO_2 reduced	X	clear - Pos (Faint red in durham tube)
Gas from NO_2	N	Neg
OF Fructose	Gr	Gr-Bl
OF Dextrose	Gr	Gr-Bl
OF Lactose	Gr	Gr-Bl
OF Maltose	Gr	Gr-Bl
OF Mannitol	Gr	Gr-Bl
OF Xylose	Gr	Gr-Bl
OF Sucrose	Gr	Gr-Bl
Arginine	N	Neg
Lysine	N	Neg
Ornithine	N	Neg
Base Control	N	Neg
Acetamide	N	Neg ✓
Esculin	N	Neg ✓
Gelatin	N	Neg ✓
Indole	X	Neg ✓
Malonate	Pos	Pos ✓
PAD	P? ⊕ prPS	X
Urea N 2 h	N	Neg
6.5% NaCL	N	Pos - sltly cloudy - Neg?
10% Lactose	N	Neg ✓
ONPG	N	Neg ✓
Growth 42° TSA	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 216: Oligella urethralis isolate 2-of-25.



Date Inoculated: M 11/17/14 DX: ; BRAIN TUMOR

Final Identification: Oligella urethralis

Comments: Maldi: Oligella urethralis 2.502

Sent out as Olig. urethralis 11/24/14 P.S.

2013-14 #49

Gram Morph.		
Gram Test		
Motility Wet Prep		
Motility Deep	Neg 3/8'	Neg ✓
Oxidase	Pos!	
Catalase	Pos	
PLATES	**48 h**	**7 day**
Odor	Neg	Slight
Pigment on swab	buff	buff
Pigment on BAP	white	white
Morphology on BAP	sm. wet	sm wet
Beta hemolysis	Neg	Neg
Growth on Mac	Neg	Neg
DNase hydrolysis	Neg - dk blue	Neg DARK Blue
Starch hydrolysis	Neg	Neg ✓
Lecithinase	Neg	Neg
Lipase	Neg	Neg
Rapid PYR	Neg	
Rapid LAP	Pos	
Rapid ESC	Neg	
Sensitivity to:		
Penicillin (10 U)	37 S	37 w/ small breakthrough col up to disk
Vancomycin (30 ug)	6R	6R
Colistin (10 mcg)	16 S	16 S
Polymyxin B (300 U)	18 S	18 S

Tubes	48 h	7 day
KIA	K/NC	K/K ✓
H_2S	Neg	Neg ✓
Pseudo P	Neg	Neg ✓
Pseudo F	Neg	Neg ✓
NO_3 reduced	X	red after Zn - Neg
Gas from NO_3	Neg	Neg
NO_2 reduced	X	clear - Pos
Gas from NO_2	Neg	~~small bubble~~ POS
OF Fructose	G	G Neg ok
OF Dextrose	↓	↓ Neg
OF Lactose	↓	↓ Neg
OF Maltose	↓	↓ Neg
OF Mannitol	↓	↓ Neg
OF Xylose	↓	↓ Neg
OF Sucrose	↓	↓ Neg
Arginine	N	Neg ✓
Lysine	↓	Neg ✓
Ornithine	↓	Neg ✓
Base Control	↓	Neg ✓
Acetamide	N	Neg -
Esculin	N	Neg -
Gelatin	N	Neg -
Indole	X	Neg -
Malonate	Neg	Pos + ✓
PAD	slt. gr? ~~Neg?~~ Pos	X + ✓
Urea Neg 2 h	Neg	Neg -
6.5% NaCL	slt. cloudy	~~Neg~~ - Pos
10% Lactose	Neg	Neg -
ONPG	Neg	Neg -
Growth 42° TSA	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.

[illegible] 11/19/14

Figure 217: Oligella urethralis isolate 3-of-25.

Reference No./Name: Maldi Study #179 orig orgs 2008-56

Date Inoculated: mon 7/22/13

Final Identification: O. urethralis per PS – enter study as O. urethralis

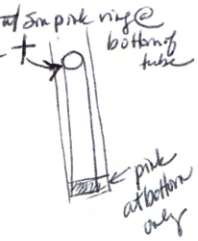
Comments: prev ID: B. cepacia complex

Maldi: O. urethralis by Vitek MS RUO, IVD and Bruker 2008-56

peach on starch agar

Gram Morph.		
Gram Test	gncb	
Motility Wet Prep	gn	
Motility Deep	neg	
Oxidase	Pos	
Catalase	Pos	
PLATES	**48 h**	**7 day**
Odor	N	N
Pigment on swab	buff	buff
Pigment on BAP	white	white
Morphology on BAP	ppt wh	round wh.
Beta hemolysis	N	N
Growth on Mac	only at inoc point	N
DNase hydrolysis	N	N – blue coll.
Starch hydrolysis	N	N
Lecithinase	N	N
Lipase	N	N
Rapid PYR	N	
Rapid LAP	Pos	
Rapid ESC	N	
Sensitivity to:		
Penicillin (10 U)	n/a	n/a
Vancomycin (30 ug)	R	R –
Colistin (10 mcg)	13	13 +
Polymyxin B (300 U)	16	16 +

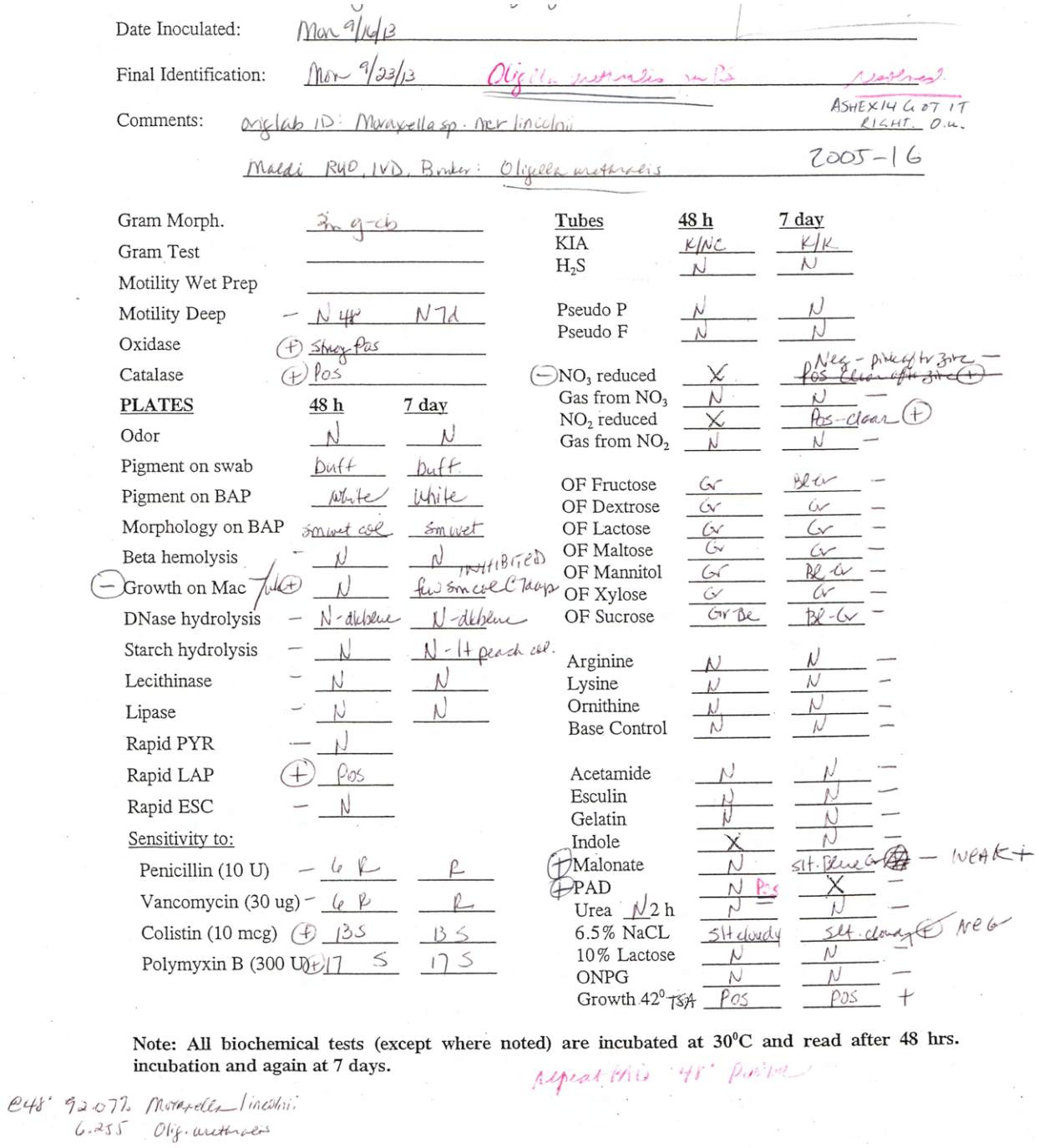
Tubes	**48 h**	**7 day**
KIA	K/NC	K/K
H_2S	N	N
Pseudo P	N	N
Pseudo F	N	N
NO_3 reduced	X	Neg pink after zinc
Gas from NO_3	tiny bubble	tiny bubble –
NO_2 reduced	X	Pos – clear w/ sm pink ring @ bottom of tube
Gas from NO_2	N	small bubble +
OF Fructose	Bl-Gr	Bl –
OF Dextrose	Bl-Gr	Bl –
OF Lactose	Bl-Gr	Bl –
OF Maltose	Bl-Gr	Bl –
OF Mannitol	Bl-Gr	Bl –
OF Xylose	Bl-Gr	Bl –
OF Sucrose	Bl-Gr	Bl –
Arginine	N	N
Lysine	N	N
Ornithine	N	N
Base Control	N	N
Acetamide	N	N
Esculin	N	N
Gelatin	N	N
Indole	X	N
Malonate	N	Blue Pos +
PAD	N	X
Urea n/d 2 h	N	N
6.5% NaCL	N	Pos slt. cloudy
10% Lactose	N	N
ONPG	N	N
Growth 42° TSA	Pos	Pos



call (+) per Paul

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

Figure 218: Oligella urethralis isolate 4-of-25.



Date Inoculated: Mon 9/16/13

Final Identification: Mon 9/23/13 Oligella urethralis in PS

Comments: orig lab ID: Moraxella sp. nov lincolnii

Maldi RUO, IVD, Bruker: Oligella urethralis

ASHEX14 G07 1T RIGHT. O.u. 2005-16

Gram Morph.	2m g-cb	
Gram Test		
Motility Wet Prep		
Motility Deep	– N 48	N 7d
Oxidase	+ Strong Pos	
Catalase	+ Pos	

PLATES	48 h	7 day
Odor	N	N
Pigment on swab	buff	buff
Pigment on BAP	white	white
Morphology on BAP	sm wet col	sm wet
Beta hemolysis	– N	N
– Growth on Mac / +	N	few sm col C Inhibited
DNase hydrolysis	– N-dkbrn	N-dkbrn
Starch hydrolysis	– N	N-lt peach col.
Lecithinase	– N	N
Lipase	– N	N
Rapid PYR	– N	
Rapid LAP	+ Pos	
Rapid ESC	– N	
Sensitivity to:		
Penicillin (10 U)	– 6 R	R
Vancomycin (30 ug)	– 6 R	R
Colistin (10 mcg)	+ 13S	13S
Polymyxin B (300 U)	+ 17 S	17S

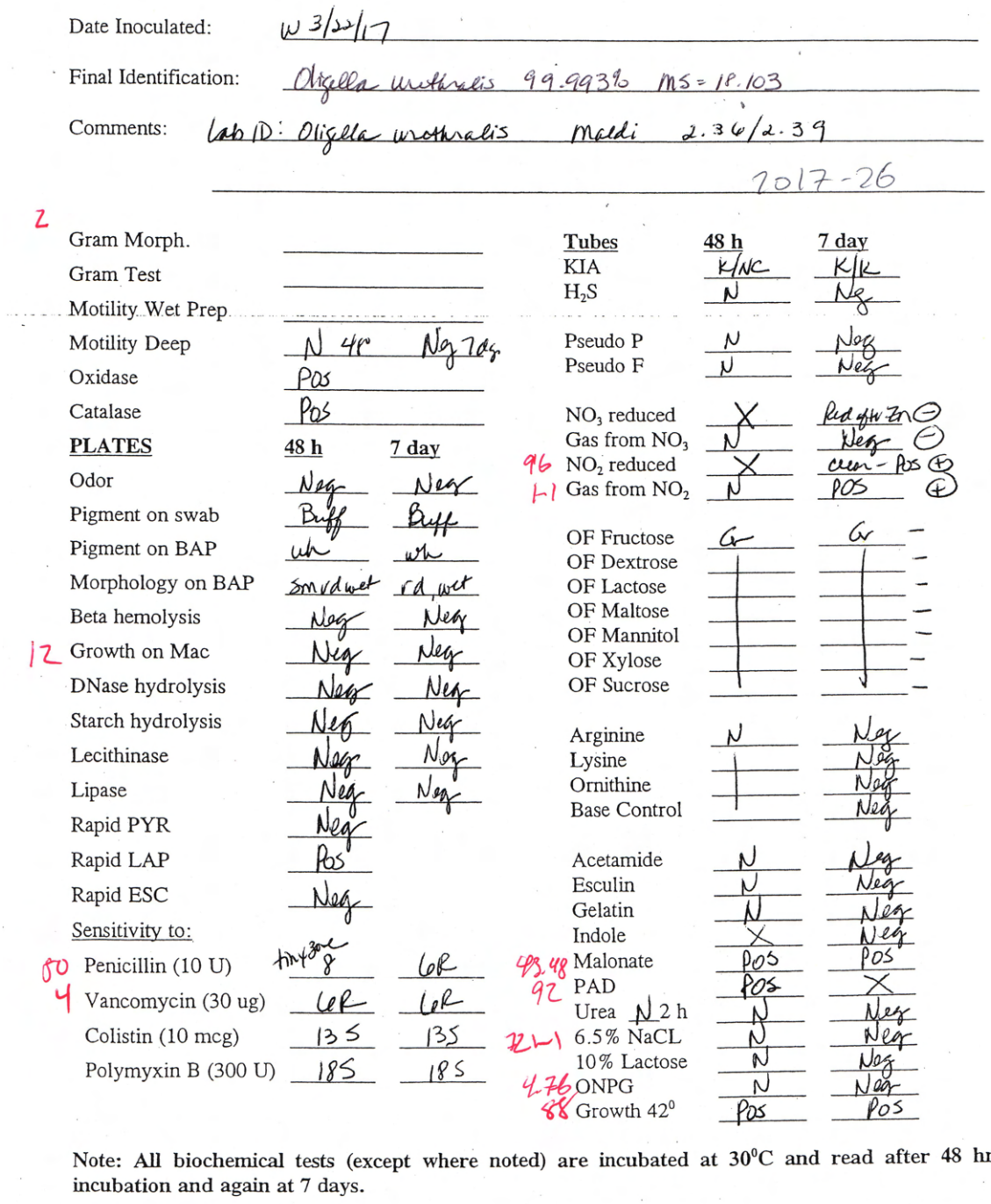
Tubes	48 h	7 day
KIA	K/NC	K/K
H_2S	N	N
Pseudo P	N	N
Pseudo F	N	N
– NO_3 reduced	X	Neg - pink/tr 3m – Pos Clear after 3m +
Gas from NO_3	N	N –
NO_2 reduced	X	Pos-clear +
Gas from NO_2	N	N –
OF Fructose	Gr	Bl Gr –
OF Dextrose	Gr	Gr –
OF Lactose	Gr	Gr –
OF Maltose	Gr	Gr –
OF Mannitol	Gr	Bl Gr –
OF Xylose	Gr	Gr –
OF Sucrose	Gr-Bl	Bl-Gr –
Arginine	N	N –
Lysine	N	N –
Ornithine	N	N –
Base Control	N	N –
Acetamide	N	N –
Esculin	N	N –
Gelatin	N	N –
Indole	X	N –
+ Malonate	N	slt. Blue Gr + – weak +
+ PAD	N Pos	X –
Urea N 2 h	N –	N –
6.5% NaCL	slt cloudy	slt. cloudy + neg
10% Lactose	N	N
ONPG	N	N –
Growth 42° ~~TSA~~	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.

repeat PRIS 48° pur line

@48' 92.07% Moraxella lincolnii
6.25% Olig. urethralis

Figure 219: Oligella urethralis isolate 5-of-25.



Date Inoculated: W 3/22/17

Final Identification: Oligella urethralis 99.993% MS = 1.8.103

Comments: Lab ID: Oligella urethralis Maldi 2.36/2.39

2017-26

2

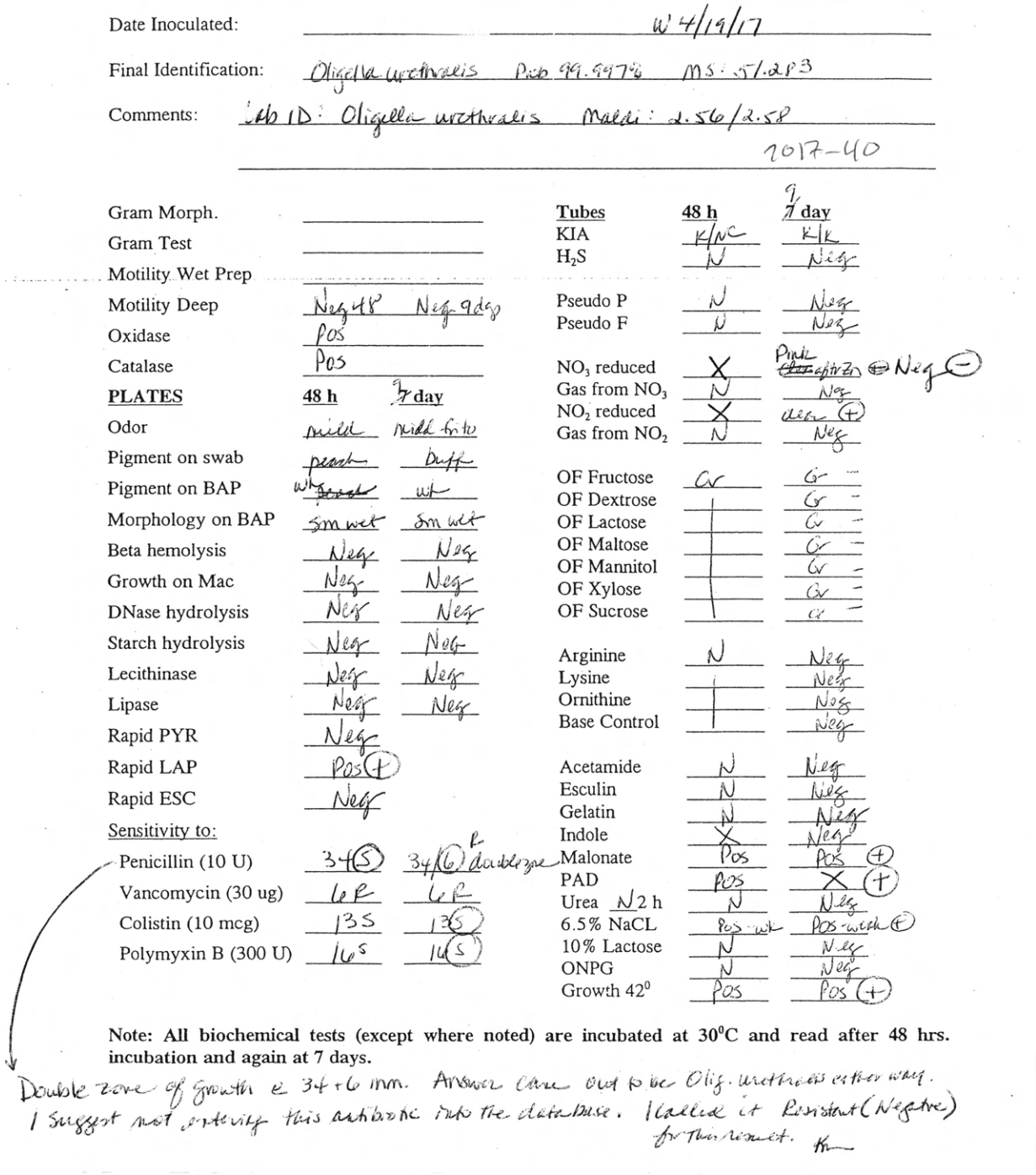
Gram Morph.		
Gram Test		
Motility Wet Prep		
Motility Deep	N 48	Neg 7 day
Oxidase	Pos	
Catalase	Pos	

PLATES	48 h	7 day
Odor	Neg	Neg
Pigment on swab	Buff	Buff
Pigment on BAP	wh	wh
Morphology on BAP	sm rd wet	rd, wet
Beta hemolysis	Neg	Neg
12 Growth on Mac	Neg	Neg
DNase hydrolysis	Neg	Neg
Starch hydrolysis	Neg	Neg
Lecithinase	Neg	Neg
Lipase	Neg	Neg
Rapid PYR	Neg	
Rapid LAP	Pos	
Rapid ESC	Neg	
Sensitivity to:		
50 Penicillin (10 U)	tiny 30 8	6R
4 Vancomycin (30 ug)	6R	6R
Colistin (10 mcg)	13 S	13S
Polymyxin B (300 U)	18S	18S

Tubes	48 h	7 day
KIA	K/NC	K/K
H_2S	N	Neg
Pseudo P	N	Neg
Pseudo F	N	Neg
NO_3 reduced	X	Red after Zn ⊖
Gas from NO_3	N	Neg ⊖
96 NO_2 reduced	X	clear - Pos ⊕
1-1 Gas from NO_2	N	Pos ⊕
OF Fructose	Gr	Gr −
OF Dextrose		−
OF Lactose		−
OF Maltose		−
OF Mannitol		−
OF Xylose		−
OF Sucrose		−
Arginine	N	Neg
Lysine		Neg
Ornithine		Neg
Base Control		Neg
Acetamide	N	Neg
Esculin	N	Neg
Gelatin	N	Neg
Indole	X	Neg
48, 48 Malonate	Pos	Pos
92 PAD	Pos	X
Urea N 2 h	N	Neg
72-1 6.5% NaCL	N	Neg
10% Lactose	N	Neg
4.76 ONPG	N	Neg
88 Growth 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 220: Oligella urethralis isolate 6-of-25.



Date Inoculated: W 4/19/17

Final Identification: Oligella urethralis Pub 99.947% MS: 5/.2P3

Comments: Lab ID: Oligella urethralis Maldi: 2.56/2.58

7017-40

Gram Morph.		
Gram Test		
Motility Wet Prep		
Motility Deep	Neg 48	Neg 9 day
Oxidase	Pos	
Catalase	Pos	

PLATES	48 h	7 day
Odor	mild	mild fruity
Pigment on swab	peach	buff
Pigment on BAP	wh ~~brown~~	wh
Morphology on BAP	sm wet	sm wet
Beta hemolysis	Neg	Neg
Growth on Mac	Neg	Neg
DNase hydrolysis	Neg	Neg
Starch hydrolysis	Neg	Neg
Lecithinase	Neg	Neg
Lipase	Neg	Neg
Rapid PYR	Neg	
Rapid LAP	Pos (+)	
Rapid ESC	Neg	
Sensitivity to:		
Penicillin (10 U)	34 (S)	34 (S) double zone
Vancomycin (30 ug)	6 R	6 R
Colistin (10 mcg)	13 S	13 S
Polymyxin B (300 U)	16 S	16 S

Tubes	48 h	7 day
KIA	K/NC	K/K
H_2S	N	Neg
Pseudo P	N	Neg
Pseudo F	N	Neg
NO_3 reduced	X	Pink ~~clear~~ after Zn ⊕ Neg (−)
Gas from NO_3	N	Neg
NO_2 reduced	X	clear (+)
Gas from NO_2	N	Neg
OF Fructose	Cv	Cv −
OF Dextrose		Cv −
OF Lactose		Cv −
OF Maltose		Cv −
OF Mannitol		Cv −
OF Xylose		Cv −
OF Sucrose		Cv −
Arginine	N	Neg
Lysine		Neg
Ornithine		Neg
Base Control		Neg
Acetamide	N	Neg
Esculin	N	Neg
Gelatin	N	Neg
Indole	X	Neg
Malonate	Pos	Pos (+)
PAD	Pos	X (+)
Urea N 2 h	N	Neg
6.5% NaCL	Pos-wk	Pos-week (+)
10% Lactose	N	Neg
ONPG	N	Neg
Growth 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.

Double zone of growth @ 34+6 mm. Answer came out to be Olig. urethralis either way. I suggest not entering this antibiotic into the database. I called it Resistant (Negative) for this moment. Kn

Figure 221: Oligella urethralis isolate 7-of-25.

Date Inoculated: 7-17-06

Final Identification: Oligella urethralis P.S. 7/21/06

Comments:

		48 h	7 day
	Gram Morph.		
	Gram Test	72h	48
	Motility Wet Prep	tiny rods/cb	cocci - Neg
—	Motility Deep	Neg	Neg
+	Oxidase	Pos	
+	Catalase	Strong Pos	

	PLATES	48 h	7 day
	Odor	None	None
	Pigment on swab	Cleak	
	Pigment on BAP	Grey	
	Morphology on BAP	Smooth	
—	Beta hemolysis	Neg	
—	Growth on Mac	Neg	Neg - inh.b.t
—	DNase hydrolysis	Neg	Neg - inh.b.t
—	Starch hydrolysis	Neg	Neg
—	Lecithinase	Neg	Neg
—	Lipase	Neg	Neg
—	Rapid PYR	Neg	
+	Rapid LAP	Pos	
—	Rapid ESC	Neg	

Sensitivity to:

+	Penicillin (10 U)	S-45	S
—	Vancomycin (30 ug)	R	R
+	Colistin (10 mcg)	S-13	S
+	Polymyxin B (300 U)	S-16	S

	Tubes	48 h	7 day
	KIA	K/NC	K/NC
—	H_2S	Neg	
—	Pseudo P	Neg	Neg
—	Pseudo F	Neg	Neg
—	NO_3 reduced		Neg ?
—	Gas from NO_3	~~Pos~~ Neg	~~Pos~~ (+ tiny bubble)
+	NO_2 reduced		Pos
+	Gas from NO_2	Neg	Pos
—	OF Fructose	Blue	Blue
—	OF Dextrose	↓	↓
—	OF Lactose	↓	↓
—	OF Maltose	↓	↓
—	OF Mannitol	↓	↓
—	OF Xylose	↓	↓
—	OF Sucrose	↓	↓
—	Arginine	Neg	Neg
—	Lysine	↓	↓
—	Ornithine	↓	↓
—	Base Control	↓	↓
—	Acetamide	Neg	Neg
—	Esculin	Neg	Neg
—	Gelatin	Neg	Neg
—	Indole		Neg
—	Malonate	Neg	Neg
+	PAD	Pos!	
—	Urea Neg 2 h	Neg	Neg
+	6.5% NaCL	Pos	Pos
—	10% Lactose	Neg	Neg
—	ONPG	Neg	Neg
+	Growth 42^0	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 222: Oligella urethralis isolate 8-of-25.

Date Inoculated: 9-19-08

Final Identification: OLIGELLA URETHRALIS 10/18/08 P.S.

Comments:

				9/22	10/10/08 21 DAYS
Gram Morph.			**Tubes**	~~48 h~~ 72	**7 day**
Gram Test	48hR		KIA	K/NC	K/K
Motility Wet Prep	NEG TINY cb		H_2S	NEG	NEG
Motility Deep	NEG	NEG	Pseudo P	NEG	NEG
Oxidase	STRONG	POS	Pseudo F	NEG	NEG
Catalase	STRONG	POS	NO_3 reduced		NEG
PLATES	**48 h**	**7 day**	Gas from NO_3	NEG (tiny Bubble)	NEG
Odor	NONE		NO_2 reduced		POS
Pigment on swab	FLESH		Gas from NO_2	NEG	POS
Pigment on BAP	GREY		OF Fructose	BLUE	DARK BLUE
Morphology on BAP	TINY GROWTH @ 48h		OF Dextrose	↓	↓
Beta hemolysis	NEG	POS 21 DAYS	OF Lactose		
Growth on Mac	NEG	INHIBITED	OF Maltose		
DNase hydrolysis	NEG	NEG	OF Mannitol		
Starch hydrolysis	NEG	NEG	OF Xylose		
Lecithinase	NEG	NEG	OF Sucrose	↓	↓
Lipase	NEG	NEG	Arginine	NEG	NEG
Rapid PYR	NEG		Lysine	↓	↓
Rapid LAP	POS!		Ornithine		
Rapid ESC	NEG		Base Control	↓	↓
Sensitivity to:			Acetamide	NEG	NEG
Penicillin (10 U)	R	R	Esculin	NEG	NEG
Vancomycin (30 ug)	R	R	Gelatin	NEG	NEG
Colistin (10 mcg)	S-14	S	Indole		NEG
Polymyxin B (300 U)	S-18	S	Malonate	NEG	NEG
			PAD	POS	—
			Urea NEG 2 h	NEG	NEG
			6.5% NaCL	NEG	NEG
			10% Lactose	NEG	NEG
			ONPG	NEG	POS
			Growth 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 223: Oligella urethralis isolate 9-of-25.

Date Inoculated: 2-12-11 (FROM 2-4-11)

Final Identification: OLIGELLA URETHRALIS 2/24/11 P.S.

Comments: BUTTERSCOTCH COLOR ON STARCH @ 12 DAYS

				2/14	2/24 12 DAYS
Gram Morph.			**Tubes**	**48 h**	**7 day**
Gram Test	48h		KIA	K/NC	K/K
Motility Wet Prep	Neg - Cocci		H_2S	Neg	Neg
Motility Deep	Neg Neg		Pseudo P	Neg	Neg
Oxidase	Pos		Pseudo F	Neg	Neg
Catalase	STRONG POS		— NO_3 reduced		Neg
PLATES	**48 h**	**7 day**	— Gas from NO_3	Tiny bubble	Neg
Odor	None		+ NO_2 reduced		POS
Pigment on swab	Flesh		— Gas from NO_2	Neg	Neg
Pigment on BAP	Grey		OF Fructose	GRN/BLUE	DARK GREEN
Morphology on BAP	Smooth-entire		OF Dextrose		
Beta hemolysis	Neg		OF Lactose		
Growth on Mac	Neg	SLIGHT GROWTH	OF Maltose		
DNase hydrolysis	Neg - Inhibited	Neg	OF Mannitol		
Starch hydrolysis	Neg	Neg	OF Xylose		
Lecithinase	Neg	Neg	OF Sucrose		
Lipase	Neg	Neg	Arginine	Neg	Neg
Rapid PYR	Neg		Lysine		
Rapid LAP	Pos		Ornithine		
Rapid ESC	Neg		Base Control		
Sensitivity to:			Acetamide	Neg	Neg
Penicillin (10 U)	S-26	S (Double zone)	Esculin	Neg	Neg
Vancomycin (30 ug)	R	R	Gelatin		Neg
Colistin (10 mcg)	S-14.3	S	Indole		Neg
Polymyxin B (300 U)	S-17.3	S	Malonate	Neg	Wt
			+ PAD		Pos !!
			— Urea Neg 2 h	Neg	Neg
			+ 6.5% NaCL	Wt	Pos
			— 10% Lactose	Neg	Neg
			— ONPG	Neg	Neg
			+ Growth 42^0	Pos	Pos

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

Figure 224: Oligella urethralis isolate 10-of-25.

Date Inoculated: 2-14-12

Final Identification: Oligella urethralis 2/24/12

Comments: P.S.

				3D	2/24
Gram Morph.	Gram neg cocci clusters		**Tubes**	**48 h**	**7 day**
Gram Test	48h		KIA	K/NC	K/K
Motility Wet Prep	Neg - very jittery		H_2S	Neg	Neg
Motility Deep	Neg Neg		Pseudo P	Neg	Neg
Oxidase	Pos		Pseudo F	Neg	Neg
Catalase	Strong Pos		— NO_3 reduced		Neg
PLATES	**48 h**	**7 day**	– Gas from NO_3	Neg	Neg
Odor	None		+ NO_2 reduced		Pos
Pigment on swab	Flesh		– Gas from NO_2	Neg	Neg
Pigment on BAP	White		OF Fructose	Blue	Blue
Morphology on BAP	Sparse - opaque		OF Dextrose	↓	Blue
Beta hemolysis	Neg		OF Lactose	↓	Dark Blue
Growth on Mac	NG	NG 2/24	OF Maltose	↓	Blue
DNase hydrolysis	Neg - Inhibited	- NG 2/24	OF Mannitol	↓	Blue
Starch hydrolysis	Neg	Neg	OF Xylose	↓	Blue
Lecithinase	Neg	Neg	OF Sucrose	↓	GRN
Lipase	Neg	Neg	Arginine	Neg	Neg
Rapid PYR	Neg		Lysine	↓	↓
Rapid LAP	Pos		Ornithine	↓	↓
Rapid ESC	Neg		Base Control	↓	↓
Sensitivity to:			Acetamide	Neg	Neg
Penicillin (10 U)	S-27	S	Esculin	Neg	Neg
Vancomycin (30 ug)	R	R	Gelatin	Neg	Neg
Colistin (10 mcg)	S-14	S	Indole		Neg
Polymyxin B (300 U)	S-17	S	Malonate	Pos	Pos
			PAD	Pos!	—
			Urea ~~Neg 2h~~	Neg	Neg
			6.5% NaCL	Neg	Neg
			10% Lactose	Neg	Neg
			ONPG	Neg	Neg
			Growth 42^0	Pos	Pos

Note: All biochemical tests (except where noted) are incubated at 30^0C 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%**	**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	0	1	0.00	39.67	NO_3 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	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 (30μg)	0	1	0.00	39.67	Lysine	0	1	0.00	39.67
Colistin (10μg)	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%**	**W95%**	**Test**	+	−	**Raw%**	**W95%**
Motility	4	0	100.00	75.50	H_2S	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_3 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_2 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 (30μg)	0	4	0.00	24.50	Lysine	0	4	0.00	24.50
Colistin (10μg)	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_2S	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_3 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_2 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 (30μg)	0	53	0.00	3.38	Lysine	0	53	0.00	3.38
Colistin (10μg)	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°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.

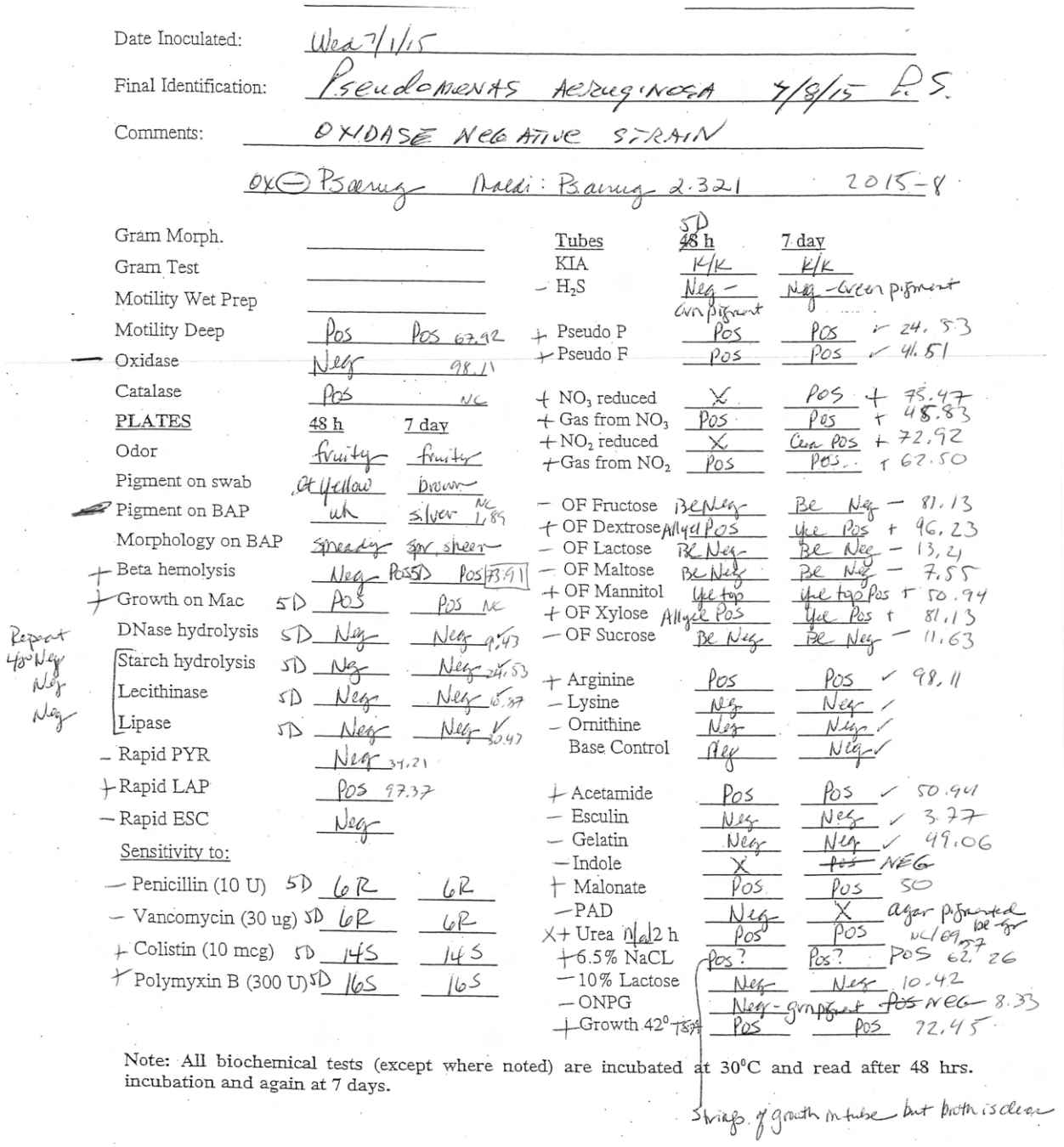


Figure 226: Pseudomonas aeruginosa isolate 1-of-53.

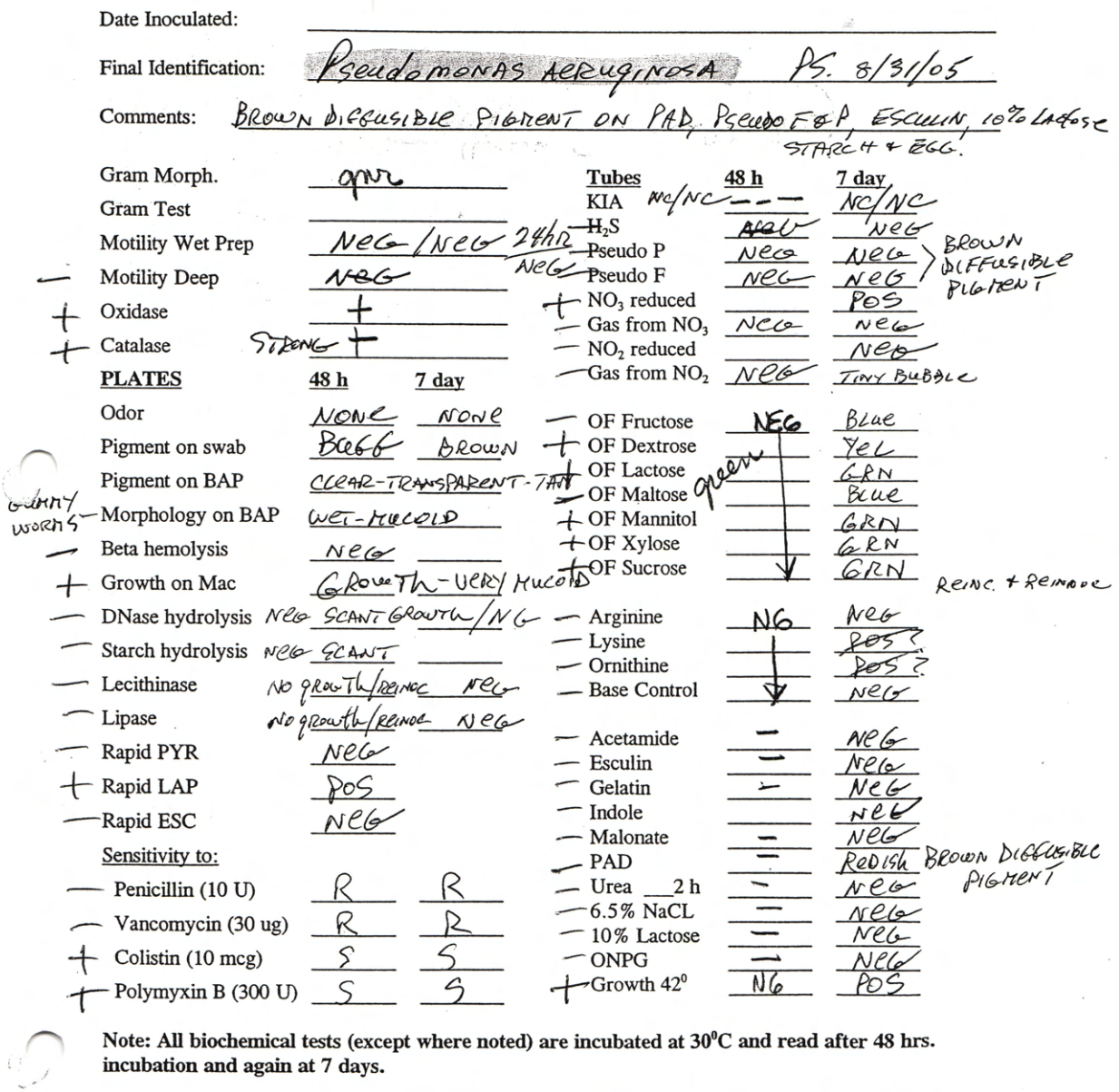


Figure 227: Pseudomonas aeruginosa isolate 2-of-53.

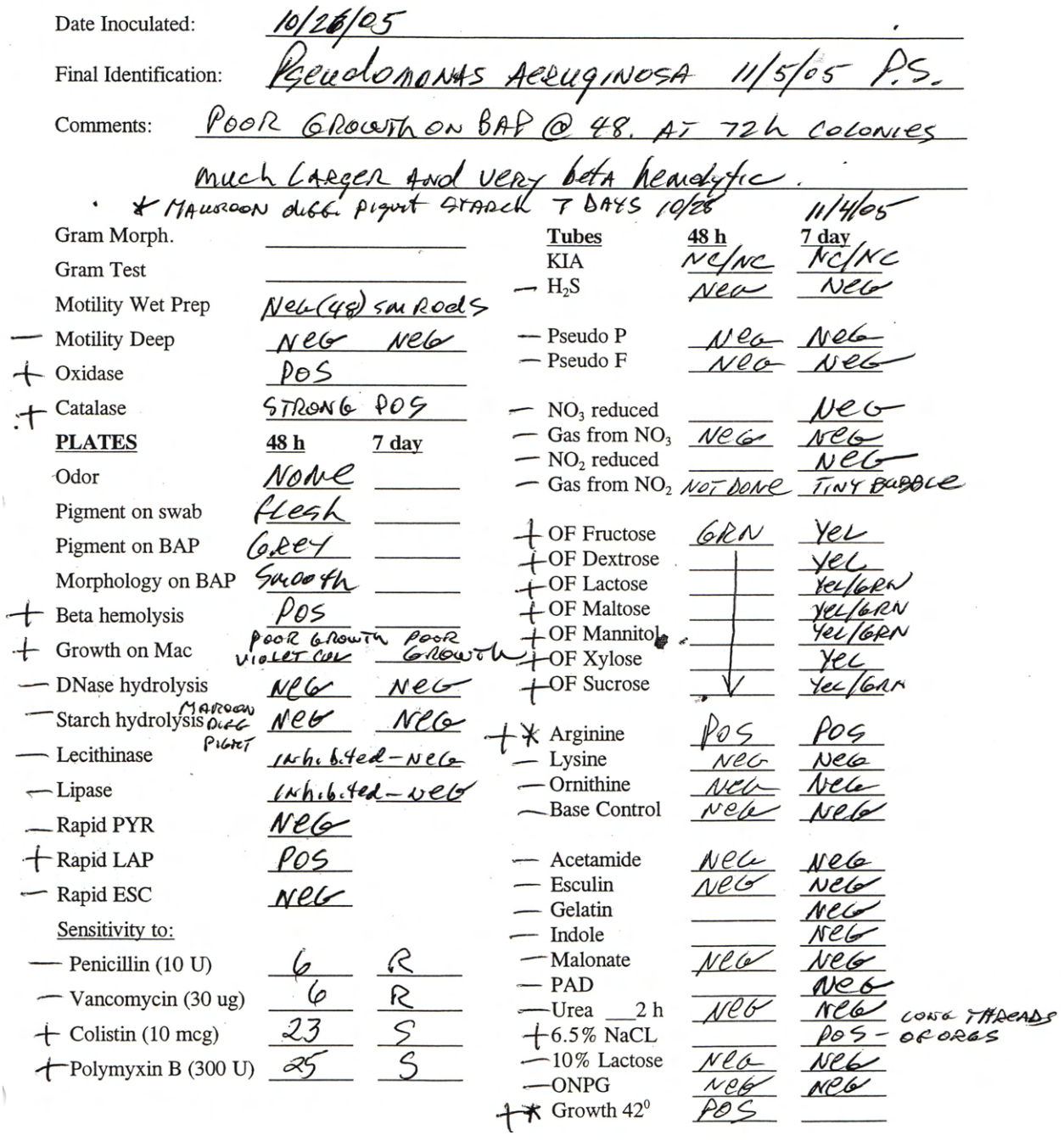


Figure 228: Pseudomonas aeruginosa isolate 3-of-53.

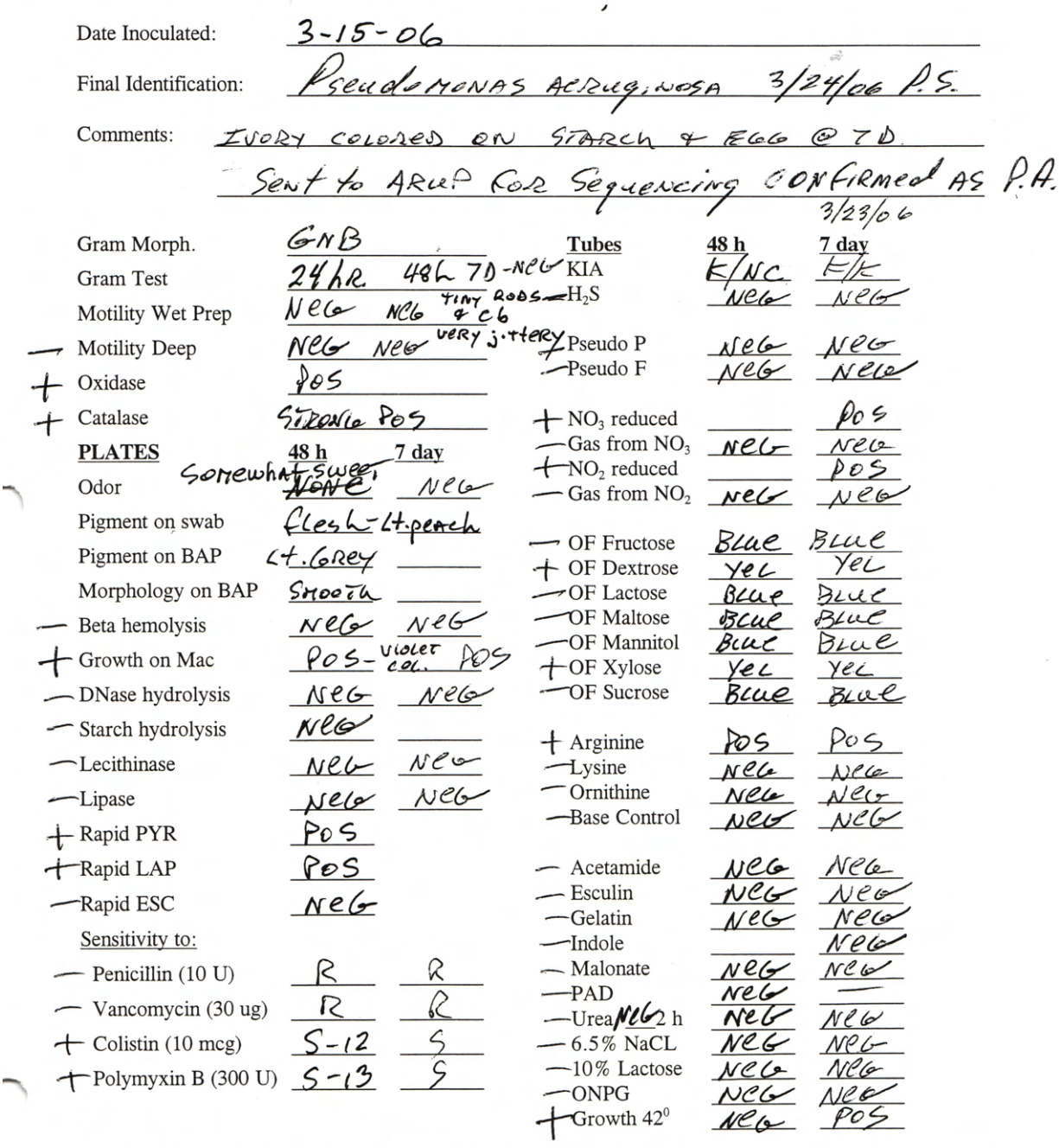


Figure 229: Pseudomonas aeruginosa isolate 4-of-53.

Reference No./Name: ID ON VITEK AS A. XYLOSOXIDANS

Date Inoculated: 5-4-06

Final Identification: PSEUDOMONAS AERUGINOSA 5/11/06 P.S.

Comments: LARGE & SMALL COLONIES ON MACKONKEY - FUNNY LOOKING PARTIALLY INHIBITED, AFTER SUBCULTURE had TYPICAL P. AERU. APPEARANCE & ODOR ON BAP 5D 5/9/06

Gram Morph.			**Tubes**	**48 h**	**7 day**
Gram Test	24h		KIA	K/K	K/K
Motility Wet Prep	MOTILE		— H_2S	NEG	NEG
+ Motility Deep	POS	POS-7D	— Pseudo P	NEG	NEG
+ Oxidase	POS		— Pseudo F	NEG	NEG
+ Catalase	STRONG POS		+ NO_3 reduced	POS	
PLATES	**48 h**	**7 day**	+ Gas from NO_3	POS	
Odor	NONE		+ NO_2 reduced	POS	
Pigment on swab	BUFF		+ Gas from NO_2	POS	
Pigment on BAP	COLORLESS		+ OF Fructose	GRN	YEL/GRN
Morphology on BAP	TRANSLUCENT	SMALL SPARSE GROWTH @ 24h	+ OF Dextrose	YEL	YEL
+ Beta hemolysis	POS		— OF Lactose	BLUE	BLUE
+ Growth on Mac	PARTIALLY INHIBITED	GROWTH	— OF Maltose	BLUE	BLUE
— DNase hydrolysis	NEG	NEG	+ OF Mannitol	YEL/GRN	YEL/GRN
— Starch hydrolysis	NEG	NEG	+ OF Xylose	YEL	YEL
+ Lecithinase	NEG	POS	— OF Sucrose	BLUE	BLUE
+ Lipase	NEG	POS	+ Arginine	POS	POS
+ Rapid PYR	WK POS		— Lysine	NEG	NEG
+ Rapid LAP	POS.		— Ornithine	NEG	NEG
— Rapid ESC	NEG		— Base Control	NEG	NEG
Sensitivity to:			+ Acetamide	POS!	POS
— Penicillin (10 U)	R		— Esculin	NEG	NEG
— Vancomycin (30 ug)	R		+ Gelatin	POS	POS
+ Colistin (10 mcg)	S-13		— Indole	NEG	—
+ Polymyxin B (300 U)	S-15		+ Malonate	BLUE	BLUE - POS
			— PAD	NEG	
			— Urea ~~NEG~~ 2 h	NEG	NEG
			+ 6.5% NaCL	POS	—
			— 10% Lactose	NEG	NEG
			— ONPG	NEG	NEG
			+ Growth 42^0	POS	—

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

Figure 230: Pseudomonas aeruginosa isolate 5-of-53.

Date Inoculated: 5-2-06

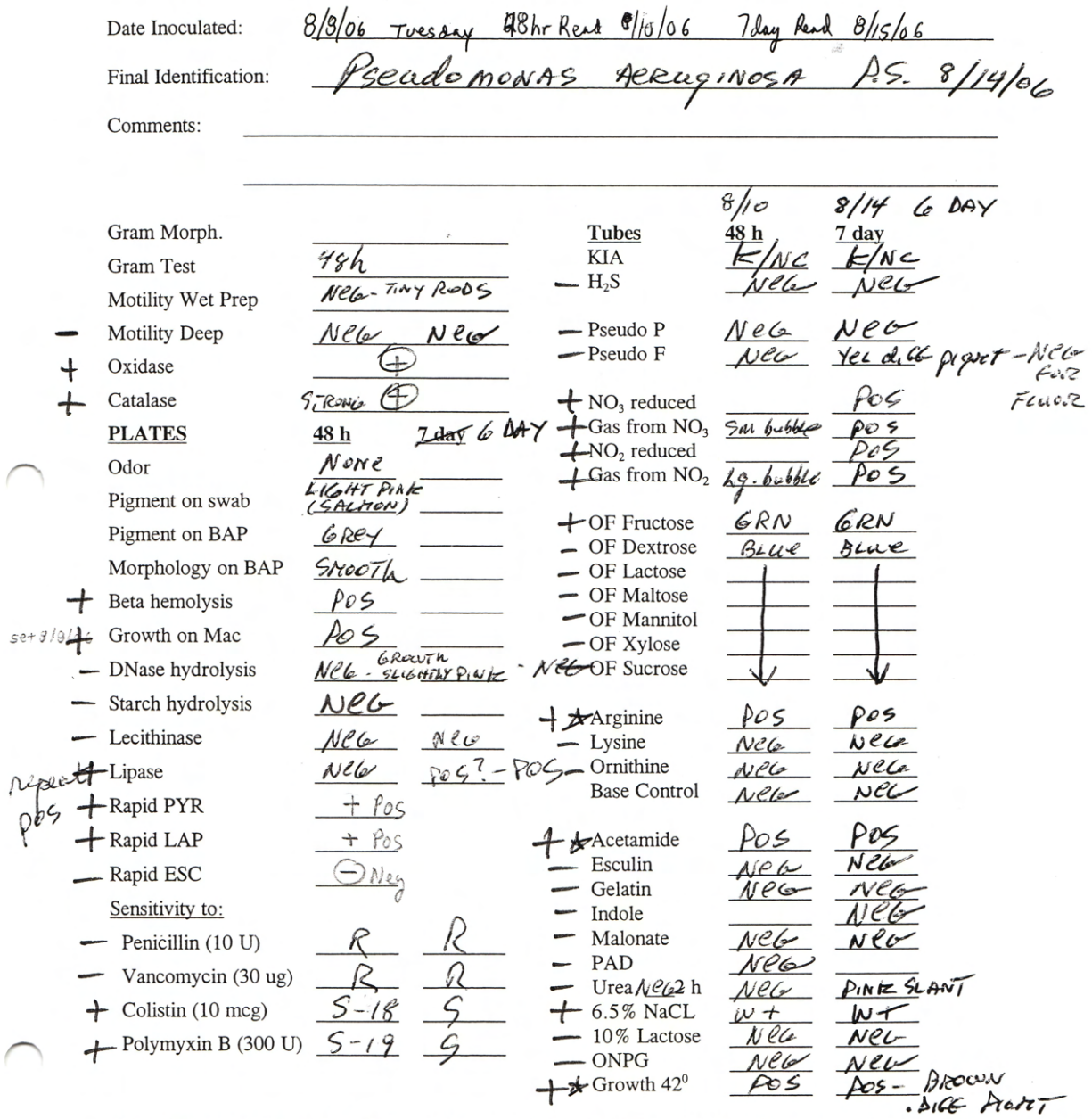
Final Identification: Pseudomonas aeruginosa P.S. 5/9/06

Comments:

				Tubes	48 h	7 day
Gram Morph.				KIA	K/NC	K/K
Gram Test	24h			— H_2S	slight H_2S	slight H_2S
Motility Wet Prep	very motile - med rods					
+ Motility Deep	POS	POS-7D		— Pseudo P	Neg	Neg
+ Oxidase	POS			— Pseudo F	Neg	Neg
+ Catalase	STRONG POS			— NO_3 reduced		Neg
PLATES	24 **48 h**	**7 day**		— Gas from NO_3	Neg	Neg
Odor	None - Ammonia			— NO_2 reduced		Neg
Pigment on swab	flesh			— Gas from NO_2	Neg	Neg
Pigment on BAP	Light grey			+ OF Fructose	Yel	Yel
Morphology on BAP	Smooth			+ OF Dextrose	Yel	Yel
+ Beta hemolysis	POS			Neg OF Lactose	Blue	Blue
+ Growth on Mac	POS	POS		— OF Maltose	Blue	Blue
— DNase hydrolysis	Neg	Neg		+ OF Mannitol	Yel	Yel
— Starch hydrolysis	Neg	Neg		+ OF Xylose	Yel	Yel
— Lecithinase	Neg	Neg		— OF Sucrose	Blue	Blue
+ * Lipase	POS	POS		+ * Arginine	POS	POS
— Rapid PYR	NEG			— Lysine	Neg	Neg
+ Rapid LAP	POS			— Ornithine	Neg	Neg
— Rapid ESC	NEG			— Base Control	Neg	Neg
Sensitivity to:				— Acetamide	Neg	POS
— Penicillin (10 U)	R	R		— Esculin	Neg	Neg
— Vancomycin (30 ug)	R	R		+ * Gelatin	POS	POS ?
+ Colistin (10 mcg)	S - 10	S		— Indole		Neg
+ Polymyxin B (300 U)	S - 11	S		+ * Malonate	Blue at top	POS !
				— PAD	Neg	—
				+ Urea Neg 2 h	POS-SLANT	POS SLANT & BUTT
				+ * 6.5% NaCL	POS	POS !
				— 10% Lactose	Neg	Neg
				— ONPG	Neg	Neg
				+ Growth 42° WK	POS ?	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 231: Pseudomonas aeruginosa isolate 6-of-53.



Date Inoculated: 8/8/06 Tuesday 48hr Read 8/10/06 7day Read 8/15/06

Final Identification: Pseudomonas aeruginosa P.S. 8/14/06

Comments:

		48 h	7 day
	Gram Morph.		
	Gram Test	48h	
	Motility Wet Prep	NEG - TINY RODS	
−	Motility Deep	NEG NEG	
+	Oxidase	+	
+	Catalase	STRONG +	
	PLATES	**48 h** 7 day 6 DAY	
	Odor	NONE	
	Pigment on swab	LIGHT PINK (SALMON)	
	Pigment on BAP	GREY	
	Morphology on BAP	SMOOTH	
+	Beta hemolysis	POS	
+	Growth on Mac	POS	
−	DNase hydrolysis	NEG - GROWTH SLIGHTLY PINK	
−	Starch hydrolysis	NEG	
−	Lecithinase	NEG NEG	
+	Lipase	NEG POS? - POS	
+	Rapid PYR	+ POS	
+	Rapid LAP	+ POS	
−	Rapid ESC	− NEG	
	Sensitivity to:		
−	Penicillin (10 U)	R R	
−	Vancomycin (30 ug)	R R	
+	Colistin (10 mcg)	S-18 S	
+	Polymyxin B (300 U)	S-19 S	

	Tubes	8/10 48 h	8/14 6 DAY 7 day
	KIA	K/NC	K/NC
−	H_2S	NEG	NEG
−	Pseudo P	NEG	NEG
−	Pseudo F	NEG	YEL DIFF pigment - NEG FOR FLUOR
+	NO_3 reduced		POS
+	Gas from NO_3	SM bubble	POS
+	NO_2 reduced		POS
+	Gas from NO_2	Lg. bubble	POS
+	OF Fructose	GRN	GRN
−	OF Dextrose	BLUE	BLUE
−	OF Lactose		
−	OF Maltose		
−	OF Mannitol		
−	OF Xylose		
−	OF Sucrose		
+	Arginine	POS	POS
−	Lysine	NEG	NEG
−	Ornithine	NEG	NEG
	Base Control	NEG	NEG
+	Acetamide	POS	POS
−	Esculin	NEG	NEG
−	Gelatin	NEG	NEG
−	Indole		NEG
−	Malonate	NEG	NEG
−	PAD	NEG	
−	Urea NEG 2 h	NEG	PINK SLANT
+	6.5% NaCL	W +	WT
−	10% Lactose	NEG	NEG
−	ONPG	NEG	NEG
+	Growth 42^0	POS	POS - BROWN DIFF PART

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

Figure 232: Pseudomonas aeruginosa isolate 7-of-53.

Reference No./Name: 12-1-06

Date Inoculated:

Final Identification: 12-8-06 Pseudomonas aeruginosa 12/8/06 P.S.

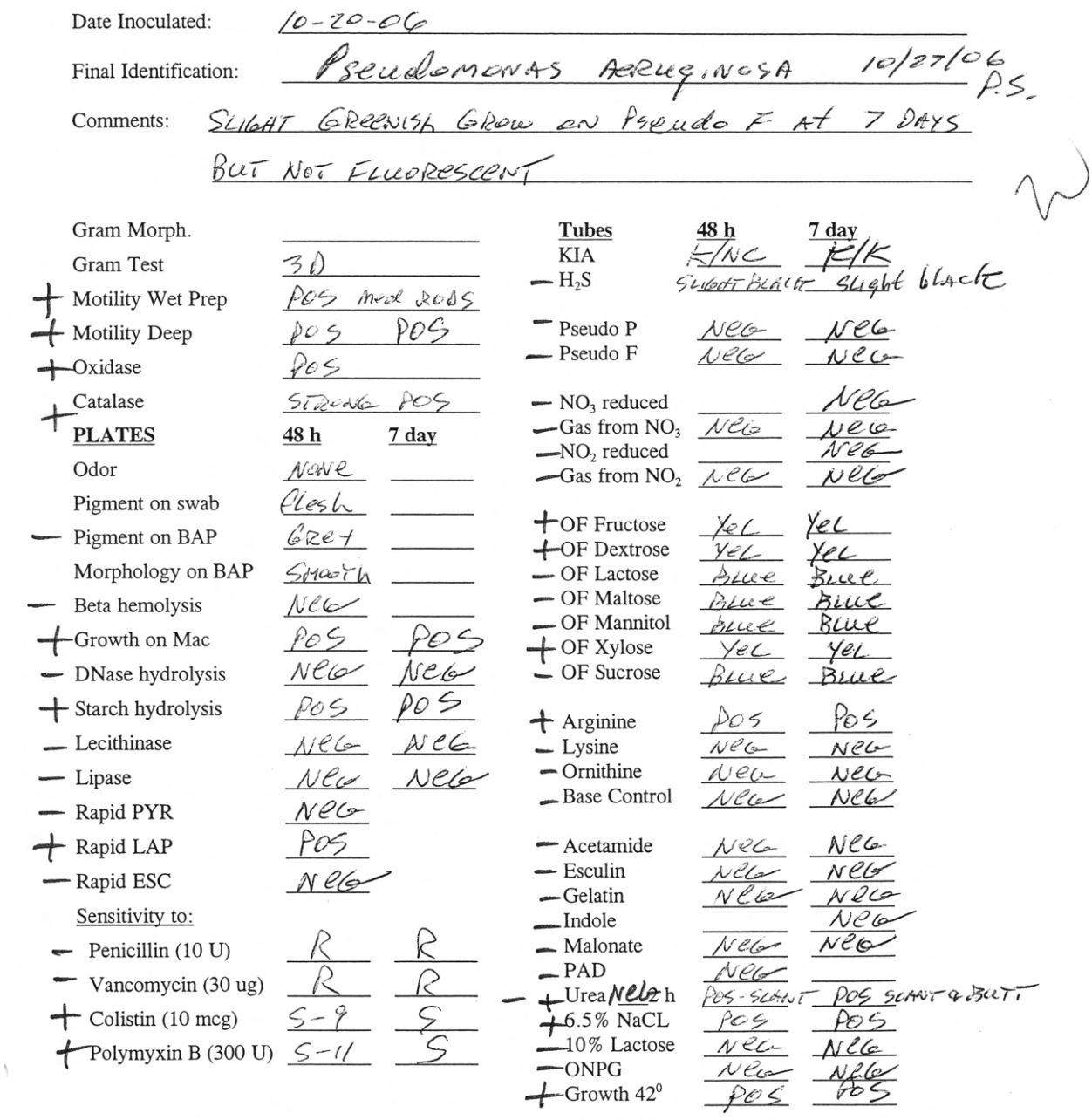
Comments:

12/5 (4D)

Gram Morph.			**Tubes**	**48 h**	**7 day**
Gram Test	24h		KIA	K/NC	K/K
Motility Wet Prep	Neg - med rods		− H_2S	Neg	Neg
+ Motility Deep	Pos	Pos	− Pseudo P	Neg	Neg
+ Oxidase	Pos		− Pseudo F	Neg	Neg
+ Catalase	Pos		+ NO_3 reduced		Pos
PLATES	**48 h**	**7 day**	+ Gas from NO_3	Pos	Pos
Odor	Pseudo		+ NO_2 reduced		Pos
Pigment on swab	Flesh		+ Gas from NO_2	Pos	Pos
− Pigment on BAP	Grey		+ OF Fructose	Grn/Blue	Grn/Blue - Yel on surface
Morphology on BAP	Metallic	Sheen	+ OF Dextrose	Yel	Yel
+ Beta hemolysis	Pos	Pos	− OF Lactose	Blue	Blue
+ Growth on Mac	Pos	Pos	− OF Maltose	Blue	Blue
− DNase hydrolysis	Neg	Neg	+ OF Mannitol	Grn/Blue	Grn/Blue - Yel on surface
− Starch hydrolysis	Neg	Neg	+ OF Xylose	Yel	Yel !
− Lecithinase	Neg	Neg	− OF Sucrose	Blue	Blue
− Lipase	Neg	Neg	+ * Arginine	Pos	Pos
− Rapid PYR	Neg		− Lysine	Neg	Neg
+ Rapid LAP	Pos		− Ornithine	Neg	Neg
− Rapid ESC	Neg		− Base Control	Neg	Neg
Sensitivity to:			− Acetamide	Neg	Neg
− Penicillin (10 U)	R	R	− Esculin	Neg	Neg
− Vancomycin (30 ug)	R	R	− Gelatin	Neg	Neg
+ Colistin (10 mcg)	S-16	S	− Indole		Neg
+ Polymyxin B (300 U)	S-19	S	− Malonate	Neg	Neg
			− PAD	Neg	—
			− Urea Neg 2 h	Neg	Neg
			− 6.5% NaCL	Neg	Neg
			− 10% Lactose	Neg	Neg
			− ONPG	Neg	Neg
			+ Growth 42°	Pos (mixed?)	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 233: Pseudomonas aeruginosa isolate 8-of-53.



Date Inoculated: 10-20-06

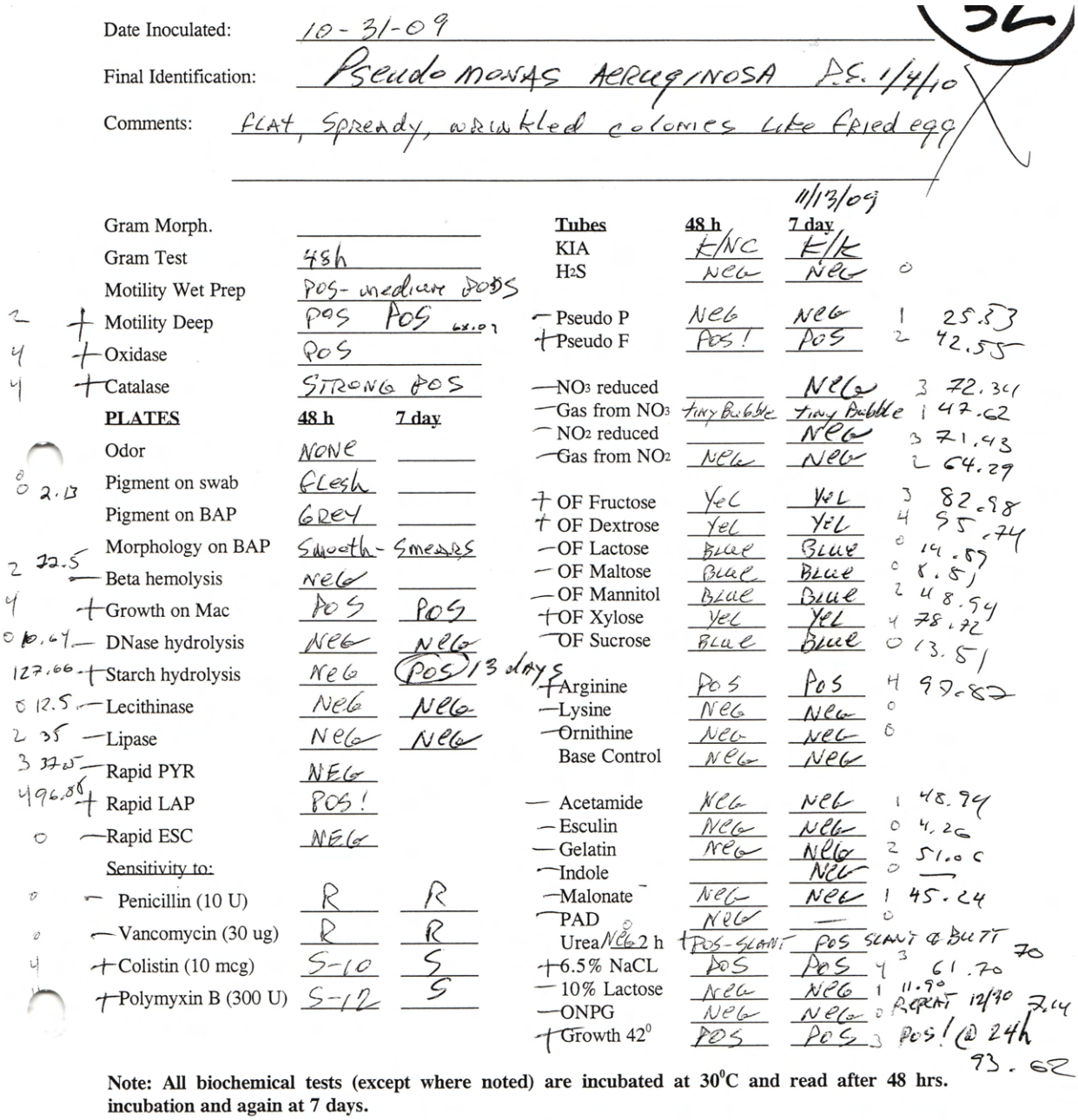
Final Identification: Pseudomonas aeruginosa 10/27/06 P.S.

Comments: Slight Greenish Grow on Pseudo F at 7 days But Not Fluorescent

				Tubes	48 h	7 day
	Gram Morph.			KIA	K/NC	K/K
	Gram Test	3D		− H_2S	Slight Black	Slight black
+	Motility Wet Prep	Pos mod Rods				
+	Motility Deep	Pos	Pos	− Pseudo P	Neg	Neg
+	Oxidase	Pos		− Pseudo F	Neg	Neg
+	Catalase	Strong Pos		− NO_3 reduced		Neg
	PLATES	**48 h**	**7 day**	−Gas from NO_3	Neg	Neg
	Odor	None		−NO_2 reduced		Neg
	Pigment on swab	Flesh		−Gas from NO_2	Neg	Neg
−	Pigment on BAP	Grey		+OF Fructose	Yel	Yel
	Morphology on BAP	Smooth		+OF Dextrose	Yel	Yel
−	Beta hemolysis	Neg		− OF Lactose	Blue	Blue
+	Growth on Mac	Pos	Pos	− OF Maltose	Blue	Blue
−	DNase hydrolysis	Neg	Neg	− OF Mannitol	Blue	Blue
+	Starch hydrolysis	Pos	Pos	+ OF Xylose	Yel	Yel
−	Lecithinase	Neg	Neg	− OF Sucrose	Blue	Blue
−	Lipase	Neg	Neg	+ Arginine	Pos	Pos
−	Rapid PYR	Neg		− Lysine	Neg	Neg
+	Rapid LAP	Pos		− Ornithine	Neg	Neg
−	Rapid ESC	Neg		− Base Control	Neg	Neg
	Sensitivity to:			− Acetamide	Neg	Neg
−	Penicillin (10 U)	R	R	− Esculin	Neg	Neg
−	Vancomycin (30 ug)	R	R	−Gelatin	Neg	Neg
+	Colistin (10 mcg)	S-9	S	−Indole		Neg
+	Polymyxin B (300 U)	S-11	S	− Malonate	Neg	Neg
				− PAD	Neg	
				− +Urea Neg h	Pos-Slant	Pos Slant & Butt
				+6.5% NaCL	Pos	Pos
				−10% Lactose	Neg	Neg
				−ONPG	Neg	Neg
				+Growth 42^0	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 234: Pseudomonas aeruginosa isolate 9-of-53.



Date Inoculated: 10-31-09

Final Identification: Pseudomonas aeruginosa P.S. 1/4/10

Comments: Flat, Spready, wrinkled colonies like fried egg

	Gram Morph.		
	Gram Test	48h	
	Motility Wet Prep	POS- medium PODS	
2 +	Motility Deep	POS POS 6x.07	
4 +	Oxidase	POS	
4 +	Catalase	STRONG POS	
	PLATES	**48 h**	**7 day**
	Odor	NONE	
0 0 2.13	Pigment on swab	Flesh	
	Pigment on BAP	GREY	
	Morphology on BAP	Smooth- Smears	
2 72.5 —	Beta hemolysis	NEG	
4 +	Growth on Mac	POS	POS
0 10.64 —	DNase hydrolysis	NEG	NEG
127.66 +	Starch hydrolysis	NEG	POS 13 days
0 12.5 —	Lecithinase	NEG	NEG
2 35 —	Lipase	NEG	NEG
3 37.05 —	Rapid PYR	NEG	
496.88 +	Rapid LAP	POS!	
0 —	Rapid ESC	NEG	
	Sensitivity to:		
0 —	Penicillin (10 U)	R	R
0 —	Vancomycin (30 ug)	R	R
4 +	Colistin (10 mcg)	S-10	S
+	Polymyxin B (300 U)	S-12	S

			11/13/09	
	Tubes	**48 h**	**7 day**	
	KIA	K/NC	K/K	
	H_2S	NEG	NEG	0
—	Pseudo P	NEG	NEG	1 25.53
+	Pseudo F	POS!	POS	2 42.55
—	NO_3 reduced		NEG	3 72.34
—	Gas from NO_3	tiny Bubble	tiny Bubble	1 47.62
—	NO_2 reduced		NEG	3 71.43
—	Gas from NO_2	NEG	NEG	2 64.29
+	OF Fructose	YEL	YEL	3 82.98
+	OF Dextrose	YEL	YEL	4 95.74
—	OF Lactose	BLUE	BLUE	0 14.89
—	OF Maltose	BLUE	BLUE	0 8.51
—	OF Mannitol	BLUE	BLUE	2 48.94
+	OF Xylose	YEL	YEL	4 78.72
—	OF Sucrose	BLUE	BLUE	0 13.51
+	Arginine	POS	POS	4 97.87
—	Lysine	NEG	NEG	0
—	Ornithine	NEG	NEG	0
	Base Control	NEG	NEG	
—	Acetamide	NEG	NEG	1 48.94
—	Esculin	NEG	NEG	0 4.26
—	Gelatin	NEG	NEG	2 51.06
—	Indole		NEG	0 —
—	Malonate	NEG	NEG	1 45.24
—	PAD	NEG	—	0
	Urea NEG 2 h	+ POS-SLANT	POS SLANT & BUTT	70
+	6.5% NaCL	POS	POS	4 3 61.70
—	10% Lactose	NEG	NEG	1 11.90
—	ONPG	NEG	NEG	0 REPEAT 12/30 7.14
+	Growth 42°	POS	POS	3 POS! @ 24h 93.62

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

Figure 235: Pseudomonas aeruginosa isolate 10-of-53.

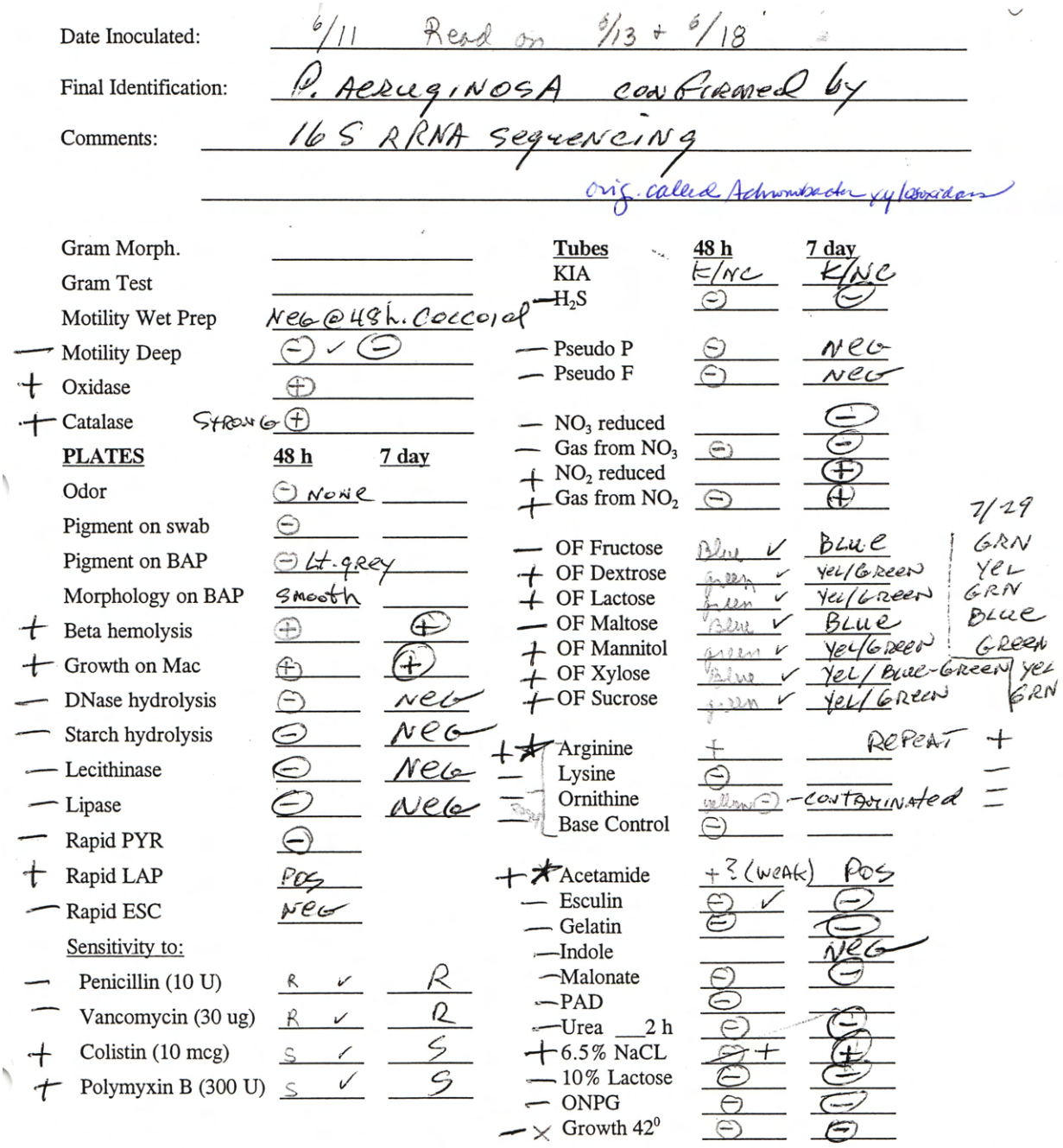


Figure 236: Pseudomonas aeruginosa isolate 11-of-53.

P. AERUGINOSA

Comments: P.S. 4/20/07

Gram Morph.		
Gram Test	48 h	
Motility Wet Prep	POS - Tiny Rods	
Motility Deep	POS	POS
Oxidase	POS	
Catalase	STRONG POS	

PLATES	48 h	7 day
Odor	None	
Pigment on swab	Flesh	
Pigment on BAP	GRAY-METALLIC SHEEN	
Morphology on BAP	Smooth	
Beta hemolysis	POS	
Growth on Mac	POS	POS
DNase hydrolysis	NEG	NEG - DARK BLUE
Starch hydrolysis	NEG	WEAK POS
Lecithinase	NEG	NEG
Lipase	NEG	NEG
Rapid PYR	NEG	
Rapid LAP	POS	
Rapid ESC	NEG	
Sensitivity to:		
Penicillin (10 U)	R	R
Vancomycin (30 ug)	R	R
Colistin (10 mcg)	S-15	S
Polymyxin B (300 U)	S-17	S

3/19/07

Tubes	48 h	7 day
KIA	K/NC	K/K
H_2S	NEG	NEG
Pseudo P	NEG	NEG
Pseudo F	NEG	NEG - TAN DIFF PIGMT
NO_3 reduced		POS
Gas from NO_3	Tiny Bubble	POS
NO_2 reduced		POS
Gas from NO_2	Tiny Bubble	POS
OF Fructose	GRN	GRN - YEL ON TOP
OF Dextrose	YEL	YEL
OF Lactose	BLUE	BLUE
OF Maltose	BLUE	BLUE
OF Mannitol	BLUE	GRN - YEL ON TOP
OF Xylose	GRN	YEL
OF Sucrose	BLUE	BLUE
Arginine	POS	POS
Lysine	NEG	NEG
Ornithine	NEG	NEG
Base Control	NEG	NEG
Acetamide	POS	Medium Blue (NOT DA
Esculin	NEG	NEG
Gelatin	NEG	NEG
Indole		NEG
Malonate	NEG	LIGHT BLUE
PAD	NEG	—
Urea NEG 2 h	NEG	NEG
6.5% NaCL	NEG	NEG
10% Lactose	NEG	NEG
ONPG	NEG	NEG
Growth 42°	POS	MIXED - REPEAT

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 POS BUT LOOKS MIXED
4/20 POS

Figure 237: Pseudomonas aeruginosa isolate 12-of-53.

Date Inoculated: 5-8-07

Final Identification: Pseudomonas Aeruginosa PS.

Comments: 5/15/07

REPEAT 24hr MOTILITY

Gram Morph.	24h very jittery but no directional motility		**Tubes**	**48 h**	**7 day**
Gram Test	POS		KIA	K/NC	K/K
Motility Wet Prep	Neg SMALL RODS JITTERY	48h Neg	H_2S	Neg	Neg
Motility Deep	Neg	Neg	Pseudo P	Neg	Neg
Oxidase	POS		Pseudo F	Neg	Neg
Catalase	STRONG POS		NO_3 reduced		POS AFTER ZINC
PLATES	**48 h**	**7 day**	Gas from NO_3	Neg	Neg
Odor	None		NO_2 reduced		POS
Pigment on swab	Flesh		Gas from NO_2	POS	POS
Pigment on BAP	Grey		−OF Fructose	Blue	Blue
Morphology on BAP	Smooth		+OF Dextrose	Yel	Yel
Beta hemolysis	POS	POS	− OF Lactose	Blue	Blue
Growth on Mac	POS	POS	−OF Maltose	Blue	Blue
DNase hydrolysis	Neg	Neg	−OF Mannitol	Blue	Blue
Starch hydrolysis	Neg	WEAK POS	+OF Xylose	Yel	Yel
Lecithinase	Neg	Neg	−OF Sucrose	Blue	Blue
Lipase	Neg	POS ?	Arginine	POS	POS
Rapid PYR	Neg		Lysine	Neg	Neg
Rapid LAP	POS		Ornithine	Neg	Neg
Rapid ESC	Neg		Base Control	Neg	Neg
Sensitivity to:			Acetamide	Slight blue	POS
Penicillin (10 U)	R	R	Esculin	Neg	Neg
Vancomycin (30 ug)	R	R	Gelatin	Neg	POS !
Colistin (10 mcg)	S-15	S	Indole		Neg
Polymyxin B (300 U)	R-10	S	Malonate	Neg	Neg
			PAD	Neg	—
			Urea ~~Neg~~ 2 h	Neg	Neg
			6.5% NaCL	Neg	Neg
			10% Lactose	Neg	Neg
			ONPG	Neg	Neg
			Growth 42^0	POS	POS

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

Figure 238: Pseudomonas aeruginosa isolate 13-of-53.

Date Inoculated: 5-8-07

Final Identification: Pseudomonas aeruginosa P.S. 5/15/07

Comments: Yel diff pigment on starch & Egg Yolk

Gram Morph.		
Gram Test	24h	48h
Motility Wet Prep - POS	NEG - small rods jittery	POS
Motility Deep	POS	POS
Oxidase	POS	
Catalase	STRONG PO	

PLATES	48 h	7 day
Odor	None	
Pigment on swab	flesh	
Pigment on BAP	Grey	
Morphology on BAP	Smooth	
Beta hemolysis	NEG	weak beta
Growth on Mac	POS	POS
DNase hydrolysis	NEG	NEG
Starch hydrolysis	NEG	NEG
Lecithinase	NEG	NEG
Lipase	NEG	NEG
Rapid PYR	NEG	
Rapid LAP	POS	
Rapid ESC	NEG	
Sensitivity to:		
Penicillin (10 U)	R1	R
Vancomycin (30 ug)	R	R
Colistin (10 mcg)	S-14	S
Polymyxin B (300 U)	S-16	S

Tubes	48 h	7 day
KIA	K/NC	K/K
H_2S	NEG	NEG
Pseudo P	NEG	NEG
Pseudo F	POS!	POS
NO_3 reduced		POS after zinc
Gas from NO_3	NEG	NEG
NO_2 reduced		POS
Gas from NO_2	POS	POS
+ OF Fructose	Blue/GRN	GRN
+ OF Dextrose	GRN	GRN
– OF Lactose	Blue	Blue
– OF Maltose	↓	↓
– OF Mannitol	↓	↓
– OF Xylose	↓	↓
– OF Sucrose	↓	↓
Arginine	POS	POS
Lysine	NEG	NEG
Ornithine	NEG	NEG
Base Control	NEG	NEG
Acetamide	NEG	NEG
Esculin	NEG	NEG
Gelatin	NEG	NEG
Indole		NEG
Malonate	NEG	NEG
PAD	NEG	—
Urea NEG 2 h	NEG	NEG
6.5% NaCL	NEG	NEG
10% Lactose	NEG	NEG
ONPG	NEG	NEG
Growth 42^0	POS	POS

Note: All biochemical tests (except where noted) are incubated at 30^0C 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: Pseudomonas Aeruginosa

Comments: Blue Diff Pigmt on Starch @ 7D

Gram Morph.		
Gram Test	48h	
Motility Wet Prep	POS	very jittery some seem to spin in place
Motility Deep	NEG	NEG no directional motility
Oxidase	POS	
Catalase	Strong POS	
PLATES	**48 h**	**7 day**
Odor	Sticks - dirty socks	
Pigment on swab	Buff	
Pigment on BAP	Grey	
Morphology on BAP	Smooth	
Beta hemolysis	POS	
Growth on Mac	Poor growth	good @ 7D
DNase hydrolysis	NEG	NEG
Starch hydrolysis	NEG	NEG
Lecithinase	NEG	NEG
Lipase	NEG	NEG
Rapid PYR	NEG	
Rapid LAP	POS	
Rapid ESC	NEG	
Sensitivity to:		
Penicillin (10 U)	R	R
Vancomycin (30 ug)	R	R
Colistin (10 mcg)	S-16	S
Polymyxin B (300 U)	S-17	S

Tubes	48 h	7 day
KIA	K/NG	K/NC
H_2S	NEG	
Pseudo P	POS (faint)	NEG
Pseudo F	NEG	NEG
NO_3 reduced		NEG
Gas from NO_3	NEG	Tiny bubble
NO_2 reduced		NEG
Gas from NO_2	NEG	NEG
OF Fructose	Blue	Blue
OF Dextrose	Grn	Yel
OF Lactose	Blue	Blue
OF Maltose	↓	Blue
OF Mannitol	↓	Blue
OF Xylose	↓	Yel
OF Sucrose	↓	Blue
Arginine	POS	POS
Lysine	NEG	NEG
Ornithine	NEG	NEG
Base Control	NEG	NEG
Acetamide	NEG	NEG
Esculin	NEG	NEG
Gelatin	NEG	NEG
Indole		
Malonate	NEG	NEG
PAD	NEG	—
Urea NEG 2 h	NEG	NEG
6.5% NaCL	NEG	NEG
10% Lactose	NEG	NEG
ONPG	NEG	NEG
Growth 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 240: Pseudomonas aeruginosa isolate 15-of-53.

Date Inoculated: 5-10-07

Final Identification: Pseudomonas Aeruginosa P.S. 5/17/07

Comments: Pyocyanin on top of HI Broth at 7 D.

Gram Morph.		
Gram Test	48h	
Motility Wet Prep	Pos - Lots of spinning	
Motility Deep	Neg	Pos
Oxidase	Pos	
Catalase	Strong Pos	
PLATES	**48 h**	**7 day**
Odor	very fruity	
Pigment on swab	TAN	
Pigment on BAP	Grey	
Morphology on BAP	Smooth	
Beta hemolysis	Pos	
Growth on Mac	Pos	Pos
DNase hydrolysis	Neg	Pos
Starch hydrolysis	Neg	Neg
Lecithinase	Neg	Neg
Lipase	Neg	Neg
Rapid PYR	Neg	
Rapid LAP	Neg	
Rapid ESC	Neg	
Sensitivity to:		
Penicillin (10 U)	R	R
Vancomycin (30 ug)	R	R
Colistin (10 mcg)	S-11	S
Polymyxin B (300 U)	S-12	S

Tubes	**48 h**	**7 day**
KIA	K/NC	K/K
H_2S	Neg	Slight H_2S
Pseudo P	Neg	Neg
Pseudo F	Neg	Neg
NO_3 reduced		Pos
Gas from NO_3	Pos	Pos
NO_2 reduced		Pos
Gas from NO_2	Pos	Pos
OF Fructose	Blue	Blue
OF Dextrose	Yel	Yel
OF Lactose	Blue	Blue
OF Maltose	Blue	Blue
OF Mannitol	GRN	Yel/GRN
OF Xylose	Yel	Yel
OF Sucrose	Blue	Blue
Arginine	Pos	Pos
Lysine	Neg	Neg
Ornithine	Neg	Neg
Base Control	Neg	Neg
Acetamide	Pos	Pos
Esculin	Neg	Neg
Gelatin	Pos	Pos
Indole		- Pyocyanin pigment on top
Malonate	Pos	Pos
PAD	Neg	
Urea Neg 2 h	Pos slant	Pos slant & butt
6.5% NaCL	Neg	Pos
10% Lactose	Neg	Neg
ONPG	Neg	Neg
Growth 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 241: Pseudomonas aeruginosa isolate 16-of-53.

Date Inoculated: 6-14-07

Final Identification: 6-20-07

Comments: Red diffusible pigment on Pseudo P, PAD, TSA

Brown pigment all tubes @ 7 D Pseudomonas aeruginosa 24h 6/20/07 P.S.

Gram Morph.	
Gram Test	48h
Motility Wet Prep	POS - Short Rods
Motility Deep	NEG - POS
Oxidase	POS
Catalase	STRONG POS

PLATES	48 h	7 day
Odor	NONE	
Pigment on swab	FLESH	
Pigment on BAP	GREY	
Morphology on BAP	SMOOTH	
Beta hemolysis	NEG	TURNS BAD GREEN
Growth on Mac	POS	POS
DNase hydrolysis	NEG	NEG
Starch hydrolysis	NEG	NEG
Lecithinase	NEG	NEG
Lipase	NEG	NEG
Rapid PYR	NEG	
Rapid LAP	POS	
Rapid ESC	NEG	
Sensitivity to:		
Penicillin (10 U)	R	R
Vancomycin (30 ug)	R	R
Colistin (10 mcg)	S-11	S
Polymyxin B (300 U)	S-16	S

Tubes	48 h	7 day
KIA	NC/NC	K/K
H_2S	NEG	NEG
Pseudo P	LT. Red	BROWN PYORUBIN
Pseudo F	NEG	BROWN
NO_3 reduced		POS
Gas from NO_3	NEG	TINY BUBBLE
NO_2 reduced		POS
Gas from NO_2	NEG	POS
OF Fructose	GRN	GRY/BLUE
OF Dextrose	YEL	YEL
OF Lactose	BLU/GRN	BLUE
OF Maltose	BLU/GRN	BLUE
OF Mannitol	BLU/GRN	BLUE
OF Xylose	YEL	YEL
OF Sucrose	BLU/GRN	BLUE
* Arginine	POS	POS
Lysine	NEG	NEG
Ornithine	NEG	NEG
Base Control	NEG	NEG
Acetamide	NEG	POS
Esculin	NEG	NEG
Gelatin	NEG	POS!
Indole		NEG
Malonate	NEG	LT. BLUE
PAD		
Urea NEG 2 h	NEG	POS-SLANT ONLY
6.5% NaCL	NEG	NEG
10% Lactose	NEG	NEG
ONPG	NEG	NEG
* Growth 42^0	POS	POS RED DIFFUSIBLE PIGMENT

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

Figure 242: Pseudomonas aeruginosa isolate 17-of-53.

Date Inoculated: 6-14

Final Identification: 6-20-07

Comments: Pseudomonas aeruginosa 6/20/07 P.S.

Gram Morph.		
Gram Test	48h	
Motility Wet Prep	POS - Extremely motile!	
Motility Deep	Neg	Neg
Oxidase	POS	
Catalase	Strong	POS

PLATES	48 h	7 day
Odor	None	
Pigment on swab	flesh	
Pigment on BAP	Grey	
Morphology on BAP	Smooth - Sheen - Like Spreading	
Beta hemolysis	POS Slight Beta	POS
+ Growth on Mac	POS	POS
+ DNase hydrolysis	Neg	POS
+ Starch hydrolysis	Neg	weak +
Lecithinase	Neg	Neg
Lipase	Neg	Neg
Rapid PYR	Neg	
Rapid LAP	POS	
Rapid ESC	Neg	
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

Tubes	48 h	7 day
KIA	K/NC	K/K
H_2S	Neg	Slight H_2S
Pseudo P	Neg	POS - Blue
Pseudo F	Neg	Neg
NO_3 reduced		POS
Gas from NO_3	POS	POS
NO_2 reduced		POS
Gas from NO_2	POS	POS
OF Fructose	Yel	Yel
OF Dextrose	Yel	Yel
OF Lactose	Not Inocul	Blue
OF Maltose	Blue	Blue
OF Mannitol	Yel	Yel
OF Xylose	Yel	Yel
OF Sucrose	GRN	Blue
* Arginine	POS	POS
Lysine	Neg	Neg
Ornithine	Neg	Neg
Base Control	Neg	Neg
* Acetamide	POS	POS
Esculin	Neg	Neg
Gelatin	Neg	Neg
Indole		Neg
Malonate	Neg	POS
PAD		Neg
Urea N2Q2 h	Neg	POS - SLANT
6.5% NaCL	Neg	POS
10% Lactose	Neg	Neg
ONPG	Neg	Neg
* Growth 42^0	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 243: Pseudomonas aeruginosa isolate 18-of-53.

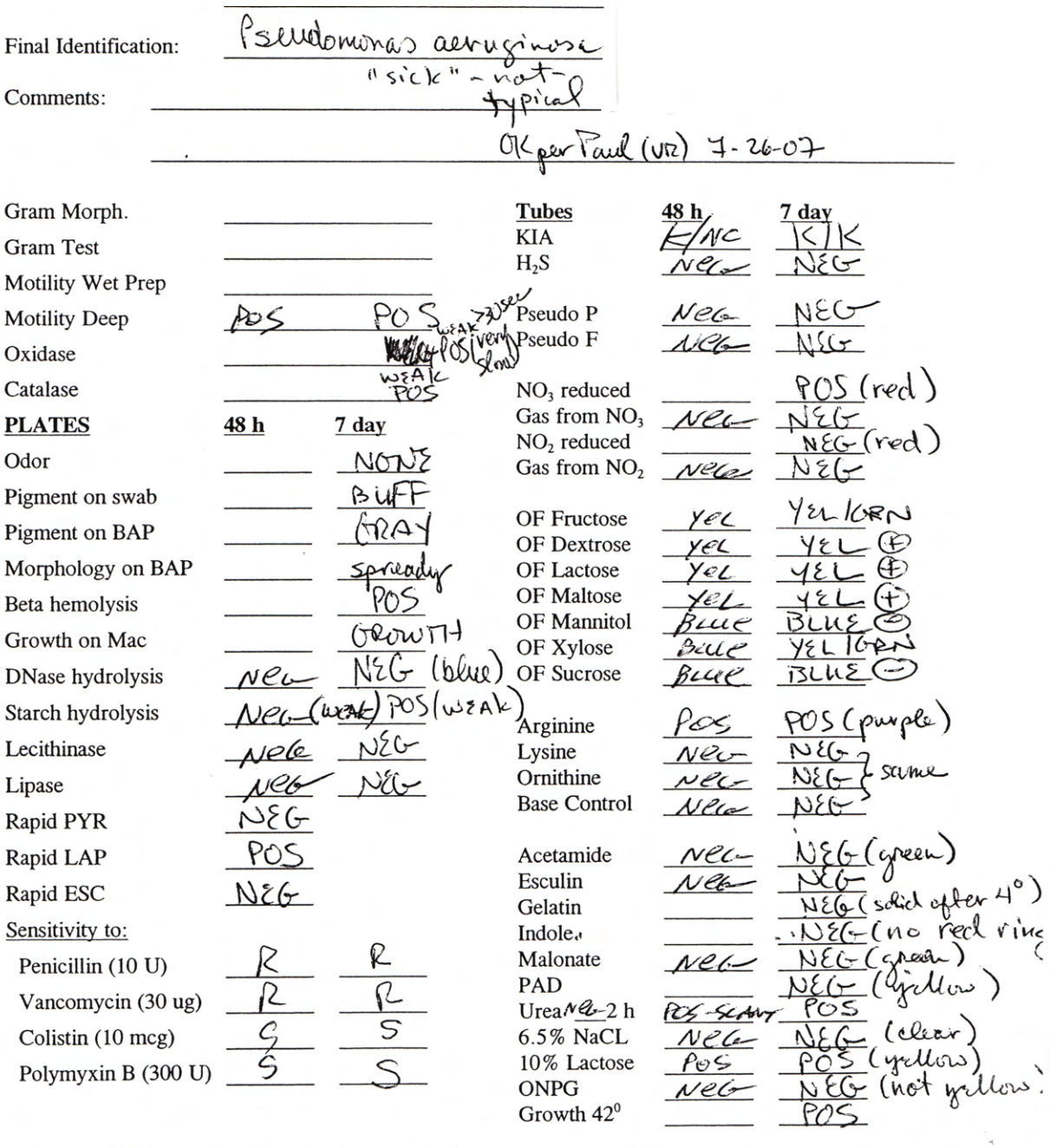


Figure 244: Pseudomonas aeruginosa isolate 19-of-53.

Comments: #2 - ox + - Beta - hemolytic colonies
Pseudomonas Aeruginosa P.S. 10/31/08

Gram Morph.		
Gram Test	24h 48hr	
Motility Wet Prep	Neg Neg	very jittery
Motility Deep	Neg	
Oxidase	Pos	
Catalase	STRONG Pos	

PLATES	48 h	7 day
Odor	None	None
Pigment on swab	flesh	
Pigment on BAP	GREY	
Morphology on BAP	Smooth - Smears	
Beta hemolysis	Pos	Pos
Growth on Mac		Pos
DNase hydrolysis		Neg
Starch hydrolysis		Neg
Lecithinase		Neg
Lipase		Pos
Rapid PYR	w +	
Rapid LAP	Strong +	
Rapid ESC	Neg	
Sensitivity to:		
Penicillin (10 U)		R
Vancomycin (30 ug)		R
Colistin (10 mcg)		S - 22
Polymyxin B (300 U)		S - 24

Tubes	48 h	7 day	
KIA		K/K	
H_2S		Neg	
Pseudo P		Neg	Faint red DIFG pgmt on Pseud P 10/22 Repeat 10/20 Pos
Pseudo F		Neg	
NO_3 reduced		Neg	
Gas from NO_3		Pos ?	Neg Pos
NO_2 reduced		Pos	Pos
Gas from NO_2		Pos	Neg Pos
OF Fructose		Blue	10/31
OF Dextrose		Yel	11 DAYS
OF Lactose		Blue	
OF Maltose		Blue	
OF Mannitol		Blue	
OF Xylose		Yel	
OF Sucrose		GRN/Yel	
Arginine		Pos	
Lysine		Neg	
Ornithine		Neg	
Base Control		Neg	
Acetamide		Neg	
Esculin		Neg	
Gelatin		Pos !	
Indole		Neg	
Malonate		Neg	
PAD		Neg	
Urea Neg 2 h		Neg	
6.5% NaCL		Pos	
10% Lactose		Neg	
ONPG		Neg	
Growth 42^0		Pos	

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

Figure 245: Pseudomonas aeruginosa isolate 20-of-53.

Date Inoculated: 4-1-09

Final Identification: "sick" Pseudomonas aeruginosa

Comments: same as patient's prev isolates

					4-13-09
Gram Morph.			**Tubes**	**48 h**	**7 day**
Gram Test	24h		KIA	K/NC	K/K
Motility Wet Prep	NEG TINY RODS OR EB		H_2S	NEG	NEG
Motility Deep	NEG POS-12 DAYS		Pseudo P	NEG	NEG
Oxidase	POS		Pseudo F	NEG	NEG
Catalase	STRONG POS		NO_3 reduced		POS
PLATES	**48 h**	**7 day**	Gas from NO_3	NEG	NEG
Odor	NONE		NO_2 reduced		POS
Pigment on swab	LIGHT		Gas from NO_2	POS	POS
Pigment on BAP	GREY		†OF Fructose	GRN	YEL/GRN
Morphology on BAP	SMOOTH		†OF Dextrose	YEL	YEL
Beta hemolysis	NEG		OF Lactose	~~BLUE~~	
Growth on Mac	POS	POS	OF Maltose	BLUE	BLUE
DNase hydrolysis	NEG	NEG	OF Mannitol	BLUE	BLUE
Starch hydrolysis	NEG	NEG	†OF Xylose	YEL	YEL
Lecithinase	NEG	NEG	OF Sucrose	BLUE	BLUE
Lipase	NEG	NEG	Arginine	POS	POS
Rapid PYR	NEG (FAINT PINK)		Lysine	NEG	NEG
Rapid LAP	POS		Ornithine	NEG	NEG
Rapid ESC	NEG		Base Control	NEG	NEG
Sensitivity to:			Acetamide	NEG	NEG
Penicillin (10 U)	R	R	Esculin	NEG	NEG
Vancomycin (30 ug)	R	R	Gelatin	NEG	NEG
Colistin (10 mcg)	S-12	S	Indole		NEG
Polymyxin B (300 U)	S-14	S	Malonate	NEG	BLUE - POS
			PAD	NEG	
			Urea NEG 2 h	POS SLANT	POS SLANT & BUTT
			6.5% NaCL	NEG	POS
			10% Lactose	NEG	NEG
			ONPG	NEG	NEG
			Growth 42^0	POS	POS

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

Figure 246: Pseudomonas aeruginosa isolate 21-of-53.

Date Inoculated: 6-10-09

Final Identification: 6-16-09 P. AERUGINOSA 6/19/09 D.S.

Comments:

Gram Morph.	Medium Rods		**Tubes**	**48 h**	**7 day**
Gram Test	6 DAY	1 DAY	KIA		K/K
Motility Wet Prep	NEG	NEG	H_2S		NEG
Motility Deep	NEG		Pseudo P		POS
Oxidase	POS		Pseudo F		POS
Catalase	STRONG	POS	NO_3 reduced		POS
PLATES	**48 h**	**7 day**	Gas from NO_3		NEG
Odor	Slightly fruity		NO_2 reduced		POS
Pigment on swab	TAN		Gas from NO_2		POS
Pigment on BAP	GREY		OF Fructose		YEL
Morphology on BAP	DRY		OF Dextrose		YEL
Beta hemolysis	POS		OF Lactose		BLUE
Growth on Mac		POS	OF Maltose		BLUE
DNase hydrolysis		NEG	OF Mannitol		YEL
Starch hydrolysis		NEG	OF Xylose		YEL
Lecithinase		NEG	OF Sucrose		BLUE
Lipase		POS	Arginine		POS
Rapid PYR	POS		Lysine		NEG
Rapid LAP	POS		Ornithine		NEG
Rapid ESC	NEG		Base Control		NEG
Sensitivity to:			Acetamide		POS!
Penicillin (10 U)		R	Esculin		NEG
Vancomycin (30 ug)		R	Gelatin		POS
Colistin (10 mcg)		S-11	Indole		NEG
Polymyxin B (300 U)		S-12	Malonate		POS
			PAD		NEG VIOLET SLANT
			Urea ___2 h		POS
			6.5% NaCL		POS
			10% Lactose		NEG
			ONPG		NEG
			Growth 42^0		POS

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

Figure 247: Pseudomonas aeruginosa isolate 22-of-53.

Date Inoculated: 08/30/10

Final Identification: Pseudomonas aeruginosa P.S. 9/3/10

Comments:

Gram Morph.			**Tubes**	**48 h**	**7 day** (4 DAY)
Gram Test			KIA	NC/NC	K/NC
Motility Wet Prep	neg		H_2S	neg	Neg
Motility Deep	positive POS		Pseudo P	neg	Neg
Oxidase	positive		Pseudo F	neg	Neg
Catalase	very strong		NO_3 reduced		POS
PLATES	**48 h**	**7 day** 4 DAY	Gas from NO_3	neg	TINY BUBBLE
Odor	none		NO_2 reduced		POS
Pigment on swab	flesh		Gas from NO_2	tiny bubble	BIG BUBBLE
Pigment on BAP	grey		+ OF Fructose	green	GRN
Morphology on BAP	Spready		+ OF Dextrose	yellow	YEL
Beta hemolysis	pos	POS	− OF Lactose	green	BLUE
Growth on Mac	growth	GROWTH	− OF Maltose	green	BLUE
DNase hydrolysis	neg	Neg	− OF Mannitol	green	BLUE
Starch hydrolysis	neg	Neg	+ OF Xylose	yellow	YEL
Lecithinase	neg	Neg	− OF Sucrose	green	BLUE
Lipase	N	Neg (WEAK POS LIPASE 9/7/10 8 DAYS)	Arginine	pos	POS
Rapid PYR	neg		Lysine	neg	Neg
Rapid LAP	pos		Ornithine	neg	Neg
Rapid ESC	neg		Base Control	neg	Neg
Sensitivity to:			Acetamide	neg	Neg
Penicillin (10 U)	R	R	Esculin	neg	Neg
Vancomycin (30 ug)	R	R	Gelatin	neg	Neg
Colistin (10 mcg)	12 S	S	Indole		Neg
Polymyxin B (300 U)	15 S	S	Malonate	neg	Neg (POS AT 8 DAYS)
			PAD	neg	—
			Urea ⊖ 2 h	neg	Neg
			6.5% NaCL	neg	Neg
			10% Lactose	neg	Neg
			ONPG	neg	Neg
			Growth 42°	neg	13 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 248: Pseudomonas aeruginosa isolate 23-of-53.

Date Inoculated: 6-20-11

Final Identification: Pseudomonas aeruginosa PS/6/24/11

Comments:

				6/24	6/29
Gram Morph.			**Tubes**	**48 h**	**7 day**
Gram Test	48h		KIA	K/K	~~K/K~~ ~~Black/K~~
Motility Wet Prep	Neg SM Rods		H_2S	Neg	Neg
Motility Deep	Pos	Pos	Pseudo P	Pos	~~Pos~~ PYORUBIN
Oxidase	Pos		Pseudo F	Pos	Pos
Catalase	STRONG Pos		NO_3 reduced		Pos
PLATES	**48 h**	**7 day**	Gas from NO_3	TINY BUBBLE	Pos
Odor	Norve		NO_2 reduced		Pos
Pigment on swab	Flesh		Gas from NO_2	Pos	Pos
Pigment on BAP	Grey		OF Fructose	GRN	Yel
Morphology on BAP	Smooth		OF Dextrose	Yel	Yel
Beta hemolysis	Neg		OF Lactose	Blue	Blue
Growth on Mac	Pos	Pos	OF Maltose	Blue	Blue
DNase hydrolysis	Neg	Neg	OF Mannitol	Yel	Yel
Starch hydrolysis	Neg	Neg	OF Xylose	Yel	Yel
Lecithinase	Neg	Neg	OF Sucrose	Blue	Blue
Lipase	Neg	Neg	Arginine	Pos	Pos
Rapid PYR	Neg		Lysine	Neg	Neg
Rapid LAP	Pos		Ornithine	Neg	Neg
Rapid ESC	Neg		Base Control	Neg	Neg
Sensitivity to:			Acetamide	Pos	Pos
Penicillin (10 U)	R	R	Esculin	Neg	Neg
Vancomycin (30 ug)	R	R	Gelatin		Pos!
Colistin (10 mcg)	S	S	Indole		Neg
Polymyxin B (300 U)	S	S	Malonate	Neg	Pos
			PAD		Neg
			Urea 2 h	Pos	Pos
			6.5% NaCL	~~Neg~~ W+	Pos
			10% Lactose	Neg	Neg
			ONPG	Pos	Pos
			Growth 42^0	Pos	Pos

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

Figure 249: Pseudomonas aeruginosa isolate 24-of-53.

Date Inoculated: 9-15-11

Final Identification: Pseudomonas aeruginosa 11-4-11 P.S.

Comments: PYOCYANIN ON TSA @ 24 h. PYORUBIN seen on Pseudo P AND STARCH Agar @ 24 h

				24 h	9/27 12 days
Gram Morph.			**Tubes**	~~48 h~~	7 day
Gram Test	24h		KIA	K/NC	K/K
Motility Wet Prep	NEG - SM Rods		H_2S	Neg	Neg
Motility Deep	Neg Pos?		Pseudo P	PYORUBIN	PYORUBIN
Oxidase	Pos		Pseudo F	Neg	Neg
Catalase	STRONG POS		NO_3 reduced		POS (after Zinc)
PLATES	**48 h**	**7 day**	Gas from NO_3	Neg	Neg
Odor	SWEET - GRAPES		NO_2 reduced		POS
Pigment on swab	Fresh		Gas from NO_2	POS	POS
Pigment on BAP	Butterscotch - GREY		OF Fructose	Blue	Yel-GRN
Morphology on BAP	Shiny		OF Dextrose	Yel	Yel
Beta hemolysis	~~Neg~~ POS		OF Lactose	Blue	Blue
Growth on Mac	Inhibited Growth	Growth	OF Maltose	Blue	Blue
DNase hydrolysis	Neg	Neg	OF Mannitol	Yel	Yel
Starch hydrolysis	Neg		OF Xylose	Yel	Yel
Lecithinase	Neg	Neg	OF Sucrose	Blue	Blue
Lipase	Neg	Neg	Arginine	Pos	Pos
Rapid PYR	Pos		Lysine	Neg	Neg
Rapid LAP	Pos		Ornithine	Neg	Neg
Rapid ESC	Neg		Base Control	Neg	Neg
Sensitivity to:			Acetamide	Pos	Pos
Penicillin (10 U)	R	R	Esculin	Neg	Neg
Vancomycin (30 ug)	R	R	Gelatin		POS!
Colistin (10 mcg)	S-10	S	Indole		Neg
Polymyxin B (300 U)	S-12	S	Malonate	Neg	POS!
			PAD	Neg	—
			Urea Neg 2 h	POS SLOW	POS!
			6.5% NaCL	Pos	Pos
			10% Lactose	Neg	Neg
			ONPG	Neg	Neg
			Growth 42°		POS

PYOCYANIN IN 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 250: Pseudomonas aeruginosa isolate 25-of-53.

Date Inoculated: 11-29-12

Final Identification: Pseudomonas aeruginosa P.S. 12/20/12

Comments:

			Tubes	12/1 48 h	12/20/12 7 day
Gram Morph.			KIA	K/NC	K/K
Gram Test	48h		H_2S	Neg	Neg
Motility Wet Prep	Neg - very sl. fiery				
Motility Deep	Neg Neg		Pseudo P	Neg	Neg
Oxidase	pos		Pseudo F	Neg	Neg
Catalase	Strong Pos		NO_3 reduced		Pos
PLATES	**48 h**	**7 day**	Gas from NO_3	Sm Bubble	Neg
Odor	None		NO_2 reduced		Neg
Pigment on swab	Grey-Translucent		Gas from NO_2	Neg	Neg
Pigment on BAP	flesh		OF Fructose	G.RN/Blue	Blue
Morphology on BAP	Poor Growth - smears		OF Dextrose		Yel
Beta hemolysis	Neg	Pos - 6 days	OF Lactose		Blue
Growth on Mac	Poor Growth	Pos	OF Maltose		Blue
DNase hydrolysis	neg Poor Growth	Neg	OF Mannitol		Blue
Starch hydrolysis	Neg	Neg 12/20	OF Xylose		Yel
Lecithinase	Neg - inhibited	Neg	OF Sucrose		Blue
Lipase	Neg - inhibited	Neg	Arginine	Pos	Pos
Rapid PYR	neg	Poor growth	Lysine	Neg	Neg
Rapid LAP	Pos		Ornithine	Neg	Neg
Rapid ESC	Neg		Base Control	Neg	Neg
Sensitivity to:			Acetamide	Neg	Neg
Penicillin (10 U)	R	R	Esculin	Neg	Neg
Vancomycin (30 ug)	R	R	Gelatin		Neg
Colistin (10 mcg)	S-16	S	Indole		Neg
Polymyxin B (300 U)	S-18	S	Malonate	Neg	Pos
			PAD	Neg	—
			Urea Neg 2 h	Neg	Pos
			6.5% NaCL	Neg	Neg
			10% Lactose	Neg	Neg
			ONPG	Neg	Neg
			Growth 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 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_3 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 (30μg)	0	9	0.00	14.96	Lysine	0	9	0.00	14.96
Colistin (10μg)	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 Pseudomonas alcaligenes P.S. W

Comments: 10/20/06

Box 1 #52 Recheck for ASHEXE

Gram Morph.		
Gram Test	24h	
Motility Wet Prep	POS - VERY ACTIVE SMALL RODS	
+ Motility Deep	POS	POS
+ Oxidase	POS	
+ Catalase	STRONG POS	
PLATES	24 ~~48~~ h	7 day
Odor	None	
Pigment on swab	Buff	
— Pigment on BAP	Grey -	
Morphology on BAP	Smooth -	SPARSE GROWTH @ 24h
— Beta hemolysis	NEG	
+ Growth on Mac	POS	POS
— DNase hydrolysis	NEG	NEG
— Starch hydrolysis	NEG	NEG
— Lecithinase	NEG	NEG
— Lipase	NEG	NEG
+ Rapid PYR	Lt. Pink	
+ Rapid LAP	POS!	
— Rapid ESC	NEG	
Sensitivity to:		
— Penicillin (10 U)	R	R
— Vancomycin (30 ug)	R	R
+ Colistin (10 mcg)	S-11	S
+ Polymyxin B (300 U)	S-16	S

Tubes	48 h	~~7~~ 8 day
KIA	K/NC	K/NG
— H_2S	NEG	BLACK @ INTERFACE
— Pseudo P	NEG	NEG
— Pseudo F	NEG	NEG
+ NO_3 reduced		POS
— Gas from NO_3	SM. bubble	SM. bubble
— NO_2 reduced		NEG
— Gas from NO_2	NEG	NEG
— OF Fructose	BLUE	BLUE
— OF Dextrose	↓	↓
— OF Lactose	↓	↓
— OF Maltose	↓	↓
— OF Mannitol	↓	↓
— OF Xylose	↓	↓
— OF Sucrose	↓	↓
— Arginine	NEG	NEG
— Lysine	↓	↓
— Ornithine	↓	↓
— Base Control	↓	↓
— Acetamide	NEG	NEG
— Esculin	NEG	NEG
— Gelatin	NEG	NEG
— Indole		NEG
— Malonate	NEG	NEG
— PAD	NEG	—
— Urea NEG 2 h	NEG	NEG
+ 6.5% NaCL	NEG	POS
— 10% Lactose	NEG	NEG
— ONPG	NEG	NEG
+ Growth 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.

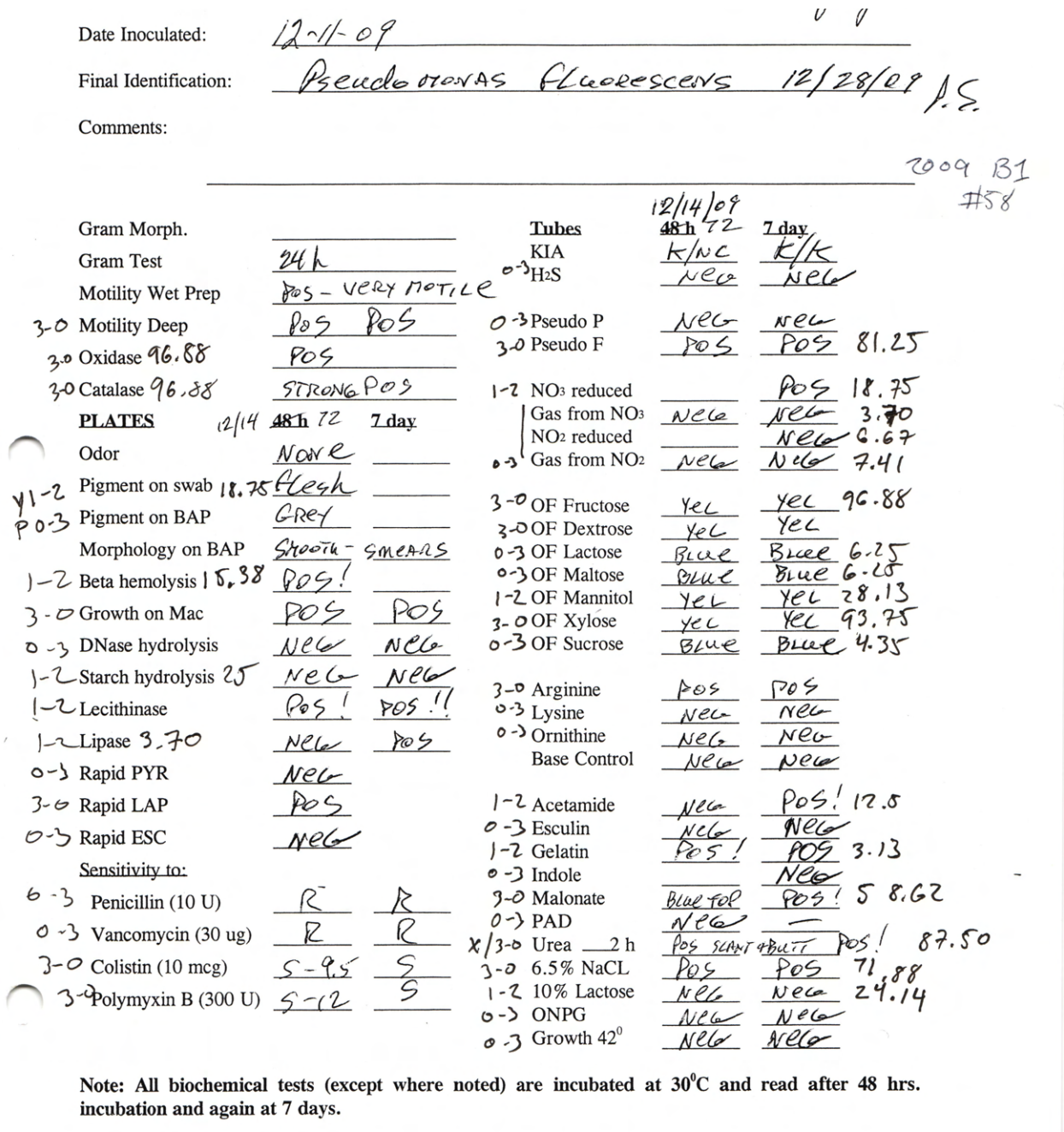
Figure 252: Pseudomonas alcaligenes isolate 1-of-9.

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%**	**W95%**
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_3 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 (30μg)	0	22	0.00	7.43	Lysine	0	22	0.00	7.43
Colistin (10μg)	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.



Date Inoculated: 12-11-09

Final Identification: Pseudomonas fluorescens 12/28/09 J.S.

Comments:

2009 B1 #58

					12/14/09 48 h 72	7 day
	Gram Morph.			Tubes		
	Gram Test	24h		KIA	K/NC	K/K
	Motility Wet Prep	Pos - very motile	0-3	H_2S	Neg	Neg
3-0	Motility Deep	Pos Pos	0-3	Pseudo P	Neg	Neg
3-0	Oxidase 96.88	Pos	3-0	Pseudo F	Pos	Pos 81.25
3-0	Catalase 96.88	STRONG Pos	1-2	NO_3 reduced		Pos 18.75
	PLATES 12/14 ~~48 h~~ 72	~~7 day~~		Gas from NO_3	Neg	Neg 3.70
	Odor	None		NO_2 reduced		Neg 6.67
Y1-2	Pigment on swab 18.75	flesh	0-3	Gas from NO_2	Neg	Neg 7.41
P0-3	Pigment on BAP	Grey	3-0	OF Fructose	Yel	Yel 96.88
	Morphology on BAP	Smooth - smears	3-0	OF Dextrose	Yel	Yel
1-2	Beta hemolysis 15.38	Pos!	0-3	OF Lactose	Blue	Blue 6.25
3-0	Growth on Mac	Pos Pos	0-3	OF Maltose	Blue	Blue 6.25
0-3	DNase hydrolysis	Neg Neg	1-2	OF Mannitol	Yel	Yel 28.13
1-2	Starch hydrolysis 25	Neg Neg	3-0	OF Xylose	Yel	Yel 93.75
1-2	Lecithinase	Pos! Pos!!	0-3	OF Sucrose	Blue	Blue 4.35
1-2	Lipase 3.70	Neg Pos	3-0	Arginine	Pos	Pos
0-3	Rapid PYR	Neg	0-3	Lysine	Neg	Neg
3-0	Rapid LAP	Pos	0-3	Ornithine	Neg	Neg
0-3	Rapid ESC	Neg		Base Control	Neg	Neg
	Sensitivity to:		1-2	Acetamide	Neg	Pos! 12.5
6-3	Penicillin (10 U)	R R	0-3	Esculin	Neg	Neg
0-3	Vancomycin (30 ug)	R R	1-2	Gelatin	Pos!	Pos 3.13
3-0	Colistin (10 mcg)	S-9.5 S	0-3	Indole		Neg
3-0	Polymyxin B (300 U)	S-12 S	3-0	Malonate	Blue top	Pos! 5 8.62
			0-3	PAD	Neg	—
			X/3-0	Urea 2 h	Pos slant + butt	Pos! 87.50
			3-0	6.5% NaCL	Pos	Pos 71.88
			1-2	10% Lactose	Neg	Neg 24.14
			0-3	ONPG	Neg	Neg
			0-3	Growth 42^0	Neg	Neg

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

Figure 253: Pseudomonas fluorescens isolate 1-of-22.

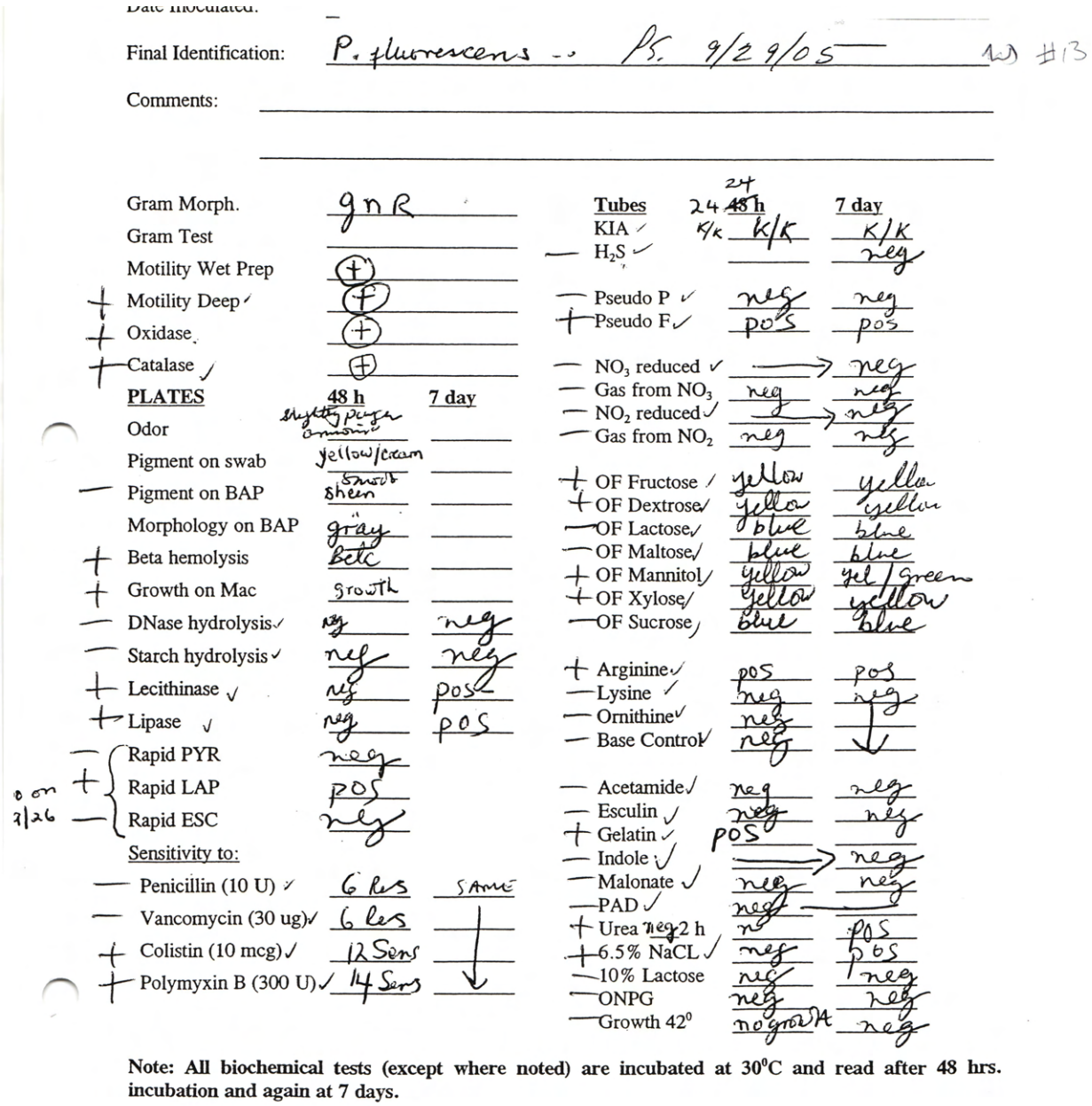


Figure 254: Pseudomonas fluorescens isolate 2-of-22.

Date Inoculated: 4-5-08

Final Identification: Pseudomonas fluorescens PS. 4/9/08

Comments:

				4/8 48 h	4/13 7 day (8 DAYS)
Gram Morph.			**Tubes**	**48 h**	**7 day**
Gram Test	48h		KIA	K/NC	K/K
Motility Wet Prep	POS small to medium RODS		H_2S	Neg	Neg
+ Motility Deep	POS	POS	Pseudo P	Neg	Neg
+ Oxidase	POS		Pseudo F	Neg	Neg
+ Catalase	POS		NO_3 reduced		Neg
PLATES	**48 h**	**7 day**	Gas from NO_3	Tiny Bubble	Tiny Bubble Neg
Odor	STRONG AMONIA		NO_2 reduced		Neg
Pigment on swab	flesh		Gas from NO_2	Neg	Neg
— Pigment on BAP	GREY		OF Fructose +	Yel	Yel
Morphology on BAP	FLAT - WRINKLED - TRANSLUCENT SMEARS		OF Dextrose +	Yel	Yel
— Beta hemolysis	Neg		OF Lactose —	Blue	Blue
+ Growth on Mac	POS	POS	OF Maltose —	Blue	Blue
— DNase hydrolysis	Neg - GREY GROWTH WITH LAVENDER RING BUT AGAR ALL BLUE	Neg	OF Mannitol —	Blue	Blue
— Starch hydrolysis	Neg	Neg	OF Xylose +	Yel	Yel
+ Lecithinase	POS!!	POS!!	OF Sucrose —	Blue	Blue
— Lipase	Neg	Neg	+ Arginine	Pos	Pos
— Rapid PYR	Neg		— Lysine	Neg	Neg
+ Rapid LAP	POS		— Ornithine	Neg	Neg
— Rapid ESC	Neg		Base Control	Neg	Neg
Sensitivity to:			— Acetamide	Neg	Neg
— Penicillin (10 U)	R	R	— Esculin	Neg	Neg
— Vancomycin (30 ug)	R	R	+ Gelatin	POS!	POS
+ Colistin (10 mcg)	S 10.4	S	— Indole	Neg	Neg
+ Polymyxin B (300 U)	S 11.8	S	— Malonate	Neg	Neg
			— PAD	Neg	—
			—/+ Urea Neg 2 h	POS!	POS
			— 6.5% NaCL	Neg	Neg
			— 10% Lactose	Neg	Neg
			— ONPG	Neg	Neg
			— Growth 42^0	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 255: Pseudomonas fluorescens isolate 3-of-22.

Date Inoculated: 1-24-07

Final Identification: 2-1-07 Pseudomonas fluorescens P.S.

Comments: 2-1-07

Gram Morph.			**Tubes**	**48 h**	**7 day**
Gram Test	24h		KIA	K/NC	K/K
Motility Wet Prep	POS- med to long Rods		H_2S	Neg	slight H_2S @ interface
Motility Deep	POS	POS	Pseudo P	Neg	Neg
Oxidase	POS		Pseudo F	Neg	Neg
Catalase	STRONG POS		NO_3 reduced		Neg
PLATES	**48 h**	**7 day**	Gas from NO_3		Neg
Odor	CABBAGE		NO_2 reduced	sm. bubble	~~sm. bubble~~ Neg
Pigment on swab	flesh		Gas from NO_2		sm. bubble Neg
Pigment on BAP	GREY		OF Fructose	Yel	Yel
Morphology on BAP	DULL, STRINGY, CAKES UP		OF Dextrose	Yel	Yel
Beta hemolysis	Neg	POS-48h	OF Lactose	Blue	slight Yel at Top
Growth on Mac	POS	POS	OF Maltose	Blue	Blue
DNase hydrolysis	neg	Neg	OF Mannitol	Yel	Yel
Starch hydrolysis	Neg	WT	OF Xylose	Yel	Yel !
Lecithinase	POS	POS ? *	OF Sucrose	Blue	Yel
Lipase	Neg	Neg	*Arginine	POS	POS
Rapid PYR	POS (weak)		Lysine	Neg	Neg
Rapid LAP	POS (strong)		Ornithine	Neg	Neg
Rapid ESC	Neg		Base Control	Neg	Neg
Sensitivity to:			Acetamide	Neg	Neg
Penicillin (10 U)	R	R	Esculin	Neg	Neg
Vancomycin (30 ug)	R	R	*Gelatin	POS !	POS !
Colistin (10 mcg)	S-12	S	Indole		
Polymyxin B (300 U)	S-14	S	Malonate	Light Blue AT TOP	POS
			PAD	Neg	—
			Urea 2 h	POS-SCANT	POS slant & butt
			6.5% NaCL	Neg	POS
			10% Lactose	Neg	Neg
			ONPG	Neg	Neg
			Growth 42°	Neg	Neg

* White band at each end of streak line looks like precipitan band

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.

~~P. aeruginosa~~

Comments: Pseudomonas fluorescens P.S.

3/20/07

3/19/07

Gram Morph.		
Gram Test	48h	
Motility Wet Prep	POS - SM. Rods	
Motility Deep	POS	POS
Oxidase	POS (DELAYED)	
Catalase	STRONG POS	

PLATES	48 h	7 day
Odor	Pseudo	
Pigment on swab	flesh	
Pigment on BAP	GREY	
Morphology on BAP	mucoid	
Beta hemolysis	POS	
Growth on Mac	POS	POS
DNase hydrolysis	NEG	NEG
Starch hydrolysis	NEG	NEG
Lecithinase	NEG	NEG
Lipase	NEG	POS
Rapid PYR	NEG	
Rapid LAP	POS	
Rapid ESC	NEG	
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

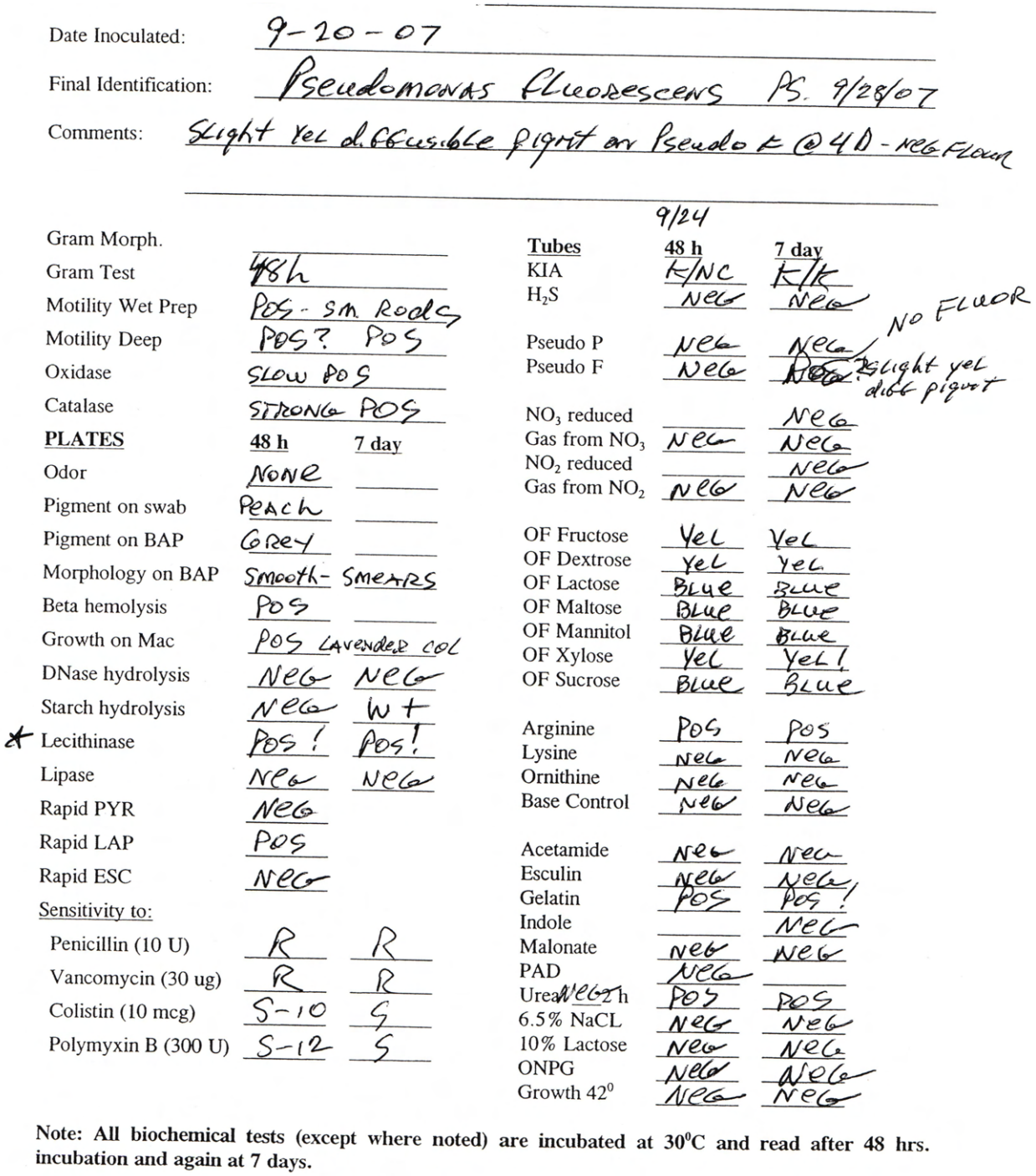
Tubes	48 h	7 day
KIA	K/NC	K/K
H_2S	NEG	NEG
Pseudo P	NEG	NEG
Pseudo F	POS	POS
NO_3 reduced		POS
Gas from NO_3	NEG	NEG
NO_2 reduced		POS
Gas from NO_2	TINY Bubbles	POS
OF Fructose	YEL	YEL
OF Dextrose	YEL	YEL
OF Lactose	BLUE	BLUE
OF Maltose	BLUE	BLUE
OF Mannitol	YEL	YEL
OF Xylose	YEL	YEL
OF Sucrose	BLUE	BLUE
Arginine	POS	POS
Lysine	NEG	NEG
Ornithine	NEG	NEG
Base Control	NEG	NEG
Acetamide	POS	POS !
Esculin	NEG	NEG
Gelatin	POS !	POS !
Indole		NEG
Malonate	POS	POS
PAD	NEG	PYOCYANIN +
Urea NEG 2 h	POS - SLANT	POS SLANT & BUTT
6.5% NaCL	NEG	POS
10% Lactose	NEG	NEG
ONPG	NEG	NEG
Growth 42^0	POS	NEG REPEAT

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

4/22 NEG

Figure 257: Pseudomonas fluorescens isolate 5-of-22.



Date Inoculated: 9-20-07

Final Identification: Pseudomonas fluorescens PS. 9/28/07

Comments: Slight Yel diffusible pigment on Pseudo F @ 4D - neg Fluor

Gram Morph.		
Gram Test	48h	
Motility Wet Prep	POS - sm. Rods	
Motility Deep	POS? POS	
Oxidase	SLOW POS	
Catalase	STRONG POS	
PLATES	**48 h**	**7 day**
Odor	NONE	
Pigment on swab	PEACH	
Pigment on BAP	GREY	
Morphology on BAP	SMOOTH- SMEARS	
Beta hemolysis	POS	
Growth on Mac	POS LAVENDER COL	
DNase hydrolysis	NEG	NEG
Starch hydrolysis	NEG	W+
* Lecithinase	POS!	POS!
Lipase	NEG	NEG
Rapid PYR	NEG	
Rapid LAP	POS	
Rapid ESC	NEG	
Sensitivity to:		
Penicillin (10 U)	R	R
Vancomycin (30 ug)	R	R
Colistin (10 mcg)	S-10	S
Polymyxin B (300 U)	S-12	S

9/24

Tubes	**48 h**	**7 day**
KIA	K/NC	K/K
H_2S	NEG	NEG
Pseudo P	NEG	NEG / NO FLUOR
Pseudo F	NEG	~~NEG~~ Slight yel diff pigmt
NO_3 reduced		NEG
Gas from NO_3	NEG	NEG
NO_2 reduced		NEG
Gas from NO_2	NEG	NEG
OF Fructose	YEL	YEL
OF Dextrose	YEL	YEL
OF Lactose	BLUE	BLUE
OF Maltose	BLUE	BLUE
OF Mannitol	BLUE	BLUE
OF Xylose	YEL	YEL!
OF Sucrose	BLUE	BLUE
Arginine	POS	POS
Lysine	NEG	NEG
Ornithine	NEG	NEG
Base Control	NEG	NEG
Acetamide	NEG	NEG
Esculin	NEG	NEG
Gelatin	POS	POS!
Indole		NEG
Malonate	NEG	NEG
PAD	NEG	
Urea NEG 2 h	POS	POS
6.5% NaCL	NEG	NEG
10% Lactose	NEG	NEG
ONPG	NEG	NEG
Growth 42^0	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 258: Pseudomonas fluorescens isolate 6-of-22.

Date Inoculated: 1-24-07

Final Identification: 2-1-07 Pseudomonas fluorescens P.S. 2/1/07

Comments:

Gram Morph.			Tubes	48 h	7 day
Gram Test	24 hr 48h Neg		KIA	K/NC	K/K
Motility Wet Prep	Neg - med to Long Rods jittery		H_2S	Neg	slight H_2S @ interface
Motility Deep	Neg Neg		Pseudo P	Neg	Neg
Oxidase	Pos		★Pseudo F	Pos!	Pos
Catalase	STRONG POS		NO_3 reduced		Neg
PLATES	48 h	7 day	Gas from NO_3	Neg	Neg
Odor	None		NO_2 reduced		Neg
Pigment on swab	Flesh		Gas from NO_2	Neg	Neg
Pigment on BAP	Grey		OF Fructose	Yel	Yel
Morphology on BAP	Smooth - Smears		OF Dextrose	Yel	Yel
Beta hemolysis	Neg	Weak-48h	OF Lactose	Blue	Blue/GRN
Growth on Mac	Pos	Pos	OF Maltose	Blue	Blue
DNase hydrolysis	Neg	Neg	OF Mannitol	Yel	Yel
Starch hydrolysis	Neg	W+	OF Xylose	Yel	Yel
Lecithinase	Neg	Neg	OF Sucrose	Blue	Yel
Lipase	Neg	Neg	★Arginine	Pos	Pos
Rapid PYR	Pos (weak)		Lysine	Neg	Neg
Rapid LAP	Pos (strong)		Ornithine	Neg	Neg
Rapid ESC	Neg		Base Control	Neg	Neg
Sensitivity to:			Acetamide	Neg	Neg
Penicillin (10 U)	R	R	Esculin	Neg	Neg
Vancomycin (30 ug)	R	R	★Gelatin	Pos!	Pos!
Colistin (10 mcg)	S-12	S	Indole		
Polymyxin B (300 U)	S-14	S	Malonate	Lt. Blue At Top	Pos
			PAD	Neg	
			Urea 2 h	Neg	Neg
			6.5% NaCL	Neg	Pos
			10% Lactose	Neg	Neg
			ONPG	Neg	Neg
			Growth 42°	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 259: Pseudomonas fluorescens isolate 7-of-22.

Date Inoculated: 8-25-11

Final Identification: Pseudomonas fluorescens PS/9-2-11

Comments: CREAM COLORED ON STARCH & EGG YOLK, PINK ON BAP & SWAB

				24	9/2
Gram Morph.			**Tubes**	~~48 h~~	7 day
Gram Test	24h		KIA	K/NC	K/K
Motility Wet Prep	POS SM RODS		H_2S	NEG	NEG
Motility Deep	NEG - DID NOT GROW IN DEEP POS 7D		Pseudo P	NEG	NEG
Oxidase	POS		Pseudo F	POS	POS
Catalase	STRONG POS		NO_3 reduced		NEG
PLATES	24 ~~48 h~~	7 day	Gas from NO_3	NEG	NEG
Odor	NONE		NO_2 reduced		NEG
Pigment on swab	SALMON		Gas from NO_2	NEG	NEG
Pigment on BAP	Light pink		OF Fructose	YEL	YEL
Morphology on BAP	WET MUCOID - STRINGY		OF Dextrose	YEL	YEL
Beta hemolysis	POS	POS	OF Lactose	BLUE	BLUE
Growth on Mac	POS	POS	OF Maltose	BLUE	BLUE
DNase hydrolysis	NEG	NEG	OF Mannitol	YEL	YEL
Starch hydrolysis	NEG	NEG	OF Xylose	YEL	YEL
Lecithinase	NEG	NEG	OF Sucrose	BLUE	BLUE
Lipase	POS	POS	Arginine	POS	POS
Rapid PYR	NEG		Lysine	NEG	NEG
Rapid LAP	POS		Ornithine	NEG	NEG
Rapid ESC	NEG		Base Control	NEG	NEG
Sensitivity to:			Acetamide	NEG	NEG
Penicillin (10 U)	R	R	Esculin	NEG	NEG
Vancomycin (30 ug)	R	R	Gelatin	POS	POS
Colistin (10 mcg)	S-11	S	Indole		NEG
Polymyxin B (300 U)	S-13	S	Malonate	NEG	POS
			PAD	NEG	—
			Urea NEG 2 h	POS - SLANT	POS SLANT & BUTT
			6.5% NaCL	NEG	WK
			10% Lactose	NEG	NEG
			ONPG	NEG	NEG
			Growth 42^0	NEG	NEG

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

Figure 260: Pseudomonas fluorescens isolate 8-of-22.

Date Inoculated: 9-28-11

Final Identification: Pseudomonas fluorescens 11/4/11 P.S

Comments:

Gram Morph.			**Tubes**	**48 h**	**7 day**
Gram Test	24h		KIA		K/K
Motility Wet Prep	POS - very directional fast swimmers		H_2S		Neg
Motility Deep	Pos - 7 DAY		Pseudo P		Neg
Oxidase	Pos		Pseudo F		Pos
Catalase	Strong Pos		NO_3 reduced		Neg
PLATES	**48 h**	**7 day**	Gas from NO_3		Neg
Odor	None		NO_2 reduced		Neg
Pigment on swab	Buff		Gas from NO_2		Neg
Pigment on BAP	Light Grey		OF Fructose		Yel
Morphology on BAP	Smooth - Smears		OF Dextrose		Yel
Beta hemolysis	Neg		OF Lactose		Yel/Grn
Growth on Mac		Pos	OF Maltose		Blue
DNase hydrolysis		Neg	OF Mannitol		Yel/Grn
Starch hydrolysis		weak Pos	OF Xylose		Yel
Lecithinase		Neg	OF Sucrose		Yel
Lipase		Neg	Arginine		Pos
Rapid PYR	Neg		Lysine		Neg
Rapid LAP	Pos		Ornithine		Neg
Rapid ESC	Neg		Base Control		Neg
Sensitivity to:			Acetamide		Neg
Penicillin (10 U)		R	Esculin		Neg
Vancomycin (30 ug)		R	Gelatin		Pos
Colistin (10 mcg)		S-10 (Growth in zone)	Indole		Neg
Polymyxin B (300 U)		S-12	Malonate		Pos
			PAD		Neg
			Urea 2 h		Pos SLANT & BUTT
			6.5% NaCL		Pos
			10% Lactose		Neg
			ONPG		Neg
			Growth 42^0		Neg

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

Figure 261: Pseudomonas fluorescens isolate 9-of-22.

Date Inoculated: 1-5-10

Final Identification: Pseudomonas fluorescens P.S. 1/20/10

Comments: Light apricot color on Egg Yolk & Starch

OF

Gram Morph.		
Gram Test	48h	
Motility Wet Prep	POS Med Rods	
Motility Deep	POS	POS
Oxidase	POS	
Catalase	STRONG	POS

PLATES	**48 h**	**7 day**
Odor	None	
Pigment on swab	flesh	
Pigment on BAP	Lt. Grey	
Morphology on BAP	ENTIRE	
Beta hemolysis	POS!	
Growth on Mac	POS	POS Lavender
DNase hydrolysis	Neg	NEG
Starch hydrolysis	NEG	NEG
Lecithinase	POS!	POS!
Lipase	NEG	NEG
Rapid PYR	NEG	
Rapid LAP	POS	
Rapid ESC	NEG	
Sensitivity to:		
Penicillin (10 U)	R	R
Vancomycin (30 ug)	R	R
Colistin (10 mcg)	S-10	S
Polymyxin B (300 U)	S-13	S

Tubes	**48 h**	**7 day**	
KIA	K/NC	K/K	
H_2S	NEG	NEG	
			NEG @ 1/18/10
Pseudo P	NEG	NEG	YELLOW DIFFUSIBLE
Pseudo F	NEG ~~POS~~	NEG	PALE NON-FLUORES
NO_3 reduced		NEG	
Gas from NO_3	TINY BUBBLE	VERY TINY BUBBLE	
NO_2 reduced		NEG	
Gas from NO_2	NEG	NEG	
OF Fructose	Yel	Yel	
OF Dextrose	Yel	Yel	
OF Lactose	Blue	Blue	
OF Maltose	Blue	Blue	
OF Mannitol	Blue	Yel	
OF Xylose	Blue	Yel!	
OF Sucrose	Blue	Blue	
Arginine	POS	POS	
Lysine	NEG	NEG	
Ornithine	NEG	NEG	
Base Control	NEG	NEG	
Acetamide	NEG	NEG	
Esculin	NEG	NEG	
Gelatin	POS	POS!	
Indole		NEG	
Malonate	NEG	POS	
PAD	NEG	—	
Urea NEG 2 h	POS SLANT	POS SLANT & BUTT	
6.5% NaCL	NEG	NEG	
10% Lactose	NEG	NEG	
ONPG	NEG	NEG	
Growth 42^0	NEG	NEG	

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

Figure 262: Pseudomonas fluorescens isolate 10-of-22.

Date Inoculated: 1-20-10

Final Identification: Pseudomonas fluorescens 2/2/10 P.S.

Comments:

				2/1/10	12 DAYS
Gram Morph.			**Tubes**	**48 h**	~~7 day~~
Gram Test	24h		KIA	K/NC	K/K
Motility Wet Prep	POS - TUMBLING MED RODS		H_2S	Neg	
Motility Deep	POS	POS	Pseudo P	Neg	Neg
Oxidase	POS		Pseudo F?	POS ~~Neg~~	DIFFUSIBLE YELLOW PIGMT BUT NO FLUORESCENSE
Catalase	POS		NO_3 reduced		Neg
PLATES	**48 h**	~~7 day~~ 12	Gas from NO_3	~~Subtle~~ Neg	Neg
Odor	NONE		NO_2 reduced		Neg
Pigment on swab	Flesh		Gas from NO_2	Neg	Neg
Pigment on BAP	Grey		OF Fructose	~~Blue~~ Yel	Yel
Morphology on BAP	DRY - SPREADY		OF Dextrose	~~Blue~~ Yel	Yel
Beta hemolysis	POS	Neg @ 24h	OF Lactose	Blue	Blue
Growth on Mac	POS	POS	OF Maltose	Blue	Blue
DNase hydrolysis	Neg	Neg	OF Mannitol	Blue	GRN/YEL
Starch hydrolysis	Neg	Neg	OF Xylose	Blue	Yel
Lecithinase	POS	POS	OF Sucrose	Blue	Blue
Lipase	Neg	Neg	Arginine	~~Neg~~ POS	POS
Rapid PYR	Neg		Lysine	Neg	Neg
Rapid LAP	POS		Ornithine		Neg
Rapid ESC	Neg		Base Control		Neg
~~Sensitivity to:~~			Acetamide	Neg	Neg
Penicillin (10 U)	R	R	Esculin	Neg ~~Red~~	Neg
Vancomycin (30 ug)	R	R	Gelatin	POS	POS
Colistin (10 mcg)	S-10	S	Indole		Neg
Polymyxin B (300 U)	S-11	S	Malonate	Neg	POS
			PAD	Neg	—
			Urea Neg 2 h	POS SLANT	POS SLANT & BUTT
			6.5% NaCL	Neg	Neg
			10% Lactose	Neg	Neg
			ONPG	Neg	Neg
			Growth 42^0	Neg	Neg

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

Figure 263: Pseudomonas fluorescens isolate 11-of-22.

Date Inoculated: 11-20-08

Final Identification: Pseudomonas fluorescens P.S. 11/25/08

Comments: Very wet mucoid on all media

				11/24	11/25
Gram Morph.			**Tubes**	**48 h**	~~7 day~~ 5 DAY
Gram Test			KIA	K/NC	K/K
Motility Wet Prep	pos- med rods darting motility		H_2S	Neg	Neg
Motility Deep	POS	Pos	Pseudo P	Neg	Neg
Oxidase	POS		Pseudo F	POS	POS
Catalase	STRONG POS		NO_3 reduced		Neg
PLATES	**48 h**	**7 day**	Gas from NO_3	Neg	Neg
Odor	None	Stinks	NO_2 reduced		Neg
Pigment on swab	flesh		Gas from NO_2	Neg	Neg
Pigment on BAP	Grey		OF Fructose	GRN	Grn/yel
Morphology on BAP	Mucoid - Slimy - Wet Looking		OF Dextrose	Yel	Yel
Beta hemolysis	POS		OF Lactose	Blue	Blue
Growth on Mac	POS	POS	OF Maltose	Blue	Blue
DNase hydrolysis	Neg	Neg	OF Mannitol	Blue	Blue
Starch hydrolysis	Neg	POS	OF Xylose	Yel	Yel
Lecithinase	Neg	Neg	OF Sucrose	Blue	Blue
Lipase	Neg	Neg	Arginine	POS	POS
Rapid PYR	Neg		Lysine	Neg	Neg
Rapid LAP	POS		Ornithine	Neg	Neg
Rapid ESC	Neg		Base Control	Neg	Neg
Sensitivity to:			Acetamide	Neg	Neg
Penicillin (10 U)	R	R	Esculin	Neg	Neg
Vancomycin (30 ug)	R	R	Gelatin	POS	POS
Colistin (10 mcg)	S-11	S	Indole		Neg
Polymyxin B (300 U)	S-13	S	Malonate	POS	POS
			PAD	Neg	—
			Urea ~~Neg~~ 2 h	Neg	Neg
			6.5% NaCL	W+	POS
			10% Lactose	Neg	Neg
			ONPG	Neg	Neg
			Growth 42^0	INHIBITED	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 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_3 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 (30μg)	0	1	0.00	39.67	Lysine	0	1	0.00	39.67
Colistin (10μg)	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°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.

Date Inoculated: 4-11-11

Final Identification: Pseudomonas fulva/parafulva by 16S rRNA

Comments: Light yellow to butterscotch on Egg Yolk + Starch
SWAB FROM
ORANGE ON BLOOD AGTER 7 DAYS
DEEP YELLOW LAYER IN INDOLE BROTH 4/13 AFTER EHRLICHS IN INDOLE LAYER



				Tubes	48 h	7 day
Gram Morph.				KIA	K/NC	K/K
Gram Test	48h			H_2S	Neg	Neg
Motility Wet Prep	Pos	SMALL RODS				
Motility Deep	POS	POS		Pseudo P	Neg	Neg
Oxidase	Neg			Pseudo F	Neg	Neg
Catalase	STRONG POS			NO_3 reduced		Neg
PLATES	**48 h**	**7 day**		Gas from NO_3	Neg	Neg
Odor	Slight odor			NO_2 reduced		Neg
Pigment on swab	Butterscotch			Gas from NO_2	Neg	Neg
* Pigment on BAP	Light yellow/orange		+	OF Fructose	Yel	Yel
Morphology on BAP	Smooth-entire		+	OF Dextrose	Yel	Yel
† Beta hemolysis	Neg	slight beta	−	OF Lactose	Blue	Blue
Growth on Mac	POS	POS	−	OF Maltose	Blue	Blue
DNase hydrolysis	Neg	Neg	−	OF Mannitol	Blue	Blue
† Starch hydrolysis	Neg	POS	+	OF Xylose	Yel	Yel
Lecithinase	Neg	Neg	−	OF Sucrose	Blue	Blue
Lipase	Neg	Neg	+	Arginine	Pos	Pos
Rapid PYR	Neg			Lysine	Neg	Neg
Rapid LAP	Pos			Ornithine	Neg	Neg
Rapid ESC	Neg			Base Control	Neg	Neg
Sensitivity to:				Acetamide	Neg	Neg
Penicillin (10 U)	R	R		Esculin	Neg	Neg
Vancomycin (30 ug)	R	R		Gelatin	Neg	Neg
Colistin (10 mcg)	S-10	S		Indole		Neg – Yellow LAYER
Polymyxin B (300 U)	S-11	S	−	Malonate	Neg	Lt. Blue ← NEG
				PAD	Neg	Neg
			− +	Urea Neg 2 h	Pos-SLANT	Pos SLANT & BUTT
			+	6.5% NaCL	Pos	Pos
				10% Lactose	Neg	Neg
				ONPG	Neg	Neg
			+	Growth 42^0	Pos	Pos – inhib. Teal

Note: All biochemical tests (except where noted) are incubated at 30^0C 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_3 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_2 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 (30μg)	0	13	0.00	11.41	Lysine	0	13	0.00	11.41
Colistin (10μg)	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.

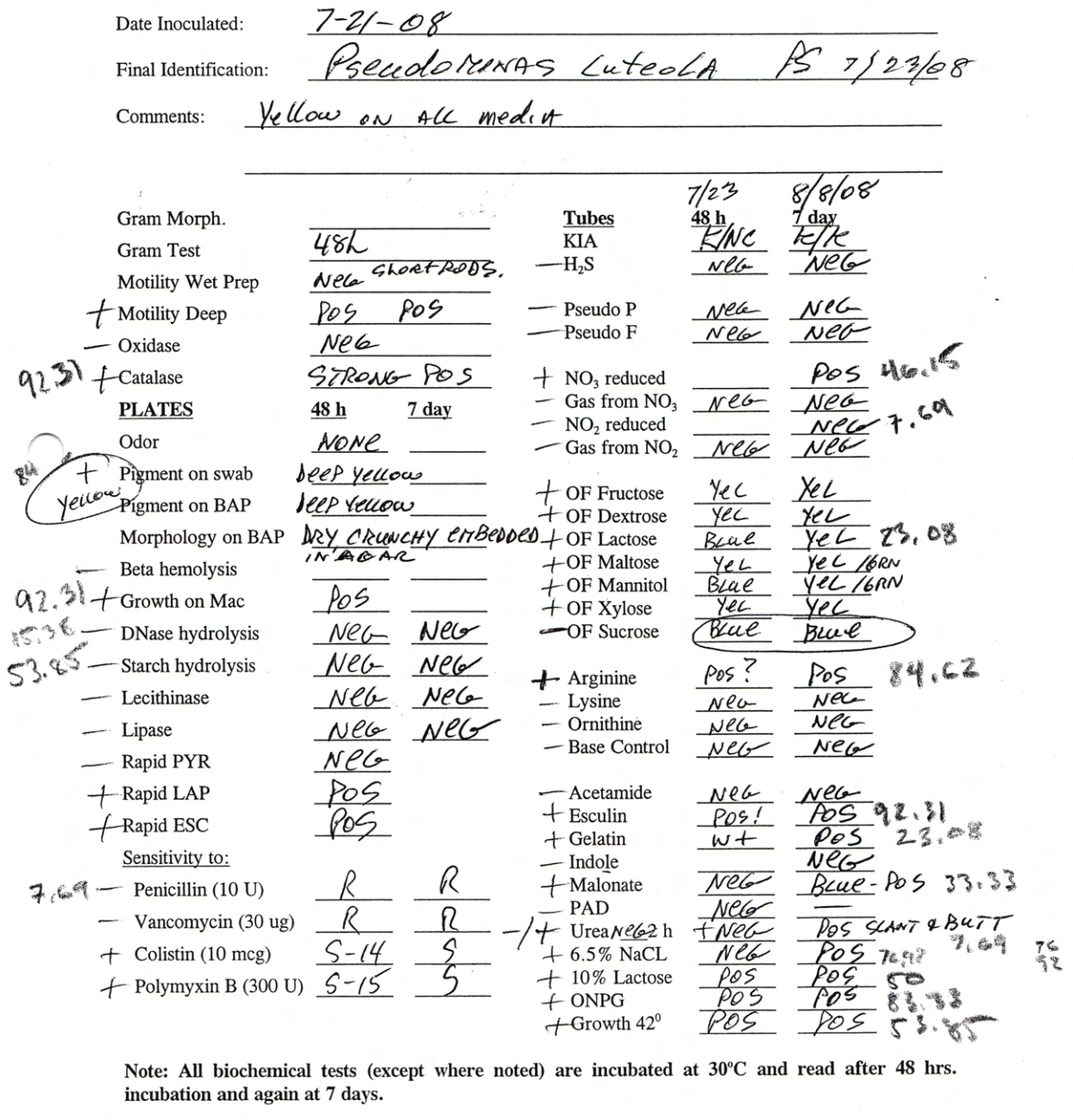


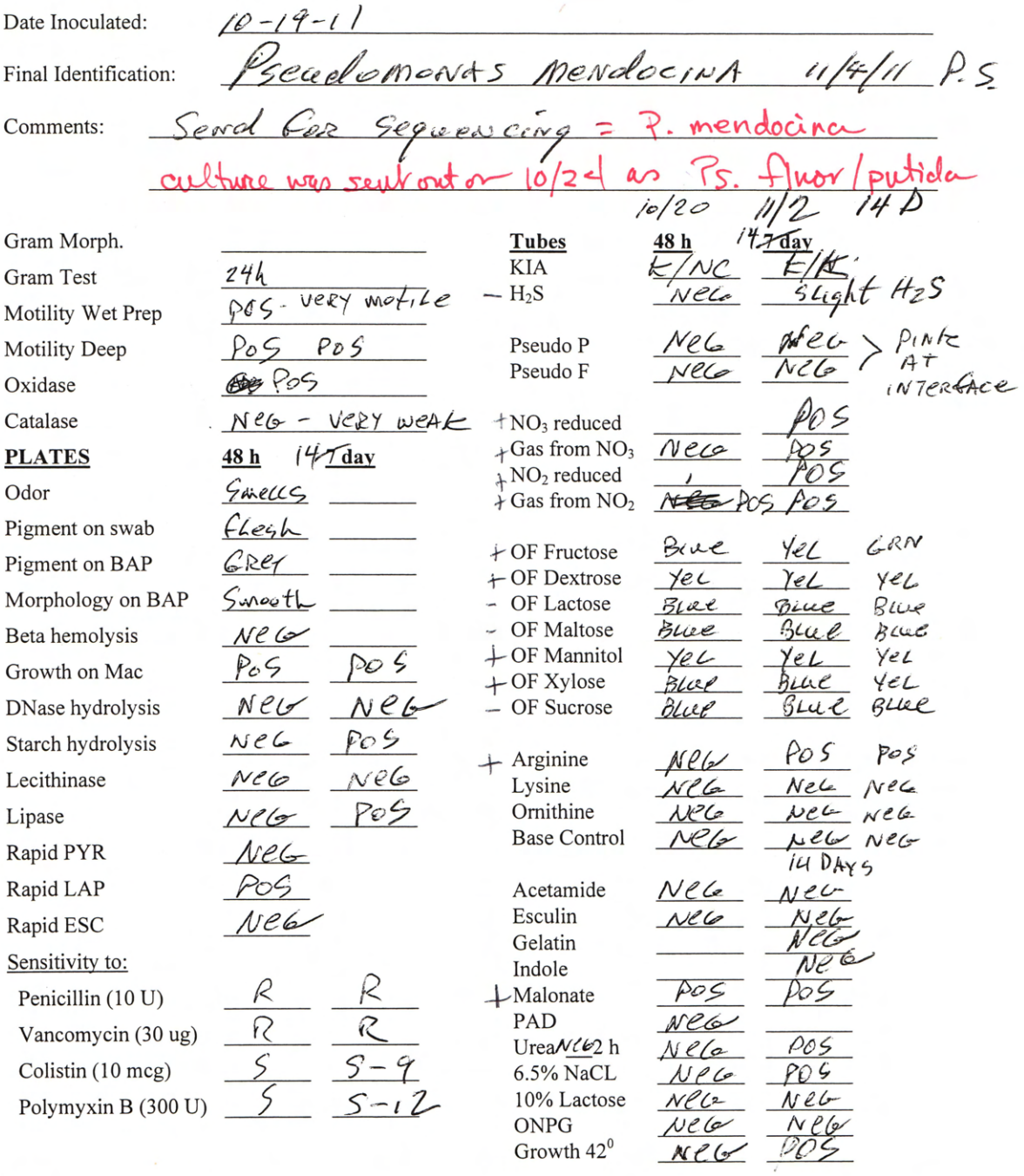
Figure 266: Pseudomonas luteola isolate 1-of-13.

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%**	**W95%**
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_3 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 (30μg)	0	12	0.00	12.13	Lysine	0	12	0.00	12.13
Colistin (10μg)	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°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.


Date Inoculated: 10-19-11

Final Identification: Pseudomonas mendocina 11/4/11 P.S.

Comments: Send for Sequencing = P. mendocina
culture was sent out on 10/24 as Ps. fluor/putida
10/20 11/2 14 D

Gram Morph.			**Tubes**	**48 h**	~~14 day~~	
Gram Test	24h		KIA	K/NC	K/NC	
Motility Wet Prep	POS - very motile		– H_2S	Neg	slight H_2S	
Motility Deep	Pos Pos		Pseudo P	Neg	~~Neg~~	> Pink at interface
Oxidase	~~Neg~~ Pos		Pseudo F	Neg	Neg	
Catalase	Neg - very weak		+ NO_3 reduced		Pos	
PLATES	**48 h**	~~14 day~~	+ Gas from NO_3	Neg	Pos	
Odor	Smells		+ NO_2 reduced		Pos	
Pigment on swab	Flesh		+ Gas from NO_2	~~Neg~~ Pos	Pos	
Pigment on BAP	Grey		+ OF Fructose	Blue	Yel	GRN
Morphology on BAP	Smooth		+ OF Dextrose	Yel	Yel	Yel
Beta hemolysis	Neg		- OF Lactose	Blue	Blue	Blue
Growth on Mac	Pos	Pos	- OF Maltose	Blue	Blue	Blue
DNase hydrolysis	Neg	Neg	+ OF Mannitol	Yel	Yel	Yel
Starch hydrolysis	Neg	Pos	+ OF Xylose	Blue	Blue	Yel
Lecithinase	Neg	Neg	– OF Sucrose	Blue	Blue	Blue
Lipase	Neg	Pos	+ Arginine	Neg	Pos	Pos
Rapid PYR	Neg		Lysine	Neg	Neg	Neg
Rapid LAP	Pos		Ornithine	Neg	Neg	Neg
Rapid ESC	Neg		Base Control	Neg	Neg	Neg
Sensitivity to:					14 DAYS	
Penicillin (10 U)	R	R	Acetamide	Neg	Neg	
Vancomycin (30 ug)	R	R	Esculin	Neg	Neg	
Colistin (10 mcg)	S	S-9	Gelatin		Neg	
Polymyxin B (300 U)	S	S-12	Indole		Neg	
			+ Malonate	Pos	Pos	
			PAD	Neg		
			Urea Neg 2 h	Neg	Pos	
			6.5% NaCL	Neg	Pos	
			10% Lactose	Neg	Neg	
			ONPG	Neg	Neg	
			Growth 42^0	Neg	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 267: Pseudomonas mendocina isolate 1-of-12.

Date Inoculated: 7-14-08

Final Identification: Pseudomonas mendocina P.S. 7/18/08

Comments: Spready colonies on BAP

Gram Morph.			**Tubes**	~~48 h~~ 7/17 72h	7 day 7/23
Gram Test	24h		KIA	K/NC	K/~~NC~~ K
Motility Wet Prep	Pos SM RODS EXTREMELY MOTILE		H_2S (DB)	Neg	~~Neg~~ slight H_2S
Motility Deep	Pos	Pos	Pseudo P	Neg	Neg > PINK INOCULA AT bottom OF SLANT
Oxidase	Pos		Pseudo F	Neg	Neg
Catalase	STRONG Pos		NO_3 reduced		Pos
PLATES	**48 h**	**7 day**	Gas from NO_3	Pos	Pos
Odor	Mouse cage		NO_2 reduced		Pos
Pigment on swab	flesh		Gas from NO_2	Pos	Pos
Pigment on BAP	GREY		OF Fructose	Yel	Yel
Morphology on BAP	SPREADY		OF Dextrose	Yel	Yel
Beta hemolysis	Neg		OF Lactose	Blue	Blue
Growth on Mac	Pos	Pos	OF Maltose	Blue	Blue
DNase hydrolysis	Neg	Neg	OF Mannitol	Yel	Yel
Starch hydrolysis	Neg	Neg	OF Xylose	Yel	Yel
Lecithinase	Neg	Neg	OF Sucrose	Blue	Blue
Lipase	Neg	Neg			REPEAT Pos Pos
Rapid PYR	Neg		Arginine	Pos } CONTAMIN	Neg Neg
Rapid LAP	Pos		Lysine	Neg } REPEAT	Neg Neg
Rapid ESC	Neg		Ornithine	Neg	Neg Neg
Sensitivity to:			Base Control	Neg	
Penicillin (10 U)	R	R	Acetamide	Neg	Neg
Vancomycin (30 ug)	R	R	Esculin	Neg	Neg
Colistin (10 mcg)	S = 9.5	S	Gelatin	Neg	Neg
Polymyxin B (300 U)	S = 11	S	Indole		Neg
			Malonate	Pos	Pos
			PAD	Neg	
			Urea Neg 2 h	Pos SLANT ONLY	Pos SLANT & BUTT
			6.5% NaCL	Pos	Pos
			10% Lactose	Neg	Neg
			ONPG	Neg	Neg
			Growth 42^0	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 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%**	**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_3 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	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 (30μg)	1	0	100.00	60.33	Lysine	0	1	0.00	39.67
Colistin (10μg)	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 ID 30 tube: Oligella urethralis 99.975% MS=0.433

Comments: Lab ID: Ps. fluorescens group

Maldi: 6 times tested w/ result of Ps. migulae 1.45 ← ENTERED AS...

Gram Morph.		
Gram Test		
Motility Wet Prep		
Motility Deep	Neg 4r	Neg 7d
Oxidase	Pos	
Catalase	Pos-slow	
PLATES	**48 h**	**7 day**
Odor	strong	strong - zoo like
Pigment on swab	Salmon	dk peach
Pigment on BAP	lt peach	lt peach
Morphology on BAP	Sm clear	Sm round, irreg edge
Beta hemolysis	Neg	Neg
Growth on Mac	N	Neg
DNase hydrolysis	N	Neg
Starch hydrolysis	N	Neg
Lecithinase	N	Neg
Lipase	N	Neg
Rapid PYR	Neg	
Rapid LAP	Pos	
Rapid ESC	Neg	
Sensitivity to:		
Penicillin (10 U)	39S	39S
Vancomycin (30 ug)	29 S	29S
Colistin (10 mcg)	11S	11S
Polymyxin B (300 U)	17S	17S

Tubes	**48 h**	**7 day**
KIA	K/NC	K/K
H_2S	N	Neg
Pseudo P	N	N
Pseudo F	N	N tan pigment
NO_3 reduced	X	Red aftr Zn ⊖
Gas from NO_3	Sm bubble	Sm bubble ⊖
NO_2 reduced	X	Clear - Pos ⊕
Gas from NO_2	Sm bubble	Pos ⊕
OF Fructose	Gr	Bl-Gr -
OF Dextrose		Gr -
OF Lactose		Gr -
OF Maltose		Bl-Gr -
OF Mannitol		Bl-Gr -
OF Xylose		Gr -
OF Sucrose		Gr -
Arginine	N	Neg
Lysine		Neg
Ornithine		Neg
Base Control		Neg
Acetamide	N	Neg
Esculin	N	Neg
Gelatin	N	Neg
Indole	X	Neg
Malonate	N	Pos ? weak Call Neg (Malonate)
PAD	N	X Repeat Neg
Urea N 2 h	N	Neg
6.5% NaCL	Pos	Pos
10% Lactose	N	Neg
ONPG	N	Neg
Growth 42°	N	Pos

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

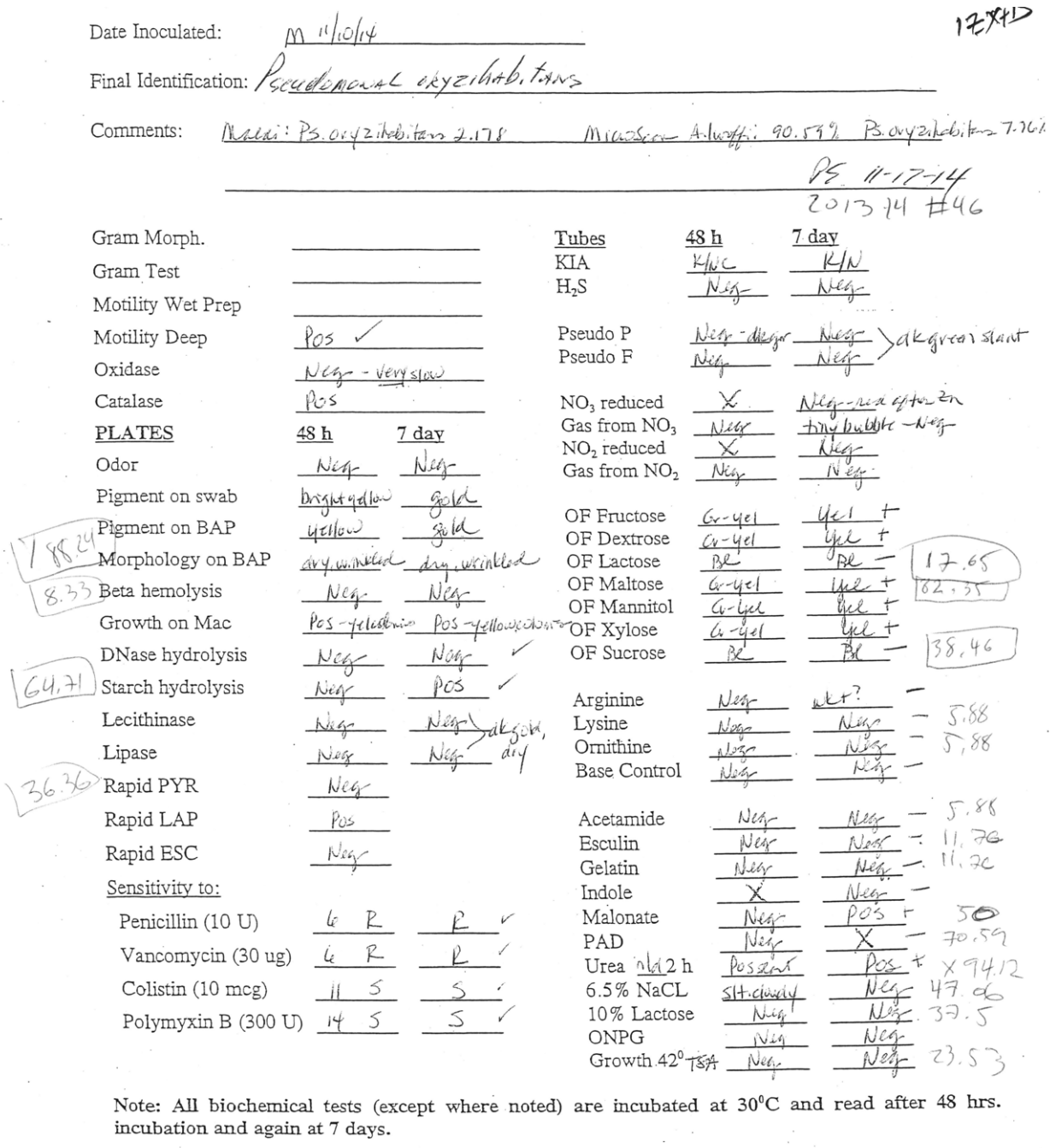
Figure 269: Pseudomonas migulae isolate 1-of-1.

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_2S	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_3 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 (30μg)	0	17	0.00	9.22	Lysine	1	16	5.88	14.01
Colistin (10μg)	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.



Date Inoculated: M 11/10/14 17XID

Final Identification: Pseudomonas oryzihabitans

Comments: Maldi: Ps. oryzihabitans 2.178 MicroScan A. lwoffii 90.59% Ps. oryzihabitans 7.76%

PS 11-17-14

2013 14 #46

Gram Morph.		
Gram Test		
Motility Wet Prep		
Motility Deep	Pos ✓	
Oxidase	Neg - very slow	
Catalase	Pos	
PLATES	**48 h**	**7 day**
Odor	Neg	Neg
Pigment on swab	bright yellow	gold
Pigment on BAP	yellow	gold
Morphology on BAP	dry, wrinkled	dry, wrinkled
Beta hemolysis	Neg	Neg
Growth on Mac	Pos - yellow/colonies	Pos - yellow/colonies
DNase hydrolysis	Neg	Neg ✓
Starch hydrolysis	Neg	Pos ✓
Lecithinase	Neg	Neg } dk gold, dry
Lipase	Neg	Neg
Rapid PYR	Neg	
Rapid LAP	Pos	
Rapid ESC	Neg	
Sensitivity to:		
Penicillin (10 U)	6 R	R ✓
Vancomycin (30 ug)	6 R	R ✓
Colistin (10 mcg)	11 S	S ✓
Polymyxin B (300 U)	14 S	S ✓

Tubes	48 h	7 day	
KIA	K/NC	K/N	
H_2S	Neg	Neg	
Pseudo P	Neg - dk gr	Neg	} dk green slant
Pseudo F	Neg	Neg	
NO_3 reduced	X	Neg - red after Zn	
Gas from NO_3	Neg	tiny bubble - Neg	
NO_2 reduced	X	Neg	
Gas from NO_2	Neg	Neg	
OF Fructose	Gr-yel	Yel +	
OF Dextrose	Gr-yel	Yel +	
OF Lactose	Bl	Bl −	17.65
OF Maltose	Gr-yel	Yel +	82.35
OF Mannitol	Gr-yel	Yel +	
OF Xylose	Gr-yel	Yel +	
OF Sucrose	Bl	Bl −	38.46
Arginine	Neg	wk+? −	
Lysine	Neg	Neg −	5.88
Ornithine	Neg	Neg −	5.88
Base Control	Neg	Neg −	
Acetamide	Neg	Neg −	5.88
Esculin	Neg	Neg −	11.76
Gelatin	Neg	Neg −	11.76
Indole	X	Neg −	
Malonate	Neg	Pos +	50
PAD	Neg	X −	70.59
Urea nld 2 h	Pos slant	Pos +	X 94.12
6.5% NaCL	slt. cloudy	Neg	47.06
10% Lactose	Neg	Neg	37.5
ONPG	Neg	Neg	
Growth 42° TSA	Neg	Neg	23.53

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.

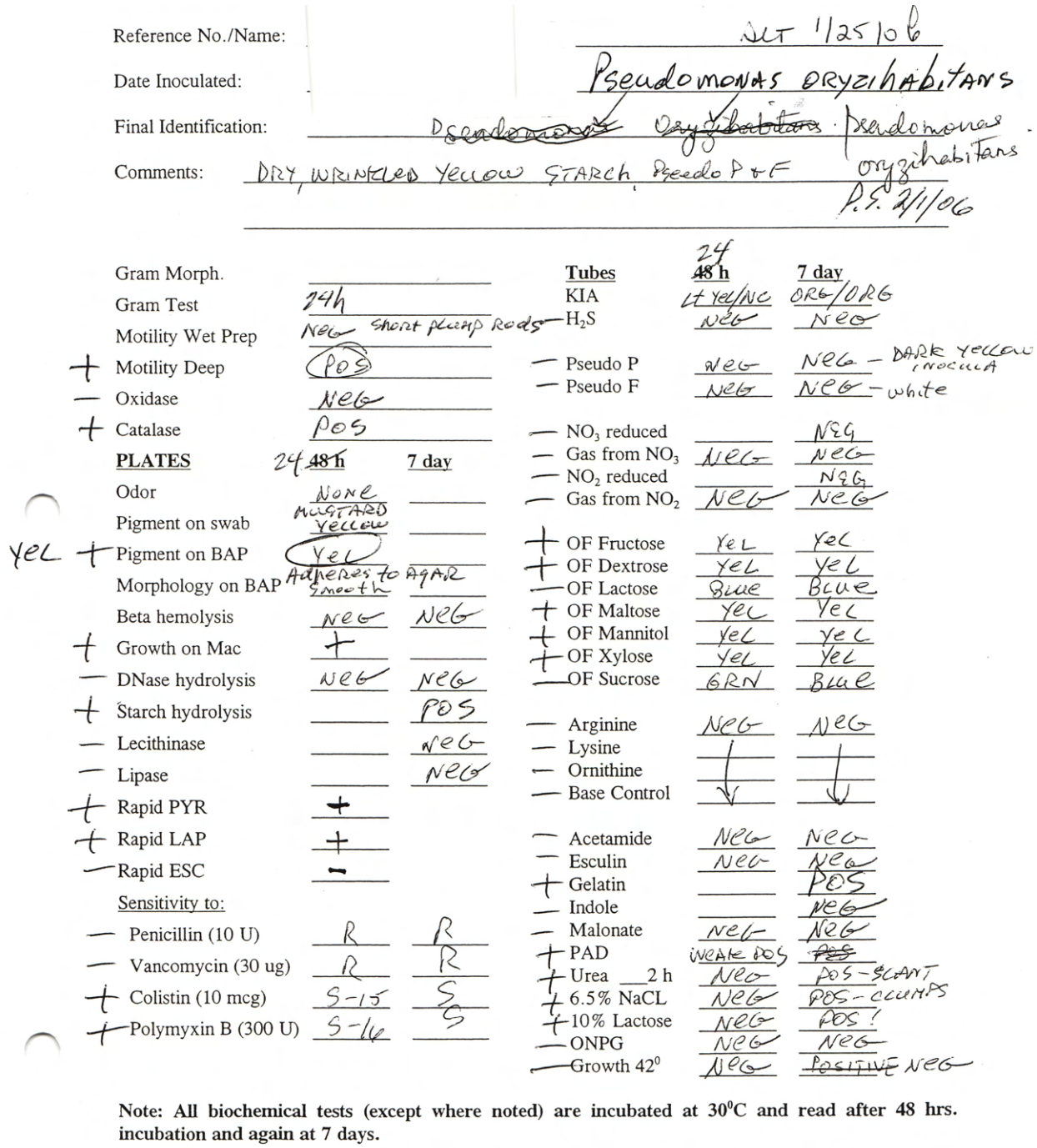


Figure 271: Pseudomonas oryzihabitans isolate 2-of-17.

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%**	**W95%**	**Test**	+	−	**Raw%**	**W95%**
Motility	9	4	69.23	64.84	H_2S	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_3 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_2 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 (30μg)	0	13	0.00	11.41	Lysine	0	13	0.00	11.41
Colistin (10μg)	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.

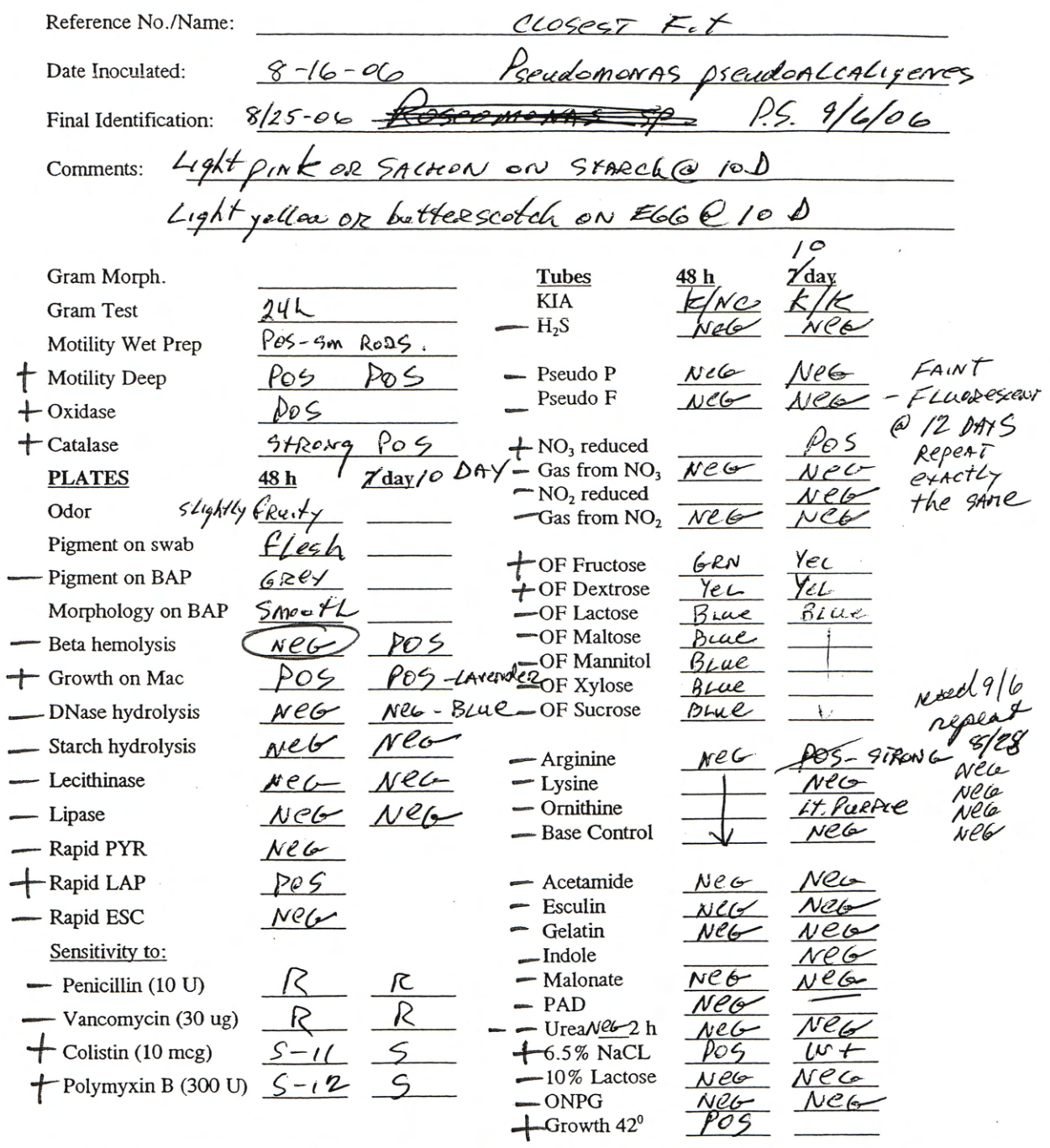
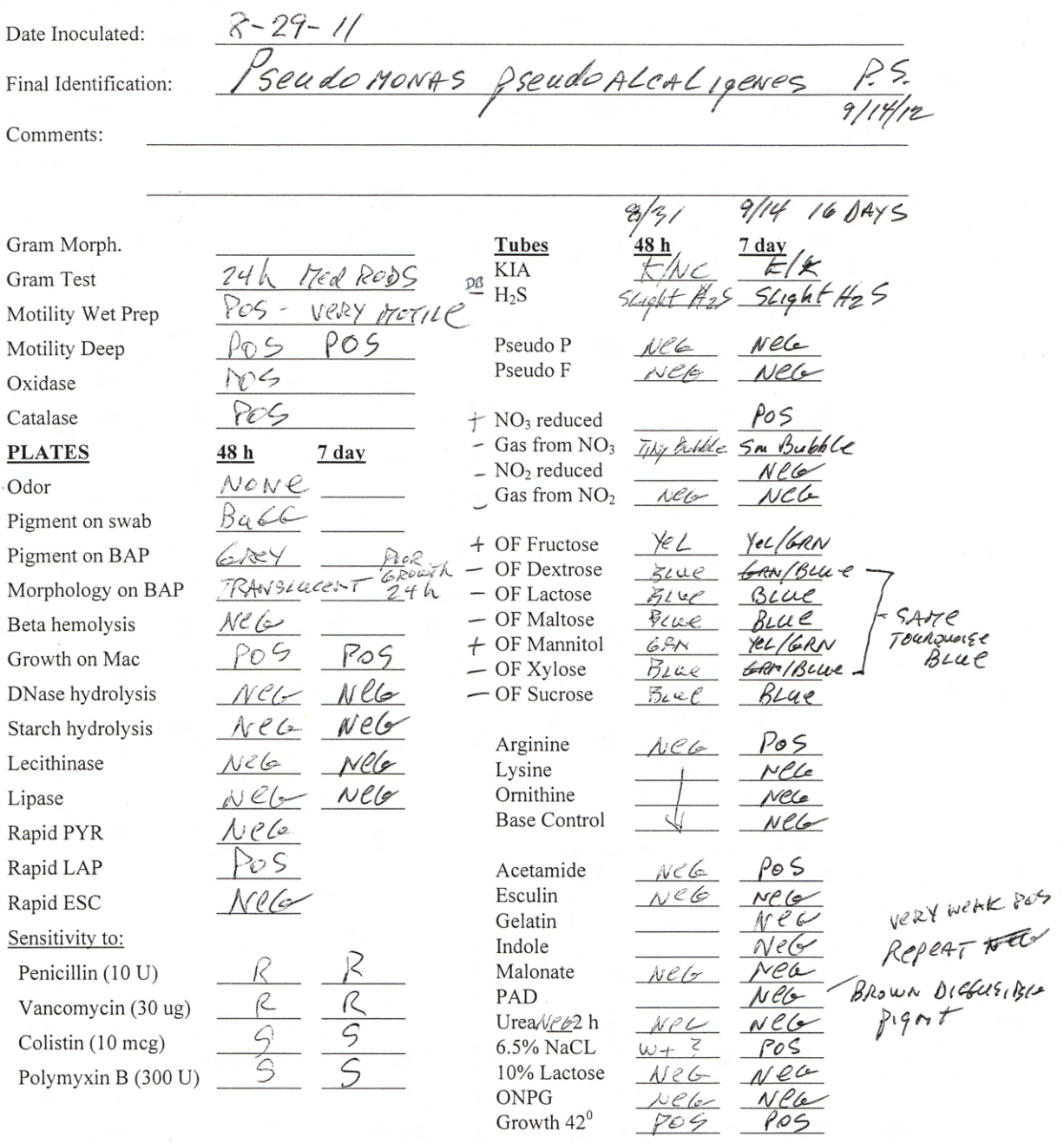


Figure 272: Pseudomonas pseudoalcaligenes isolate 1-of-13.



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

Figure 273: Pseudomonas pseudoalcaligenes isolate 2-of-13.

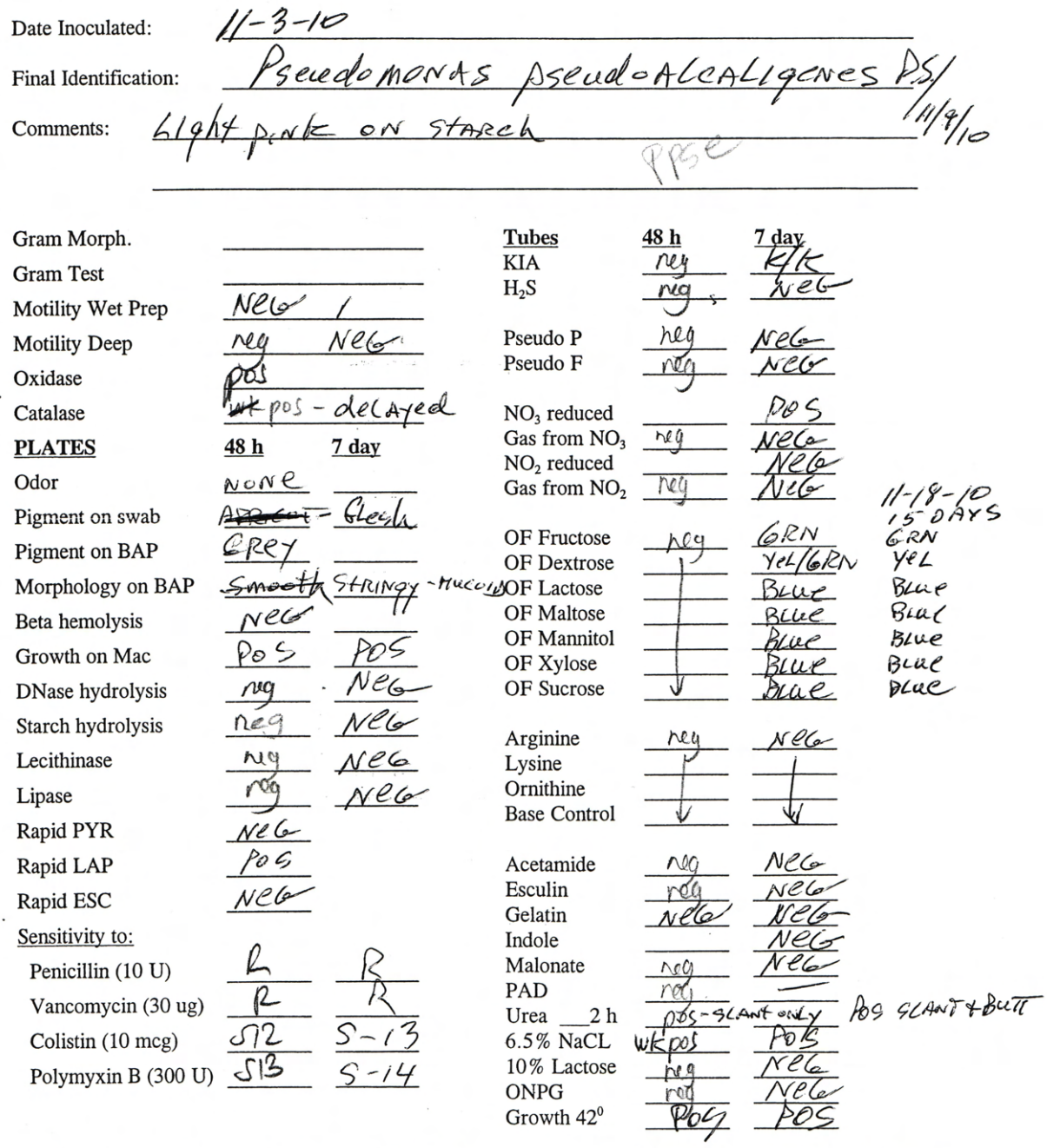


Figure 274: Pseudomonas pseudoalcaligenes isolate 3-of-13.

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%**	**W95%**
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_3 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_2 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 (30μg)	0	32	0.00	5.36	Lysine	0	32	0.00	5.36
Colistin (10μg)	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.

Reference No./Name: Study #331 orig cryobox 2005-64

Date Inoculated: Mon 9/16/13

Final Identification: Mon 9/23/13 Ps. putida per PS restocked

Comments: orig lab ID: Ps. stutzeri Ovg is dry, wrinkly white

Microdi: RMO: 77.9% Ps putida VITEK: 99.7%: Ps. putida Biolog: 1.525 Ps. putida

2005-64

Gram Morph.	gnr
Gram Test	
Motility Wet Prep	
Motility Deep	Pos 48
Oxidase	Pos
Catalase	Pos-strg

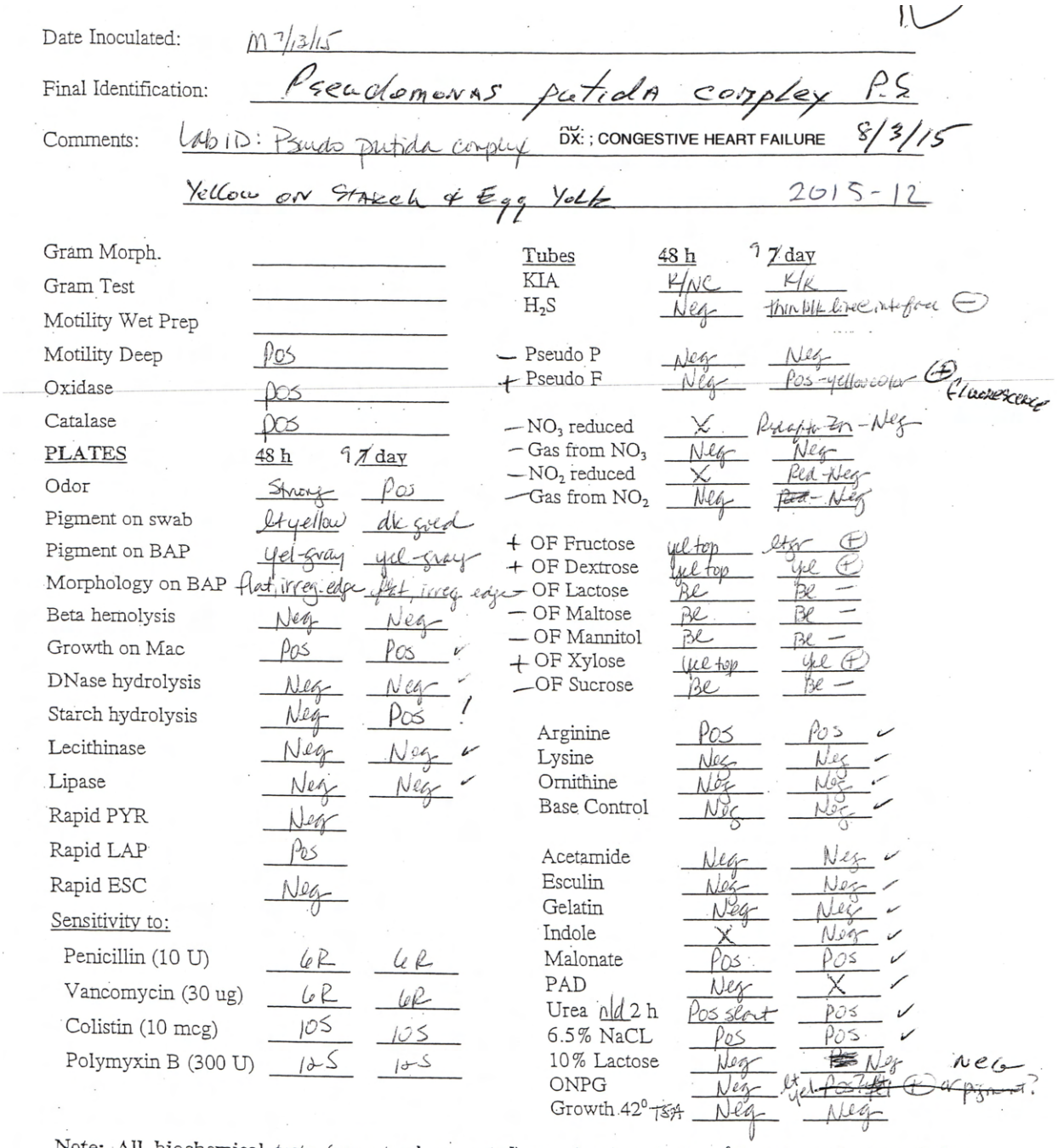
PLATES	48 h	7 day
Odor	strong Pos	Pos
Pigment on swab	buff	dk gold
Pigment on BAP	wh-gr	wh-gr
Morphology on BAP	dry wrinkled	wrinkled edges
Beta hemolysis	N	N
Growth on Mac	Pos	Pos - small (+)
DNase hydrolysis	N	N
Starch hydrolysis	N	N
Lecithinase	N	N
Lipase	N	N
Rapid PYR	N	
Rapid LAP	Pos	
Rapid ESC	N	
Sensitivity to:		
Penicillin (10 U)	6 R	6R
Vancomycin (30 ug)	6 R	6R
Colistin (10 mcg)	10 S	10S
Polymyxin B (300 U)	12 S	12 S

Tubes	48 h	7 day
KIA	K/NC	K/K
H_2S	N	N
Pseudo P	N	N
Pseudo F	strong yellow pgmt	yel pgmt (+)
NO_3 reduced	X	N-ned after 3rd
Gas from NO_3	N	N
NO_2 reduced	X	N-ned
Gas from NO_2	N	N
OF Fructose	+ Pos - yel top	yel top (+)
OF Dextrose	+ Pos - yel top	yel (+)
OF Lactose	- Be-Gr	Be Gr -
OF Maltose	- Be-Gr	Be Gr -
OF Mannitol	- Be-Gr	Be Gr -
OF Xylose	+ yel-pos	yel (+)
OF Sucrose	- Be-Gr	Be-Gr -
Arginine	+ Pos	Pos (+)
Lysine	- N	N -
Ornithine	- N	N -
Base Control	N	N -
Acetamide	N	N
Esculin	N	N
Gelatin	N	N
Indole	X	N
Malonate	+ Pos - blue	Blue (+)
PAD	N	X
Urea N 2 h	+ Pos slow	Pos (+) slant+butt
6.5% NaCL	Pos	Pos (+)
10% Lactose	N	Pos - yel slant (+)
ONPG	N	lt. straw color -
Growth 42° TSA	Neg	N

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

@ 48' 99.944 Ps. putida

Figure 275: Pseudomonas putida isolate 1-of-32.



Date Inoculated: M 7/13/15

Final Identification: Pseudomonas putida complex P.S

Comments: Lab ID: Pseudo putida complex DX: ; CONGESTIVE HEART FAILURE 8/3/15

Yellow on Starch & Egg Yolk 2015-12

			Tubes	48 h	7 day
Gram Morph.			KIA	K/NC	K/K
Gram Test			H_2S	Neg	thin blk line at interface ⊖
Motility Wet Prep					
Motility Deep	Pos		— Pseudo P	Neg	Neg
Oxidase	pos		+ Pseudo F	Neg	Pos-yellow color ⊕ (fluorescence)
Catalase	pos				
PLATES	**48 h**	**7 day**	— NO_3 reduced	X	Reagents-Neg
Odor	~~Strong~~	Pos	— Gas from NO_3	Neg	Neg
Pigment on swab	lt yellow	dk green	— NO_2 reduced	X	Red-Neg
Pigment on BAP	yel-gray	yel-gray	— Gas from NO_2	Neg	~~Red~~-Neg
Morphology on BAP	flat, irreg. edge	flat, irreg. edge			
Beta hemolysis	Neg	Neg	+ OF Fructose	yel top	lt yr ⊕
Growth on Mac	Pos	Pos ✓	+ OF Dextrose	yel top	yel ⊕
DNase hydrolysis	Neg	Neg ✓	— OF Lactose	Be	Be —
Starch hydrolysis	Neg	Pos !	— OF Maltose	Be	Be —
Lecithinase	Neg	Neg ✓	— OF Mannitol	Be	Be —
Lipase	Neg	Neg ✓	+ OF Xylose	yel top	yel ⊕
Rapid PYR	Neg		— OF Sucrose	Be	Be —
Rapid LAP	Pos				
Rapid ESC	Neg		Arginine	Pos	Pos ✓
Sensitivity to:			Lysine	Neg	Neg ✓
Penicillin (10 U)	6R	6R	Ornithine	Neg	Neg ✓
Vancomycin (30 ug)	6R	6R	Base Control	Neg	Neg ✓
Colistin (10 mcg)	10S	10S			
Polymyxin B (300 U)	12S	10S	Acetamide	Neg	Neg ✓
			Esculin	Neg	Neg ✓
			Gelatin	Neg	Neg ✓
			Indole	X	Neg ✓
			Malonate	Pos	Pos ✓
			PAD	Neg	X ✓
			Urea n/d 2 h	Pos slant	Pos ✓
			6.5% NaCL	Pos	Pos ✓
			10% Lactose	Neg	~~Pos~~ Neg neg
			ONPG	Neg	lt yel-~~Pos~~ ⊕ or pigment?
			Growth 42° ~~TSA~~	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 276: Pseudomonas putida isolate 2-of-32.

Date Inoculated: 10-10-06

Final Identification: 10-20-06 Pseudomonas putida PS.

Comments: 10/20/06

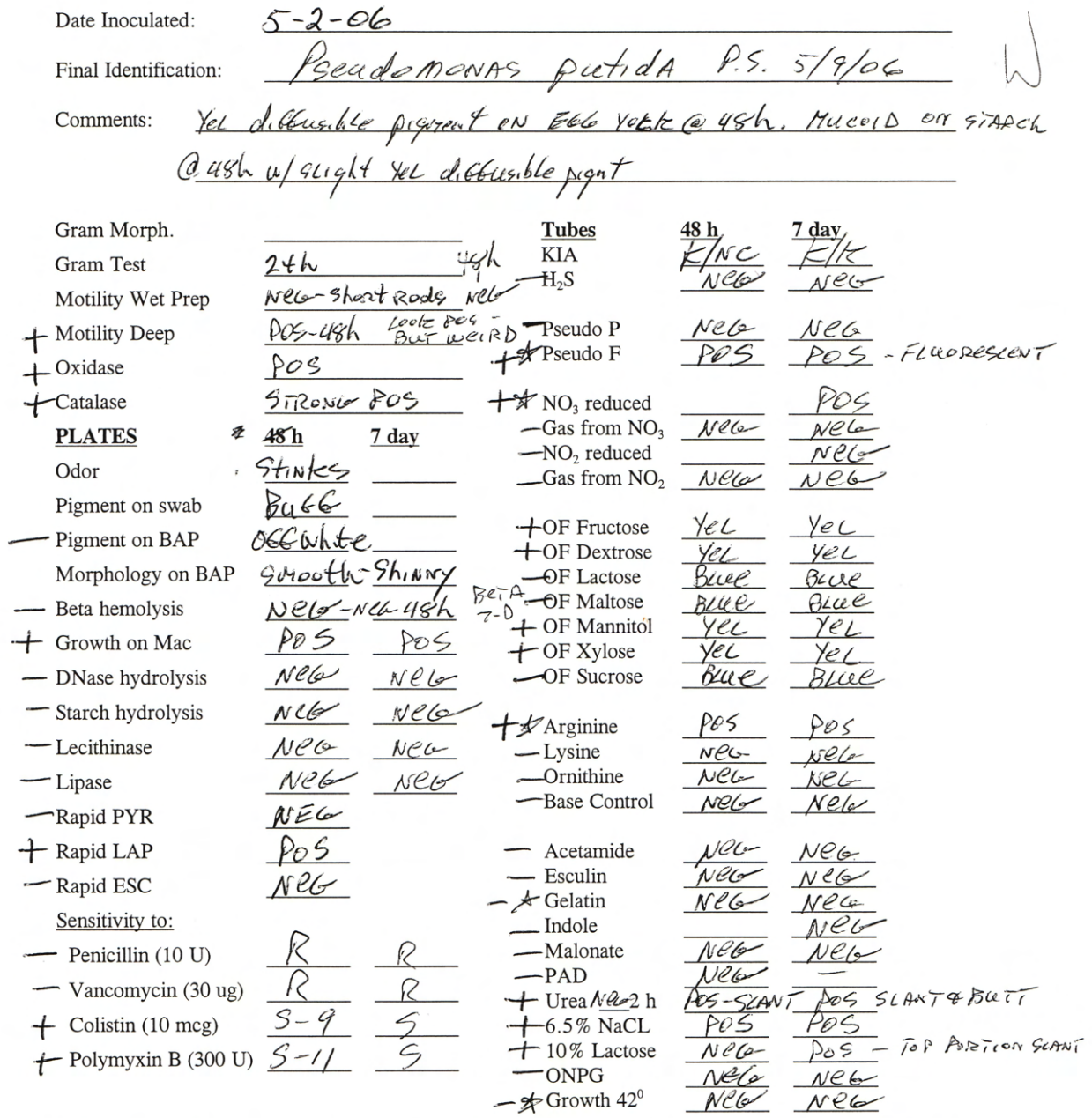
Gram Morph.		
Gram Test	24h	
Motility Wet Prep	POS - EXTREMELY ACTIVE MED RODS	
+ Motility Deep	POS	POS
+ Oxidase	POS	
+ Catalase	STRONG POS	
PLATES	**48 h**	**7 day**
Odor	Smells	
Pigment on swab	Bugg	
— Pigment on BAP	GREY	
Morphology on BAP	Smooth	
— Beta hemolysis	NEG	
+ Growth on Mac	POS-	POS
— DNase hydrolysis	NEG	NEG
+ Starch hydrolysis	NEG	POS
— Lecithinase	NEG	NEG
— Lipase	NEG	NEG
— Rapid PYR	NEG	
+ Rapid LAP	POS	
— Rapid ESC	NEG	
Sensitivity to:		
— Penicillin (10 U)	R	R
— Vancomycin (30 ug)	R	R
+ Colistin (10 mcg)	S-10	S
+ Polymyxin B (300 U)	S-13	S

Tubes	**48 h**	~~7 day~~ 10 day
KIA	K/NC	K/NC
— H_2S	NEG	Slight black @ interface
— Pseudo P	NEG	NEG
+ Pseudo F	POS	POS!
— NO_3 reduced	~~[illegible]~~	~~[illegible]~~ NEG
— Gas from NO_3	NEG	~~N~~ NEG
— NO_2 reduced		NEG
— Gas from NO_2	NEG	NEG
+ OF Fructose	YEL	YEL
+ OF Dextrose	YEL	YEL
— OF Lactose	BLUE	BLUE
— OF Maltose	BLUE	BLUE
— OF Mannitol	BLUE	BLUE
+ OF Xylose	YEL	YEL
— OF Sucrose	BLUE	BLUE
+ Arginine	NEG	POS
— Lysine	↓	NEG
— Ornithine	↓	NEG
— Base Control	↓	NEG
— Acetamide	NEG	NEG
— Esculin	NEG	NEG
— Gelatin	NEG	NEG
— Indole		NEG
+ Malonate	BLUE	BLUE
— PAD	NEG	/ —
— + Urea NEG 2 h	POS - SLANT ONLY	POS
+ 6.5% NaCL	POS	POS
— 10% Lactose	NEG	NEG
— ONPG	NEG	NEG
— Growth 42°	~~POS~~	NEG

Repeat 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 277: Pseudomonas putida isolate 3-of-32.



Date Inoculated: 5-2-06

Final Identification: Pseudomonas putida P.S. 5/9/06

Comments: Yel diffusible pigment on Egg Yolk @ 48h. Mucoid on Slant @ 48h w/ slight Yel diffusible pigt

Gram Morph.		
Gram Test	24h	48h
Motility Wet Prep	Neg-short rods	Neg
+ Motility Deep	Pos-48h	Looks Pos But Weird
+ Oxidase	Pos	
+ Catalase	Strong Pos	

PLATES	48 h	7 day
Odor	Stinks	
Pigment on swab	Bugg	
— Pigment on BAP	Off white	
Morphology on BAP	Smooth-Shinny	
— Beta hemolysis	Neg-Neg 48h	
+ Growth on Mac	Pos	Pos
— DNase hydrolysis	Neg	Neg
— Starch hydrolysis	Neg	Neg
— Lecithinase	Neg	Neg
— Lipase	Neg	Neg
— Rapid PYR	NEG	
+ Rapid LAP	Pos	
— Rapid ESC	Neg	
Sensitivity to:		
— Penicillin (10 U)	R	R
— Vancomycin (30 ug)	R	R
+ Colistin (10 mcg)	S-9	S
+ Polymyxin B (300 U)	S-11	S

Tubes	48 h	7 day
KIA	K/NC	K/K
— H_2S	Neg	Neg
— Pseudo P	Neg	Neg
+ ★ Pseudo F	Pos	Pos - Fluorescent
+ ★ NO_3 reduced		Pos
— Gas from NO_3	Neg	Neg
— NO_2 reduced		Neg
— Gas from NO_2	Neg	Neg
+ OF Fructose	Yel	Yel
+ OF Dextrose	Yel	Yel
— OF Lactose	Blue	Blue
— OF Maltose	Blue	Blue
+ OF Mannitol	Yel	Yel
+ OF Xylose	Yel	Yel
— OF Sucrose	Blue	Blue
+ ★ Arginine	Pos	Pos
— Lysine	Neg	Neg
— Ornithine	Neg	Neg
— Base Control	Neg	Neg
— Acetamide	Neg	Neg
— Esculin	Neg	Neg
— ★ Gelatin	Neg	Neg
— Indole		Neg
— Malonate	Neg	Neg
— PAD	Neg	—
+ Urea Neg 2 h	Pos-Slant	Pos Slant & Butt
+ 6.5% NaCL	Pos	Pos
+ 10% Lactose	Neg	Pos - Top Portion Slant
— ONPG	Neg	Neg
— ★ Growth 42°	Neg	Neg

Beta 7-D

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

Figure 278: Pseudomonas putida isolate 4-of-32.

Date Inoculated: 5-2-06

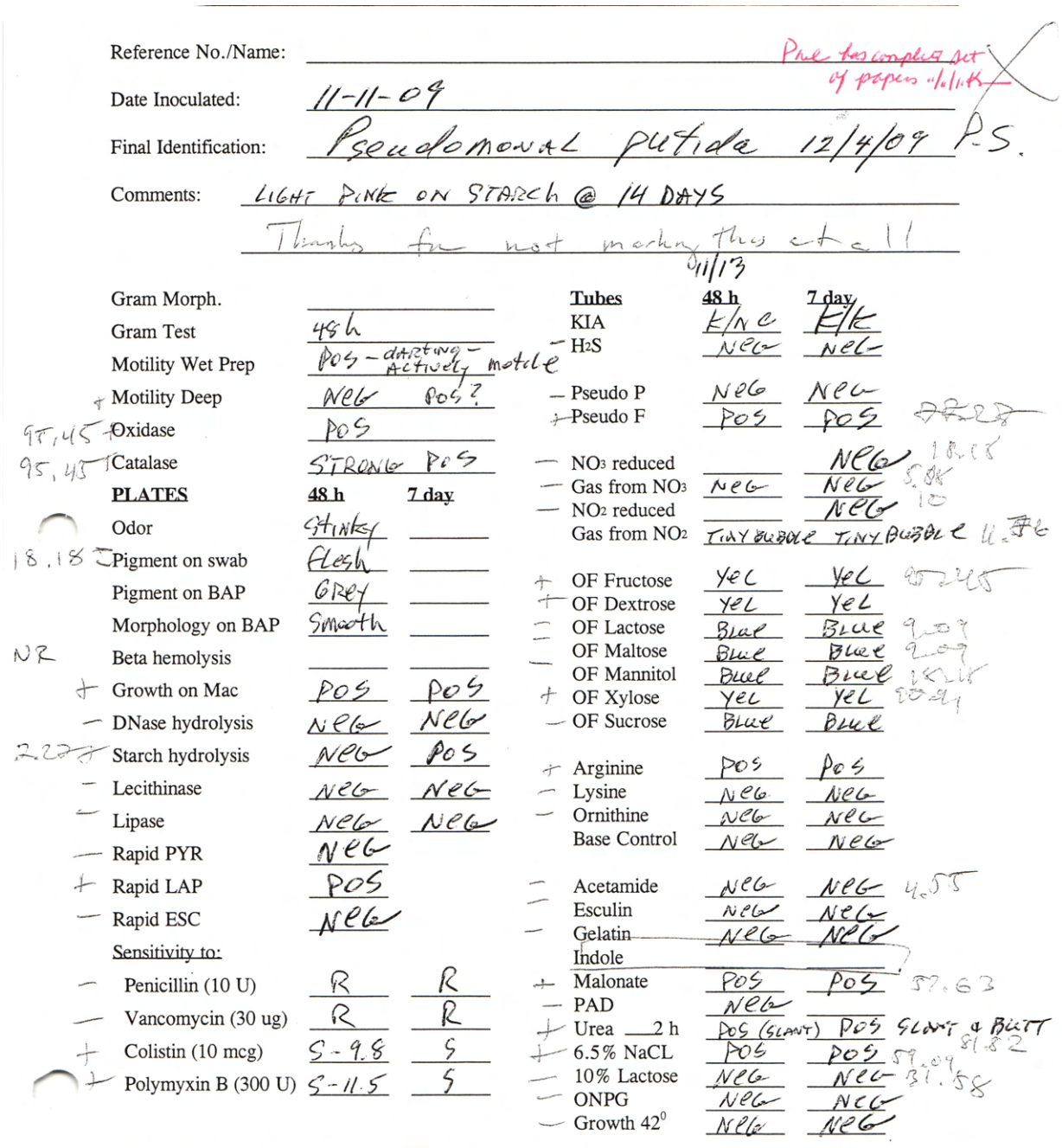
Final Identification: Pseudomonas putida P.S. 5/9/06

Comments: DRY, WRINKLED

Gram Morph.			**Tubes**	**48 h**	**7 day**
Gram Test	24h		KIA	K/NC.	K/K
Motility Wet Prep	very motile- SHT-MED RODS		— H_2S	Neg	Neg
+ Motility Deep	Pos	Pos-7D	— Pseudo P	Neg	Neg
+ Oxidase	Pos		+* Pseudo F	Pos	Pos - FLUORESCEN
+ Catalase	STRONG POS		— NO_3 reduced		Neg
PLATES	24 **48 h**	**7 day**	— Gas from NO_3	Neg	Neg
Odor	STINKS		— NO_2 reduced		Neg
Pigment on swab	flesh		— Gas from NO_2	SM BUBBLE	SM BUBBLE
— Pigment on BAP	light Grey		+ OF Fructose	Yel	Yel
Morphology on BAP	dull-cabbage up		+ OF Dextrose	Yel	Yel
— Beta hemolysis	Neg	Pos-7D	— OF Lactose	Blue	Blue
+ Growth on Mac	Pos	Pos	— OF Maltose	blue	blue
— DNase hydrolysis	Neg	Neg	— OF Mannitol	Blue	Blue
— Starch hydrolysis	Neg	Neg	+ OF Xylose	Yel	Yel
— Lecithinase	Neg	Neg	— OF Sucrose	Blue	Blue
— Lipase	Neg	Neg	+* Arginine	Pos	Pos
— Rapid PYR	NEG		— Lysine	Neg	Neg
+ Rapid LAP	POS		— Ornithine	Neg	Neg
— Rapid ESC	NEG		— Base Control	Neg	Neg
Sensitivity to:			— Acetamide	Neg	Neg
— Penicillin (10 U)	R	R	— Esculin	Neg	Neg
— Vancomycin (30 ug)	R	R	— Gelatin	Neg	Neg
+ Colistin (10 mcg)	S-9	S	— Indole		Neg
+ Polymyxin B (300 U)	S-12	S	+* Malonate	Blue	Blue
			— PAD	Neg	—
			+ Urea Neg 2 h	POS-SLANT	POS SLANT & BUTT
			+* 6.5% NaCL	Pos	Pos !
			— 10% Lactose	Neg	Neg
			— ONPG	Neg	Neg
			— Growth 42°	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 279: Pseudomonas putida isolate 5-of-32.



Reference No./Name: _____ Pine has complete set of papers [illegible]

Date Inoculated: 11-11-09

Final Identification: Pseudomonal putida 12/4/09 P.S.

Comments: LIGHT PINK ON STARCH @ 14 DAYS

Thanks for not marking this at all

	Gram Morph.		
	Gram Test	48h	
	Motility Wet Prep	POS - darting - Actively motile	
+	Motility Deep	NEG	POS?
95,45 +	Oxidase	POS	
95,45 +	Catalase	STRONG	POS
	PLATES	**48 h**	**7 day**
	Odor	Stinky	
18.18	Pigment on swab	Flesh	
	Pigment on BAP	Grey	
	Morphology on BAP	Smooth	
NR	Beta hemolysis		
+	Growth on Mac	POS	POS
−	DNase hydrolysis	NEG	NEG
2.27 +	Starch hydrolysis	NEG	POS
−	Lecithinase	NEG	NEG
−	Lipase	NEG	NEG
−	Rapid PYR	NEG	
+	Rapid LAP	POS	
−	Rapid ESC	NEG	
	Sensitivity to:		
−	Penicillin (10 U)	R	R
−	Vancomycin (30 ug)	R	R
+	Colistin (10 mcg)	S - 9.8	S
+	Polymyxin B (300 U)	S - 11.5	S

	Tubes	**48 h**	**7 day**	
	KIA	K/NC	K/K	
−	H_2S	NEG	NEG	
−	Pseudo P	NEG	NEG	
+	Pseudo F	POS	POS	~~[illegible]~~
−	NO_3 reduced		NEG	18.18
−	Gas from NO_3	NEG	NEG	5.08
−	NO_2 reduced		NEG	10
	Gas from NO_2	TINY BUBBLE	TINY BUBBLE	11.76
+	OF Fructose	YEL	YEL	95.45
+	OF Dextrose	YEL	YEL	
−	OF Lactose	BLUE	BLUE	9.09
−	OF Maltose	BLUE	BLUE	9.09
−	OF Mannitol	BLUE	BLUE	18.18
+	OF Xylose	YEL	YEL	90.91
−	OF Sucrose	BLUE	BLUE	
+	Arginine	POS	POS	
−	Lysine	NEG	NEG	
−	Ornithine	NEG	NEG	
	Base Control	NEG	NEG	
−	Acetamide	NEG	NEG	4.55
−	Esculin	NEG	NEG	
−	Gelatin	NEG	NEG	
	Indole			
+	Malonate	POS	POS	57.63
−	PAD	NEG		
+	Urea ___2 h	POS (SLANT)	POS	SLANT & BUTT 81.82
+	6.5% NaCL	POS	POS	59.09
−	10% Lactose	NEG	NEG	31.58
−	ONPG	NEG	NEG	
−	Growth 42°	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 280: Pseudomonas putida isolate 6-of-32.

Date Inoculated: 6-12-08

Final Identification: Pseudomonas putida P.S. 6/23/08

Comments: Yellow diffusible Pigment on Egg Yolk at 8 DAYS

Gram Morph.			**Tubes**	**48 h**	8 ~~7~~ day 6/20/08
Gram Test	14h		KIA		K/K
Motility Wet Prep	VERY MOTILE - SM RODS		H_2S		slight H_2S
Motility Deep	POS		Pseudo P		NEG
Oxidase	POS		Pseudo F		POS!
Catalase	STRONG POS		NO_3 reduced		NEG
PLATES	**48 h**	8 ~~7~~ day	Gas from NO_3		NEG
Odor	STICKS		NO_2 reduced		NEG
Pigment on swab	FLESH		Gas from NO_2		NEG
Pigment on BAP	GREY		OF Fructose		BLUE
Morphology on BAP	SMOOTH		OF Dextrose		YEL
Beta hemolysis	NEG		OF Lactose		BLUE
Growth on Mac		POS	OF Maltose		BLUE
DNase hydrolysis		NEG	OF Mannitol		BLUE
Starch hydrolysis		NEG	OF Xylose		YEL
Lecithinase		NEG	OF Sucrose		BLUE
Lipase		NEG	Arginine		POS
Rapid PYR	NEG		Lysine		NEG
Rapid LAP	POS		Ornithine		NEG
Rapid ESC	NEG		Base Control		NEG
Sensitivity to:			Acetamide		NEG
Penicillin (10 U)		R	Esculin		NEG
Vancomycin (30 ug)		R	Gelatin		NEG
Colistin (10 mcg)		S-11	Indole		NEG
Polymyxin B (300 U)		S-12	Malonate		POS
			PAD		NEG
			Urea ~~NEG~~ 2 h	~~NEG~~ POS	POS SLANT & BUTT
			6.5% NaCL		POS
			10% Lactose		NEG
			ONPG		NEG
			Growth 42^0		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:

Comments: Yellow on all media ~~Pseudomonas fulva~~

Pseudomonas putida P.S. 3/10/12

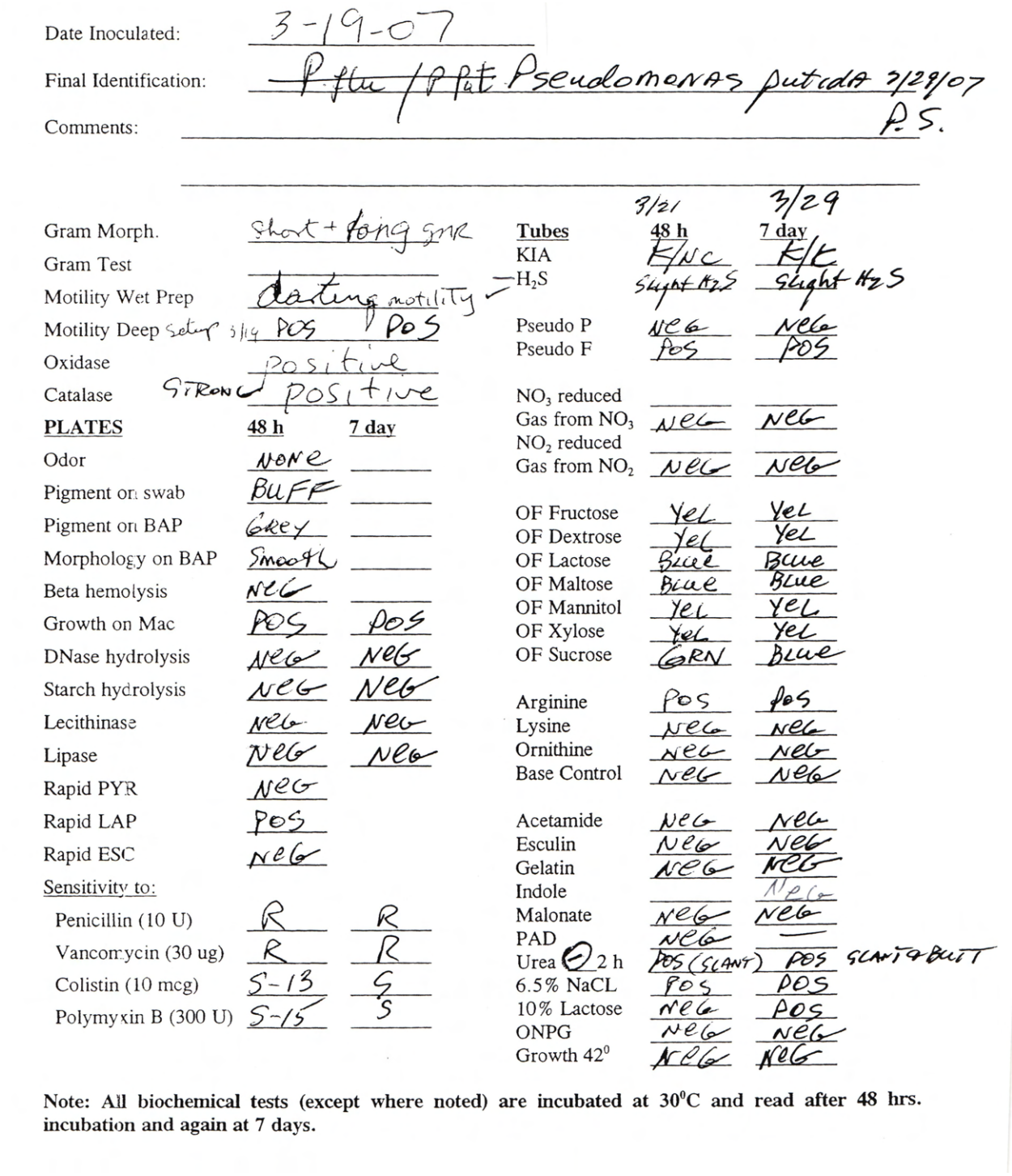
ASHEX FAV. 11 DAYS 3/10/12 11 DAYS

Gram Morph.		
Gram Test	48 h	
Motility Wet Prep	POS - LONG-RODS	
Motility Deep	POS!	
Oxidase	SLOW POS	
Catalase	STRONG POS	
PLATES	~~48 h~~ 11	**7 day**
Odor	NONE	
Pigment on swab	DEEP YELLOW	
Pigment on BAP	Yellow	
Morphology on BAP	SMOOTH	
Beta hemolysis	NEG	
Growth on Mac	POS	
DNase hydrolysis	NEG	
Starch hydrolysis	~~NEG~~ POS	
Lecithinase	NEG	
Lipase	NEG	
Rapid PYR	NEG	
Rapid LAP	POS	
Rapid ESC	NEG	
Sensitivity to:		
Penicillin (10 U)	R	
Vancomycin (30 ug)	R	
Colistin (10 mcg)	S-14	
Polymyxin B (300 U)	S-17	

Tubes	~~48 h~~	**7 day**
KIA	K/K	K/K
H_2S	NEG	NEG
Pseudo P	NEG	
Pseudo F	POS	
NO_3 reduced	NEG	
Gas from NO_3	TINY BUBBLE	
NO_2 reduced	NEG	
Gas from NO_2	NEG	
OF Fructose	YEL/GRN	
OF Dextrose	YEL	
OF Lactose	BLUE	
OF Maltose	BLUE	
OF Mannitol	BLUE	
OF Xylose	YEL	
OF Sucrose	BLUE	
Arginine	POS	
Lysine	NEG	
Ornithine	NEG	
Base Control	NEG	
Acetamide	NEG	
Esculin	NEG	
Gelatin	NEG	
Indole	NEG	- Yellow indole
Malonate	NEG	
PAD	NEG	
Urea NEG 2 h	POS	
6.5% NaCL	POS	
10% Lactose	NEG	
ONPG	NEG	
Growth 42^0	NEG	

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

Figure 282: Pseudomonas putida isolate 8-of-32.



Date Inoculated: 3-19-07

Final Identification: ~~P.flu / P.put~~ Pseudomonas putida 3/29/07 P.S.

Comments:

Gram Morph.	Short + long GNR	
Gram Test		
Motility Wet Prep	darting motility	
Motility Deep setup 3/19	POS	POS
Oxidase	positive	
Catalase	STRONG positive	

PLATES	48 h	7 day
Odor	NONE	
Pigment on swab	BUFF	
Pigment on BAP	Grey	
Morphology on BAP	Smooth	
Beta hemolysis	NEG	
Growth on Mac	POS	POS
DNase hydrolysis	NEG	NEG
Starch hydrolysis	NEG	NEG
Lecithinase	NEG	NEG
Lipase	NEG	NEG
Rapid PYR	NEG	
Rapid LAP	POS	
Rapid ESC	NEG	
Sensitivity to:		
Penicillin (10 U)	R	R
Vancomycin (30 ug)	R	R
Colistin (10 mcg)	S-13	S
Polymyxin B (300 U)	S-15	S

Tubes	3/21 48 h	3/29 7 day
KIA	K/NC	K/K
H_2S	Slight H_2S	Slight H_2S
Pseudo P	NEG	NEG
Pseudo F	POS	POS
NO_3 reduced		
Gas from NO_3	NEG	NEG
NO_2 reduced		
Gas from NO_2	NEG	NEG
OF Fructose	Yel	Yel
OF Dextrose	Yel	Yel
OF Lactose	Blue	Blue
OF Maltose	Blue	Blue
OF Mannitol	Yel	Yel
OF Xylose	Yel	Yel
OF Sucrose	GRN	Blue
Arginine	POS	POS
Lysine	NEG	NEG
Ornithine	NEG	NEG
Base Control	NEG	NEG
Acetamide	NEG	NEG
Esculin	NEG	NEG
Gelatin	NEG	NEG
Indole		NEG
Malonate	NEG	NEG
PAD	NEG	—
Urea (-) 2 h	POS (SLANT)	POS SLANT & BUTT
6.5% NaCL	POS	POS
10% Lactose	NEG	POS
ONPG	NEG	NEG
Growth 42^0	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 283: Pseudomonas putida isolate 9-of-32.

Comments: Pseudomonas putida P.S. 4/20/07

Gram Morph.		
Gram Test	48h	
✱ Motility Wet Prep	POS - SM. Rods	
+ Motility Deep	NEG POS	
Oxidase	POS (DELAYED)	
Catalase	STRONG POS	
PLATES	**48 h**	**7 day**
Odor	NONE	
Pigment on swab	PALE L/CREAM	
Pigment on BAP	GREY	
Morphology on BAP	SMOOTH	
Beta hemolysis	NEG	
Growth on Mac	POS	POS
DNase hydrolysis	NEG	NEG
Starch hydrolysis	NEG	NEG
Lecithinase	NEG	NEG
Lipase	NEG	NEG
Rapid PYR	NEG	
Rapid LAP	POS	
Rapid ESC	NEG	
Sensitivity to:		
Penicillin (10 U)	R	R
Vancomycin (30 ug)	R	R
Colistin (10 mcg)	S-10	S
Polymyxin B (300 U)	S-12	S

3/19/07

Tubes	**48 h**	**7 day**
KIA	K/NC	K/K
H_2S	Slight H_2S	NEG
Pseudo P	NEG	NEG
Pseudo F	NEG	NEG
NO_3 reduced		NEG
Gas from NO_3	SM. bubble	NEG
NO_2 reduced		NEG
Gas from NO_2	NEG	NEG
OF Fructose	Yel	Yel
OF Dextrose	Yel	Yel
OF Lactose	Blue	Blue
OF Maltose	Blue	Blue
OF Mannitol	Blue	Blue
OF Xylose	Yel	Yel
OF Sucrose	Blue	Blue
Arginine	POS	POS
Lysine	NEG	NEG
Ornithine	NEG	NEG
Base Control	NEG	NEG
Acetamide	NEG	NEG
Esculin	NEG	NEG
Gelatin	NEG	NEG ✓
Indole		NEG
Malonate	BLUE AT TOP	BLUE - POS
PAD	NEG	
Urea NEG 2 h	POS-SLANT	POS SLANT & BUTT
6.5% NaCL	NEG	POS
10% Lactose	NEG	NEG
ONPG	NEG	NEG
Growth 42°	~~POS~~ SPARSE	~~POS~~
REPEAT 42°	NEG	NEG
3/29	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 284: Pseudomonas putida isolate 10-of-32.

Date Inoculated: Wed 7/10/13

Final Identification: Pseudomonas putida

Comments: prev. ID Ps. fluor/putida

Maldi: Vitek MS RUO+IVD: Ps putida Bruker: Ps. monteilii

Gram Morph.	gnr
Gram Test	
Motility Wet Prep	
Motility Deep	Pos / Pos
Oxidase	Pos
Catalase	Pos

PLATES	48 h	7 day
Odor	Negr	Pos - stinks
Pigment on swab	buff	~~dk gold~~
Pigment on BAP	gray	yel-gr
Morphology on BAP	round, ~~gray~~ lg wet	
Beta hemolysis	Negr	Pos
Growth on Mac	Pos round Diff wet	Pos
DNase hydrolysis	Negr	Negr
Starch hydrolysis	Negr	Negr
Lecithinase	Negr yellow pigment	Negr
Lipase	Negr	Negr
Rapid PYR	Negr	
Rapid LAP	Pos	
Rapid ESC	Negr	
Sensitivity to:		
Penicillin (10 U)	R	R
Vancomycin (30 ug)	R	R
Colistin (10 mcg)	I1	S-11
Polymyxin B (300 U)	13	S-13

Tubes	48 h	7 day
KIA	K/NC	K/K
H_2S	Negr	Negr
Pseudo P	Negr	Negr
Pseudo F	Pos-yellow	Pos
		NEG after ZINC
NO_3 reduced	X	~~Pos clear effervescence~~
Gas from NO_3	tiny bubble	~~tiny bubble~~
NO_2 reduced	X	Neg-red
Gas from NO_2	Negr	Negr
OF Fructose	yel at top	yel-Gr +
OF Dextrose	yel at top	Ye-Gr +
OF Lactose	Bl-Gr	Bl -
OF Maltose	Bl-Gr	Bl -
OF Mannitol	Bl-Gr	Bl -
OF Xylose	Yellow	Yellow +
OF Sucrose	Bl-Gr	Bl -
Arginine	Pos	Pos
Lysine	Negr	Negr
Ornithine	Negr	Negr
Base Control	Negr	Negr
Acetamide	Negr	Negr
Esculin	~~dk cherry color~~	Negr very slt. br color bug on slant
Gelatin	Negr	Negr
Indole	X	Negr
Malonate	Blue-Pos	Pos-Blue
PAD	Negr	X
Urea Na 2 h	pink slant	Pos slant + butt
6.5% NaCL slt	cloudy Pos	Pos
10% Lactose	Neg-pink	Negr
ONPG	Negr	~~lt yellow +~~ neg
Growth 42°	Negr	Negr

Note: All biochemical tests (except where noted) are incubated at 30°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%**	**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_3 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	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 (30μg)	0	1	0.00	39.67	Lysine	0	1	0.00	39.67
Colistin (10μg)	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

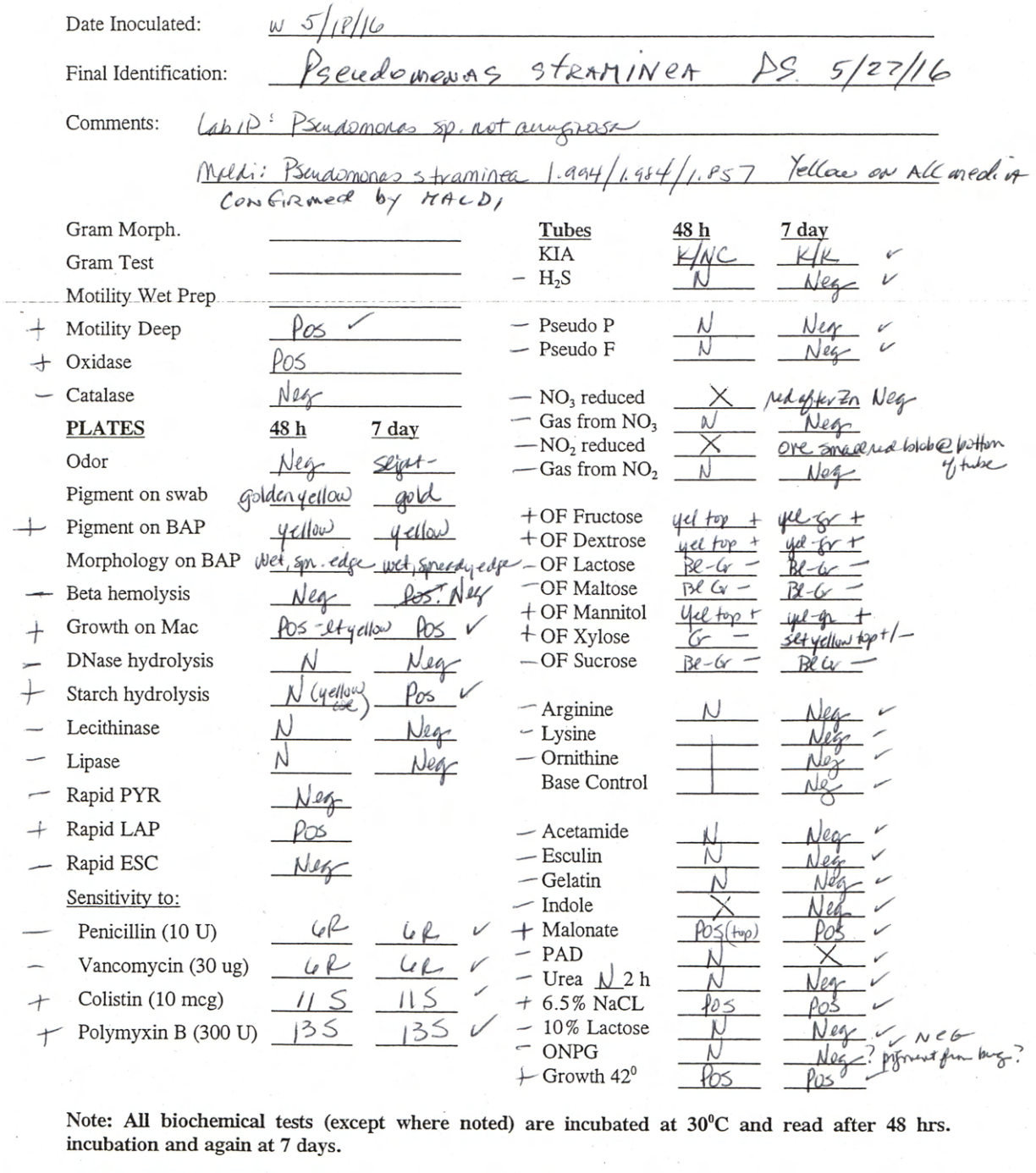
Table 86: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as $n_+/(n_+ + n_-)$, where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which 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%**	**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_3 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 (30μg)	0	1	0.00	39.67	Lysine	0	1	0.00	39.67
Colistin (10μg)	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 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: Pseudomonas straminea DS 5/27/16

Comments: Lab ID: Pseudomonas sp. not aeruginosa

Maldi: Pseudomonas straminea 1.994/1.984/1.857 Yellow on All media Confirmed by MALDI

	Gram Morph.		
	Gram Test		
	Motility Wet Prep		
+	Motility Deep	Pos ✓	
+	Oxidase	Pos	
−	Catalase	Neg	
	PLATES	**48 h**	**7 day**
	Odor	Neg	slight-
	Pigment on swab	golden yellow	gold
+	Pigment on BAP	yellow	yellow
	Morphology on BAP	wet, spr. edge	wet, spready edge
−	Beta hemolysis	Neg	~~Pos~~ Neg
+	Growth on Mac	Pos - lt yellow	Pos ✓
−	DNase hydrolysis	N	Neg
+	Starch hydrolysis	N (yellow ~~cle~~)	Pos ✓
−	Lecithinase	N	Neg
−	Lipase	N	Neg
−	Rapid PYR	Neg	
+	Rapid LAP	Pos	
−	Rapid ESC	Neg	
	Sensitivity to:		
−	Penicillin (10 U)	6R	6R ✓
−	Vancomycin (30 ug)	6R	6R ✓
+	Colistin (10 mcg)	11 S	11 S ✓
+	Polymyxin B (300 U)	13 S	13 S ✓

	Tubes	**48 h**	**7 day**
	KIA	K/NC	K/K ✓
−	H_2S	N	Neg ✓
−	Pseudo P	N	Neg ✓
−	Pseudo F	N	Neg ✓
−	NO_3 reduced	X	red after Zn Neg
−	Gas from NO_3	N	Neg
−	NO_2 reduced	X	ore small red blob @ bottom of tube
−	Gas from NO_2	N	Neg
+	OF Fructose	yel top +	yel-gr +
+	OF Dextrose	yel top +	yel-gr +
−	OF Lactose	Bl-Gr −	Bl-Gr −
−	OF Maltose	Bl Gr −	Bl-Gr −
+	OF Mannitol	yel top +	yel-gr +
+	OF Xylose	Gr −	slt yellow top +/−
−	OF Sucrose	Bl-Gr −	Bl Gr −
−	Arginine	N	Neg ✓
−	Lysine		Neg ✓
−	Ornithine		Neg ✓
	Base Control		Neg ✓
−	Acetamide	N	Neg ✓
−	Esculin	N	Neg ✓
−	Gelatin	N	Neg ✓
−	Indole	X	Neg ✓
+	Malonate	Pos (top)	Pos ✓
−	PAD	N	X ✓
−	Urea N 2 h	N	Neg ✓
+	6.5% NaCL	Pos	Pos ✓
−	10% Lactose	N	Neg ✓ ✓ NEG
−	ONPG	N	Neg? pigment from bug?
+	Growth 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 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_3 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_2 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 (30μg)	0	23	0.00	7.16	Lysine	1	22	4.35	10.88
Colistin (10μg)	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.

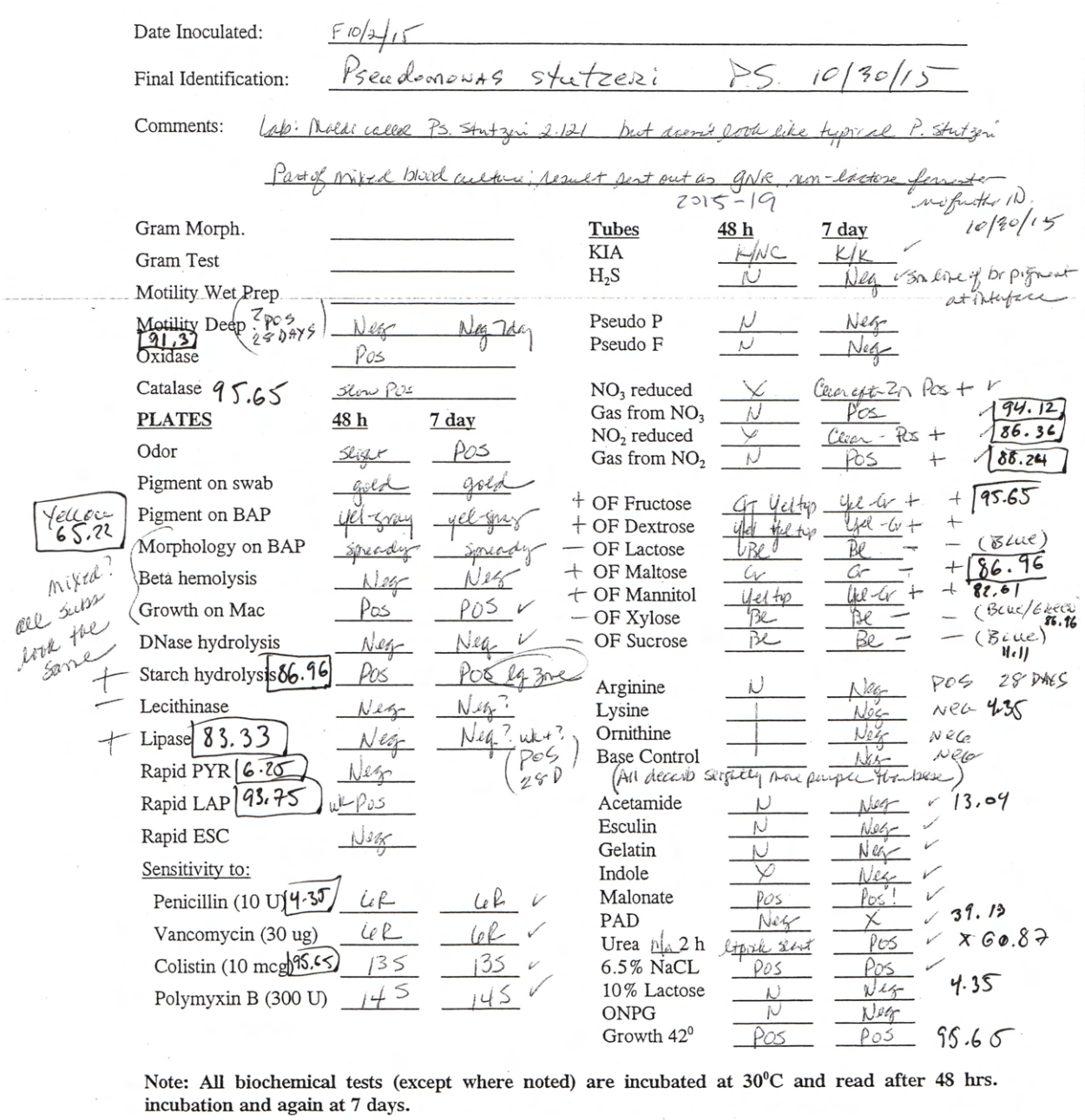
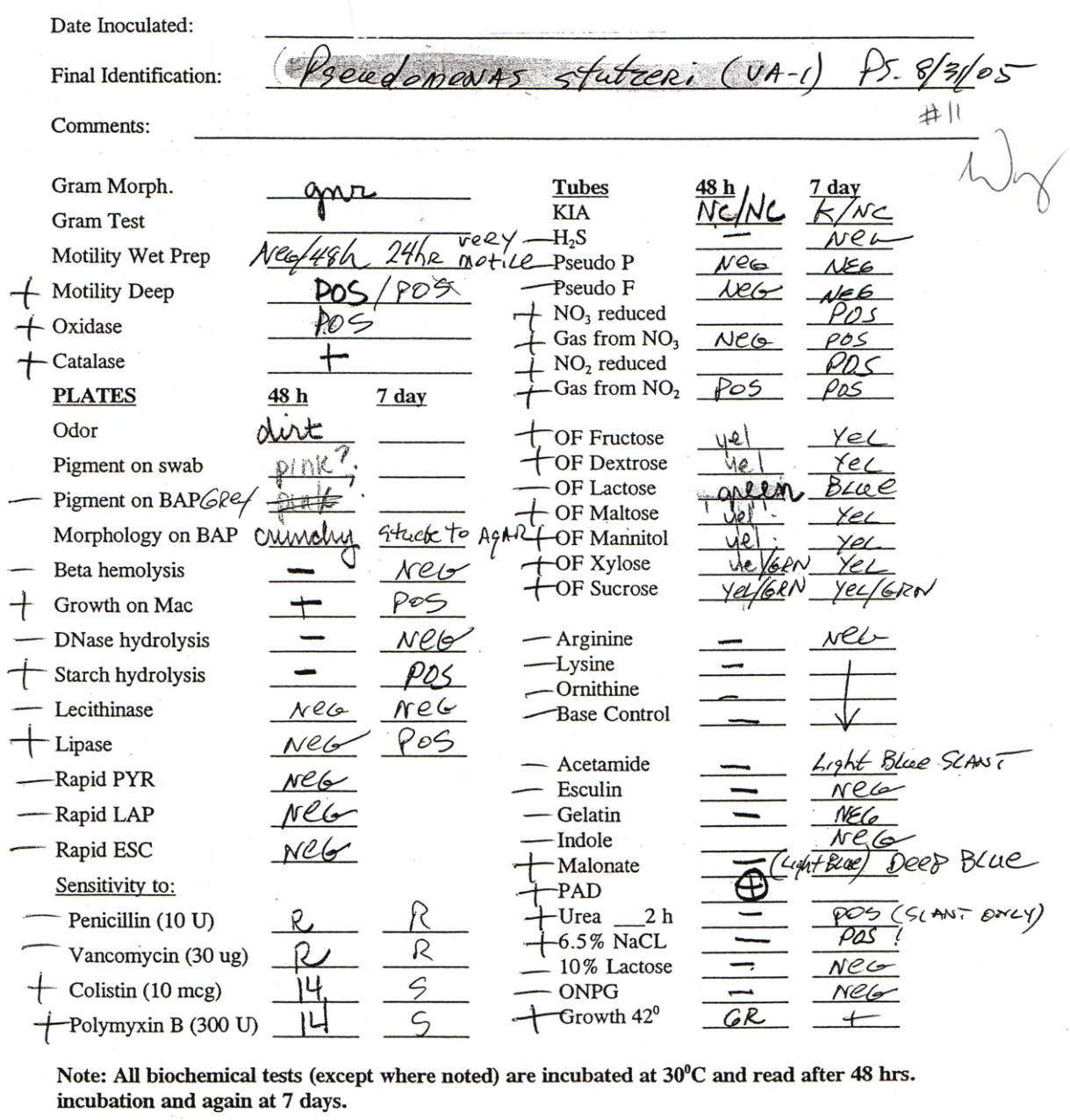


Figure 287: Pseudomonas stutzeri isolate 1-of-23.



Date Inoculated: _____

Final Identification: Pseudomonas stutzeri (UA-1) PS. 8/31/05

#11

Comments: _____

				Tubes	48 h	7 day
	Gram Morph.	gnr		KIA	NC/NC	K/NC
	Gram Test			H_2S	—	NEG
	Motility Wet Prep	Neg/48h 24hr very motile		Pseudo P	NEG	NEG
+	Motility Deep	POS/POS		Pseudo F	NEG	NEG
+	Oxidase	POS		NO_3 reduced		POS
+	Catalase	+		Gas from NO_3	NEG	POS
				NO_2 reduced		POS
	PLATES	**48 h**	**7 day**	Gas from NO_2	POS	POS
	Odor	dirt		OF Fructose	Yel	Yel
	Pigment on swab	pink?		OF Dextrose	Yel	Yel
—	Pigment on BAP Grey	~~Pink~~		OF Lactose	GREEN	BLUE
	Morphology on BAP	crumbly	stuck to AGAR	OF Maltose	Yel	Yel
—	Beta hemolysis	—	NEG	OF Mannitol	Yel	Yel
+	Growth on Mac	+	POS	OF Xylose	Yel/GRN	Yel
—	DNase hydrolysis	—	NEG	OF Sucrose	Yel/GRN	Yel/GRN
+	Starch hydrolysis	—	POS	Arginine	—	NEG
—	Lecithinase	NEG	NEG	Lysine	—	
+	Lipase	NEG	POS	Ornithine	—	
				Base Control	—	
—	Rapid PYR	NEG		Acetamide	—	Light Blue SLANT
—	Rapid LAP	NEG		Esculin	—	NEG
—	Rapid ESC	NEG		Gelatin	—	NEG
				Indole		NEG
	Sensitivity to:			Malonate	— (Light Blue)	Deep Blue
				PAD	⊕	
—	Penicillin (10 U)	R	R	Urea 2 h	—	POS (SLANT ONLY)
—	Vancomycin (30 ug)	R	R	6.5% NaCL	—	POS !
+	Colistin (10 mcg)	14	S	10% Lactose	—	NEG
+	Polymyxin B (300 U)	14	S	ONPG	—	NEG
				Growth 42°	GR	+

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

Figure 288: Pseudomonas stutzeri isolate 2-of-23.

Date Inoculated: 8-16-06

Final Identification: Pseudomonas stutzeri (Va-1) B.S. 8/18/06

Comments: Lt. Yel & WRINKLED/DRY on STARCH & EGG YOLK

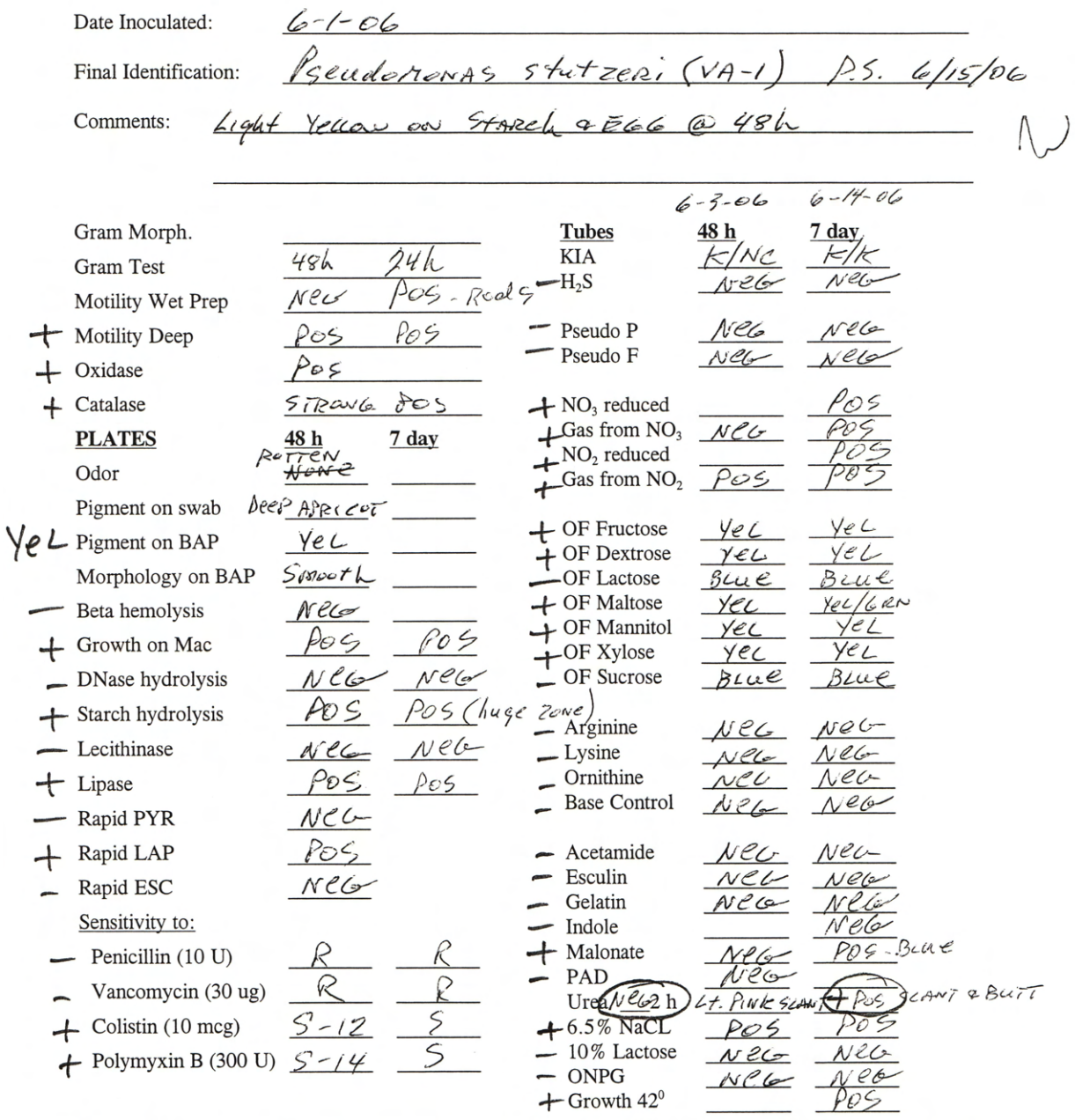
		48 h	10 day
	Gram Morph.		
	Gram Test	24h	
	Motility Wet Prep	POS - med rods	
+	Motility Deep	Pos?	POS
+	Oxidase	POS	
+	Catalase	POS	
	PLATES	**48 h**	**10 day**
	Odor	NONE	
	Pigment on swab	flesh	
—	Pigment on BAP	Grey	
	Morphology on BAP	WRINKLED	
—	Beta hemolysis	NEG	
+	Growth on Mac	POS	POS
—	DNase hydrolysis	NEG	NEG
+	Starch hydrolysis	POS !	POS !!
—	Lecithinase	NEG	NEG
+	Lipase	W+?	POS
—	Rapid PYR	NEG	
+	Rapid LAP	POS	
—	Rapid ESC	NEG	
	Sensitivity to:		
—	Penicillin (10 U)	R - DOUBLE ZONE	
—	Vancomycin (30 ug)	R	
+	Colistin (10 mcg)	S-13	
+	Polymyxin B (300 U)	S-14	

	Tubes	48 h	10 day
	KIA	K/NC	K/K
—	H_2S	NEG	NEG
—	Pseudo P	NEG	NEG
—	Pseudo F	NEG	NEG
+	NO_3 reduced		POS
+	Gas from NO_3	TINY BUBBLE	POS
+	NO_2 reduced		POS
+	Gas from NO_2	POS	POS
+	OF Fructose	Yel	Yel
+	OF Dextrose	Yel	Yel
—	OF Lactose	Blue	Blue
+	OF Maltose	Yel	Yel
—	OF Mannitol	Blue	Blue
+	OF Xylose	Yel	Yel
—	OF Sucrose	Blue	Blue
—	Arginine	NEG	~~POS - STRONG~~ NEG
—	Lysine		NEG
—	Ornithine		Lt. PURPLE
—	Base Control		NEG
—	Acetamide	NEG	NEG
—	Esculin	NEG	NEG
—	Gelatin	NEG	NEG
—	Indole		NEG
+	Malonate	NEG	POS!
—	PAD	NEG	~~NEG~~
—	Urea NEG 2 h	NEG	NEG
+	6.5% NaCL	POS	POS
—	10% Lactose	NEG	NEG
—	ONPG	NEG	NEG
+	Growth 42°	POS	

read 9/6
repeat 8/24
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 289: Pseudomonas stutzeri isolate 3-of-23.



Date Inoculated: 6-1-06

Final Identification: Pseudomonas stutzeri (VA-1) P.S. 6/15/06

Comments: Light Yellow on Starch & Egg @ 48h

	48h	24h
Gram Morph.		
Gram Test	48h	24h
Motility Wet Prep	Neg	Pos - Rods
+ Motility Deep	Pos	Pos
+ Oxidase	Pos	
+ Catalase	STRONG	POS

PLATES	48 h	7 day
Odor	ROTTEN ~~None~~	
Pigment on swab	Deep Apricot	
Yel Pigment on BAP	Yel	
Morphology on BAP	Smooth	
— Beta hemolysis	Neg	
+ Growth on Mac	Pos	Pos
— DNase hydrolysis	Neg	Neg
+ Starch hydrolysis	Pos	Pos (huge zone)
— Lecithinase	Neg	Neg
+ Lipase	Pos	Pos
— Rapid PYR	Neg	
+ Rapid LAP	Pos	
— Rapid ESC	Neg	
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

Tubes	6-3-06 48 h	6-14-06 7 day
KIA	K/Neg	K/K
— H_2S	Neg	Neg
— Pseudo P	Neg	Neg
— Pseudo F	Neg	Neg
+ NO_3 reduced		Pos
+ Gas from NO_3	Neg	Pos
+ NO_2 reduced		Pos
+ Gas from NO_2	Pos	Pos
+ OF Fructose	Yel	Yel
+ OF Dextrose	Yel	Yel
— OF Lactose	Blue	Blue
+ OF Maltose	Yel	Yel/GRN
+ OF Mannitol	Yel	Yel
+ OF Xylose	Yel	Yel
— OF Sucrose	Blue	Blue
— Arginine	Neg	Neg
— Lysine	Neg	Neg
— Ornithine	Neg	Neg
— Base Control	Neg	Neg
— Acetamide	Neg	Neg
— Esculin	Neg	Neg
— Gelatin	Neg	Neg
— Indole		Neg
+ Malonate	Neg	Pos - Blue
— PAD	Neg	
Urea Neg 2 h	Lt. Pink slant	+ Pos slant & Butt
+ 6.5% NaCL	Pos	Pos
— 10% Lactose	Neg	Neg
— ONPG	Neg	Neg
+ Growth 42^0		Pos

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

Figure 290: Pseudomonas stutzeri isolate 4-of-23.

Date Inoculated: 1-3-08

Final Identification: 1-10-08 Pseudomonas stutzeri VA-1 P.S. 1/10/08

Comments: Butterscotch Yellow on Starch & Egg Yolk @ 7 DAYS - very wrinkled

				24	
Gram Morph.			**Tubes**	**48 h**	**7 day**
Gram Test	24h. 48h		KIA	K/NC	K/K
Motility Wet Prep	Neg Neg		H_2S	Neg	Neg
Motility Deep	Pos Pos		Pseudo P	Neg	Neg - Yel wrinkled
Oxidase	Pos		Pseudo F	Neg	Neg - Yel wrinkled
Catalase	Strong Pos		NO_3 reduced		Pos
PLATES	**48 h**	**7 day**	Gas from NO_3	small bubble	Pos
Odor	None		NO_2 reduced		repeat NO_2 set up NO_3 by mistake
Pigment on swab	Yellow		Gas from NO_2	~~Neg~~	~~Pos~~
Pigment on BAP	Yellow		OF Fructose	GRN	Yel
Morphology on BAP	DRY - Adherent-wrinkled		OF Dextrose	Yel	Yel
Beta hemolysis	Neg-24h		OF Lactose	Blue	Blue
Growth on Mac	Pos		OF Maltose	GRN	Yel
DNase hydrolysis	Neg	Neg	OF Mannitol	GRN	Yel
Starch hydrolysis	Neg	Pos!	OF Xylose	GRN/Yel	Yel
Lecithinase	Neg	Neg	OF Sucrose	Blue	Blue
Lipase	Neg	Pos (narrow zone)	Arginine	Neg	Neg
Rapid PYR	Neg		Lysine	↓	↓
Rapid LAP	Pos		Ornithine	↓	↓
Rapid ESC	Neg		Base Control	↓	↓
Sensitivity to:			Acetamide	Neg	Pos - slant (degrinkly pos)
Penicillin (10 U)	R	R	Esculin	Neg	Neg
Vancomycin (30 ug)	R	R	Gelatin		Neg
Colistin (10 mcg)	S-13	S	Indole		Neg
Polymyxin B (300 U)	S-13	S	Malonate	Neg	Pos
			PAD	Neg	
			Urea Neg 2 h	Neg	Pos slant only
			6.5% NaCL	Neg	Pos!
			10% Lactose	Neg	Neg
			ONPG	Neg	Neg
			Growth 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 291: Pseudomonas stutzeri isolate 5-of-23.

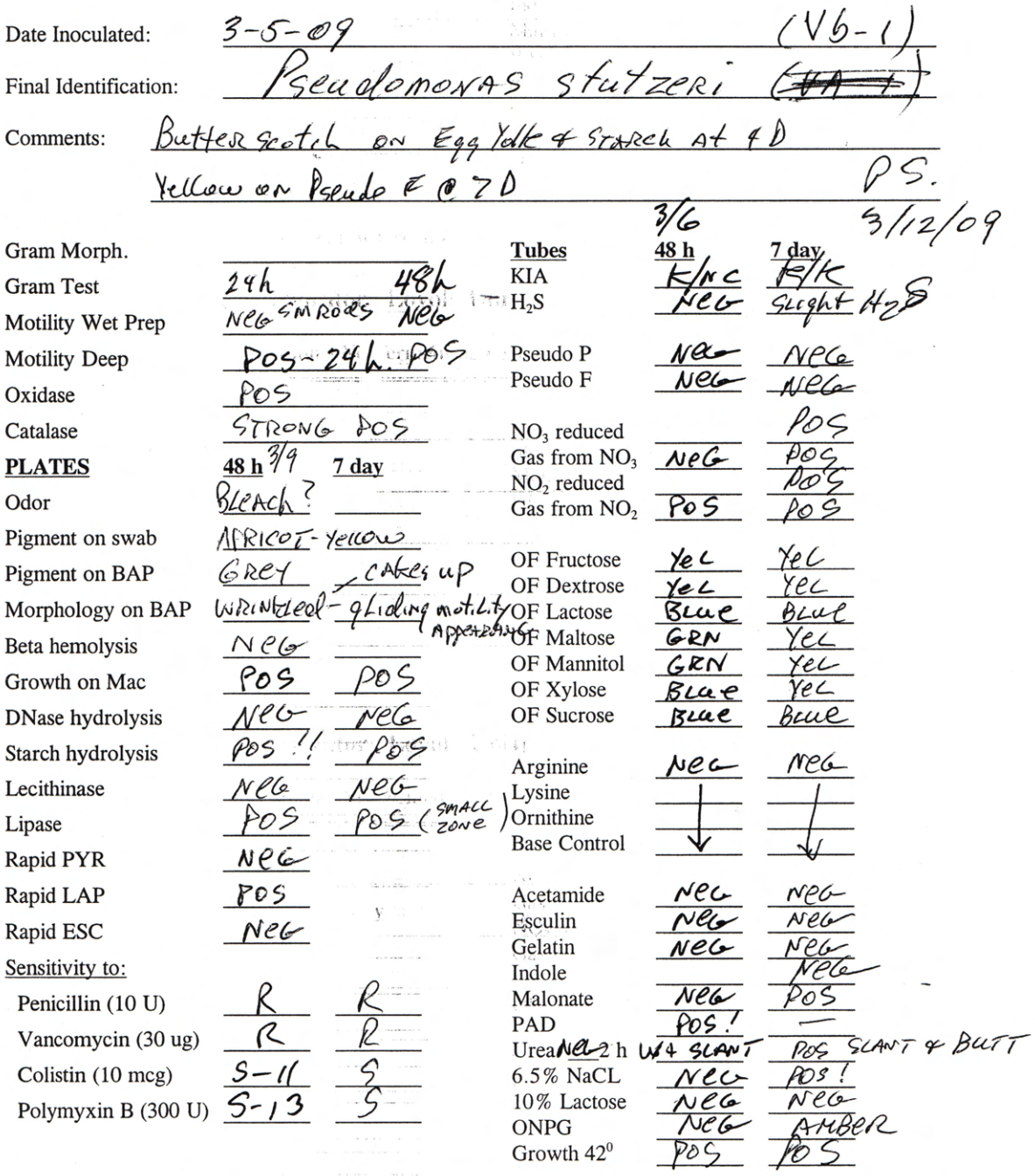


Figure 292: Pseudomonas stutzeri isolate 6-of-23.

Date Inoculated: 3-30-11

Final Identification: Pseudomonas stutzeri 4/8/11 P.S.

Comments: Yellow, dry, wrinkled on Choc, starch, Egg

					4/8 9 DAYS
Gram Morph.			**Tubes**	**48 h**	**7 day**
Gram Test	2-DAY		KIA	K/NC	K/K
Motility Wet Prep	Neg ? very jittery		H_2S	Neg	Neg
Motility Deep	Neg Neg		Pseudo P	Neg	Neg
Oxidase	POS		Pseudo F	Neg	Neg
Catalase	STRONG POS		NO_3 reduced		POS
PLATES	**48 h**	**7 day**	Gas from NO_3	Neg	POS
Odor	CABBAGE		NO_2 reduced		POS
Pigment on swab	ORANGE		Gas from NO_2	POS	POS
Pigment on BAP	Yel		OF Fructose	Yel/GRN	Yel/GRN
Morphology on BAP	SPREADY		OF Dextrose	Yel	Yel
Beta hemolysis	Neg		OF Lactose	Blue	Blue
Growth on Mac	POS	POS	OF Maltose	Blue	Yel/GRN
DNase hydrolysis	Neg	Neg	OF Mannitol	Yel/GRN	Yel/GRN
Starch hydrolysis	POS !!	POS (4+)	OF Xylose	Yel	Yel
Lecithinase	Neg	Neg	OF Sucrose	Blue	Blue
Lipase	Neg	POS	Arginine	Neg	Neg
Rapid PYR	Neg		Lysine	↓	↓
Rapid LAP	POS		Ornithine	↓	↓
Rapid ESC	Neg		Base Control	↓	↓
Sensitivity to:			Acetamide	Neg	Neg
Penicillin (10 U)	R	R	Esculin	Neg	Neg
Vancomycin (30 ug)	R	R	Gelatin	Neg	Neg
Colistin (10 mcg)	S-14	S	Indole		Neg
Polymyxin B (300 U)	S-16	S	Malonate	Neg	POS
			PAD	POS	
			Urea/Neg 2 h	POS - SLANT	POS SLANT & BUTT
			6.5% NaCL	POS	POS
			10% Lactose	Neg	Neg
			ONPG	Neg	Neg
			Growth 42^0	POS	POS

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

Figure 293: Pseudomonas stutzeri isolate 7-of-23.

Date Inoculated: 9-15-11

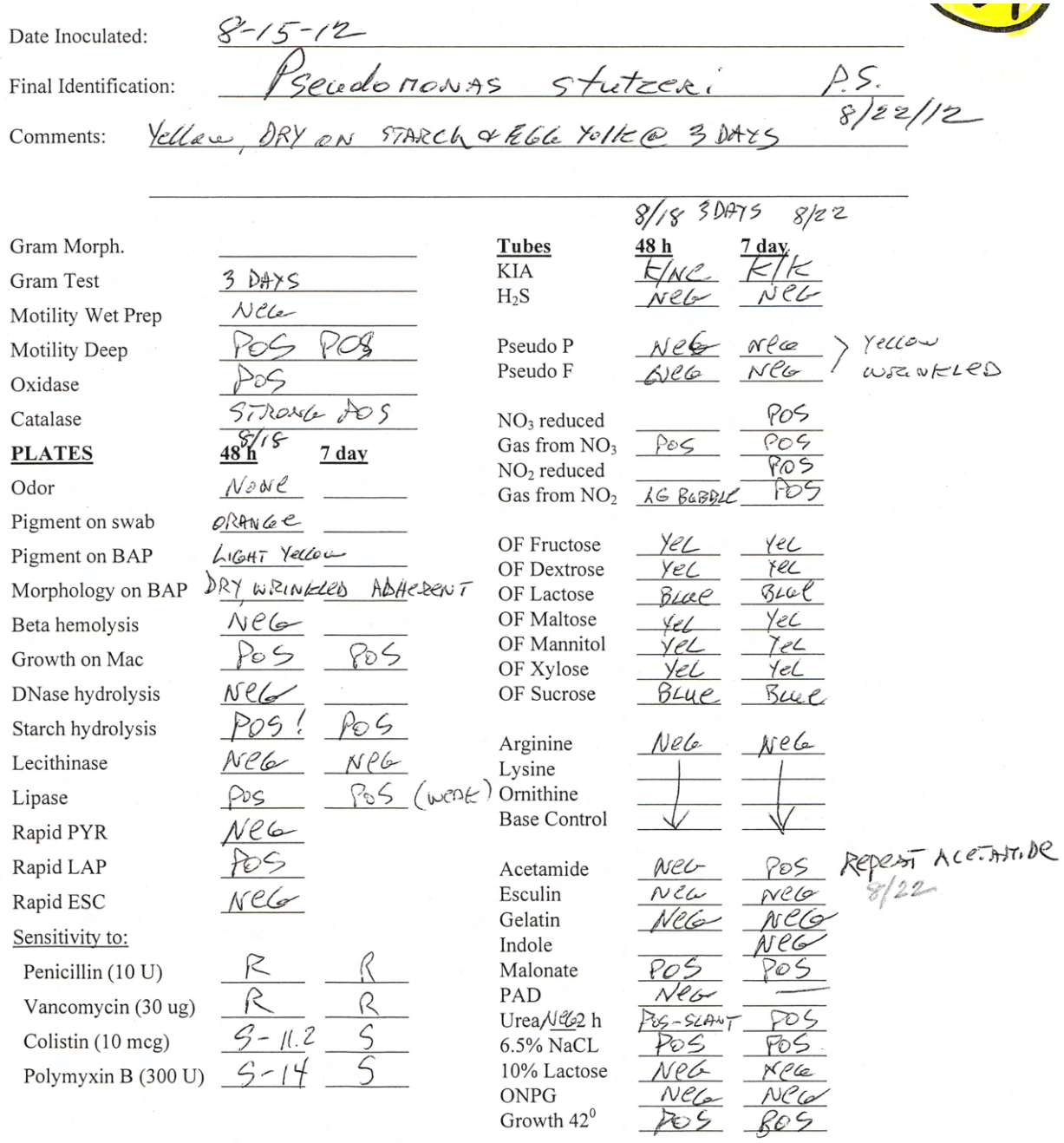
Final Identification: Pseudomonas stutzeri

Comments: Send for sequencing
Confirmed by 16s rRNA sequencing

				24	9/27/11 12 days
Gram Morph.			**Tubes**	~~48 h~~	**7 day**
Gram Test	24 hr		KIA	K/NC	K/K
Motility Wet Prep	Pos very motile		H_2S	Neg	Neg
Motility Deep	Pos	Pos	Pseudo P	Neg	Neg
Oxidase	Pos		Pseudo F	Neg	Neg
Catalase	Strong Pos		NO_3 reduced		Pos
PLATES	**48 h**	**7 day**	Gas from NO_3	Neg	Pos
Odor	~~None~~ Grapes		NO_2 reduced		Pos
Pigment on swab	Bleach		Gas from NO_2	Pos	Pos
Pigment on BAP	Grey		OF Fructose	Blue	Blue
Morphology on BAP	Spread-y		OF Dextrose	↓	Green +
Beta hemolysis	Neg		OF Lactose	↓	Blue
Growth on Mac	Inhibited	Growth	OF Maltose	↓	Blue
DNase hydrolysis	Neg	Neg	OF Mannitol	↓	Blue
Starch hydrolysis	Neg	Neg	OF Xylose	GRN	Yel
Lecithinase	Neg	Neg	OF Sucrose	Blue	Blue
Lipase	Neg	Pos	Arginine	Neg	Neg LYS Repeat 9/27 Pos 10/7
Rapid PYR	Neg		★ Lysine	↓	Pos
Rapid LAP	Pos		Ornithine	↓	Neg
Rapid ESC	Neg		Base Control	↓	Neg
Sensitivity to:			Acetamide	Neg	Neg
Penicillin (10 U)	R	R	Esculin	Neg	Neg
Vancomycin (30 ug)	R	R	Gelatin		Neg
Colistin (10 mcg)	S-12	S	Indole		Neg
Polymyxin B (300 U)	S-13	S	Malonate	Neg	Pos !
			+ PAD	Pos	—
			Urea Neg 2 h	Neg	Neg
			6.5% NaCL	Pos	Pos
			10% Lactose	Neg	Neg
			ONPG	Neg	Neg
			Growth 42°		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 294: Pseudomonas stutzeri isolate 8-of-23.



Date Inoculated: 8-15-12

Final Identification: Pseudomonas stutzeri P.S. 8/22/12

Comments: Yellow, DRY on STARCH & EGG Yolk @ 3 DAYS

Gram Morph.		
Gram Test	3 DAYS	
Motility Wet Prep	Neg	
Motility Deep	POS	POS
Oxidase	POS	
Catalase	STRONG POS	
PLATES	**48 h** (8/15)	**7 day**
Odor	None	
Pigment on swab	ORANGE	
Pigment on BAP	LIGHT Yellow	
Morphology on BAP	DRY WRINKLED ADHERENT	
Beta hemolysis	Neg	
Growth on Mac	POS	POS
DNase hydrolysis	Neg	
Starch hydrolysis	POS!	POS
Lecithinase	Neg	Neg
Lipase	POS	POS (WEAK)
Rapid PYR	Neg	
Rapid LAP	POS	
Rapid ESC	Neg	
Sensitivity to:		
Penicillin (10 U)	R	R
Vancomycin (30 ug)	R	R
Colistin (10 mcg)	S-11.2	S
Polymyxin B (300 U)	S-14	S

8/18 3 DAYS 8/22

Tubes	**48 h**	**7 day**	
KIA	K/NC	K/K	
H_2S	Neg	Neg	
Pseudo P	Neg	Neg	> Yellow WRINKLED
Pseudo F	Neg	Neg	
NO_3 reduced		POS	
Gas from NO_3	POS	POS	
NO_2 reduced		POS	
Gas from NO_2	LG BUBBLE	POS	
OF Fructose	Yel	Yel	
OF Dextrose	Yel	Yel	
OF Lactose	Blue	Blue	
OF Maltose	Yel	Yel	
OF Mannitol	Yel	Yel	
OF Xylose	Yel	Yel	
OF Sucrose	Blue	Blue	
Arginine	Neg	Neg	
Lysine	↓	↓	
Ornithine	↓	↓	
Base Control	↓	↓	
Acetamide	Neg	POS	Repeat ACETAMIDE 8/22
Esculin	Neg	Neg	
Gelatin	Neg	Neg	
Indole		Neg	
Malonate	POS	POS	
PAD	Neg		
Urea/Neg2 h	POS-SLANT	POS	
6.5% NaCL	POS	POS	
10% Lactose	Neg	Neg	
ONPG	Neg	Neg	
Growth 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 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_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_3 Reduced	6	0	100.00	80.48
Pink Pigment	1	5	16.67	29.68	Gas from NO_3	1	1	50.00	50.00
Beta Hemolysis	0	2	0.00	32.88	NO_2 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 (30μg)	0	6	0.00	19.52	Lysine	0	6	0.00	19.52
Colistin (10μg)	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 PSYCHROBACTER

31.1 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_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_3 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	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 (30μg)	1	0	100.00	60.33	Lysine	0	1	0.00	39.67
Colistin (10μg)	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.

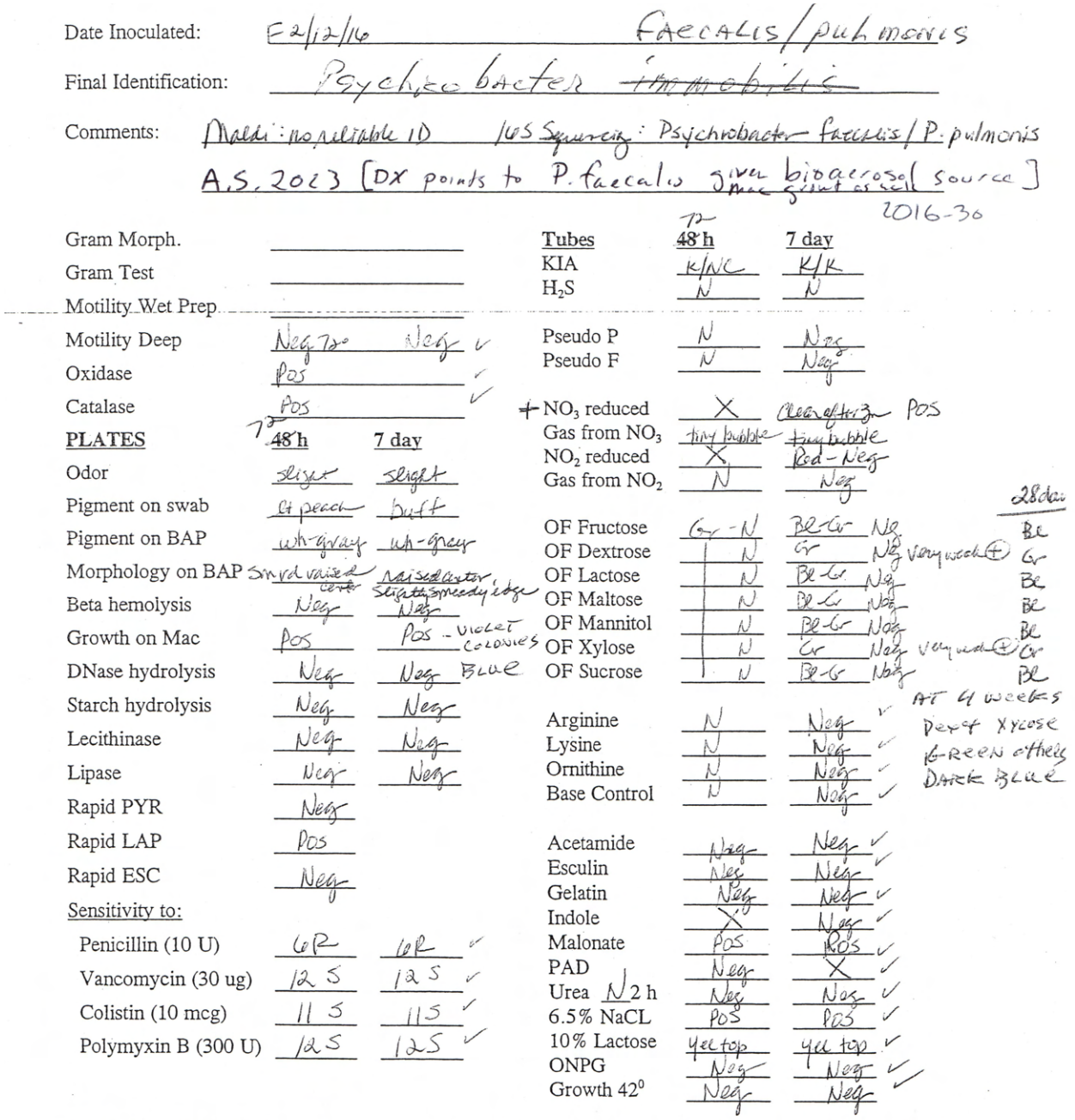


Figure 296: Psychrobacter faecalis isolate 1-of-1.

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_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_3 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_2 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 (30μg)	4	1	80.00	66.97	Lysine	0	5	0.00	21.72
Colistin (10μg)	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_3 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_2 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 (30μg)	5	0	100.00	78.28	Lysine	0	5	0.00	21.72
Colistin (10μg)	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°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_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_3 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 (30μg)	3	2	60.00	55.66	Lysine	0	5	0.00	21.72
Colistin (10μg)	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.

Date Inoculated: 5-12-10 Blood collected 3-8-10 #19

Final Identification: Psycrobacter phenylpyruvica

Comments: SERPINTINE RODS SEEN ON WET PREP

Gram Morph.	Cocci AND		**Tubes**	**48 h**	**7 day**
Gram Test	LONG SERPENTINE RODS		KIA	NC/NC	K/NC
Motility Wet Prep	NEG -		H_2S	NEG	NEG
Motility Deep	NEG	NEG	Pseudo P	NEG	NEG
Oxidase	POS		Pseudo F	NEG	NEG
Catalase	STRONG POS		– NO_3 reduced		NEG
PLATES	**48 h**	**7 day**	– Gas from NO_3	Tiny Bubble	Tiny Bubble
Odor	NONE		– NO_2 reduced		NEG
Pigment on swab	BUFF	TAN - slight yellow	– Gas from NO_2	NEG	NEG
Pigment on BAP	CLEAR - SLIGHT ALpha hem		OF Fructose	GRN	BLUE/GRN
Morphology on BAP	TRANSLUCENT		OF Dextrose	↓	↓
Beta hemolysis	NEG		OF Lactose		
Growth on Mac	TINY distant colonies	NG 7D	OF Maltose		
DNase hydrolysis	NEG - NO GROWTH - 7D		OF Mannitol		
Starch hydrolysis	NEG - POOR GROWTH	NG 7D	OF Xylose		
Lecithinase	NEG	NEG	OF Sucrose	↓	↓
Lipase	NEG	NEG → GROWTH	Arginine (–)	NEG	POS repeat 6/4/10 72 7 DAYS NEG NEG
Rapid PYR	NEG		Lysine		NEG
Rapid LAP	POS		Ornithine		
Rapid ESC	NEG		Base Control	↓	↓
Sensitivity to:			Acetamide	NEG	NEG
Penicillin (10 U)	S-22	S-22	Esculin	NEG	NEG
Vancomycin (30 ug)	S-13	S-13	Gelatin	NEG	NEG
Colistin (10 mcg)	S-16	S-16	Indole		NEG
Polymyxin B (300 U)	S-17	S-17	Malonate	NEG	NEG
			PAD	POS!	
			Urea – 2 h	POS SLANT+BUFF	POS SLANT & BUFF
			6.5% NaCL	NEG	NEG
			10% Lactose	NEG	NEG
			ONPG	NEG	NEG
			Growth 42^0	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.

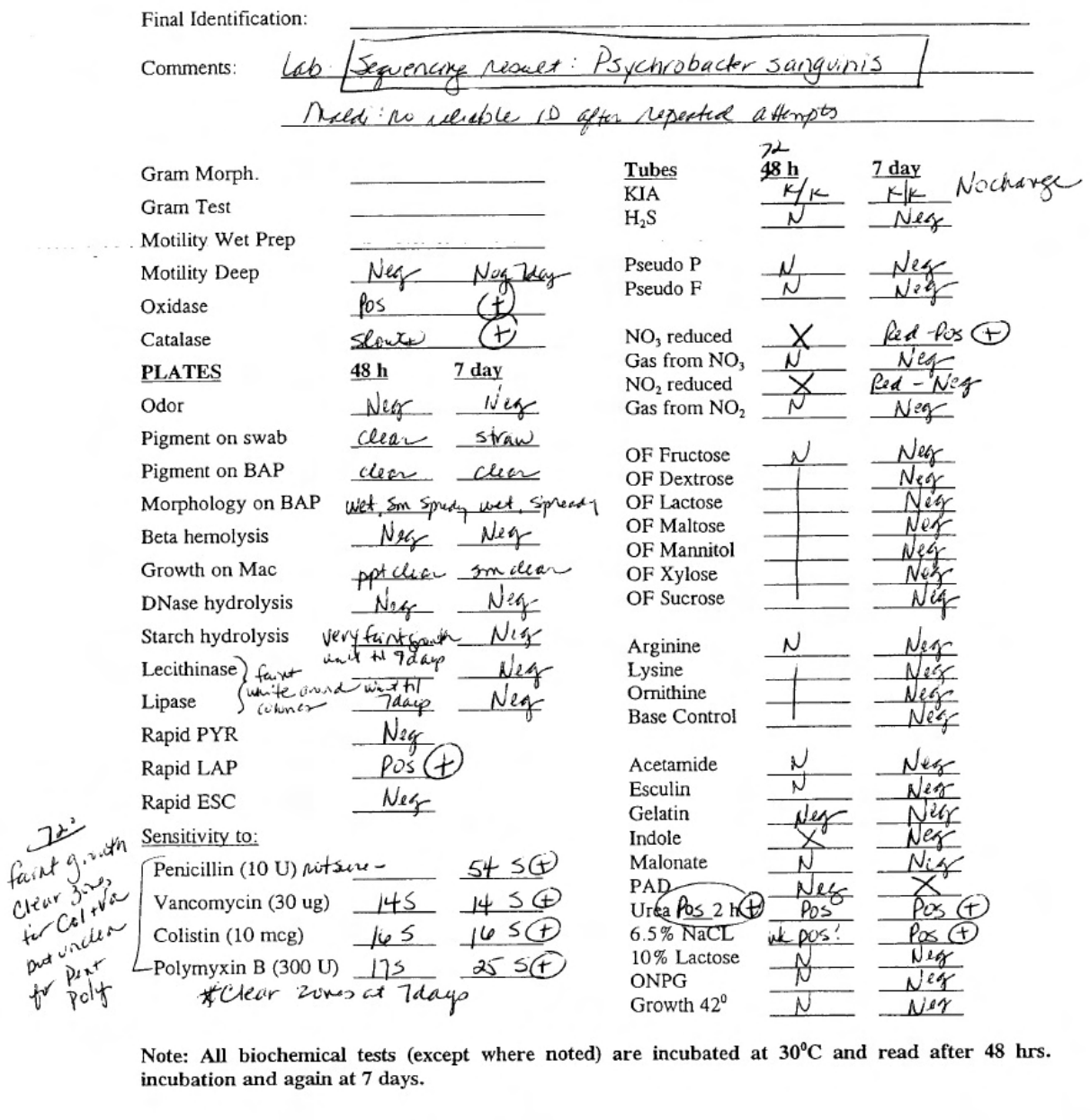
Figure 297: Psychrobacter phenylpyruvicus isolate 1-of-5.

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%**	**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_3 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	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 (30μg)	1	0	100.00	60.33	Lysine	0	1	0.00	39.67
Colistin (10μg)	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: Psychrobacter sanguinis

Maldi: no reliable ID after repeated attempts

Gram Morph.		
Gram Test		
Motility Wet Prep		
Motility Deep	Neg	Neg 7day
Oxidase	Pos	(+)
Catalase	slow+	(+)
PLATES	**48 h**	**7 day**
Odor	Neg	Neg
Pigment on swab	clear	straw
Pigment on BAP	clear	clear
Morphology on BAP	wet, sm spreading	wet, spreading
Beta hemolysis	Neg	Neg
Growth on Mac	ppt clear	sm clear
DNase hydrolysis	Neg	Neg
Starch hydrolysis	very faint growth wait til 7 days	Neg
Lecithinase } faint white around colonies		Neg
Lipase }	wait til 7 days	Neg
Rapid PYR	Neg	
Rapid LAP	Pos (+)	
Rapid ESC	Neg	

72° faint growth clear zones for Col+Va but unclear for Pent Poly

Sensitivity to:

Penicillin (10 U) not sure -		54 S (+)
Vancomycin (30 ug)	14 S	14 S (+)
Colistin (10 mcg)	16 S	16 S (+)
Polymyxin B (300 U)	17 S	25 S (+)

*Clear zones at 7 days

Tubes	72 ~~48 h~~	7 day
KIA	K/K	K/K No change
H_2S	N	Neg
Pseudo P	N	Neg
Pseudo F	N	Neg
NO_3 reduced	X	Red - Pos (+)
Gas from NO_3	N	Neg
NO_2 reduced	X	Red - Neg
Gas from NO_2	N	Neg
OF Fructose	N	Neg
OF Dextrose		Neg
OF Lactose		Neg
OF Maltose		Neg
OF Mannitol		Neg
OF Xylose		Neg
OF Sucrose		Neg
Arginine	N	Neg
Lysine		Neg
Ornithine		Neg
Base Control		Neg
Acetamide	N	Neg
Esculin	N	Neg
Gelatin	Neg	Neg
Indole	X	Neg
Malonate	N	Neg
PAD	Neg	X
Urea Pos 2 h (+)	Pos	Pos (+)
6.5% NaCL	wk pos!	Pos (+)
10% Lactose	N	Neg
ONPG	N	Neg
Growth 42°	N	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 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%**	**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	0	1	0.00	39.67	Pseudo F	0	1	0.00	39.67
Yellow Pigment	1	0	100.00	60.33	NO_3 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 (30μg)	0	1	0.00	39.67	Lysine	0	1	0.00	39.67
Colistin (10μg)	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°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.

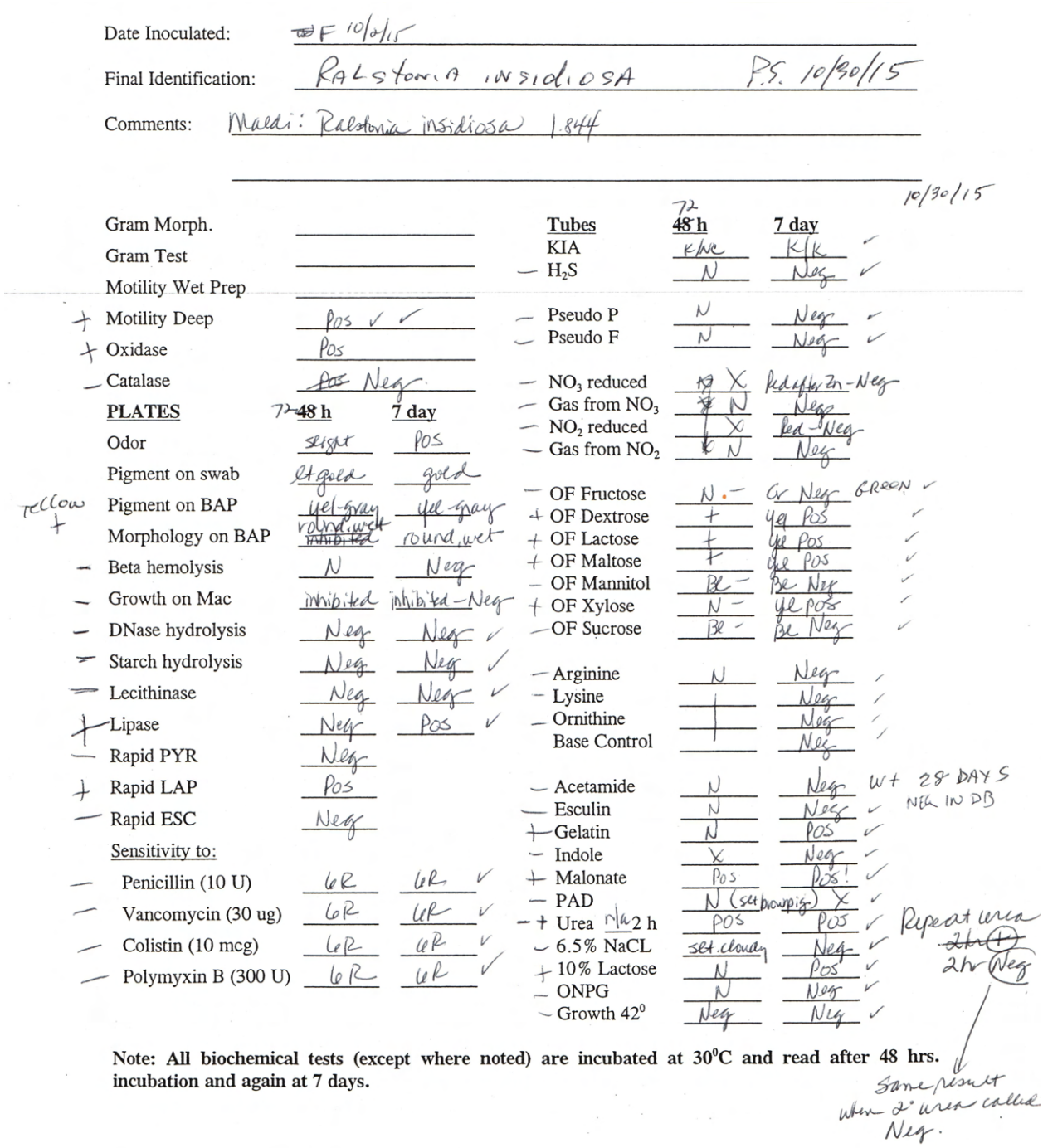


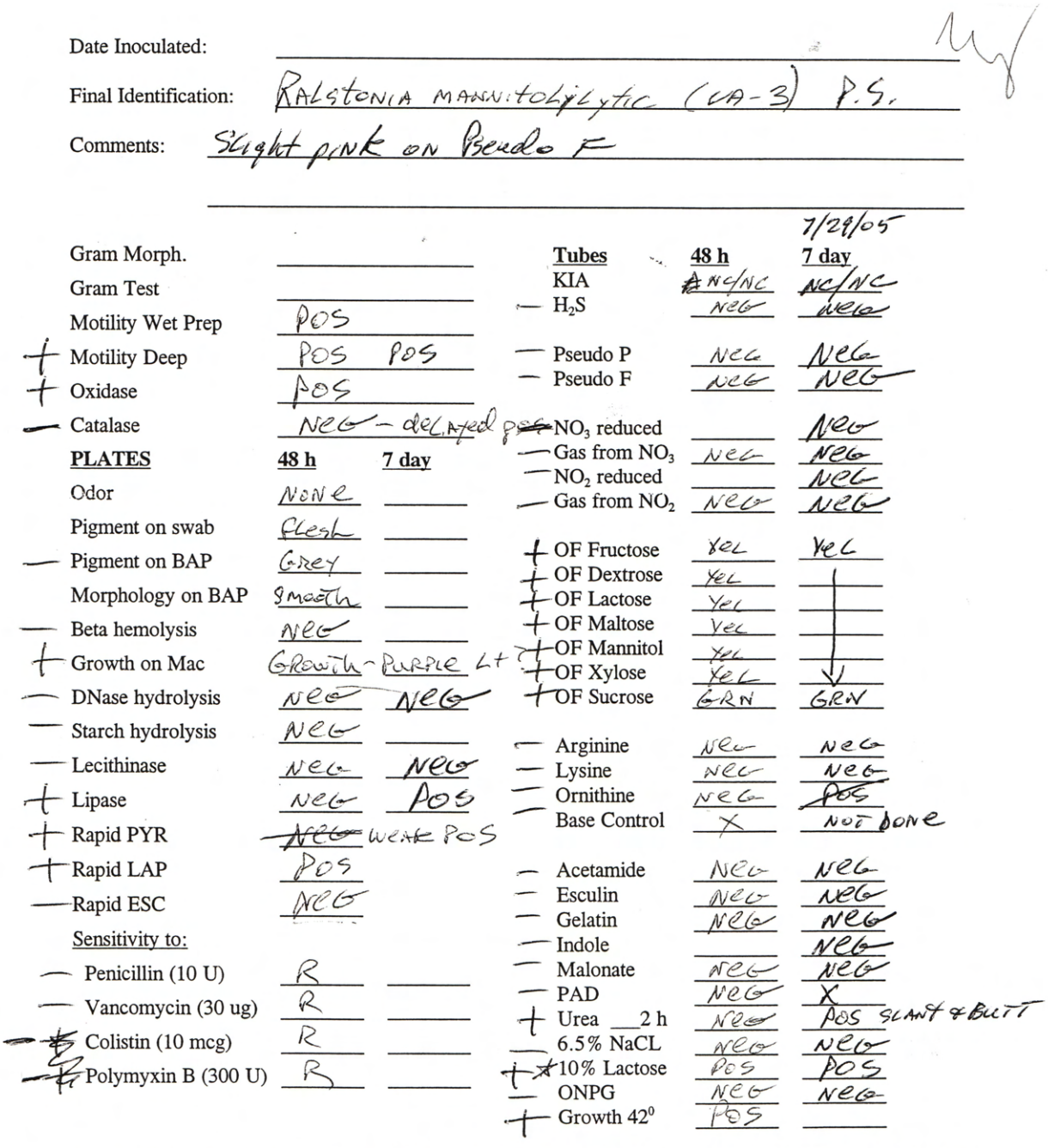
Figure 299: Ralstonia insidiosa isolate 1-of-1.

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_3 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 (30μg)	0	7	0.00	17.72	Lysine	0	7	0.00	17.72
Colistin (10μg)	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°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:

Final Identification: Ralstonia mannitolilytic (UA-3) P.S.

Comments: Slight pink on Pseudo F

	Gram Morph.			**Tubes**	**48 h**	**7 day**
	Gram Test			KIA	~~A~~ NC/NC	~~NC~~/NC
	Motility Wet Prep	POS		— H_2S	Neg	Neg
+	Motility Deep	POS	POS	— Pseudo P	Neg	Neg
+	Oxidase	POS		— Pseudo F	Neg	Neg
—	Catalase	Neg – delayed pos		— NO_3 reduced		Neg
	PLATES	**48 h**	**7 day**	— Gas from NO_3	Neg	Neg
	Odor	None		— NO_2 reduced		Neg
	Pigment on swab	flesh		— Gas from NO_2	Neg	Neg
—	Pigment on BAP	Grey		+ OF Fructose	Yel	Yel
	Morphology on BAP	Smooth		+ OF Dextrose	Yel	↓
—	Beta hemolysis	Neg		+ OF Lactose	Yel	↓
+	Growth on Mac	Growth – Purple Lt		+ OF Maltose	Yel	↓
—	DNase hydrolysis	Neg	Neg	+ OF Mannitol	Yel	↓
—	Starch hydrolysis	Neg		+ OF Xylose	Yel	↓
—	Lecithinase	Neg	Neg	+ OF Sucrose	GRN	GRN
+	Lipase	Neg	Pos	— Arginine	Neg	Neg
+	Rapid PYR	~~Neg~~ weak Pos		— Lysine	Neg	Neg
+	Rapid LAP	Pos		— Ornithine	Neg	~~Pos~~
—	Rapid ESC	Neg		— Base Control	X	Not done
	Sensitivity to:			— Acetamide	Neg	Neg
—	Penicillin (10 U)	R		— Esculin	Neg	Neg
—	Vancomycin (30 ug)	R		— Gelatin	Neg	Neg
—	~~S~~ Colistin (10 mcg)	R		— Indole		Neg
—	~~S~~ R Polymyxin B (300 U)	R		— Malonate	Neg	Neg
				— PAD	Neg	X
				+ Urea 2 h	Neg	Pos slant & butt
				— 6.5% NaCL	Neg	Neg
				+ ~~A~~ 10% Lactose	Pos	Pos
				— ONPG	Neg	Neg
				+ Growth 42°	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.

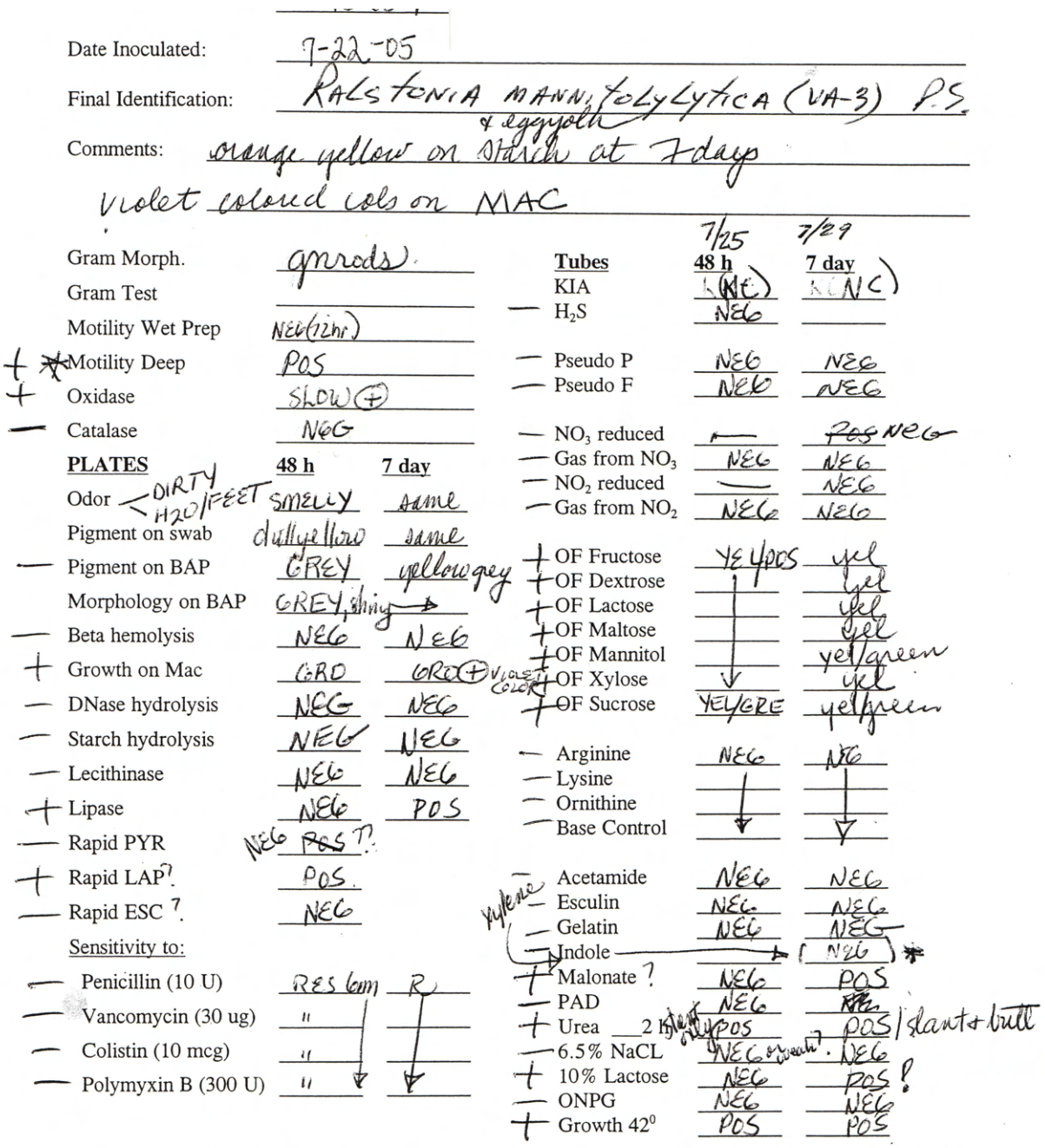


Figure 301: Ralstonia mannitolilytica isolate 2-of-7.

Date Inoculated: 6-4-12

Final Identification: RALSTONIA MANNITOLILYTICA P.S. 6/8/12

Comments:

MALDI RALSTONIA MANNITOLILYTICA (99.9%) 6/8 & 6/29

Gram Morph.			**Tubes**	**48 h**	**7 day**
Gram Test	48h	24h	KIA	K/NC	K/K
Motility Wet Prep	Neg	Neg	H_2S	Neg	Neg
Motility Deep	POS	POS	Pseudo P	Neg	Neg
Oxidase	POS		Pseudo F	Neg	Neg
Catalase	Neg	Neg-24h	NO_3 reduced	Neg	
PLATES	**48 h**	**7 day**	Gas from NO_3	Neg	
Odor	~~Stinks~~		NO_2 reduced	Neg	
Pigment on swab	flesh		Gas from NO_2	Neg	
Pigment on BAP	Grey		+ OF Fructose	GRN/Yel	GRN
Morphology on BAP	Smooth, Smears		+ OF Dextrose	Yel	Yel
Beta hemolysis	Neg		+ OF Lactose	Yel	Yel
Growth on Mac	Inhibited		+ OF Maltose	Yel	Yel
DNase hydrolysis	Neg - poor growth		+ OF Mannitol	GRN/Yel	GRN
Starch hydrolysis	Neg		+ OF Xylose	Yel	Yel
Lecithinase	Neg		− OF Sucrose	Blue	Blue
Lipase	Neg		Arginine	Neg	Neg
Rapid PYR	Neg		Lysine		
Rapid LAP	POS		Ornithine		
Rapid ESC	Neg		Base Control		
Sensitivity to:			Acetamide	Neg	Neg
Penicillin (10 U)	R	R	Esculin	Neg	Neg
Vancomycin (30 ug)	R	R	Gelatin	Neg	
Colistin (10 mcg)	R	R	Indole	Neg	
Polymyxin B (300 U)	R	R	Malonate	POS	POS
			PAD	Neg	
			Urea ~~Neg 2~~ h	POS	POS
			6.5% NaCL	Neg	Neg
			10% Lactose	POS	POS
			ONPG	Neg	Neg
			Growth 42^0	POS	POS

> PINK INOCULUM AT INTERFACE

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_2S	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_3 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_2 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 (30μg)	0	14	0.00	10.77	Lysine	0	14	0.00	10.77
Colistin (10μg)	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: RALSTONIA pickettii (VA-1) P.S.

Comments: 5/10/06

Gram Morph.		
Gram Test	24h	48h
Motility Wet Prep	NEG MED RODS	NEG
+ Motility Deep	POS - Bottle brush appear	
+ Oxidase	POS	POS
— Catalase	NEG	

PLATES	48 h	7 day
Odor	NONE	
Pigment on swab	Flesh	
— Pigment on BAP	GREY	
Morphology on BAP	SMOOTH SMEARS	
— Beta hemolysis	NEG - NEG - 48h	
— Growth on Mac	NO GROWTH	NEG
— DNase hydrolysis	NEG	NEG - inh. b. food
— Starch hydrolysis	NEG	NEG
— Lecithinase	NEG	NEG
+ ★ Lipase	NEG	POS
— Rapid PYR	NEG	
+ Rapid LAP	POS	
— Rapid ESC	NEG	
Sensitivity to:		
— Penicillin (10 U)	R	R
— Vancomycin (30 ug)	R	R
— ★ Colistin (10 mcg)	R	R
— Polymyxin B (300 U)	R	R

Tubes	48 h	7 day
KIA	K/NC	K/NC
— H_2S	NEG	NEG
— Pseudo P	NEG	NEG
— Pseudo F	NEG	NEG
+ ★ NO_3 reduced		POS
+ Gas from NO_3	POS	POS
— NO_2 reduced		NEG
— Gas from NO_2	NEG	NEG
— OF Fructose	GRN	Lt. BLUE
+ OF Dextrose	YEL	YEL
+ OF Lactose	YEL	YEL
+ OF Maltose	YEL	YEL
— OF Mannitol	BLUE	DARK BLUE
+ OF Xylose	YEL	YEL
— OF Sucrose	BLUE	DARK BLUE
— Arginine	NEG	NEG
— Lysine	↓	↓
— Ornithine	↓	↓
— Base Control	↓	↓
— Acetamide	NEG	NEG
— Esculin	NEG	NEG
+ ★ Gelatin	NEG	POS
— Indole		NEG
+ ★ Malonate	Light BLUE	BLUE
— PAD	NEG	—
+ ★ Urea NEG 2 h	POS - SLANT	POS SLANT & BUTT
— 6.5% NaCL	NEG	NEG
+ ★ 10% Lactose	NEG	POS!
— ONPG	NEG	NEG
— Growth 42^0	NEG	NEG

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

Figure 303: Ralstonia pickettii (Va-1) isolate 1-of-14.

Date Inoculated: 3-16-09

Final Identification: RALSTONIA pickettii, biovar Va-1 3/24/09 P.S.

Comments: Peach colored on Starch & Egg Yolk at 4D

~~ONLY~~

		4D	**Tubes**	**48 h**	**7 day**
Gram Morph.			KIA	K/NC	K/K
Gram Test	24h	NEG	H_2S	NEG	NEG
Motility Wet Prep	NEG	SM-MED RODS			
Motility Deep	POS??	POS?	Pseudo P	NEG	NEG
Oxidase	POS		Pseudo F	NEG	NEG
Catalase	NEG				
PLATES	**48 h**	~~7 day~~ 4D	NO_3 reduced		POS
Odor	NONE		Gas from NO_3	POS	POS
Pigment on swab	Flesh	PINK BEIGE	NO_2 reduced		NEG
Pigment on BAP	GREY		Gas from NO_2	NEG	NEG
Morphology on BAP	Smooth				
Beta hemolysis	NEG		OF Fructose	YEL	YEL
Growth on Mac	NEG	NEG	OF Dextrose	YEL	YEL
DNase hydrolysis	NEG	NEG	OF Lactose	YEL	YEL
Starch hydrolysis	NEG	WT	OF Maltose	YEL	YEL
Lecithinase	NEG	NEG	OF Mannitol	BLUE	BLUE
Lipase	NEG	POS (SLIGHT)	OF Xylose	YEL	YEL
Rapid PYR	WT		OF Sucrose	BLUE	BLUE
Rapid LAP	POS!		Arginine	NEG	NEG
Rapid ESC	NEG		Lysine	↓	↓
Sensitivity to:			Ornithine	↓	↓
Penicillin (10 U)	S	S	Base Control	↓	↓
Vancomycin (30 ug)	R	R	Acetamide	NEG	NEG
Colistin (10 mcg)	R	R	Esculin	NEG	NEG
Polymyxin B (300 U)	R	R	Gelatin		NEG
			Indole		NEG
			Malonate	POS	POS
			PAD	NEG	—
			Urea NEG 2 h	POS	POS SLANT & BUTT
			6.5% NaCL	NEG	NEG
			10% Lactose	POS	POS
			ONPG	NEG	NEG
			Growth 42^0	NEG	NEG

Note: All biochemical tests (except where noted) are incubated at 30^0C 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_3 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_2 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 (30μg)	0	5	0.00	21.72	Lysine	0	5	0.00	21.72
Colistin (10μg)	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 Inoculated: E 8/4/17

Final Identification: Ralstonia pickettii (Va-2) Prob 99.997 MS = 1.01

Comments: Lab result: Ralstonia pickettii

Maldi: 2.53 R. pickettii

Gram Morph.		
Gram Test		
Motility Wet Prep		
Motility Deep	N 3d ? wait ~~Neg~~ Pos	
Oxidase	(+)	
Catalase	Neg	
PLATES	**48 h**	**7 day**
Odor	sleight	sleight frito
Pigment on swab	buff	tan
Pigment on BAP	wh-gr	wh-gr
Morphology on BAP	sm rd wet	sm round wet
Beta hemolysis	N	Neg
Growth on Mac	N	Neg
DNase hydrolysis	N	Neg
Starch hydrolysis	N	Neg
Lecithinase	N	Neg
Lipase	N oilslick Pos (+)	
Rapid PYR	N	
Rapid LAP	Pos (+)	
Rapid ESC	N	
Sensitivity to:		
Penicillin (10 U)	6 R	6 R
Vancomycin (30 ug)	6 R	6 R
Colistin (10 mcg)	6 R	6 R
Polymyxin B (300 U)	6 R	6 R

Tubes	**48 h**	**7 day**
KIA	K/K	K/K
H_2S	N	Neg
Pseudo P	N	Neg
Pseudo F	N	Neg
NO_3 reduced	X	Red - Pos (+)
Gas from NO_3	N	Neg
NO_2 reduced	X	Red - Neg
Gas from NO_2	Sm. bubble	sm. bubble
OF Fructose	yel top (+)	yel (+)
OF Dextrose	yel top (+)	yel (+)
OF Lactose	Be -	Be -
OF Maltose	Be -	Be -
OF Mannitol	Be -	Be -
OF Xylose	yel (+)	yel (+)
OF Sucrose	Be -	Be -
Arginine	N	Neg
Lysine		Neg
Ornithine		Neg
Base Control		Neg
Acetamide	N	Neg
Esculin	N	Neg
Gelatin	N	Neg
Indole	X	Neg
Malonate	Pos (+)	Pos (+)
PAD	Pos (+)	X
Urea N 2 h	pink sent (+)	Pos (+)
6.5% NaCL	wk (+)/-	Neg
10% Lactose	N	Neg
ONPG	N	Neg
Growth 42°	wk (+)	Weak (+)

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

Figure 305: Ralstonia pickettii (Va-2) isolate 1-of-5.

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%**	**W95%**
Motility	11	2	84.62	76.72	H_2S	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_3 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 (30μg)	3	10	23.08	29.22	Lysine	0	13	0.00	11.41
Colistin (10μg)	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.

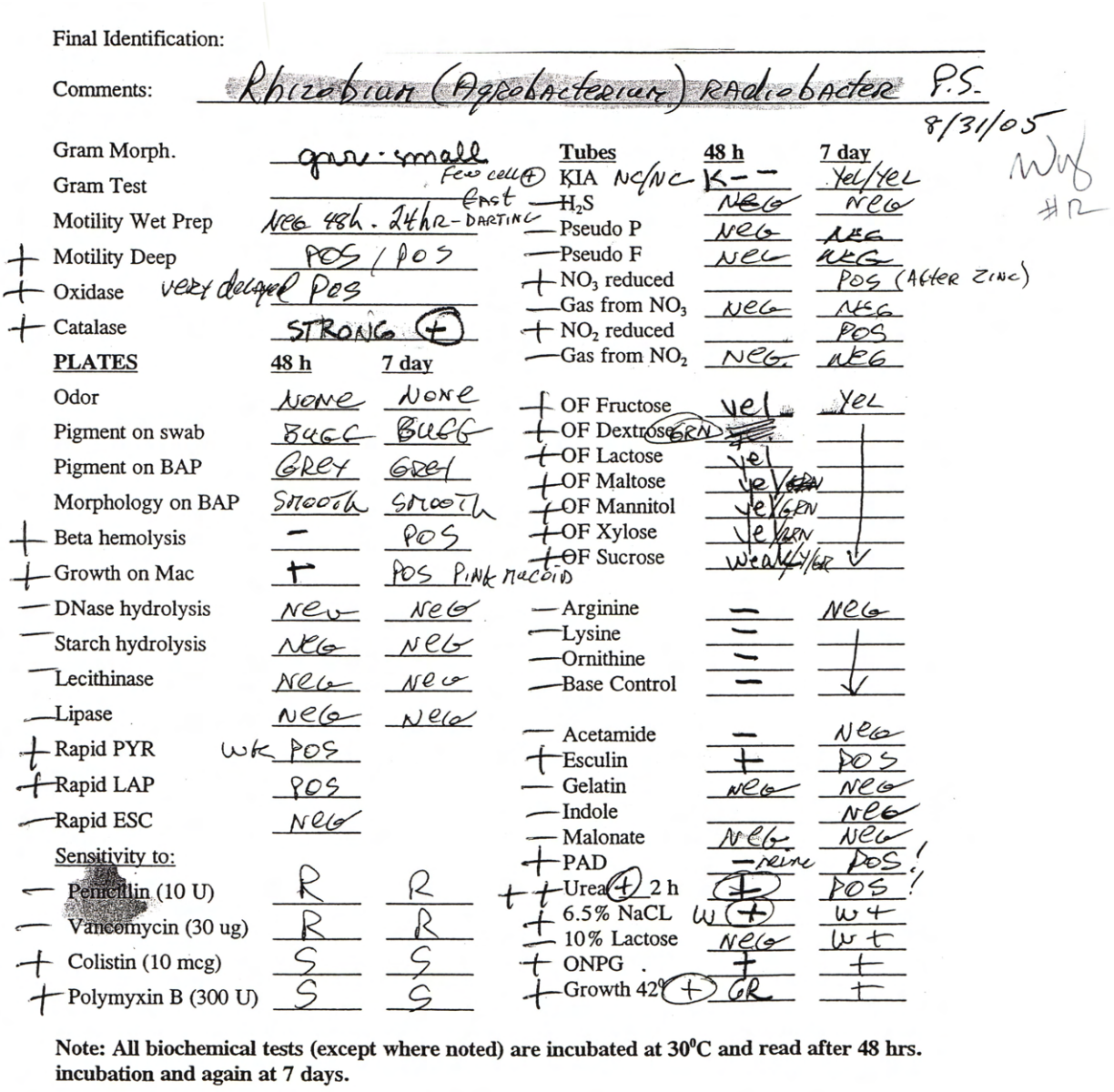


Figure 306: Rhizobium radiobacter isolate 1-of-13.

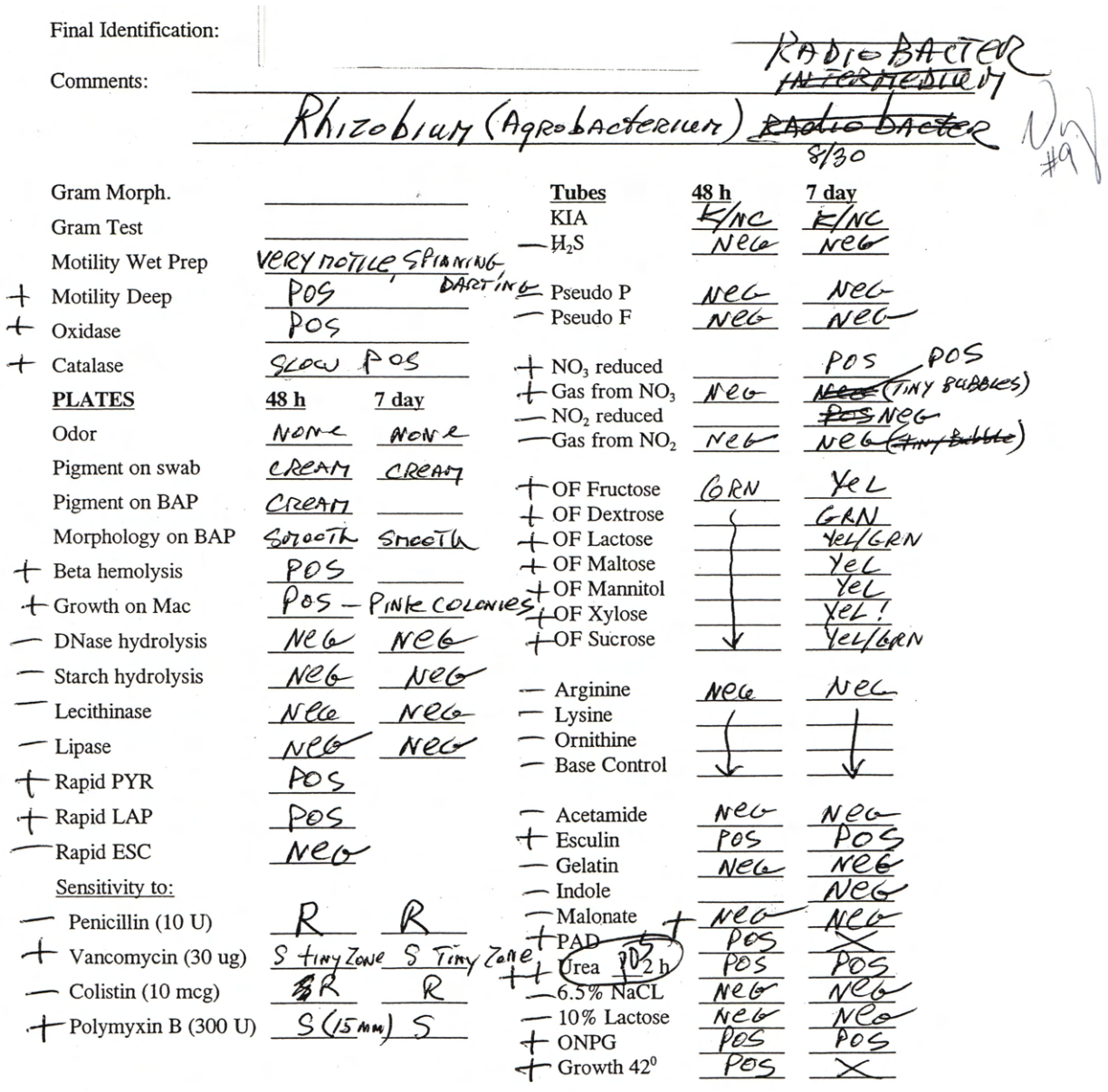


Figure 307: Rhizobium radiobacter isolate 2-of-13.

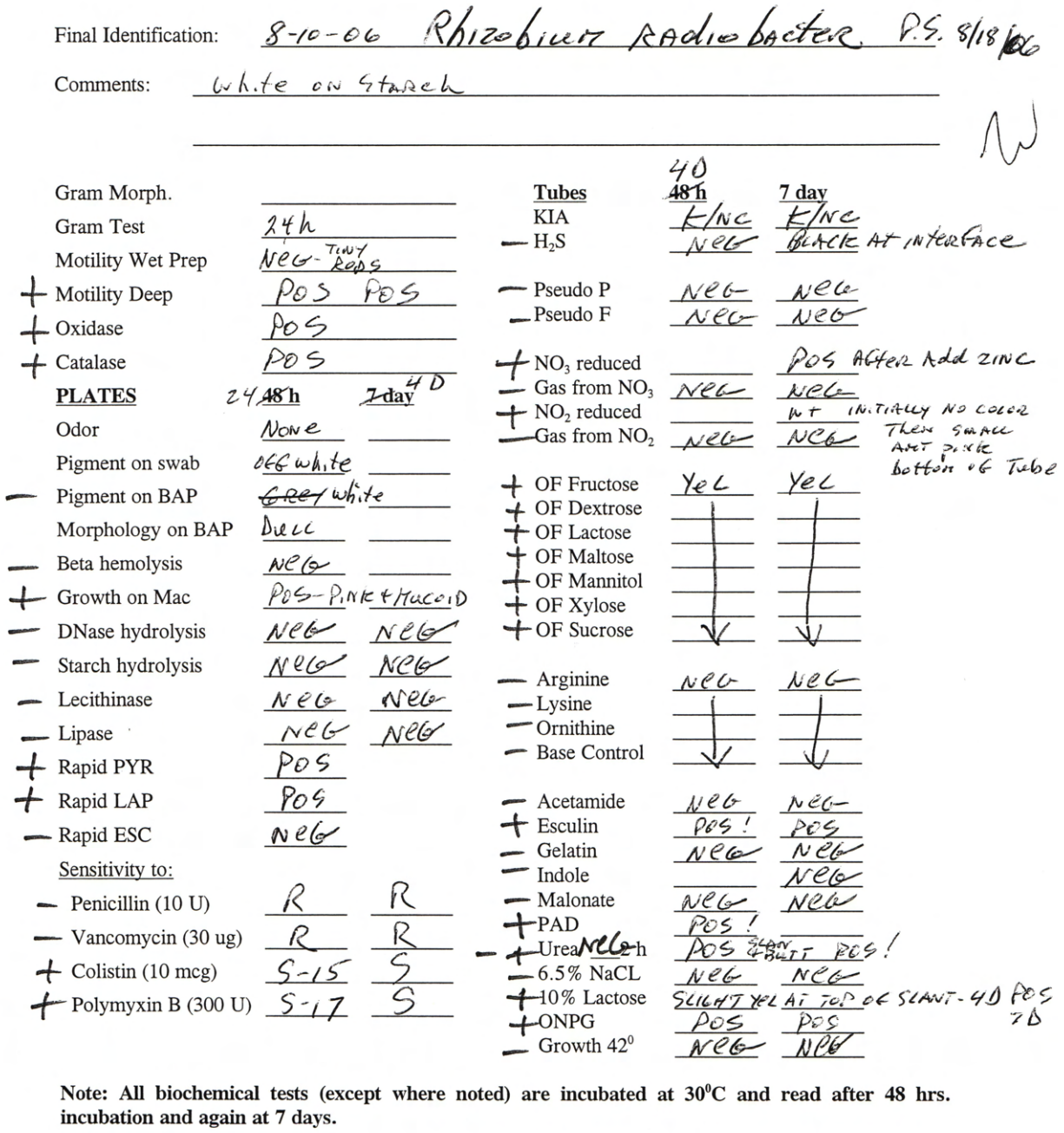
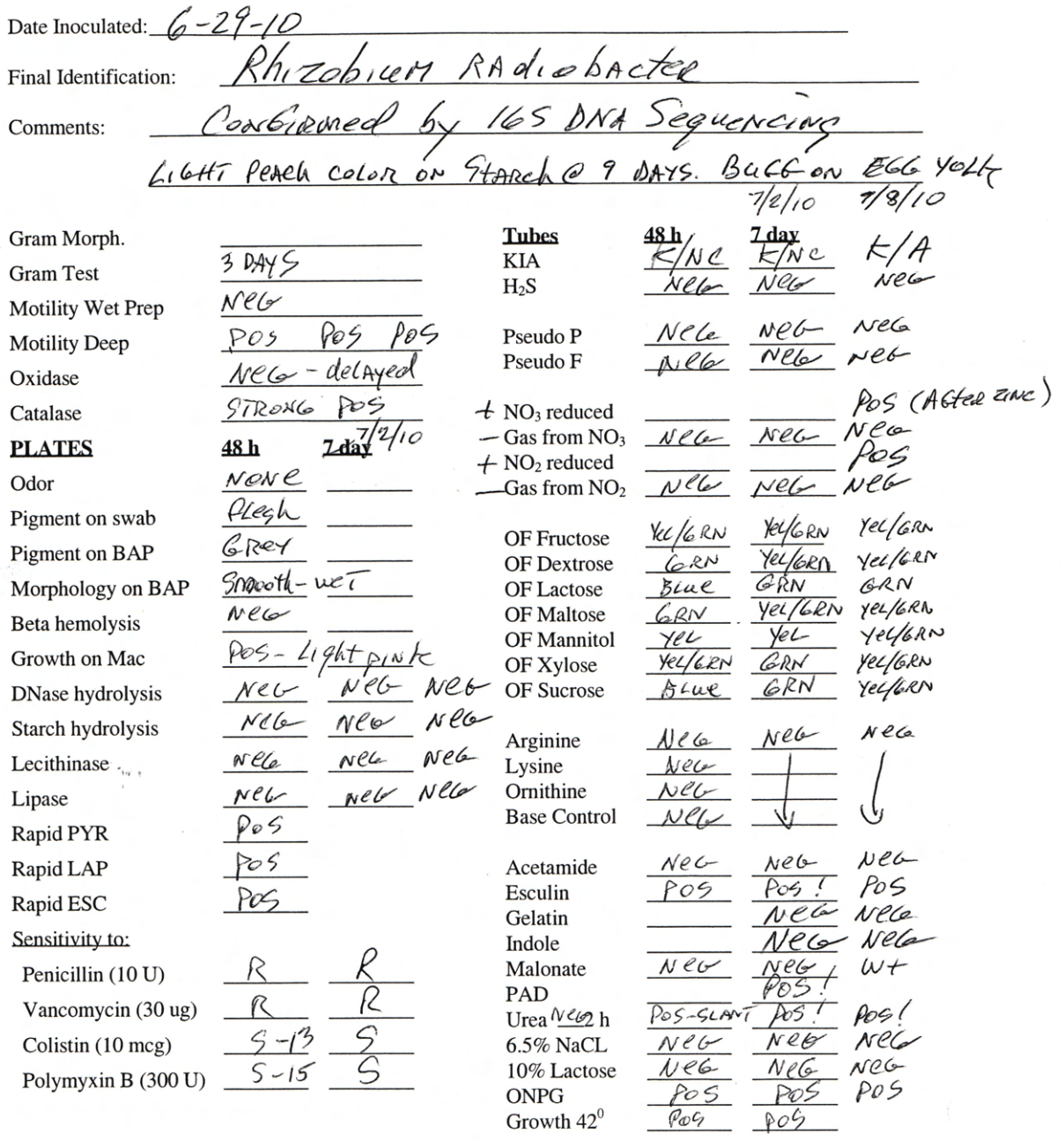


Figure 308: Rhizobium radiobacter isolate 3-of-13.



Date Inoculated: 6-29-10

Final Identification: Rhizobium Radiobacter

Comments: Confirmed by 16S DNA Sequencing

Light peach color on Starch @ 9 days. Buff on Egg yolk

Gram Morph.			
Gram Test	3 DAYS		
Motility Wet Prep	NEG		
Motility Deep	POS	POS	POS
Oxidase	NEG - delayed		
Catalase	STRONG POS		
PLATES	**48 h**	**7 day** 7/2/10	
Odor	NONE		
Pigment on swab	Flesh		
Pigment on BAP	GREY		
Morphology on BAP	Smooth - wet		
Beta hemolysis	NEG		
Growth on Mac	POS - Light pink		
DNase hydrolysis	NEG	NEG	NEG
Starch hydrolysis	NEG	NEG	NEG
Lecithinase	NEG	NEG	NEG
Lipase	NEG	NEG	NEG
Rapid PYR	POS		
Rapid LAP	POS		
Rapid ESC	POS		
Sensitivity to:			
Penicillin (10 U)	R	R	
Vancomycin (30 ug)	R	R	
Colistin (10 mcg)	S-13	S	
Polymyxin B (300 U)	S-15	S	

Tubes	**48 h**	**7 day** 7/2/10	7/8/10
KIA	K/NC	K/NC	K/A
H_2S	NEG	NEG	NEG
Pseudo P	NEG	NEG	NEG
Pseudo F	NEG	NEG	NEG
+ NO_3 reduced			POS (After zinc)
− Gas from NO_3	NEG	NEG	NEG
+ NO_2 reduced			POS
− Gas from NO_2	NEG	NEG	NEG
OF Fructose	YEL/GRN	YEL/GRN	YEL/GRN
OF Dextrose	GRN	YEL/GRN	YEL/GRN
OF Lactose	BLUE	GRN	GRN
OF Maltose	GRN	YEL/GRN	YEL/GRN
OF Mannitol	YEL	YEL	YEL/GRN
OF Xylose	YEL/GRN	GRN	YEL/GRN
OF Sucrose	BLUE	GRN	YEL/GRN
Arginine	NEG	NEG	NEG
Lysine	NEG	↓	↓
Ornithine	NEG	↓	↓
Base Control	NEG	↓	↓
Acetamide	NEG	NEG	NEG
Esculin	POS	POS!	POS
Gelatin		NEG	NEG
Indole		NEG	NEG
Malonate	NEG	NEG	W+
PAD		POS!	
Urea NEG 2 h	POS-SLANT	POS!	POS!
6.5% NaCL	NEG	NEG	NEG
10% Lactose	NEG	NEG	NEG
ONPG	POS	POS	POS
Growth 42^0	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.

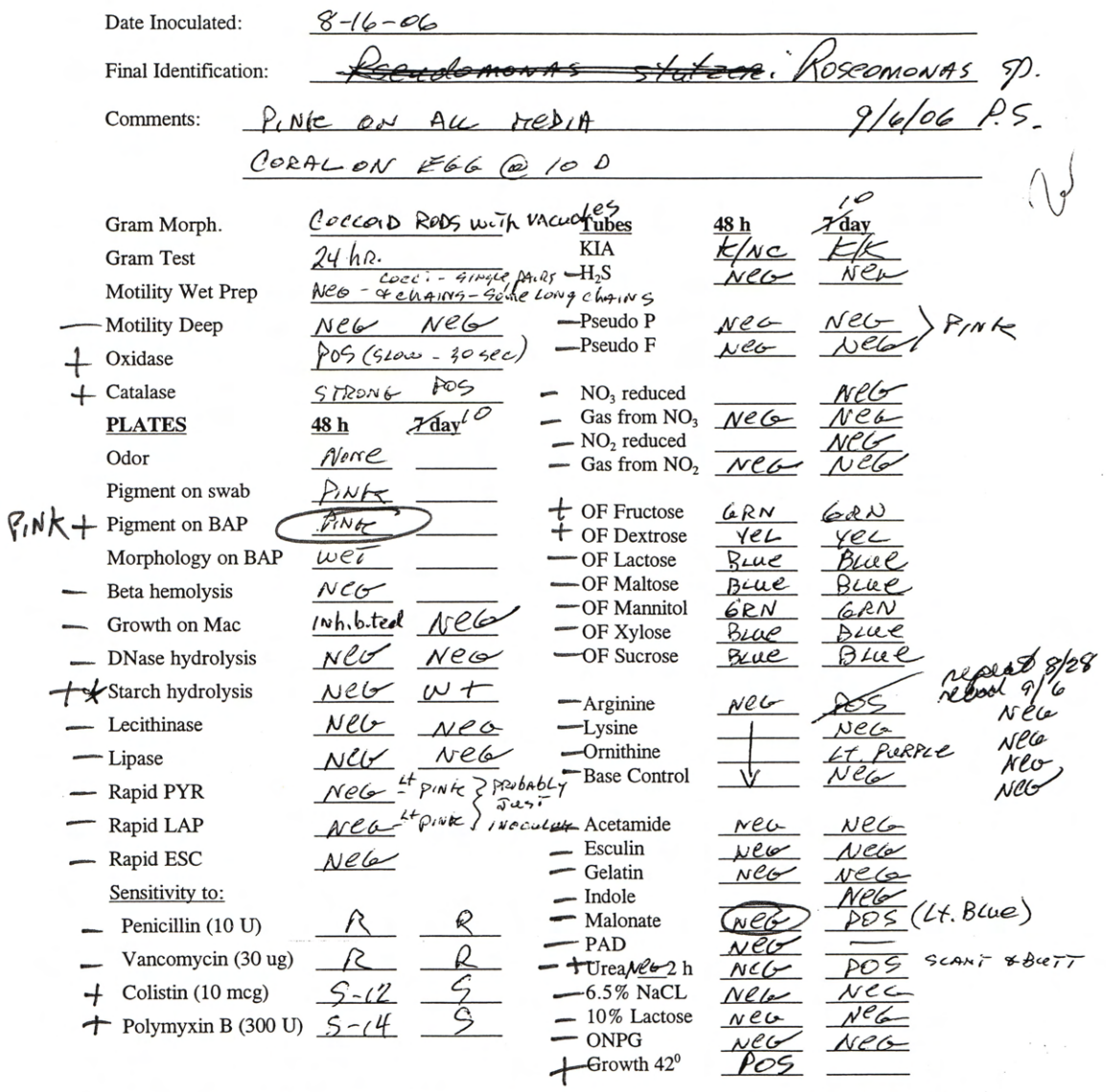
34 GENUS ROSEOMONAS

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_2S	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_3 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 (30μg)	0	13	0.00	11.41	Lysine	0	13	0.00	11.41
Colistin (10μg)	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°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: ~~Pseudomonas stutzeri~~ Roseomonas sp.
Comments: PINK ON ALL MEDIA 9/6/06 P.S.
CORAL ON EGG @ 10 D
Gram Morph. COCCOID RODS with VACUOLES
Gram Test 24 hr.
Motility Wet Prep NEG - COCCI - SINGLE PAIRS & CHAINS - SOME LONG CHAINS
Motility Deep NEG NEG
Oxidase POS (SLOW - 30 SEC)
Catalase STRONG POS
PLATES 48 h 7 day 10
Odor None
Pigment on swab PINK
Pigment on BAP PINK
Morphology on BAP WET
Beta hemolysis NEG
Growth on Mac Inh. by tech NEG
DNase hydrolysis NEG NEG
Starch hydrolysis NEG WT
Lecithinase NEG NEG
Lipase NEG NEG
Rapid PYR NEG LT PINK
Rapid LAP NEG LT PINK
Rapid ESC NEG
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
Tubes 48 h 7 day 10
KIA K/NC K/K
H2S NEG NEG
Pseudo P NEG NEG
Pseudo F NEG NEG
NO3 reduced NEG
Gas from NO3 NEG NEG
NO2 reduced NEG
Gas from NO2 NEG NEG
OF Fructose GRN GRN
OF Dextrose YEL YEL
OF Lactose BLUE BLUE
OF Maltose BLUE BLUE
OF Mannitol GRN GRN
OF Xylose BLUE BLUE
OF Sucrose BLUE BLUE
Arginine NEG NEG
Lysine NEG
Ornithine LT. PURPLE
Base Control NEG
Acetamide NEG NEG
Esculin NEG NEG
Gelatin NEG NEG
Indole NEG
Malonate NEG POS (LT. BLUE)
PAD NEG
Urea 2 h NEG POS
6.5% NaCL NEG NEG
10% Lactose NEG NEG
ONPG NEG NEG
Growth 42° POS
PINK+
PINK
PINK
PINK

Date Inoculated: 1-4-11

Final Identification: Roseomonas

Comments: PINK ON STARCH & Egg Yolk @ 3 DAYS

1-12-11 8 DAYS

Gram Morph.			**Tubes**	**48 h**	**7 day**
Gram Test	24h		KIA	K/NC	K/K
Motility Wet Prep	Neg - SM Rods		H_2S	Neg	
Motility Deep	Neg	Neg	Pseudo P	Neg	Neg
Oxidase	Neg (W+ AFTER 1 MIN)		Pseudo F	Neg	Neg
Catalase	STRONG POS		NO_3 reduced		POS
PLATES	**48 h**	**7 day**	Gas from NO_3	Neg	Neg
Odor	NONE		NO_2 reduced		Neg
Pigment on swab	PINK		Gas from NO_2	Neg	Neg
Pigment on BAP	PINK		+ OF Fructose	Yel	Yel
Morphology on BAP	Mucoid - RUNNING		+ OF Dextrose	GRN	GRN
Beta hemolysis	Neg		— OF Lactose	Blue	Blue
Growth on Mac	Neg	Neg	— OF Maltose	Blue	Blue
DNase hydrolysis	Neg	Neg	+ OF Mannitol	Yel/GRN	GRN
Starch hydrolysis	Neg	Neg	— OF Xylose	Blue	Blue
Lecithinase	Neg	Neg	— OF Sucrose	Blue	Blue
Lipase	Neg	Neg	Arginine	Neg	Neg
Rapid PYR	POS		Lysine		
Rapid LAP	POS		Ornithine		
Rapid ESC	Neg		Base Control		
Sensitivity to:			Acetamide	Neg	Neg
Penicillin (10 U)	R	R	Esculin	Neg	Neg
Vancomycin (30 ug)	R	R	Gelatin	Neg	Neg
Colistin (10 mcg)	R	R	Indole		Neg
Polymyxin B (300 U)	S-10	R	Malonate	Neg	POS
			PAD		Neg
			Urea Neg 2 h	POS SLANT	POS SLANT & BUTT
			6.5% NaCL	Neg	Neg
			10% Lactose	Neg	Neg
			ONPG	Neg	Neg
			Growth 42°	INHIBITED	SLIGHT GROWTH

Pseudo P, Pseudo F: Neg / Neg > PINK

FeCl3 turned TANGERINE ORANGE AFTER FeCl3

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

Figure 311: Roseomonas species isolate 2-of-13.

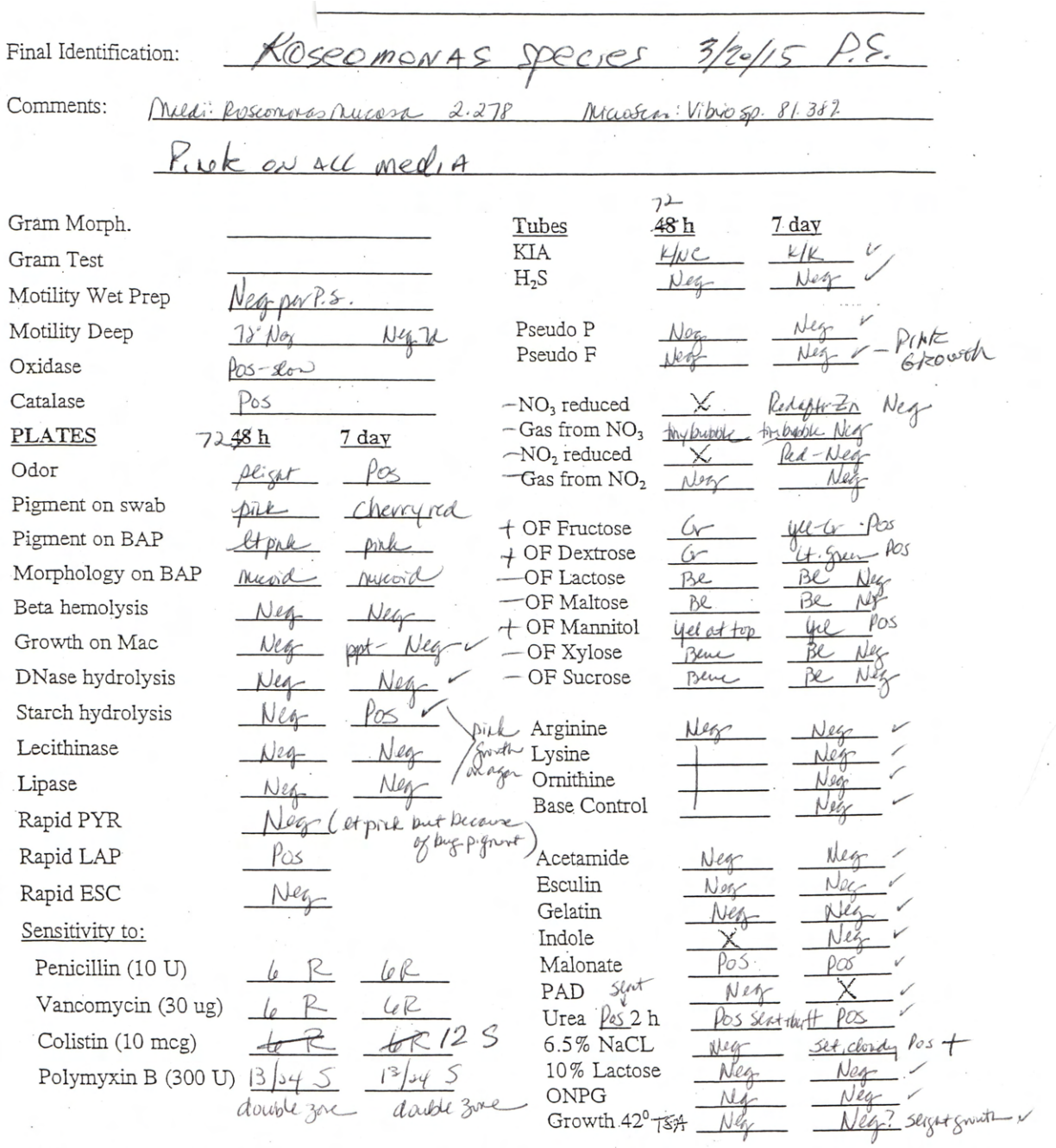


Figure 312: Roseomonas species isolate 3-of-13.

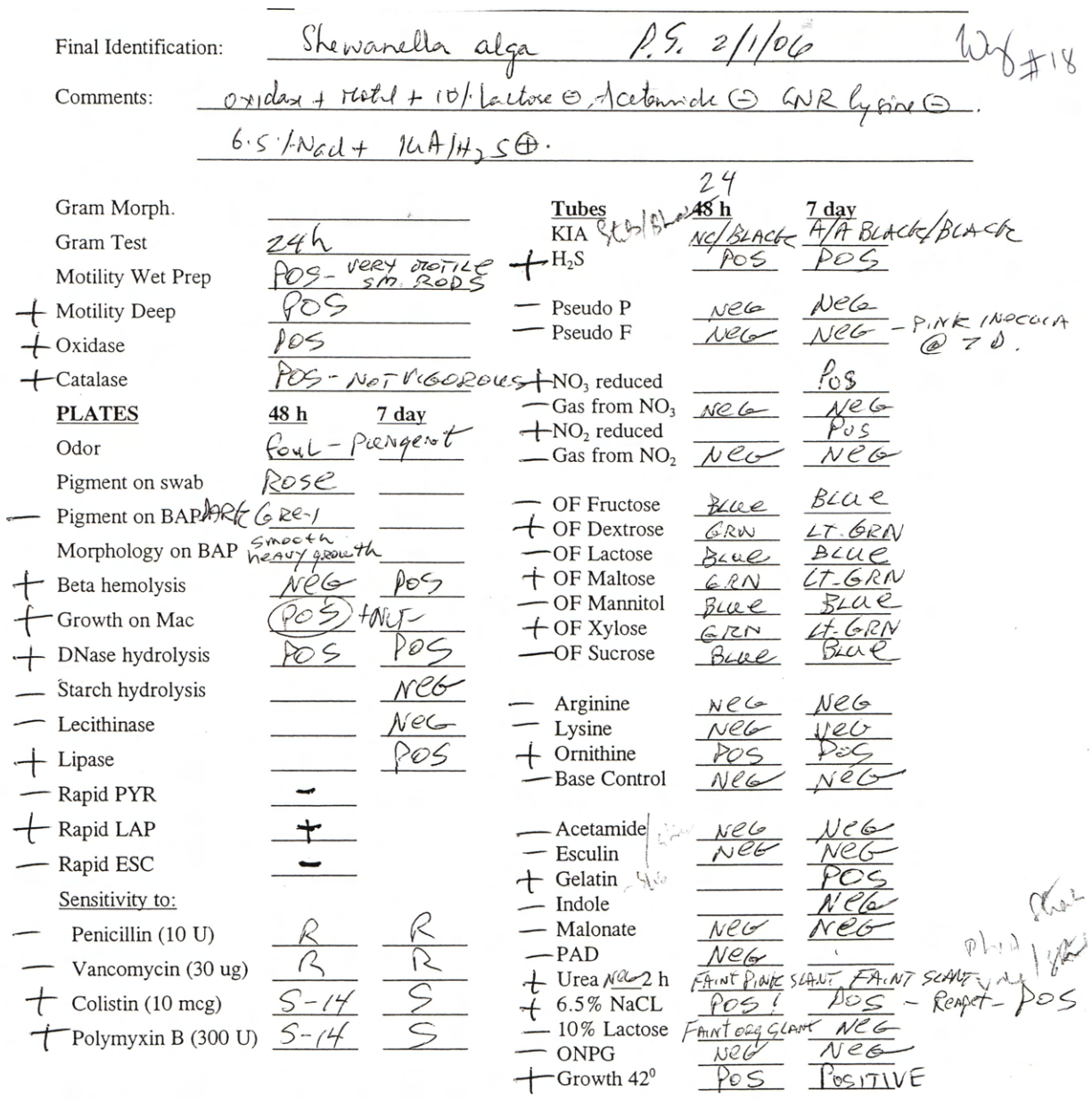
35 GENUS SHEWANELLA

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%**	**W95%**	**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_3 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_2 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 (30μg)	0	6	0.00	19.52	Lysine	0	6	0.00	19.52
Colistin (10μg)	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: Shewanella alga P.S. 2/1/06 Wy #18

Comments: Oxidase + Motil + 1% Lactose ⊖, Acetamide ⊖ GNR Lysine ⊖. 6.5% NaCl + NA/H_2S ⊕.

		48 h	7 day
	Gram Morph.		
	Gram Test	24h	
	Motility Wet Prep	POS - VERY MOTILE SM. RODS	
+	Motility Deep	POS	
+	Oxidase	POS	
+	Catalase	POS - NOT VIGOROUS	
	PLATES	**48 h**	**7 day**
	Odor	FOUL - PUNGENT	
	Pigment on swab	ROSE	
—	Pigment on BAP	DARK GREY	
	Morphology on BAP	SMOOTH HEAVY GROWTH	
+	Beta hemolysis	NEG	POS
+	Growth on Mac	(POS) +NF-	
+	DNase hydrolysis	POS	POS
—	Starch hydrolysis		NEG
—	Lecithinase		NEG
+	Lipase		POS
—	Rapid PYR	—	
+	Rapid LAP	+	
—	Rapid ESC	—	
	Sensitivity to:		
—	Penicillin (10 U)	R	R
—	Vancomycin (30 ug)	R	R
+	Colistin (10 mcg)	S-14	S
+	Polymyxin B (300 U)	S-14	S

		24 48 h	7 day
	Tubes		
	KIA	NC/BLACK	A/A BLACK/BLACK
+	H_2S	POS	POS
—	Pseudo P	NEG	NEG
—	Pseudo F	NEG	NEG - PINK INOCULA @ 7 D.
+	NO_3 reduced		POS
—	Gas from NO_3	NEG	NEG
+	NO_2 reduced		POS
—	Gas from NO_2	NEG	NEG
—	OF Fructose	BLUE	BLUE
+	OF Dextrose	GRN	LT. GRN
—	OF Lactose	BLUE	BLUE
+	OF Maltose	GRN	LT-GRN
—	OF Mannitol	BLUE	BLUE
+	OF Xylose	GRN	LT. GRN
—	OF Sucrose	BLUE	BLUE
—	Arginine	NEG	NEG
—	Lysine	NEG	NEG
+	Ornithine	POS	POS
—	Base Control	NEG	NEG
—	Acetamide	NEG	NEG
—	Esculin	NEG	NEG
+	Gelatin		POS
—	Indole		NEG
—	Malonate	NEG	NEG
—	PAD	NEG	
+	Urea NEG 2 h	FAINT PINK SLANT	FAINT SLANT
+	6.5% NaCL	POS!	POS - REPEAT - POS
—	10% Lactose	FAINT ORG SLANT	NEG
—	ONPG	NEG	NEG
+	Growth 42°	POS	POSITIVE

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

Figure 313: Shewanella algae isolate 1-of-6.

Date Inoculated: 1-3-11

Final Identification: Shewanella Algae

Comments: APRICOTT PIGMT ON STARCH & Egg YOLK @ 4 DAYS
MOTILITY LOOKS LIKE BOTTLE BRUSH
1-7-11 1-12-11 8 DAYS

Gram Morph.			**Tubes**	**48 h**	**7 day**
Gram Test	24h		KIA	K/ANC	K/NC
Motility Wet Prep	NEG - Med RODS		★ H_2S	H_2S POS	POS entire butt is black
Motility Deep	POS !!		Pseudo P	NEG	NEG
Oxidase	POS		Pseudo F	NEG	NEG
Catalase	POS		NO_3 reduced		POS
PLATES	**48 h**	**7 day**	Gas from NO_3	NEG	NEG
Odor	foul odor		NO_2 reduced		POS
Pigment on swab	PINK - SALMON		Gas from NO_2	NEG	NEG
Pigment on BAP	GREY - BROWN/TAN		OF Fructose	BLUE	Deep Blue
Morphology on BAP	LARGE - SMOOTH		OF Dextrose		
Beta hemolysis	NEG		OF Lactose		
Growth on Mac	POS	POS	OF Maltose		
DNase hydrolysis	POS !	POS !!!	OF Mannitol		
Starch hydrolysis	NEG	NEG	OF Xylose		
Lecithinase	NEG	NEG	OF Sucrose		
Lipase	POS	POS	Arginine	NEG	NEG
Rapid PYR	~~NEG~~	(Wt)	Lysine	NEG	NEG
Rapid LAP	POS		Ornithine	POS	POS
Rapid ESC	NEG		Base Control	NEG	NEG
Sensitivity to:			Acetamide	NEG	NEG
Penicillin (10 U)	R	R	Esculin	NEG	NEG
Vancomycin (30 ug)	R	R	Gelatin	POS	POS
Colistin (10 mcg)	S-8	S	Indole		NEG
Polymyxin B (300 U)	S-10	S	Malonate	NEG	POS
			PAD		NEG
			Urea NEG 2 h	POS SLANT	POS SLANT & BUTT
			6.5% NaCL	POS !	POS
			10% Lactose	NEG	NEG
			ONPG	NEG	NEG
			Growth 42^0	POS	POS Brown diffusible pigment

Note: All biochemical tests (except where noted) are incubated at 30^0C 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_3 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_2 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 (30μg)	0	5	0.00	21.72	Lysine	0	5	0.00	21.72
Colistin (10μg)	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: 9-28-11

Final Identification: Shewanella putrefaciens 11-4-11 P.S.

Comments: Light tan on Starch @ 7 DAYS

Gram Morph.			**Tubes**	**48 h**	9 **7 day**
Gram Test	24h		KIA		K/NC
Motility Wet Prep	POS	medium to long RODS - very motile	H_2S		POS !!
Motility Deep	7D POS		Pseudo P		NEG > Light pink inoculum
Oxidase	POS		Pseudo F		NEG
Catalase	STRONG POS		NO_3 reduced		POS
PLATES	**48 h**	**7 day**	Gas from NO_3		NEG
Odor	stinks		NO_2 reduced		POS
Pigment on swab	Cleak		Gas from NO_2		NEG
Pigment on BAP	dark Grey		OF Fructose		Blue
Morphology on BAP	Smooth		OF Dextrose		Yel
Beta hemolysis	NEG		OF Lactose		Blue
Growth on Mac		POS	OF Maltose		Yel
DNase hydrolysis		POS !!	OF Mannitol		Blue
Starch hydrolysis		NEG	OF Xylose		Blue
Lecithinase		NEG	OF Sucrose		Blue
Lipase		NEG	Arginine		NEG
Rapid PYR	NEG		Lysine		
Rapid LAP	POS		Ornithine		
Rapid ESC	NEG		Base Control		
Sensitivity to:			Acetamide		NEG
Penicillin (10 U)		R	Esculin		NEG
Vancomycin (30 ug)		R	Gelatin		POS
Colistin (10 mcg)		S-I	Indole		NEG
Polymyxin B (300 U)		S-I2	Malonate		NEG
			PAD		NEG
			Urea NEG 2 h	NEG	NEG
			6.5% NaCL		POS
			10% Lactose		NEG
			ONPG		NEG
			Growth 42^0		NEG

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

Figure 315: Shewanella putrefaciens isolate 1-of-5.

36 GENUS SPHINGOBACTERIUM

36.1 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%**	**W95%**	**Test**	+	−	**Raw%**	**W95%**
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_3 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_2 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 (30μg)	1	5	16.67	29.68	Lysine	0	6	0.00	19.52
Colistin (10μg)	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

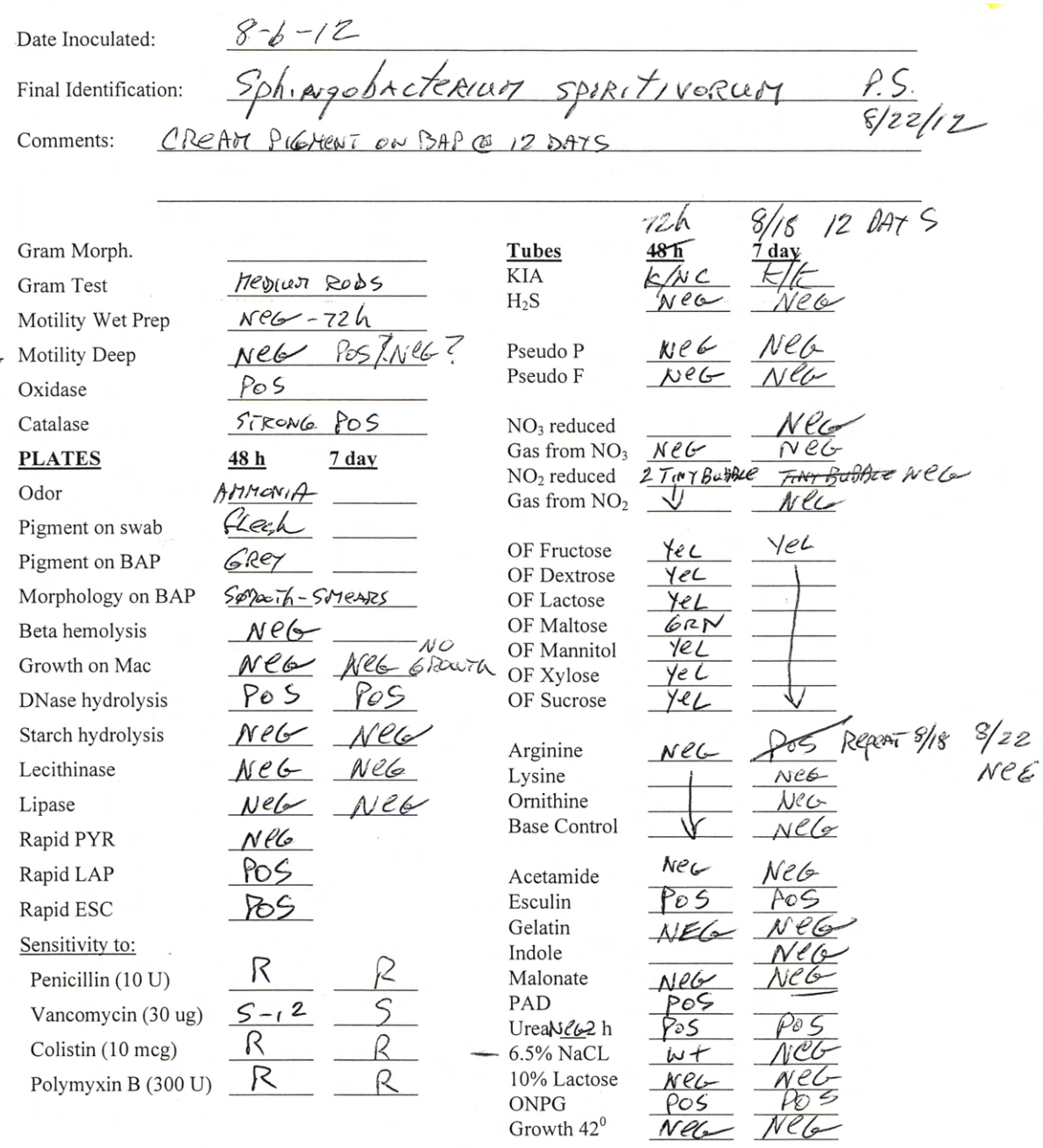
Table 103: Positive and negative counts for each of the tests performed on isolates identified as this species. Raw% is evaluated as $n_+/(n_+ + n_-)$, where each n represents the number of positive and negative results for each test. W95% is the mean of the 95% Wilson Binomial Confidence Interval, which 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_3 Reduced	0	9	0.00	14.96
Pink Pigment	0	9	0.00	14.96	Gas from NO_3	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 (30μg)	5	4	55.56	53.89	Lysine	0	9	0.00	14.96
Colistin (10μg)	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°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: 8-6-12

Final Identification: Sphingobacterium spiritivorum P.S. 8/22/12

Comments: CREAM PIGMENT ON BAP @ 12 DAYS

				72h	8/18 12 DAYS
Gram Morph.			**Tubes**	**48 h**	**7 day**
Gram Test	MEDIUM RODS		KIA	K/NC	K/K
Motility Wet Prep	NEG - 72h		H_2S	NEG	NEG
Motility Deep	NEG POS? NEG?		Pseudo P	NEG	NEG
Oxidase	POS		Pseudo F	NEG	NEG
Catalase	STRONG POS		NO_3 reduced		NEG
PLATES	**48 h**	**7 day**	Gas from NO_3	NEG	NEG
Odor	AMMONIA		NO_2 reduced	2 TINY BUBBLE	~~TINY BUBBLE~~ NEG
Pigment on swab	Flesh		Gas from NO_2	↓	NEG
Pigment on BAP	GREY		OF Fructose	YEL	YEL
Morphology on BAP	SMOOTH - SMEARS		OF Dextrose	YEL	↓
Beta hemolysis	NEG		OF Lactose	YEL	
Growth on Mac	NEG	NEG NO GROWTH	OF Maltose	GRN	
DNase hydrolysis	POS	POS	OF Mannitol	YEL	
Starch hydrolysis	NEG	NEG	OF Xylose	YEL	
Lecithinase	NEG	NEG	OF Sucrose	YEL	↓
Lipase	NEG	NEG	Arginine	NEG	~~POS~~ REPEAT 8/18 8/22 NEG
Rapid PYR	NEG		Lysine	↓	NEG
Rapid LAP	POS		Ornithine	↓	NEG
Rapid ESC	POS		Base Control	↓	NEG
Sensitivity to:			Acetamide	NEG	NEG
Penicillin (10 U)	R	R	Esculin	POS	POS
Vancomycin (30 ug)	S-12	S	Gelatin	NEG	NEG
Colistin (10 mcg)	R	R	Indole		NEG
Polymyxin B (300 U)	R	R	Malonate	NEG	NEG
			PAD	POS	
			Urea NEG 2 h	POS	POS
			6.5% NaCL	W+	NEG
			10% Lactose	NEG	NEG
			ONPG	POS	POS
			Growth 42^0	NEG	NEG

Note: All biochemical tests (except where noted) are incubated at 30^0C 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%**	**W95%**
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_3 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 (30μg)	2	0	100.00	67.12	Lysine	0	2	0.00	32.88
Colistin (10μg)	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.

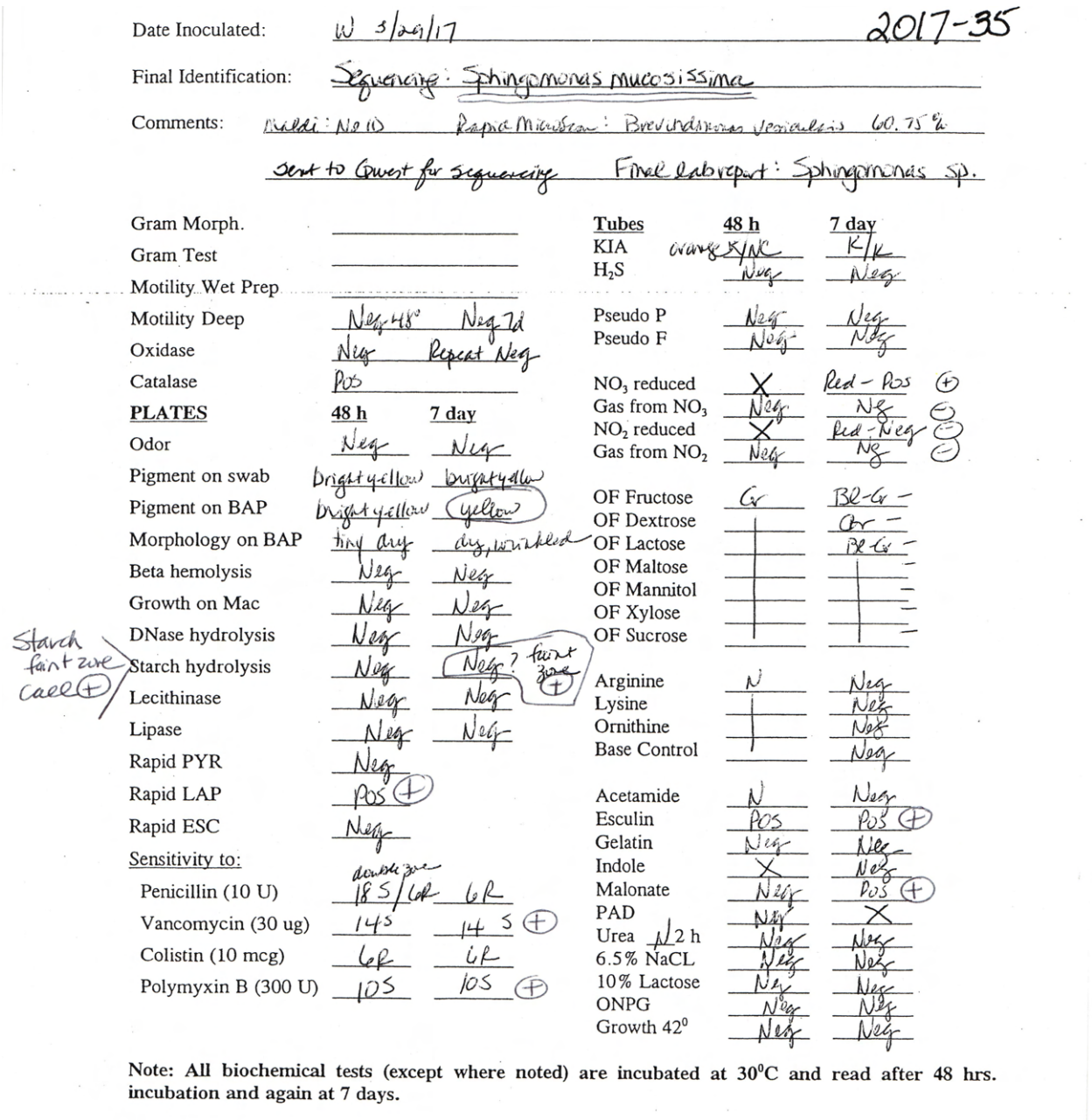
37 GENUS SPHINGOMONAS

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%**	**W95%**	**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_3 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	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 (30μg)	1	0	100.00	60.33	Lysine	0	1	0.00	39.67
Colistin (10μg)	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 3/29/17 2017-35

Final Identification: Sequencing: Sphingomonas mucosissima

Comments: Maldi: No ID Rapid Microscan: Brevundimonas vesicularis 60.75%

Sent to Quest for sequencing Final lab report: Sphingomonas sp.

Gram Morph.		
Gram Test		
Motility Wet Prep		
Motility Deep	Neg 48°	Neg 7d
Oxidase	Neg	Repeat Neg
Catalase	Pos	
PLATES	**48 h**	**7 day**
Odor	Neg	Neg
Pigment on swab	bright yellow	bright yellow
Pigment on BAP	bright yellow	yellow
Morphology on BAP	tiny dry	dry, wrinkled
Beta hemolysis	Neg	Neg
Growth on Mac	Neg	Neg
DNase hydrolysis	Neg	Neg
Starch hydrolysis	Neg	Neg? faint zone (+)
Lecithinase	Neg	Neg
Lipase	Neg	Neg
Rapid PYR	Neg	
Rapid LAP	Pos (+)	
Rapid ESC	Neg	
Sensitivity to:		
Penicillin (10 U)	double zone 18 S / 6R	6R
Vancomycin (30 ug)	14 S	14 S (+)
Colistin (10 mcg)	6R	6R
Polymyxin B (300 U)	10 S	10 S (+)

Starch faint zone call (+)

Tubes	48 h	7 day
KIA	orange K/NC	K/K
H_2S	Neg	Neg
Pseudo P	Neg	Neg
Pseudo F	Neg	Neg
NO_3 reduced	X	Red - Pos (+)
Gas from NO_3	Neg	Neg (−)
NO_2 reduced	X	Red - Neg (−)
Gas from NO_2	Neg	Neg (−)
OF Fructose	Gr	Bl-Gr −
OF Dextrose		Gr −
OF Lactose		Bl-Gr −
OF Maltose		−
OF Mannitol		−
OF Xylose		−
OF Sucrose		−
Arginine	N	Neg
Lysine		Neg
Ornithine		Neg
Base Control		Neg
Acetamide	N	Neg
Esculin	Pos	Pos (+)
Gelatin	Neg	Neg
Indole	X	Neg
Malonate	Neg	Pos (+)
PAD	Neg	X
Urea N 2 h	Neg	Neg
6.5% NaCL	Neg	Neg
10% Lactose	Neg	Neg
ONPG	Neg	Neg
Growth 42°	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.

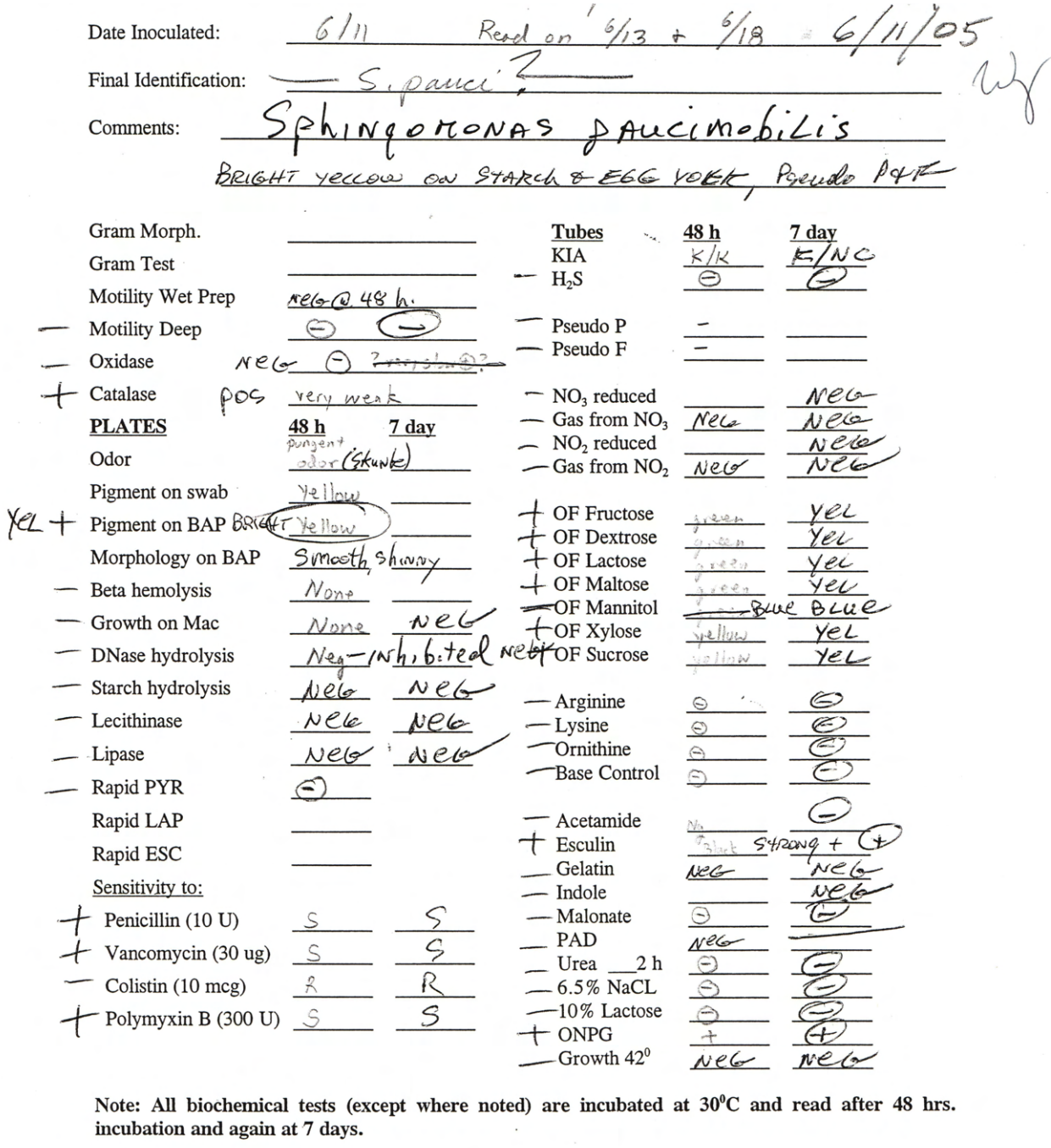
Figure 317: Sphingomonas mucosissima isolate 1-of-1.

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_2S	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_3 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_2 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 (30μg)	20	0	100.00	91.94	Lysine	0	20	0.00	8.06
Colistin (10μg)	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: 6/11 Read on 6/13 + 6/18 = 6/11/05

Final Identification: — S. paucimobilis

Comments: Sphingomonas paucimobilis

BRIGHT yellow on STARCH & EGG YOLK, Pseudo P/F

		48 h	7 day
	Gram Morph.		
	Gram Test		
	Motility Wet Prep	neg @ 48 h.	
—	Motility Deep	(−)	(−)
—	Oxidase	neg (−)	
+	Catalase	pos very weak	
	PLATES	**48 h**	**7 day**
	Odor	pungent odor (skunk)	
	Pigment on swab	yellow	
Yel +	Pigment on BAP	BRIGHT yellow	
	Morphology on BAP	smooth, shiny	
—	Beta hemolysis	None	
—	Growth on Mac	None	neg
—	DNase hydrolysis	Neg — Inhibited	neg
—	Starch hydrolysis	neg	neg
—	Lecithinase	neg	neg
—	Lipase	neg	neg
—	Rapid PYR	(−)	
	Rapid LAP		
	Rapid ESC		
	Sensitivity to:		
+	Penicillin (10 U)	S	S
+	Vancomycin (30 ug)	S	S
—	Colistin (10 mcg)	R	R
+	Polymyxin B (300 U)	S	S

		48 h	7 day
	Tubes		
	KIA	K/K	K/NC
—	H_2S	(−)	(−)
—	Pseudo P	−	
—	Pseudo F	−	
—	NO_3 reduced		neg
—	Gas from NO_3	neg	neg
—	NO_2 reduced		neg
—	Gas from NO_2	neg	neg
+	OF Fructose	green	yel
+	OF Dextrose	green	yel
+	OF Lactose	green	yel
+	OF Maltose	green	yel
—	OF Mannitol	green	blue blue
+	OF Xylose	yellow	yel
—	OF Sucrose	yellow	yel
—	Arginine	(−)	(−)
—	Lysine	(−)	(−)
—	Ornithine	(−)	(−)
—	Base Control	(−)	(−)
—	Acetamide		(−)
+	Esculin	black strong +	(+)
—	Gelatin	neg	neg
—	Indole		neg
—	Malonate	(−)	(−)
—	PAD	neg	
—	Urea 2 h	(−)	(−)
—	6.5% NaCL	(−)	(−)
—	10% Lactose	(−)	(−)
+	ONPG	+	(+)
—	Growth 42°	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 318: Sphingomonas paucimobilis isolate 1-of-20.

Date Inoculated: 2-3-11

Final Identification: Sphingomonas paucimobilis 2/14/11

Comments: # Bright Yellow on All media P.S.

				2/5	2/14 11 DAYS
Gram Morph.			**Tubes**	**48 h**	**7 day**
Gram Test	48h		KIA	K/NC	K/K
Motility Wet Prep	Neg	small-medium length rods	H_2S	Neg	Neg
Motility Deep	Pos	Pos	Pseudo P	Neg	Neg
Oxidase	Neg		Pseudo F	Neg	Neg
Catalase	Slow w+		NO_3 reduced		Neg
PLATES	**48 h**	**7 day**	Gas from NO_3	Neg	Neg
Odor	Neg		NO_2 reduced		Neg
Pigment on swab	Mustard	Yellow	Gas from NO_2	Neg	Neg
Pigment on BAP	Mustard	Yellow	OF Fructose	Yel	Yel
Morphology on BAP	Smooth		OF Dextrose	Yel	Yel
Beta hemolysis	Neg		OF Lactose	Yel	Yel
Growth on Mac	Neg	Neg	OF Maltose	Yel	Yel
DNase hydrolysis	Neg - inhibited	Neg	OF Mannitol	Blue	Blue
Starch hydrolysis	Neg	Pos !	OF Xylose	Yel	Yel
Lecithinase	Neg		OF Sucrose	Yel	Yel
Lipase	Neg		Arginine	Neg	Neg
Rapid PYR	Neg		Lysine		
Rapid LAP	Pos !		Ornithine		
Rapid ESC	Pos !		Base Control		
Sensitivity to:			Acetamide	Neg	Neg
Penicillin (10 U)	R	R	Esculin	Pos	Pos
Vancomycin (30 ug)	S-10.3	S	Gelatin	Neg	Neg
Colistin (10 mcg)	R	R	Indole		Neg
Polymyxin B (300 U)	R	R	Malonate	Neg	Neg
			PAD	Pos	—
			Urea Neg 2 h	Neg	Neg
			6.5% NaCL	Neg	Neg
			10% Lactose	Neg	Neg
			ONPG	Pos	Pos
			Growth 42^0	Neg	Neg

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

Figure 319: Sphingomonas paucimobilis isolate 2-of-20.

11/18/2008

Comments: BRIGHT YELLOW ACC MEDIA

Sphingomonas paucimobilis PS. 11/25/08

			Tubes	48 h (11/20)	7 day (11/25 7DAY)
Gram Morph.			KIA	K/NC	K/K
Gram Test			H_2S	NEG	NEG
Motility Wet Prep	NEG				
Motility Deep	+? NEG		Pseudo P	NEG	NEG
Oxidase	NEG		Pseudo F	NEG	NEG
Catalase	STRONG POS		NO_3 reduced		NEG
PLATES	**48 h**	**7 day**	Gas from NO_3	NEG	NEG
Odor			NO_2 reduced		NEG
Pigment on swab	mustard yellow		Gas from NO_2	NEG	NEG
Pigment on BAP	bright yellow		OF Fructose	GRN	YEL
Morphology on BAP	smooth-shiny		OF Dextrose	GRN	YEL
Beta hemolysis	NEG		OF Lactose	GRN	YEL
Growth on Mac	NEG	NEG	OF Maltose	GRN	YEL
DNase hydrolysis		POS	OF Mannitol	BLUE	BLUE
Starch hydrolysis	POS	POS	OF Xylose	GRN	YEL
Lecithinase	NEG	NEG	OF Sucrose	GRN	YEL
Lipase	NEG	NEG	Arginine	NEG	NEG
Rapid PYR	NEG		Lysine		
Rapid LAP	POS		Ornithine		
Rapid ESC	POS		Base Control		
Sensitivity to:			Acetamide	NEG	NEG
Penicillin (10 U)	R	R	Esculin	POS	POS
Vancomycin (30 ug)	S-13	S	Gelatin		NEG
Colistin (10 mcg)	R	R	Indole		NEG
Polymyxin B (300 U)	R	R	Malonate	NEG	NEG
			PAD	NEG	—
			Urea NEG 2 h	NEG	NEG
			6.5% NaCL	W+	NEG
			10% Lactose	NEG	NEG
			ONPG	POS	POS
			Growth 42^0	POS	POS

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

Figure 320: Sphingomonas paucimobilis isolate 3-of-20.

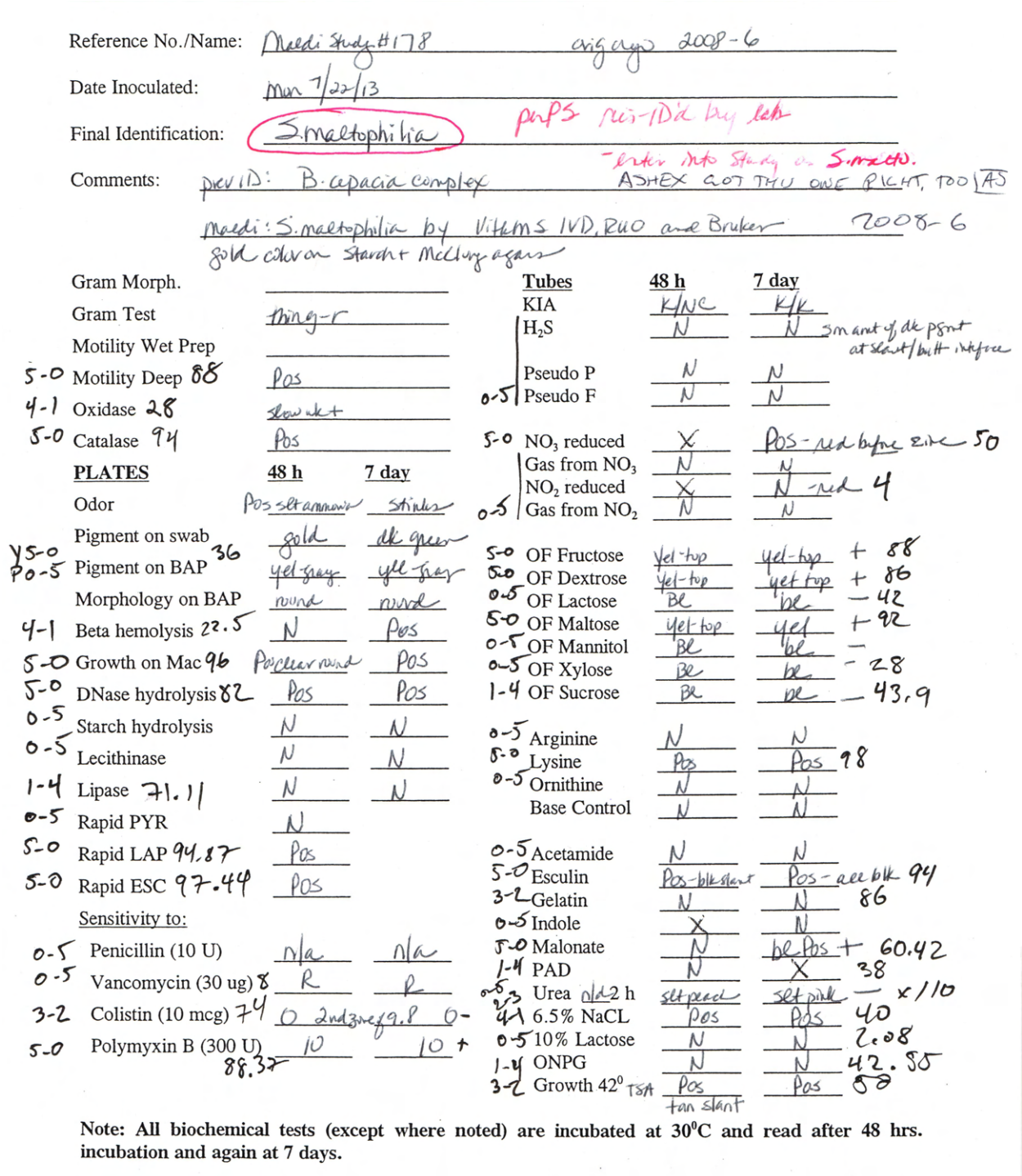
38 GENUS STENOTROPHOMONAS

38.1 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%**	**W95%**	**Test**	+	−	**Raw%**	**W95%**
Motility	44	6	88.00	85.29	H_2S	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_3 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_2 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 (30μg)	4	46	8.00	11.00	Lysine	49	1	98.00	94.58
Colistin (10μg)	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: Maedi Study #178 orig ago 2008-6

Date Inoculated: Mon 7/22/13

Final Identification: S. maltophilia perPS res-ID'd by lab

Comments: prev ID: B. cepacia complex — enter into Study as S. malto. ASHEX GOT THIS ONE RIGHT, TOO AS

Maedi: S. maltophilia by Vitams IVD, RUO and Bruker 2008-6

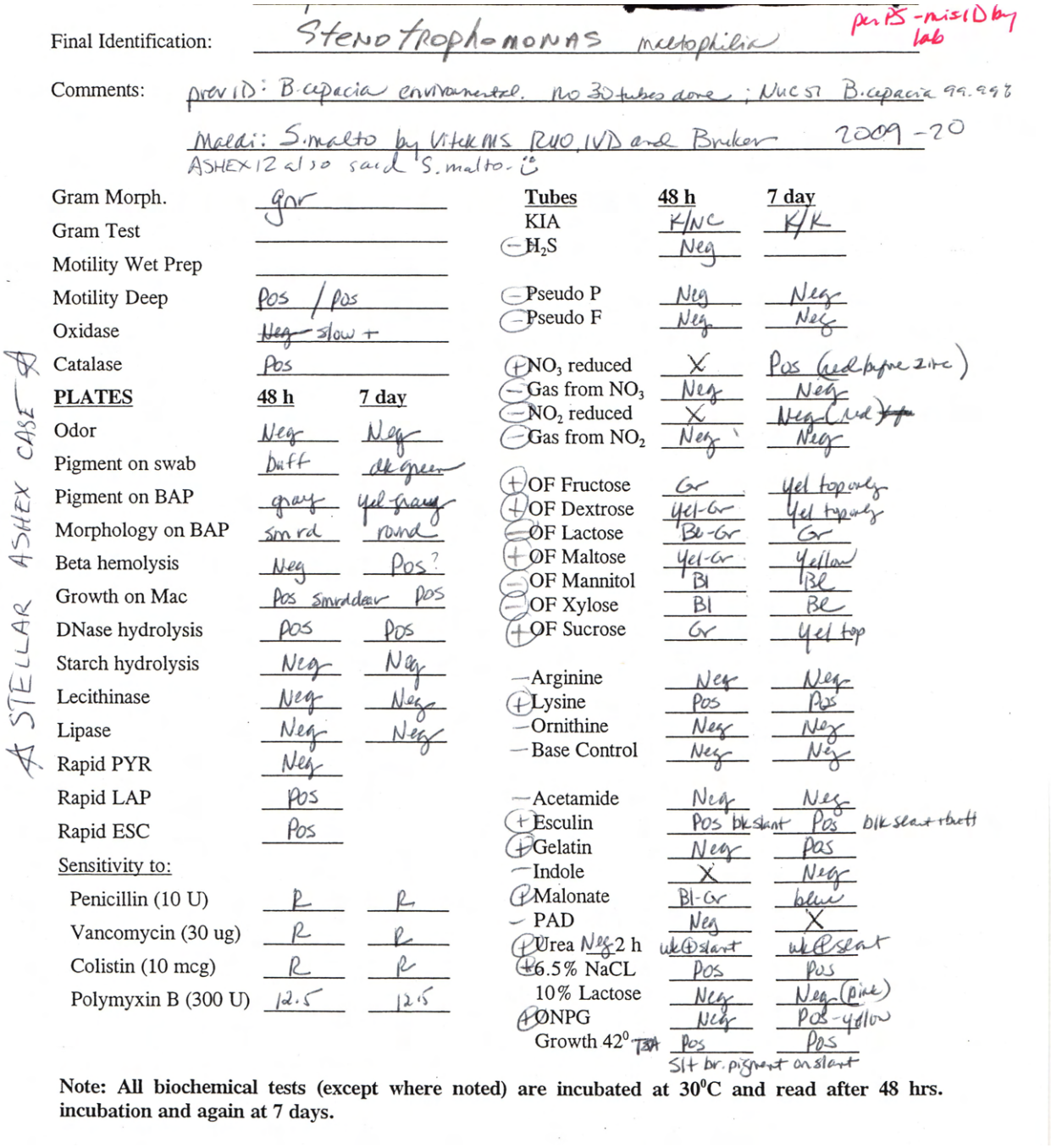
gold color on starch + McClung agars

	Gram Morph.		
	Gram Test	thing-r	
	Motility Wet Prep		
5-0	Motility Deep 88	Pos	
4-1	Oxidase 28	slow wk +	
5-0	Catalase 94	Pos	
	PLATES	**48 h**	**7 day**
	Odor	Pos slt ammonia	stinks
	Pigment on swab	gold	dk green
Y5-0 P0-5	Pigment on BAP 36	yel-gray	yel-gray
	Morphology on BAP	round	round
4-1	Beta hemolysis 22.5	N	Pos
5-0	Growth on Mac 96	Pos clear round	Pos
5-0	DNase hydrolysis 82	Pos	Pos
0-5	Starch hydrolysis	N	N
0-5	Lecithinase	N	N
1-4	Lipase 71.11	N	N
0-5	Rapid PYR	N	
5-0	Rapid LAP 94.87	Pos	
5-0	Rapid ESC 97.44	Pos	
	Sensitivity to:		
0-5	Penicillin (10 U)	n/a	n/a
0-5	Vancomycin (30 ug) 8	R	R
3-2	Colistin (10 mcg) 74	0 2nd zone 9.8	0-
5-0	Polymyxin B (300 U) 88.37	10	10 +

	Tubes	48 h	7 day	
	KIA	K/NC	K/K	
	H_2S	N	N	sm amt of dk pgmt at slant/butt interface
	Pseudo P	N	N	
0-5	Pseudo F	N	N	
5-0	NO_3 reduced	X	Pos - red before zinc 50	
	Gas from NO_3	N	N	
	NO_2 reduced	X	N - red 4	
0-5	Gas from NO_2	N	N	
5-0	OF Fructose	yel-top	yel-top	+ 88
5-0	OF Dextrose	yel-top	yel top	+ 86
0-5	OF Lactose	Bl	bl	− 42
5-0	OF Maltose	yel-top	yel	+ 92
0-5	OF Mannitol	Bl	bl	−
0-5	OF Xylose	Bl	bl	− 28
1-4	OF Sucrose	Bl	bl	− 43.9
0-5	Arginine	N	N	
5-0	Lysine	Pos	Pos 98	
0-5	Ornithine	N	N	
	Base Control	N	N	
0-5	Acetamide	N	N	
5-0	Esculin	Pos-blk slant	Pos - all blk 94	
3-2	Gelatin	N	N 86	
0-5	Indole	X	N	
5-0	Malonate	N	bl Pos + 60.42	
1-4	PAD	N	X 38	
0-5 2-3	Urea n/d 2 h	slt peach	slt pink − x/10	
4-1	6.5% NaCL	Pos	Pos 40	
0-5	10% Lactose	N	N 2.08	
1-4	ONPG	N	N 42.55	
3-2	Growth 42° TSA	Pos tan slant	Pos 58	

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

Figure 321: Stenotrophomonas maltophilia isolate 1-of-50.



Final Identification: Stenotrophomonas maltophilia per PS - misID by lab

Comments: prev ID: B. cepacia environmental. no 30 tubes done; NUC 51 B. cepacia 99.99%

Maldi: S. malto by Vitek MS RUO, IVD and Bruker 2009-20

ASHEX 12 also said S. malto. :)

Gram Morph.	gnr	
Gram Test		
Motility Wet Prep		
Motility Deep	Pos / Pos	
Oxidase	~~Neg~~ slow +	
Catalase	Pos	
PLATES	**48 h**	**7 day**
Odor	Neg	Neg
Pigment on swab	buff	dk green
Pigment on BAP	gray	yel-gray
Morphology on BAP	sm rd	round
Beta hemolysis	Neg	Pos?
Growth on Mac	Pos sm rd clear	Pos
DNase hydrolysis	Pos	Pos
Starch hydrolysis	Neg	Neg
Lecithinase	Neg	Neg
Lipase	Neg	Neg
Rapid PYR	Neg	
Rapid LAP	Pos	
Rapid ESC	Pos	
Sensitivity to:		
Penicillin (10 U)	R	R
Vancomycin (30 ug)	R	R
Colistin (10 mcg)	R	R
Polymyxin B (300 U)	12.5	12.5

Tubes	48 h	7 day
KIA	K/NC	K/K
(−) H_2S	Neg	
(−) Pseudo P	Neg	Neg
(−) Pseudo F	Neg	Neg
(+) NO_3 reduced	X	Pos (red before zinc)
(−) Gas from NO_3	Neg	Neg
(−) NO_2 reduced	X	Neg (red) ~~Yel~~
(−) Gas from NO_2	Neg	Neg
(+) OF Fructose	Gr	yel top only
(+) OF Dextrose	yel-Gr	yel top only
(−) OF Lactose	Bl-Gr	Gr
(+) OF Maltose	yel-Gr	yellow
(−) OF Mannitol	Bl	Bl
(−) OF Xylose	Bl	Bl
(+) OF Sucrose	Gr	yel top
(−) Arginine	Neg	Neg
(+) Lysine	Pos	Pos
(−) Ornithine	Neg	Neg
(−) Base Control	Neg	Neg
(−) Acetamide	Neg	Neg
(+) Esculin	Pos blk slant	Pos blk slant + buff
(+) Gelatin	Neg	Pos
(−) Indole	X	Neg
(+) Malonate	Bl-Gr	blue
(−) PAD	Neg	X
(+) Urea Neg 2 h	wk (+) slant	wk (+) slant
(+) 6.5% NaCL	Pos	Pos
10% Lactose	Neg	Neg (pink)
(+) ONPG	Neg	Pos - yellow
Growth 42° TSA	Pos	Pos
	slt br. pigment on slant	

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

STELLAR ASHEX CASE

Figure 322: Stenotrophomonas maltophilia isolate 2-of-50.

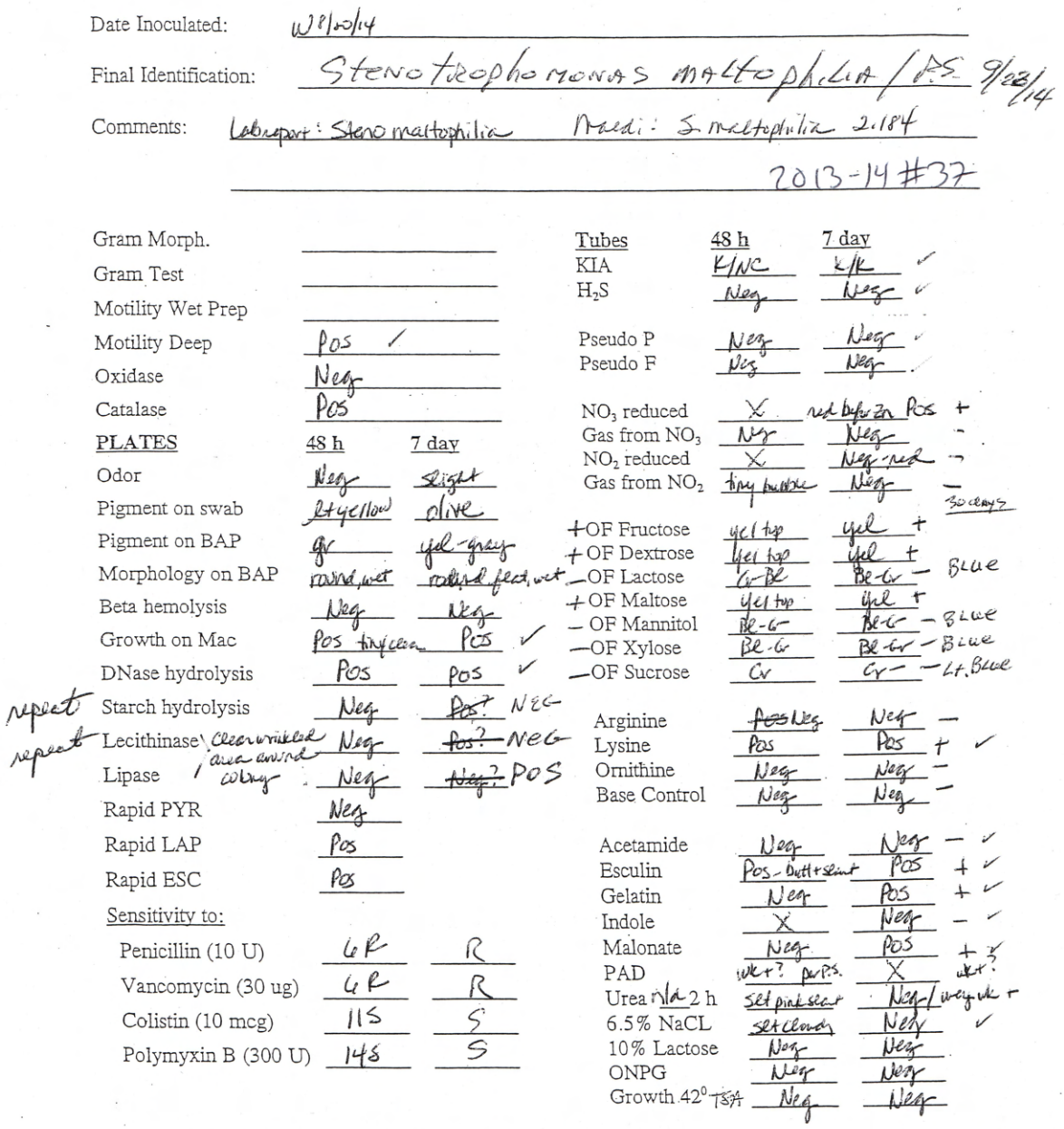
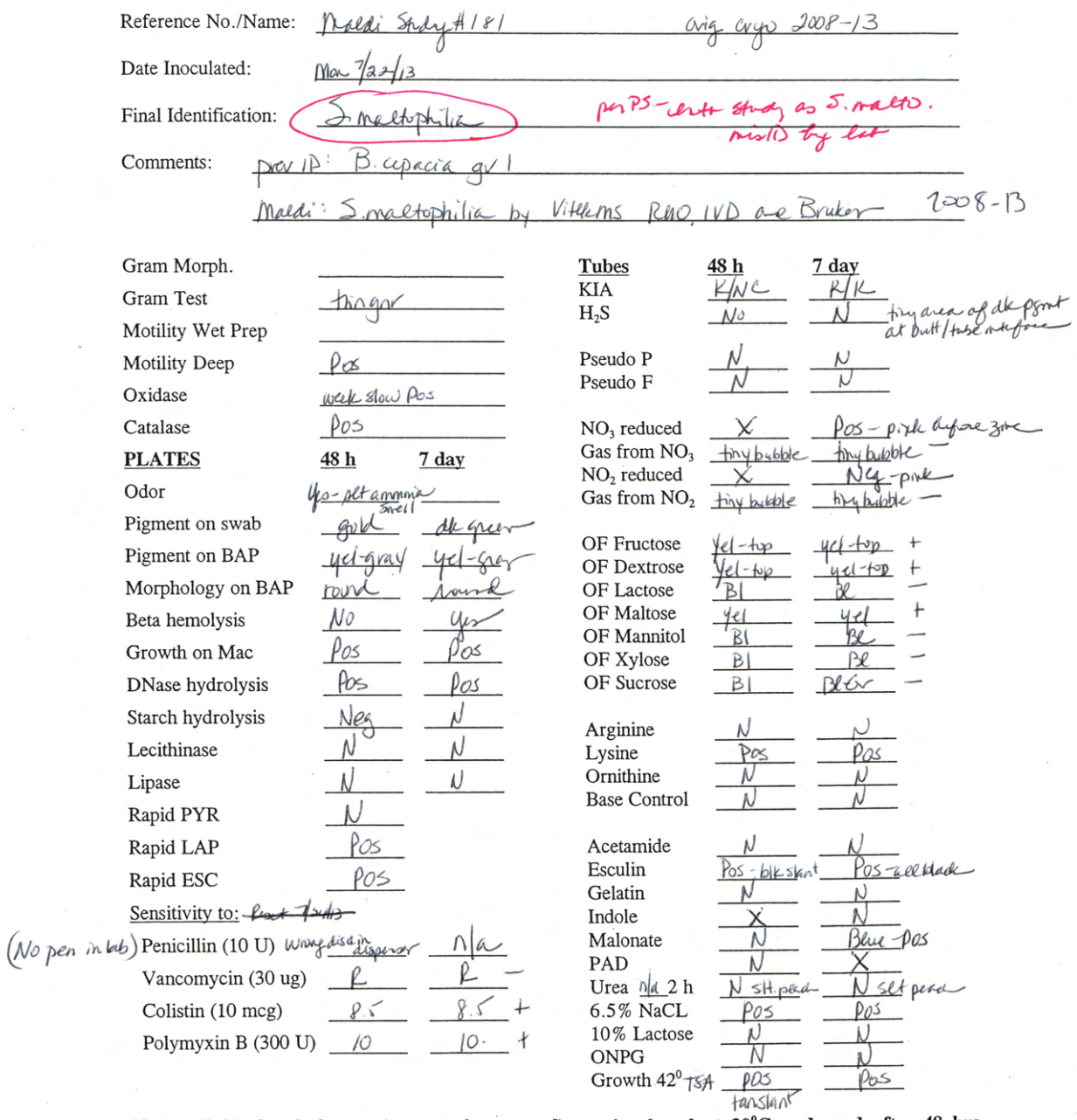


Figure 323: Stenotrophomonas maltophilia isolate 3-of-50.



Reference No./Name: Maldi Study #181 orig cryo 2008-13

Date Inoculated: Mon 7/22/13

Final Identification: S. maltophilia — per PS - enter study as S. malto. misID by lab

Comments: prev ID: B. cepacia gv 1

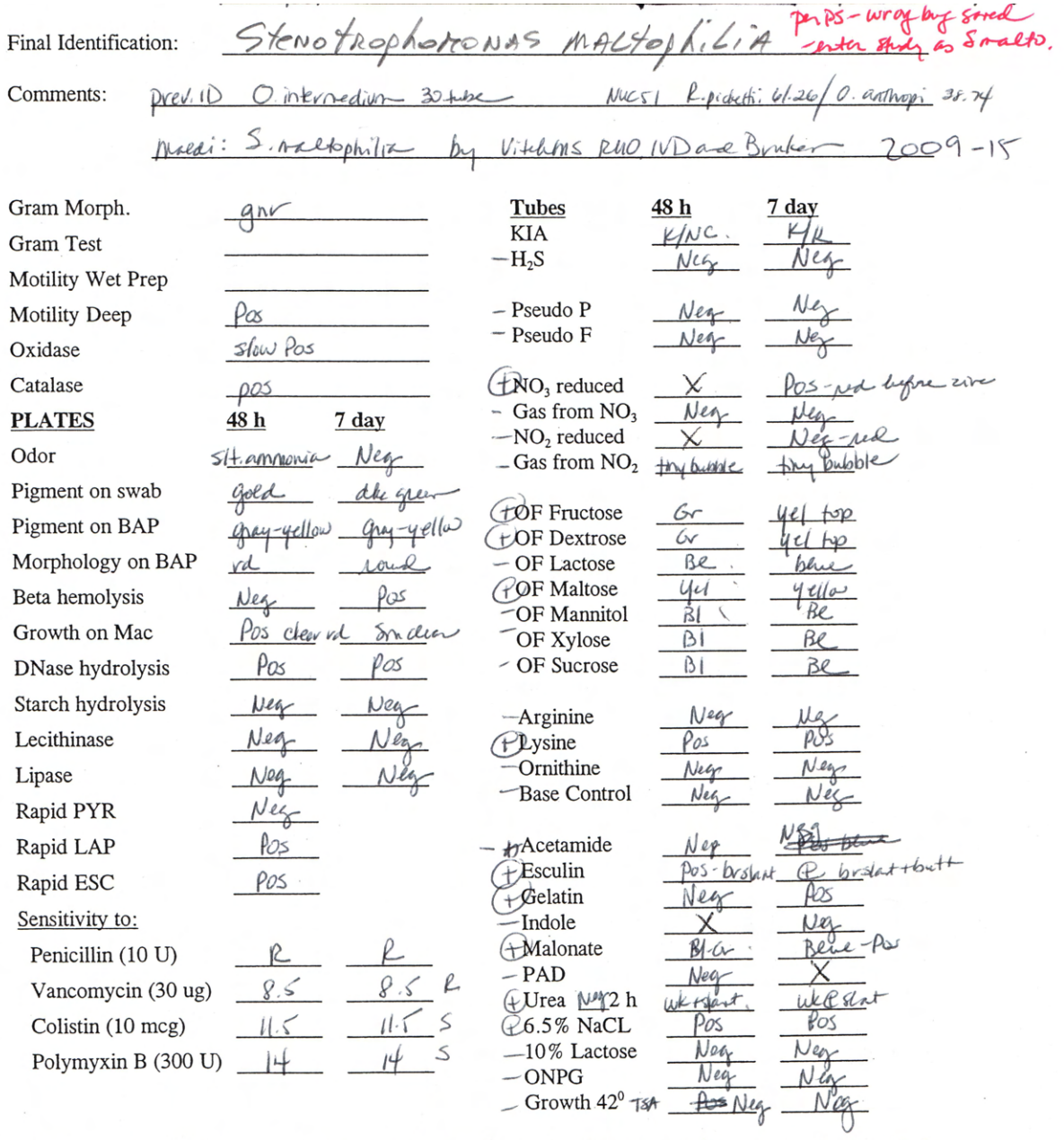
Maldi: S. maltophilia by Vitek MS RMO, IVD and Bruker 2008-13

Gram Morph.		
Gram Test	tringnr	
Motility Wet Prep		
Motility Deep	Pos	
Oxidase	week slow Pos	
Catalase	Pos	
PLATES	**48 h**	**7 day**
Odor	Yes - slt ammonia smell	
Pigment on swab	gold	dk green
Pigment on BAP	yel-gray	yel-gray
Morphology on BAP	round	round
Beta hemolysis	No	Yes
Growth on Mac	Pos	Pos
DNase hydrolysis	Pos	Pos
Starch hydrolysis	Neg	N
Lecithinase	N	N
Lipase	N	N
Rapid PYR	N	
Rapid LAP	Pos	
Rapid ESC	Pos	
Sensitivity to: ~~Reset 7/24/13~~		
(No pen in lab) Penicillin (10 U)	wrong disc in dispenser	n/a
Vancomycin (30 ug)	R	R —
Colistin (10 mcg)	8.5	8.5 +
Polymyxin B (300 U)	10	10. +

Tubes	**48 h**	**7 day**	
KIA	K/NC	R/K	
H_2S	No	N	tiny area of dk pgmt at butt/tube interface
Pseudo P	N	N	
Pseudo F	N	N	
NO_3 reduced	X	Pos - pink before zinc	
Gas from NO_3	tiny bubble	tiny bubble	—
NO_2 reduced	X	Neg - pink	
Gas from NO_2	tiny bubble	tiny bubble	—
OF Fructose	yel-top	yel-top	+
OF Dextrose	yel-top	yel-top	+
OF Lactose	Bl	Bl	—
OF Maltose	yel	yel	+
OF Mannitol	Bl	Bl	—
OF Xylose	Bl	Bl	—
OF Sucrose	Bl	Bl Gr	—
Arginine	N	N	
Lysine	Pos	Pos	
Ornithine	N	N	
Base Control	N	N	
Acetamide	N	N	
Esculin	Pos - blk slant	Pos - all black	
Gelatin	N	N	
Indole	X	N	
Malonate	N	Blue - Pos	
PAD	N	X	
Urea n/a 2 h	N slt. peach	N slt peach	
6.5% NaCL	Pos	Pos	
10% Lactose	N	N	
ONPG	N	N	
Growth 42° TSA	Pos tan slant	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 324: Stenotrophomonas maltophilia isolate 4-of-50.



Final Identification: Stenotrophomonas maltophilia per PS - wrong bug saved - enter study as S maltos.

Comments: prev. ID O. intermedium 30 tube NUC51 R. pickettii 61.26 / O. anthropi 38.74

Maldi: S. maltophilia by Vitek MS RUO IVD and Bruker 2009-15

Gram Morph.	gnr	
Gram Test		
Motility Wet Prep		
Motility Deep	Pos	
Oxidase	slow Pos	
Catalase	pos	
PLATES	**48 h**	**7 day**
Odor	slt. ammonia	Neg
Pigment on swab	gold	dk green
Pigment on BAP	gray-yellow	gray-yellow
Morphology on BAP	rd	round
Beta hemolysis	Neg	Pos
Growth on Mac	Pos clear rd	Sm clear
DNase hydrolysis	Pos	Pos
Starch hydrolysis	Neg	Neg
Lecithinase	Neg	Neg
Lipase	Neg	Neg
Rapid PYR	Neg	
Rapid LAP	Pos	
Rapid ESC	Pos	
Sensitivity to:		
Penicillin (10 U)	R	R
Vancomycin (30 ug)	8.5	8.5 R
Colistin (10 mcg)	11.5	11.5 S
Polymyxin B (300 U)	14	14 S

Tubes	**48 h**	**7 day**
KIA	K/NC.	K/K
H_2S	Neg	Neg
Pseudo P	Neg	Neg
Pseudo F	Neg	Neg
NO_3 reduced	X	Pos - red before zinc
Gas from NO_3	Neg	Neg
NO_2 reduced	X	Neg - red
Gas from NO_2	tiny bubble	tiny bubble
OF Fructose	Gr	yel top
OF Dextrose	Gr	yel top
OF Lactose	Bl	blue
OF Maltose	Yel	yellow
OF Mannitol	Bl	Bl
OF Xylose	Bl	Bl
OF Sucrose	Bl	Bl
Arginine	Neg	Neg
Lysine	Pos	Pos
Ornithine	Neg	Neg
Base Control	Neg	Neg
Acetamide	Neg	Neg ~~Pos blue~~
Esculin	Pos - brslant	+ brslant + butt
Gelatin	Neg	Pos
Indole	X	Neg
Malonate	Bl-Gr	Blue - Pos
PAD	Neg	X
Urea Neg 2 h	wk + slant	wk + slant
6.5% NaCL	Pos	Pos
10% Lactose	Neg	Neg
ONPG	Neg	Neg
Growth 42° TSA	~~Pos~~ 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 325: Stenotrophomonas maltophilia isolate 5-of-50.

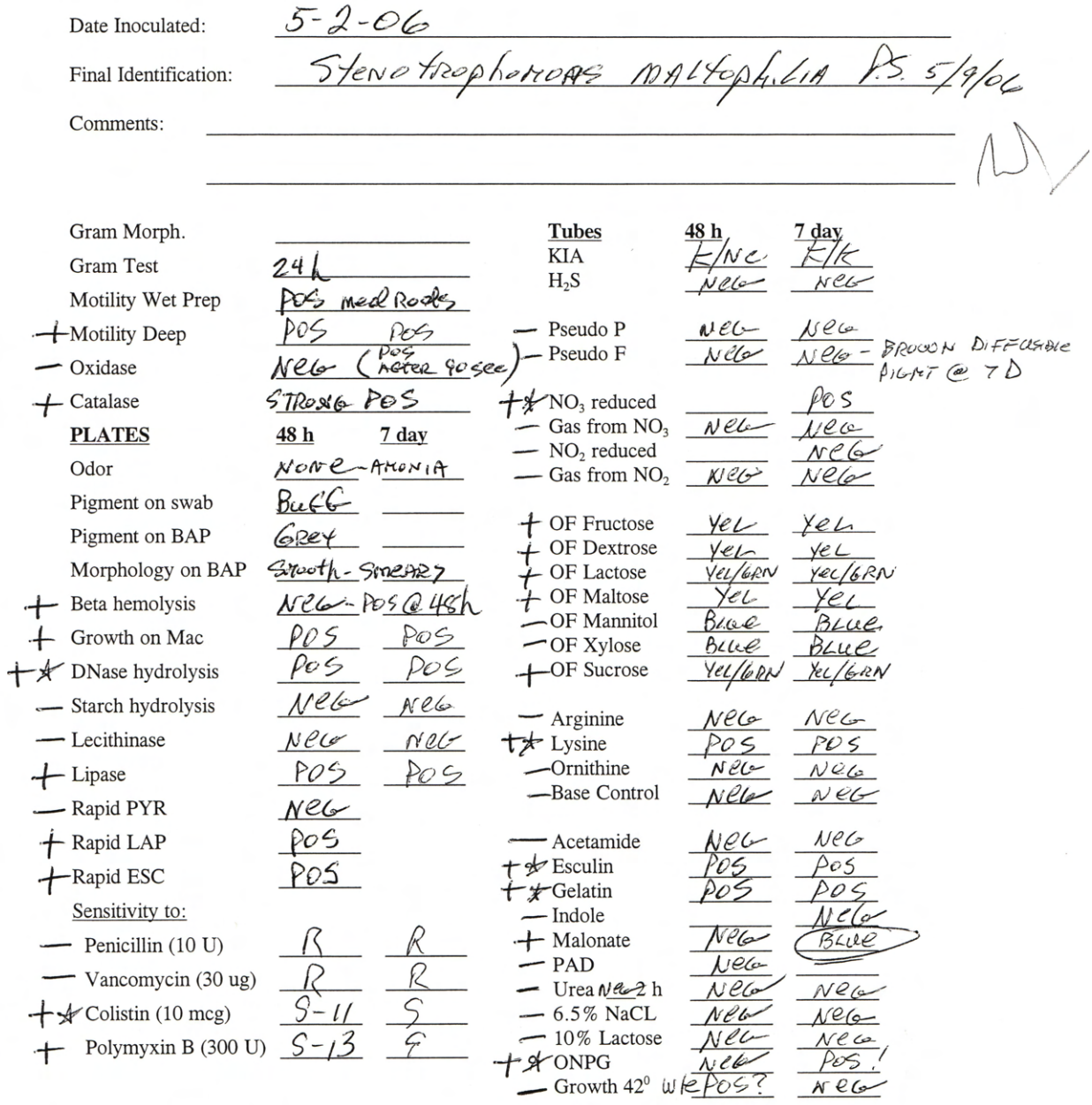


Figure 326: Stenotrophomonas maltophilia isolate 6-of-50.

Date Inoculated: (V)

Final Identification: Stenotrophomonas maltophilia P.S. 8/18/04

Comments: Lt. Yellow and creamy in appearance on Starch @ 4D

	Gram Morph.				**Tubes**	**48 h**	**7 day**
	Gram Test	24h			KIA	K/NC	K/K
+	Motility Wet Prep	POS	Med Rods		− H_2S	Neg	Neg
	Motility Deep	POS	POS		− Pseudo P	Neg	Neg
−	Oxidase	Neg	Slow POS		− Pseudo F	Neg	Neg
+	Catalase	POS			+ NO_3 reduced		POS
	PLATES	24/~~48 h~~	**7 day**		− Gas from NO_3	Neg	Neg
	Odor	NONE	AMMONIA		+ NO_2 reduced		POS
	Pigment on swab	White			− Gas from NO_2	Neg	Neg
	Pigment on BAP	Grey			+ OF Fructose	Yel	Yel
	Morphology on BAP	Smooth-Dull			+ OF Dextrose	Yel	Yel
−	Beta hemolysis	Neg	POS		− OF Lactose	Blue	Blue
+	Growth on Mac	POS	POS		+ OF Maltose	Yel	Yel
+	DNase hydrolysis	POS	POS		− OF Mannitol	Blue	Blue
−	Starch hydrolysis	Neg	Neg		− OF Xylose	Blue	Blue
−	Lecithinase	Neg	Neg		− OF Sucrose	Blue	Blue
+	Lipase	POS	POS		− Arginine	Neg	Neg
−	Rapid PYR	Neg			+ Lysine	POS	POS
+	Rapid LAP	POS			− Ornithine	Neg	Neg
+	Rapid ESC	POS			− Base Control	Neg	Neg
	Sensitivity to:				− Acetamide	Neg	Neg
−	Penicillin (10 U)	R	R		+ Esculin	POS	POS
−	Vancomycin (30 ug)	R	R		+ Gelatin	Neg	(POS!)
+	Colistin (10 mcg)	S-8	S-9		− Indole		Neg
+	Polymyxin B (300 U)	S-9	S-9		+ Malonate	Neg	(POS)
					+ PAD	POS	
					− Urea Neg 2 h	Neg	Neg
					− 6.5% NaCL	Neg	Neg
					− 10% Lactose	Neg	Neg
					− ONPG	Neg	Neg
					− Growth 42°	Neg	Poor Growth

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.

Date Inoculated: 2-5-07

Final Identification: 2-14-07 Stenotrophomonas maltophilia 2/14/07 P.S.

Comments: T/S (R)

Gram Morph.		
Gram Test	48L	
Motility Wet Prep	POS- sm RODS VERY motile	
Motility Deep	POS TUMBLING POS	
Oxidase	NEG	
Catalase	STRONG POS	
PLATES	**48 h**	**7 day**
Odor	None - slight AMMONIA	
Pigment on swab	Buff	
Pigment on BAP	Deep Grey	
Morphology on BAP	Smooth	
Beta hemolysis	NEG	
Growth on Mac	POS	POS
DNase hydrolysis	POS	POS
Starch hydrolysis	NEG	NEG
Lecithinase	NEG	NEG
Lipase	NEG	POS
Rapid PYR	NEG	
Rapid LAP	POS	
Rapid ESC	POS	
Sensitivity to:		
Penicillin (10 U)	R	R
Vancomycin (30 ug)	R	R
Colistin (10 mcg)	S-10	S
Polymyxin B (300 U)	S-12	S

Tubes	**48 h**	**7 day**
KIA	K/NC	K/K
H_2S	NEG	NEG
Pseudo P	NEG	NEG
Pseudo F	NEG	NEG
NO_3 reduced		NEG
Gas from NO_3	NEG	NEG
NO_2 reduced		NEG
Gas from NO_2	NEG	NEG
OF Fructose	Yel	Yel
OF Dextrose	Yel	Yel
OF Lactose	GRN	Blue
OF Maltose	Yel	Yel
OF Mannitol	Blue	Blue
OF Xylose	Blue	Blue
OF Sucrose	GRN	GRN
Arginine	NEG	NEG
Lysine	POS	POS
Ornithine	NEG	NEG
Base Control	NEG	NEG
Acetamide	NEG	NEG
Esculin	POS	POS
Gelatin	NEG	POS
Indole		NEG
Malonate	NEG	POS
PAD	POS	—
Urea NEG 2 h	NEG	NEG
6.5% NaCL	NEG	NEG
10% Lactose	POS	POS
ONPG	NEG	NEG
Growth 42^0	POS	POS

BROWN DARK. PIGMT

Note: All biochemical tests (except where noted) are incubated at 30°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: Stenotrophomonas maltophilia P.S. 12/30/10

Comments: Light peach on Starch & Egg Yolk @ 10 DAYS

				24	1/7/11 9 DAYS
Gram Morph.			**Tubes**	~~48 h~~	7 day
Gram Test	24h		KIA	K/NC	K/K
Motility Wet Prep	POS		H_2S	Neg	Neg
Motility Deep	POS	POS	Pseudo P	Neg	Neg
Oxidase	Slow POS (15 sec)		Pseudo F	Neg	Neg
Catalase	STRONG POS		NO_3 reduced		Neg
PLATES	**48 h**	**7 day**	Gas from NO_3	Neg	Neg
Odor	None		NO_2 reduced		Neg
Pigment on swab	Golden		Gas from NO_2	Neg	Neg
Pigment on BAP	GREY		+ OF Fructose	Blue	Yel/GRN
Morphology on BAP	Smooth		+ OF Dextrose	Blue	GRN
Beta hemolysis	Neg		+ OF Lactose	Blue	GRN
Growth on Mac	SPARSE GROWTH	POS	+ OF Maltose	Yel	Yel
DNase hydrolysis	POS	POS	− OF Mannitol	Blue	Blue
Starch hydrolysis	Neg	Neg	+ OF Xylose	Blue	GRN
Lecithinase	Neg	Neg	+ OF Sucrose	Blue	GRN
Lipase	Neg	POS	Arginine	Neg	Neg
Rapid PYR	Neg		Lysine	Pos	POS
Rapid LAP	POS		Ornithine	Neg	Neg
Rapid ESC	POS		Base Control	Neg	Neg
Sensitivity to:			Acetamide	Neg	Neg
Penicillin (10 U)	R	R	Esculin	Neg	POS!
Vancomycin (30 ug)	R	R	Gelatin	Neg	POS!
Colistin (10 mcg)	S-9.5	S	Indole		Neg
Polymyxin B (300 U)	S-10.6	S	Malonate	Neg	POS
			PAD	POS	—
			Urea Neg 2 h	Neg	W+ SLANT ONLY
			6.5% NaCL	Neg	POS
			10% Lactose	Neg	Neg
			ONPG	Neg	POS!
			Growth 42^0	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 329: Stenotrophomonas maltophilia isolate 9-of-50.

Date Inoculated: 10-21-08

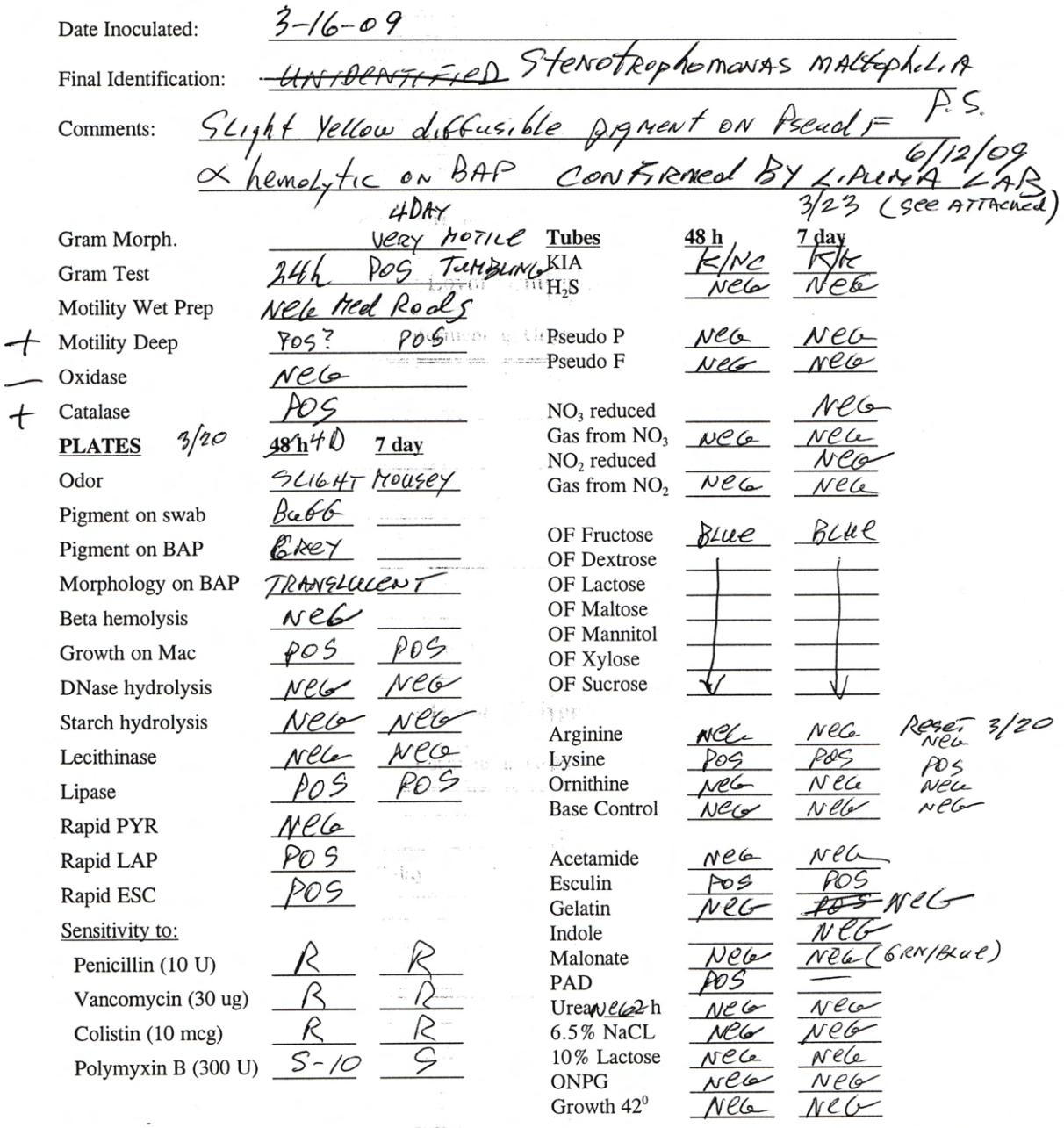
Final Identification: Stenotrophomonas maltophilia P.S.

Comments: 10/31/08

						10/31/08
Gram Morph.			**Tubes**	**48 h**	**7 day**	10 DAY
Gram Test	48 hr.		KIA		K/K	
Motility Wet Prep	POS - med RODS		H_2S		SLIGHT H_2S	
Motility Deep	POS		Pseudo P		NEG	
Oxidase	Slow POS (35 sec)		Pseudo F		NEG	
Catalase	STRONG POS		NO_3 reduced		POS	
PLATES	**48 h**	**7 day**	Gas from NO_3		NEG	
Odor	NONE		NO_2 reduced		NEG	
Pigment on swab	TAN		Gas from NO_2		NEG	
Pigment on BAP	Yellowish-Grey		OF Fructose		YEL/GRN	
Morphology on BAP	SMOOTH-STRINGY		OF Dextrose		YEL/GRN	
Beta hemolysis	NEG		OF Lactose		YEL/GRN	
Growth on Mac	POS		OF Maltose		YEL/GRN	
DNase hydrolysis		POS !	OF Mannitol		BLUE	
Starch hydrolysis		NEG	OF Xylose		BLUE	
Lecithinase		NEG	OF Sucrose		YEL/GRN	
Lipase		POS	Arginine		NEG	
Rapid PYR	~~POS~~	NEG	★Lysine		POS	
Rapid LAP	~~POS~~	POS	Ornithine		NEG	
Rapid ESC	~~POS~~	POS	Base Control		NEG	
Sensitivity to:			Acetamide		NEG	
Penicillin (10 U)		R	Esculin		POS	
Vancomycin (30 ug)		R	Gelatin		POS	
Colistin (10 mcg)		S - 9	Indole		NEG	
Polymyxin B (300 U)		S - 10	Malonate		BLUE-POS	
			PAD		POS !	
			Urea NEG 2 h	NEG	NEG	
			6.5% NaCL		POS (wk)	
			10% Lactose		NEG	
			ONPG		POS	
			Growth 42°		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 330: Stenotrophomonas maltophilia isolate 10-of-50.



Date Inoculated: 3-16-09

Final Identification: ~~UNIDENTIFIED~~ Stenotrophomonas maltophilia P.S.

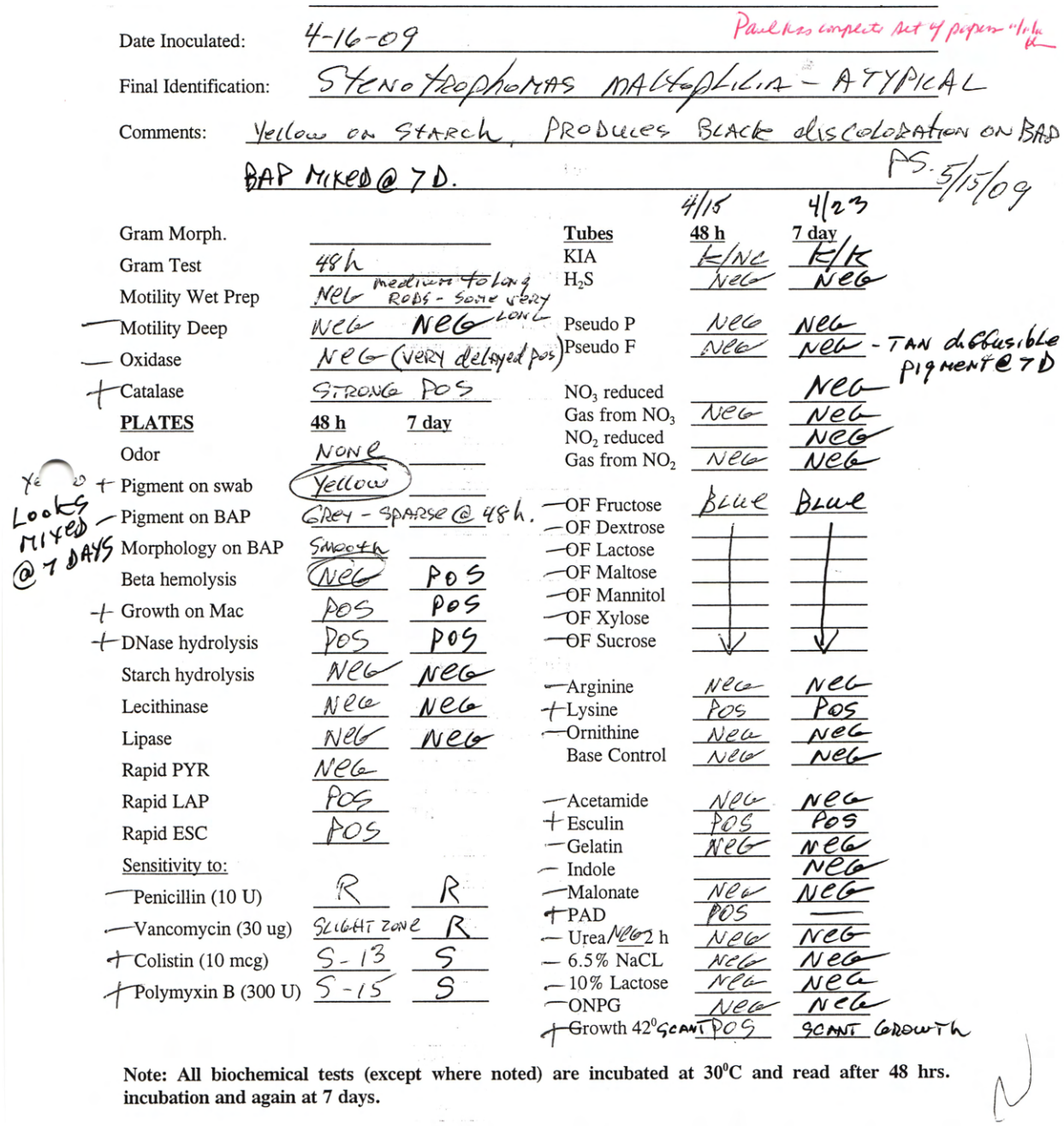
Comments: Slight yellow diffusible pigment on Pseud F 6/12/09
α hemolytic on BAP confirmed by Lipuma Lab 3/23 (see attached)

	Gram Morph.	4 DAY very motile		**Tubes**	**48 h**	**7 day**
	Gram Test	24h POS Tumbling		KIA	K/NC	K/K
	Motility Wet Prep	Neg Med Rods		H_2S	Neg	Neg
+	Motility Deep	POS?	POS	Pseudo P	Neg	Neg
—	Oxidase	Neg		Pseudo F	Neg	Neg
+	Catalase	POS		NO_3 reduced		Neg
	PLATES 3/20	~~48 h~~ 4D	**7 day**	Gas from NO_3	Neg	Neg
	Odor	Slight	Mousey	NO_2 reduced		Neg
	Pigment on swab	Buff		Gas from NO_2	Neg	Neg
	Pigment on BAP	Grey		OF Fructose	Blue	Blue
	Morphology on BAP	Translucent		OF Dextrose	↓	↓
	Beta hemolysis	Neg		OF Lactose	↓	↓
	Growth on Mac	POS	POS	OF Maltose	↓	↓
	DNase hydrolysis	Neg	Neg	OF Mannitol	↓	↓
	Starch hydrolysis	Neg	Neg	OF Xylose	↓	↓
	Lecithinase	Neg	Neg	OF Sucrose	↓	↓
	Lipase	POS	POS	Arginine	Neg	Neg
	Rapid PYR	Neg		Lysine	POS	POS
	Rapid LAP	POS		Ornithine	Neg	Neg
	Rapid ESC	POS		Base Control	Neg	Neg
	Sensitivity to:			Acetamide	Neg	Neg
	Penicillin (10 U)	R	R	Esculin	POS	POS
	Vancomycin (30 ug)	R	R	Gelatin	Neg	~~POS~~ Neg
	Colistin (10 mcg)	R	R	Indole		Neg
	Polymyxin B (300 U)	S-10	S	Malonate	Neg	Neg (Grn/Blue)
				PAD	POS	—
				Urea Neg 2 h	Neg	Neg
				6.5% NaCL	Neg	Neg
				10% Lactose	Neg	Neg
				ONPG	Neg	Neg
				Growth 42^0	Neg	Neg

Reset 3/20
Neg
POS
Neg
Neg

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

Figure 331: Stenotrophomonas maltophilia isolate 11-of-50.



Date Inoculated: 4-16-09 Paul has complete set of papers 4/16

Final Identification: STENOTROPHOMAS MALTOPHILIA - ATYPICAL

Comments: Yellow on STARCH. PRODUCES BLACK discoloration on BAP

BAP MIXED @ 7D. PS. 5/15/09

				4/15	4/23
Gram Morph.			**Tubes**	**48 h**	**7 day**
Gram Test	48h		KIA	K/NC	K/K
Motility Wet Prep	NEG	medium to long RODS - some very long	H_2S	NEG	NEG
— Motility Deep	NEG	NEG	Pseudo P	NEG	NEG
— Oxidase	NEG (VERY delayed pos)		Pseudo F	NEG	NEG - TAN diffusible PIGMENT @ 7D
+ Catalase	STRONG POS		NO_3 reduced		NEG
PLATES	**48 h**	**7 day**	Gas from NO_3	NEG	NEG
Odor	NONE		NO_2 reduced		NEG
+ Pigment on swab	Yellow		Gas from NO_2	NEG	NEG
— Pigment on BAP	GREY - SPARSE @ 48h.		—OF Fructose	BLUE	BLUE
Morphology on BAP	SMOOTH		—OF Dextrose		
Beta hemolysis	NEG	POS	—OF Lactose		
+ Growth on Mac	POS	POS	—OF Maltose		
+ DNase hydrolysis	POS	POS	—OF Mannitol		
Starch hydrolysis	NEG	NEG	—OF Xylose		
Lecithinase	NEG	NEG	—OF Sucrose	V	V
Lipase	NEG	NEG	—Arginine	NEG	NEG
Rapid PYR	NEG		+ Lysine	POS	POS
Rapid LAP	POS		— Ornithine	NEG	NEG
Rapid ESC	POS		Base Control	NEG	NEG
Sensitivity to:			— Acetamide	NEG	NEG
— Penicillin (10 U)	R	R	+ Esculin	POS	POS
— Vancomycin (30 ug)	SLIGHT ZONE	R	— Gelatin	NEG	NEG
+ Colistin (10 mcg)	S - 13	S	— Indole		NEG
+ Polymyxin B (300 U)	S - 15	S	— Malonate	NEG	NEG
			+ PAD	POS	—
			— Urea/NEG 2 h	NEG	NEG
			— 6.5% NaCL	NEG	NEG
			— 10% Lactose	NEG	NEG
			— ONPG	NEG	NEG
			+ Growth 42° SCANT	POS	SCANT GROWTH

Looks MIXED @ 7 DAYS

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

Figure 332: Stenotrophomonas maltophilia isolate 12-of-50.

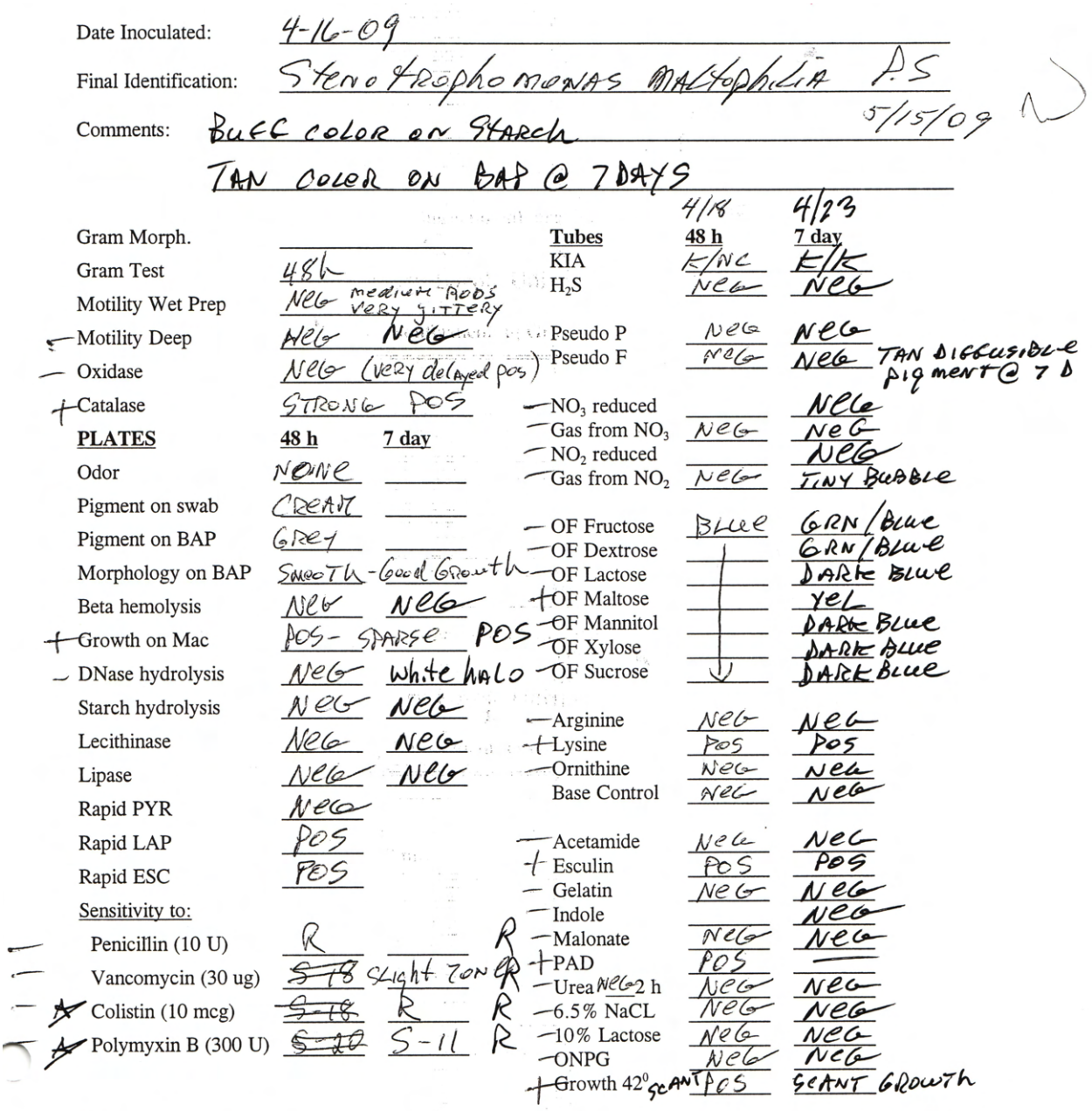


Figure 333: Stenotrophomonas maltophilia isolate 13-of-50.

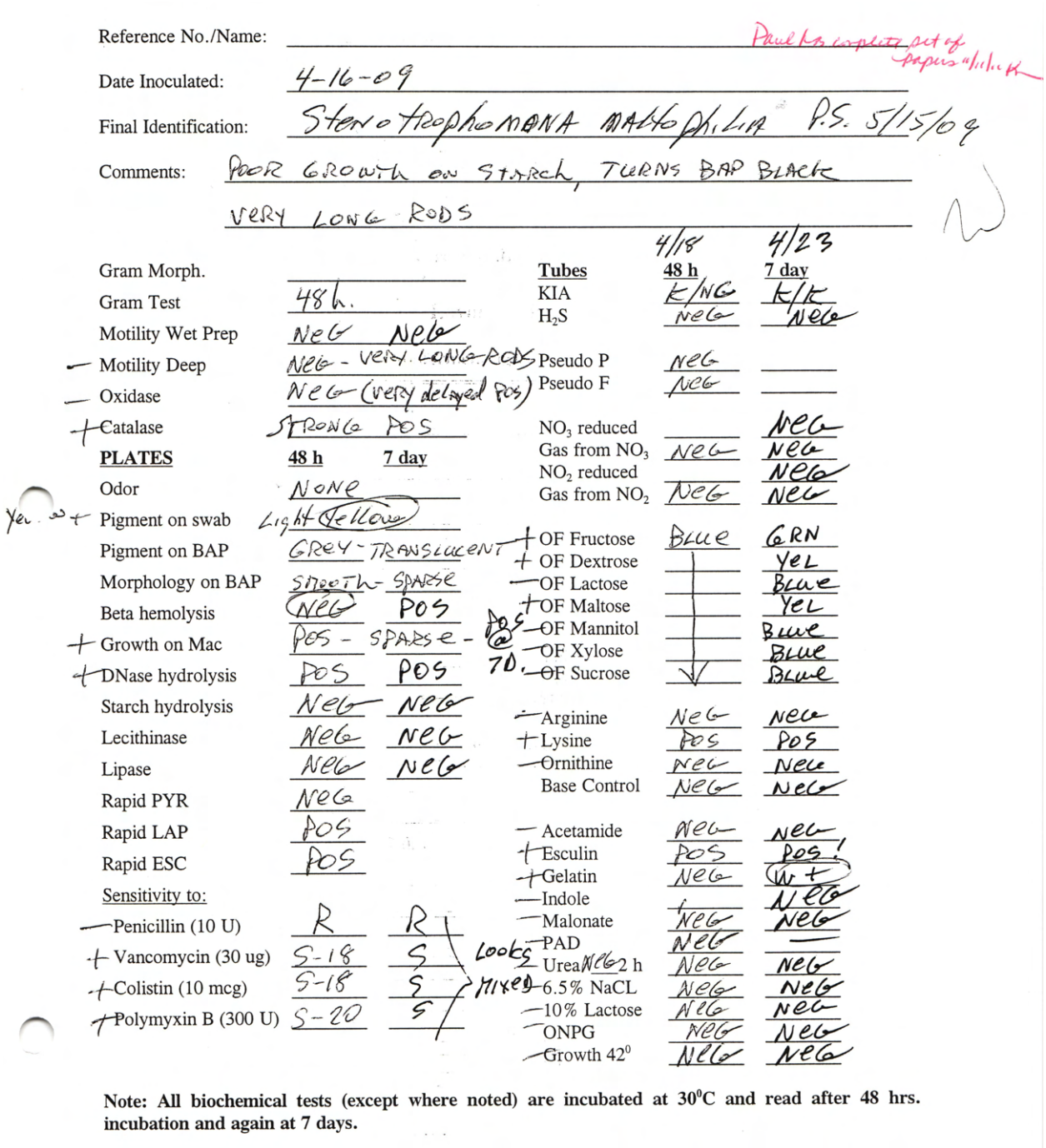


Figure 334: Stenotrophomonas maltophilia isolate 14-of-50.

Date Inoculated: 6-9-09

Final Identification: 6-16-09 S. MALtophilia 6/19/09 P.S.

Comments: SPARSE growth ON BAP IN 24h.

Gram Morph.			**Tubes**	**48 h**	**7 day**
Gram Test	7D	1D	KIA		K/K
Motility Wet Prep	Neg	Neg	H_2S		Neg
Motility Deep	Neg		Pseudo P		Neg
Oxidase	Neg		Pseudo F		Neg
Catalase	STRONG Pos		NO_3 reduced		Neg
PLATES	**48 h**	**7 day**	Gas from NO_3		Neg
Odor	None		NO_2 reduced		Neg
Pigment on swab	BUFF		Gas from NO_2		Neg
Pigment on BAP	GREY		OF Fructose		Yel/GRN
Morphology on BAP	Smooth		OF Dextrose		Yel/GRN
Beta hemolysis	Neg		OF Lactose		BLUE
Growth on Mac		~~POS~~ INHibited	OF Maltose		Yel
DNase hydrolysis		POS INOCULUM DARK BLUE	OF Mannitol		BLUE
Starch hydrolysis		Neg	OF Xylose		Yel
Lecithinase		Neg \ SCANT	OF Sucrose		BLUE
Lipase		Neg / GROWTH	Arginine		Neg
Rapid PYR	Neg		Lysine		POS
Rapid LAP	Neg		Ornithine		Neg
Rapid ESC	Neg		Base Control		Neg
Sensitivity to:			Acetamide		Neg
Penicillin (10 U)		R	Esculin		POS
Vancomycin (30 ug)		S 6-15	Gelatin		Neg
Colistin (10 mcg)		R	Indole		Neg
Polymyxin B (300 U)		R	Malonate		W+
			PAD		Neg
			Urea 2 h		Neg
			6.5% NaCL		Neg
			10% Lactose		Neg
			ONPG		Neg
			Growth 42^0		Neg

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

Figure 335: Stenotrophomonas maltophilia isolate 15-of-50.

Date Inoculated: 6-9-09

Final Identification: 6-16-09 S. maltophilia 6/19/09 P.S.

Comments:

Gram Morph.	Medium RODS		**Tubes**	**48 h**	**7 day**
Gram Test	1 DAY		KIA		K/K
Motility Wet Prep	POS		H_2S		Neg
Motility Deep	~~Neg~~		Pseudo P		Neg
Oxidase	Neg		Pseudo F		Neg
Catalase	Strong POS		NO_3 reduced		Neg
PLATES	**48 h**	**7 day**	Gas from NO_3		~~Neg~~ Tiny Bubble
Odor	None		NO_2 reduced		Neg
Pigment on swab	Buff		Gas from NO_2		Neg
Pigment on BAP	Grey		OF Fructose		Yel
Morphology on BAP	Smooth		OF Dextrose		Yel
Beta hemolysis	Neg		OF Lactose		Blue
Growth on Mac		POS	OF Maltose		Yel
DNase hydrolysis		POS Yellow	OF Mannitol		Blue
Starch hydrolysis		Neg	OF Xylose		Blue
Lecithinase		Neg	OF Sucrose		Blue
Lipase		POS	Arginine		Neg
Rapid PYR	Neg		Lysine		POS
Rapid LAP	POS		Ornithine		Neg
Rapid ESC	POS		Base Control		Neg
Sensitivity to:			Acetamide		Neg
Penicillin (10 U)		R	Esculin		POS!
Vancomycin (30 ug)		R	Gelatin		POS
Colistin (10 mcg)		R	Indole		Neg
Polymyxin B (300 U)		S-I	Malonate		POS
			PAD		POS
			Urea 2 h		Neg
			6.5% NaCL		Neg
			10% Lactose		Neg
			ONPG		POS
			Growth 42^0		POS

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

Figure 336: Stenotrophomonas maltophilia isolate 16-of-50.

Date Inoculated: 6-8-09

Final Identification: 6-16-09 S. MALtophilia 6/19/09 A.E.

Comments:

Gram Morph.	Medium Rods		**Tubes**	**48 h**	**7 day**
Gram Test	4 DAY		KIA		K/K
Motility Wet Prep	POS VERY MOTILE		H_2S		H_2S POS AT INTERFACE
Motility Deep	POS		Pseudo P		NEG
Oxidase	NEG		Pseudo F		NEG
Catalase	STRONG POS		NO_3 reduced		POS
PLATES	**48 h**	**7 day**	Gas from NO_3		tiny Bubble
Odor	NONE		NO_2 reduced		NEG
Pigment on swab	Light Yel		Gas from NO_2		TINY Bubble - NEG
Pigment on BAP	GREY		OF Fructose		YEL
Morphology on BAP	Smooth		OF Dextrose		YEL
Beta hemolysis	NEG		OF Lactose		BLUE
Growth on Mac		POS	OF Maltose		YEL
DNase hydrolysis		POS Inoculum Yellow	OF Mannitol		BLUE
Starch hydrolysis		NEG	OF Xylose		BLUE
Lecithinase		NEG	OF Sucrose		BLUE/GRN
Lipase		POS	Arginine		NEG
Rapid PYR	NEG		Lysine		POS
Rapid LAP	POS		Ornithine		NEG
Rapid ESC	POS		Base Control		NEG
Sensitivity to:			Acetamide		NEG
Penicillin (10 U)		R	Esculin		POS
Vancomycin (30 ug)		R	Gelatin		POS
Colistin (10 mcg)		R	Indole		NEG
Polymyxin B (300 U)		S-12	Malonate		NEG
			PAD		NEG
			Urea 2 h		NEG
			6.5% NaCL		NEG
			10% Lactose		NEG
			ONPG		NEG
			Growth 42^0		Inhibited

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

Figure 337: Stenotrophomonas maltophilia isolate 17-of-50.

Date Inoculated: 9-8-09

Final Identification: Steno trophomonas MALTophiLiA P.S.

Comments: 9/10/09

				9/10/09	9/14/09
Gram Morph.	24h		**Tubes**	**48 h**	**7 day**
Gram Test	MEDIUM RODS - POS		KIA	K/NC	K/K
Motility Wet Prep	NEG SMALL RODS + CB		H_2S	NEG	SLIGHT H_2S
+ Motility Deep	POS POS		Pseudo P	NEG	NEG
Oxidase	NEG (VERY delayed)		Pseudo F	NEG	NEG
Catalase	STRONG POS		NO_3 reduced		
PLATES	**48 h**	**7 day**	Gas from NO_3	NEG	NEG
Odor	NONE		NO_2 reduced		
Pigment on swab	BUFF		Gas from NO_2	NEG	NEG
Pigment on BAP	LIGHT GREY		+ OF Fructose	BLUE	YEL
Morphology on BAP	SMOOTH, ENTIRE		+ OF Dextrose	BLUE	YEL/GRN
Beta hemolysis	NEG		NEG OF Lactose	BLUE	BLUE
Growth on Mac	POS (SPARSE) POS		+ OF Maltose	YEL/GRN	YEL
DNase hydrolysis	POS	POS!	NEG OF Mannitol	BLUE	BLUE
Starch hydrolysis	NEG	NEG	NEG OF Xylose	BLUE	BLUE
Lecithinase	NEG	NEG	NEG OF Sucrose	BLUE	BLUE
Lipase	NEG	NEG	Arginine	NEG	NEG
Rapid PYR	NEG		Lysine	POS	POS
Rapid LAP	POS		Ornithine	NEG	NEG
Rapid ESC	POS		Base Control	NEG	NEG
Sensitivity to:			Acetamide	NEG	NEG
Penicillin (10 U)	R	R	Esculin	POS	POS
Vancomycin (30 ug)	R	R	Gelatin	NEG	
Colistin (10 mcg)	R	R	Indole		
Polymyxin B (300 U)	R	R	Malonate	NEG	~~NEG~~ POS
			PAD	POS (WEAK)	
			Urea NEG 2 h	NEG	NEG
			6.5% NaCL	NEG	POS
			10% Lactose	NEG	NEG
			ONPG	NEG	NEG
			Growth 42^0	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 338: Stenotrophomonas maltophilia isolate 18-of-50.

Date Inoculated: 9-22-09

Final Identification: STENOTROPHOMONAS MALTOPHILIA 10/6/09

Comments: ATYPICAL - MALTOSE NEGATIVE P.S.

Stenotrophomonas maltophilia per DNA sequencing by ARUP LABS

				24	10/6
Gram Morph.			**Tubes**	~~48 h~~	**7 day**
Gram Test	24h		KIA	K/NC	K/K
Motility Wet Prep	POS LONG, MEDIUM AND SHORT RODS		H_2S	NEG	NEG
Motility Deep	NEG	POS	Pseudo P	NEG	NEG
Oxidase	NEG		Pseudo F	NEG	NEG
Catalase	POS		NO_3 reduced		NEG
PLATES	24 ~~48 h~~	**7 day**	Gas from NO_3	NEG	NEG
Odor	NONE		NO_2 reduced		NEG
Pigment on swab	OFF white		Gas from NO_2	NEG	NEG
Pigment on BAP	LIGHT GREY		OF Fructose	BLUE	BLUE
Morphology on BAP	CLEAR TRANSLUCENT		OF Dextrose		
Beta hemolysis	NEG		OF Lactose		
Growth on Mac	SPARSE	POS LAVENDER COLONIES	OF Maltose		
DNase hydrolysis	NEG	POS	OF Mannitol		
Starch hydrolysis	NEG	NEG	OF Xylose		
Lecithinase	NEG	NEG	OF Sucrose		
Lipase	NEG	POS !	Arginine	NEG	NEG
Rapid PYR	NEG		Lysine	WT ?	POS
Rapid LAP	POS		Ornithine	NEG	NEG
Rapid ESC	POS		Base Control	NEG	NEG
~~Sensitivity to:~~			Acetamide	NEG	NEG !
Penicillin (10 U)	R	R	Esculin	NEG	POS !
Vancomycin (30 ug)	R	R	Gelatin	NEG	POS
Colistin (10 mcg)	S	S-10	Indole		NEG
Polymyxin B (300 U)	S	S-11	Malonate	NEG	POS !
			PAD	NEG	—
			Urea NEG h	NEG	NEG
			6.5% NaCL	NEG	NEG
			10% Lactose	NEG	NEG
			ONPG	NEG	NEG
			Growth 42^0	NEG	NEG

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

Figure 339: Stenotrophomonas maltophilia isolate 19-of-50.

Date Inoculated: 6-21-10

Final Identification: Stenotrophomonas maltophilia P.S / 6/29/10

Comments: Yellow on BAP @ 4 DAYS

Gram Morph.				**Tubes**	~~48 h~~ 4 DAY	**7 day**
Gram Test	24h			KIA	K/K	
Motility Wet Prep	Pos- med Rods very motile			H_2S	Neg	
Motility Deep	Pos			Pseudo P	Neg	
Oxidase	Slow Pos- 1 min			Pseudo F	Neg	
Catalase	Neg			NO_3 reduced		
PLATES	**48 h**	**7 day**		Gas from NO_3	Neg	
Odor	Ammonia			NO_2 reduced		
Pigment on swab	Buff-cream			Gas from NO_2	Neg	
Pigment on BAP	Grey - Yellow 4D			OF Fructose	Yel	
Morphology on BAP	Smooth			OF Dextrose	Yel	
Beta hemolysis	Neg			OF Lactose	Yel	
Growth on Mac	Pos	Pos		OF Maltose	Yel	
DNase hydrolysis	Neg			OF Mannitol	Blue	
Starch hydrolysis	Neg			OF Xylose	Blue/Grn	
Lecithinase	Neg			OF Sucrose	Yel	
Lipase	Pos			Arginine	Neg	
Rapid PYR	Neg			Lysine	Pos	
Rapid LAP	Pos!			Ornithine	Neg	
Rapid ESC	Pos!			Base Control	Neg	
Sensitivity to:				Acetamide	Neg	
Penicillin (10 U)	R			Esculin	Pos	
Vancomycin (30 ug)	R			Gelatin	Pos (wk)	
Colistin (10 mcg)	S-I			Indole		
Polymyxin B (300 U)	S-I			Malonate	Pos	
				PAD	Neg	
				Urea Neg 2 h	Slight Pink	
				6.5% NaCL	Pos	
				10% Lactose	Neg	
				ONPG	Neg	
				Growth 42°	Neg	

Diffusible Brown pgmt

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

Figure 340: Stenotrophomonas maltophilia isolate 20-of-50.

Date Inoculated: 7-19-10

Final Identification: Stenotrophomonas maltophilia

Comments: Light Butterscotch on Starch @ 48h

Gram Morph.			**Tubes**	**48 h**	**7 day**
Gram Test	24hr		KIA	K/NC	
Motility Wet Prep	Pos- mod rods Extremely motile		H_2S	Neg	
Motility Deep	Pos		Pseudo P	Neg	
Oxidase	Slow Pos - 15 sec		Pseudo F	Neg	
Catalase	Strong Pos		NO_3 reduced		
PLATES	**48 h**	**7 day**	Gas from NO_3	Neg	
Odor			NO_2 reduced		
Pigment on swab	CREAM		Gas from NO_2	Neg	
Pigment on BAP	DARK GREY		OF Fructose	Yel	
Morphology on BAP	Smooth-Shinny		OF Dextrose	GRN	
Beta hemolysis	Neg		OF Lactose	GRN	
Growth on Mac	Pos		OF Maltose	Yel	
DNase hydrolysis	Pos		OF Mannitol	Blue	
Starch hydrolysis	Neg		OF Xylose	Blue	
Lecithinase	Neg		OF Sucrose	Blue	
Lipase	Pos		Arginine	Neg	
Rapid PYR	Neg		Lysine		
Rapid LAP	Pos		Ornithine		
Rapid ESC	Pos		Base Control		
Sensitivity to:			Acetamide	Neg	
Penicillin (10 U)	R		Esculin	Pos	
Vancomycin (30 ug)	R		Gelatin	Pos	
Colistin (10 mcg)	S-13		Indole		
Polymyxin B (300 U)	S-14		Malonate	Pos	
			PAD	Pos	
			Urea NC 62 h	SLIGHT PINK	
			6.5% NaCL	W+	
			10% Lactose	Neg	
			ONPG	Neg	
			Growth 42^0	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 341: Stenotrophomonas maltophilia isolate 21-of-50.

Date Inoculated: 8-13-10

Final Identification: Stenotrophomonas maltophilia PS 8/20/10

Comments: Confirmed as S. maltophilia by Dr. L. Puma 16S rRNA

Gram Morph.		
Gram Test	72hrs	
Motility Wet Prep	POS - med RODS	
Motility Deep	POS POS	
Oxidase	POS (30 sec)	
Catalase	STRONG POS	
PLATES	**48 h**	**7 day**
Odor	NONE	
Pigment on swab	CREAM	
Pigment on BAP	Yellow-Grey	
Morphology on BAP	SMOOTH	
Beta hemolysis	NEG	
Growth on Mac	POS	POS
DNase hydrolysis	POS	POS
Starch hydrolysis	NEG	NEG
Lecithinase	NEG	NEG
Lipase	POS	POS
Rapid PYR	NEG	
Rapid LAP	POS	
Rapid ESC	POS	
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

Tubes	**~~48 h~~ 72h**	**7 day**	
KIA	K/NC	K/K	
H_2S	NEG	NEG	
Pseudo P	NEG	NEG	RED diffusible pigment PYORUBIN?
Pseudo F	NEG	NEG	
NO_3 reduced		POS	
Gas from NO_3	NEG	NEG	
NO_2 reduced		NEG	
Gas from NO_2	NEG	NEG	
OF Fructose	GRN	GRN	+
OF Dextrose	GRN	GRN	+
OF Lactose	GRN	GRN	+
OF Maltose	YEL	YEL	+
OF Mannitol	BLUE	BLUE	
OF Xylose	BLUE	BLUE	
OF Sucrose	GRN	GRN	+
Arginine	NEG	NEG	
Lysine	POS	POS	
Ornithine	NEG	NEG	
Base Control	NEG	NEG	
Acetamide	NEG	NEG	
Esculin	POS	POS !	
Gelatin	NEG	POS !	
Indole		NEG	
Malonate	POS	POS	
PAD	POS		
Urea NEG 2 h	SLIGHT PINK	SLANT	NEG
6.5% NaCL	POS	POS	
10% Lactose	NEG	NEG	
ONPG	NEG NEG	POS !	
Growth 42°	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 342: Stenotrophomonas maltophilia isolate 22-of-50.

Date Inoculated: 11-16-11

Final Identification: Stenotrophomonas maltophilia 12/1/11 P.S.

Comments: Brown diffusible pigment in gelatin, motility, pseudo F

12/1/11 15 DAYS

Gram Morph.			**Tubes**	**48 h**	**7 day**
Gram Test	24h.		KIA		K/K
Motility Wet Prep	Neg		H_2S		Neg
Motility Deep	Pos		Pseudo P		Neg
Oxidase	Slow Pos (1 min)		Pseudo F		Neg
Catalase	Strong Pos		NO_3 reduced		Neg
PLATES	**48 h**	**7 day**	Gas from NO_3		Neg
Odor	None		NO_2 reduced		Neg
Pigment on swab	Yellow		Gas from NO_2		Neg
Pigment on BAP	Grey		OF Fructose		GRN-light
Morphology on BAP	Slow Growth @ 24h		OF Dextrose		Yel
Beta hemolysis	Neg		OF Lactose		GRN/Blue* state
Growth on Mac	Neg	Pos	OF Maltose		Yel
DNase hydrolysis	?	Pos	OF Mannitol		Dark Blue
Starch hydrolysis	Neg	Neg	OF Xylose		Dark Blue
Lecithinase	Neg	Neg	OF Sucrose		GRN/Blue* state
Lipase	Neg	Neg	Arginine		Neg
Rapid PYR	Neg		Lysine		Pos
Rapid LAP	W+		Ornithine		Neg
Rapid ESC	Pos		Base Control		Neg
Sensitivity to:			Acetamide		Neg
Penicillin (10 U)	R		Esculin		Pos
Vancomycin (30 ug)	R		Gelatin		Pos
Colistin (10 mcg)	S-15.8		Indole		Neg
Polymyxin B (300 U)	S-12.2		Malonate		Pos
			PAD		Neg
			Urea Neg 2 h	Neg	Neg
			6.5% NaCL		Neg
			10% Lactose		Neg
			ONPG		Neg
			Growth 42°		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 343: Stenotrophomonas maltophilia isolate 23-of-50.

Date Inoculated: 9-9-12

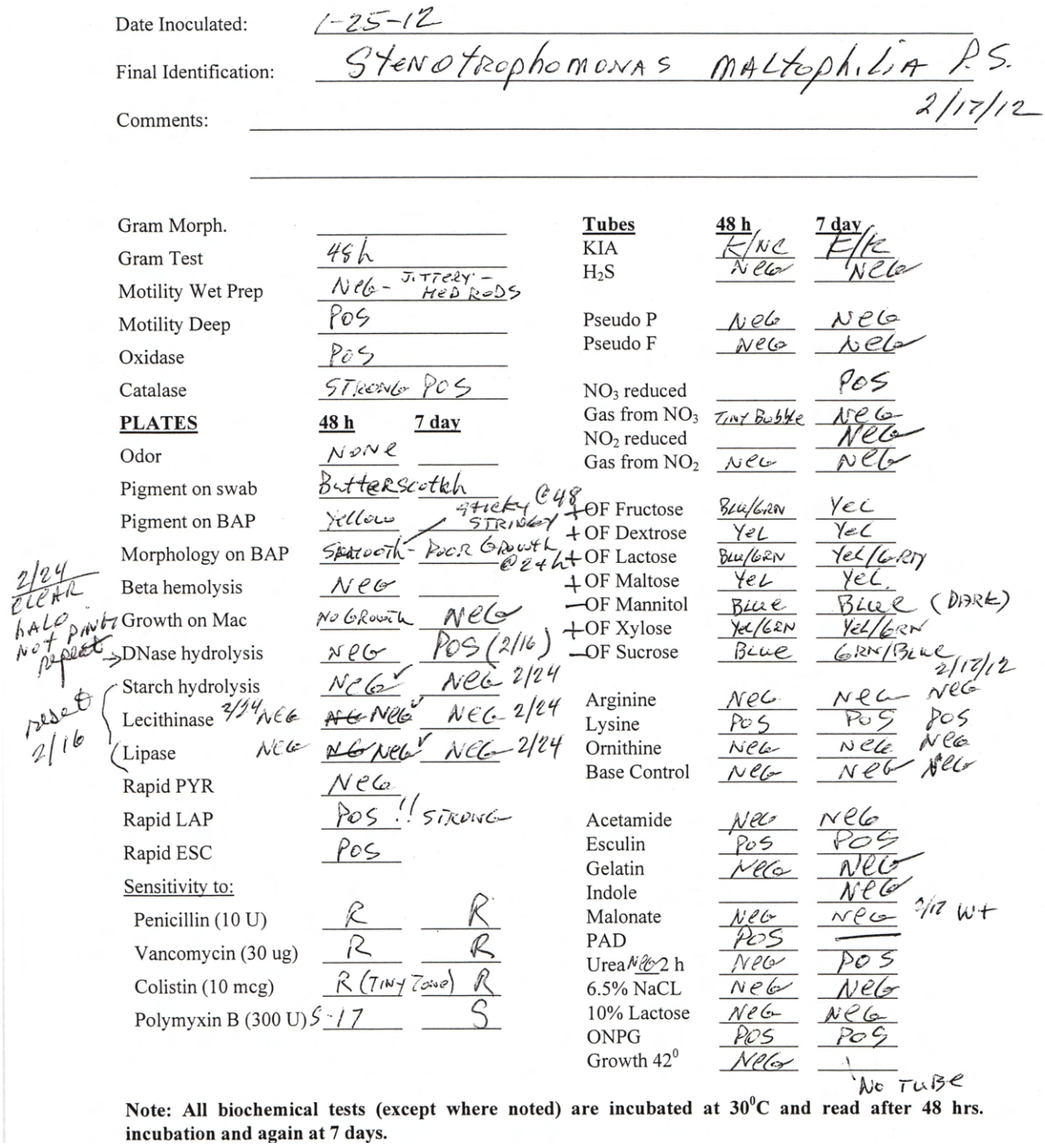
Final Identification: Stenotrophomonas maltophilia P.S

Comments: LIGHT Yellow on STARCH @ 72 h 12/22/11

				12/12	12/22/11 13 DAYS
Gram Morph.			**Tubes**	72 ~~48 h~~	**7 day**
Gram Test	72 h		KIA	K/NC	K/K
Motility Wet Prep	Pos med Rods		H_2S	Neg	Neg
Motility Deep	POS	POS	Pseudo P	Neg	Neg
Oxidase	Pos (20 sec)		Pseudo F	Neg	Neg
Catalase	STRONG POS		NO_3 reduced		POS
PLATES	**48 h**	**7 day**	Gas from NO_3	Neg	Neg
Odor	Slight AMMONIA		NO_2 reduced		Neg
Pigment on swab	TAN		Gas from NO_2	TINY Bubble	TINY BUBBLE
Pigment on BAP	Grey-Yellowish		OF Fructose	Yel	Yel
Morphology on BAP	Smooth - entire		OF Dextrose	Yel	Yel
Beta hemolysis	Neg		OF Lactose	Blue	Yel
Growth on Mac	POS	POS	OF Maltose	Yel	Yel
DNase hydrolysis	Neg	Neg	OF Mannitol	Blue	Blue
Starch hydrolysis	Neg	Neg	OF Xylose	Blue	Blue
Lecithinase	Neg	Neg	OF Sucrose	Yel	Yel/GRN
Lipase	Neg	POS	Arginine	Neg	Neg
Rapid PYR	Neg		Lysine	POS	POS
Rapid LAP	POS		Ornithine	Neg	Neg
Rapid ESC	POS		Base Control	Neg	Neg
Sensitivity to:			Acetamide	Neg	Neg
Penicillin (10 U)	R	R	Esculin	POS	POS
Vancomycin (30 ug)	R	R	Gelatin	Neg	POS
Colistin (10 mcg)	R	R- SMALL ZONE	Indole		
Polymyxin B (300 U)	S-12	S	Malonate	POS	POS
			PAD	POS	—
			Urea Neg 2 h	Neg	Neg
			6.5% NaCL	Neg	POS
			10% Lactose	Neg	Neg
			ONPG	Neg	POS
			Growth 42^0	POS	POS

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

Figure 344: Stenotrophomonas maltophilia isolate 24-of-50.



Date Inoculated: 1-25-12

Final Identification: Stenotrophomonas maltophilia P.S. 2/17/12

Comments:

Gram Morph.		
Gram Test	48h	
Motility Wet Prep	Neg - Jittery - Red Rods	
Motility Deep	Pos	
Oxidase	Pos	
Catalase	Strong Pos	
PLATES	**48 h**	**7 day**
Odor	None	
Pigment on swab	Butterscotch	
Pigment on BAP	Yellow	sticky @48 stringy
Morphology on BAP	Smooth - Poor Growth @24h	
Beta hemolysis	Neg	
Growth on Mac	No Growth	Neg
DNase hydrolysis	Neg	Pos (2/16)
Starch hydrolysis	Neg ✓	Neg 2/24
Lecithinase	2/24 Neg ~~Neg~~ Neg ✓	Neg 2/24
Lipase	Neg ~~Neg~~ Neg ✓	Neg 2/24
Rapid PYR	Neg	
Rapid LAP	Pos !! Strong	
Rapid ESC	Pos	
Sensitivity to:		
Penicillin (10 U)	R	R
Vancomycin (30 ug)	R	R
Colistin (10 mcg)	R (Tiny Zone)	R
Polymyxin B (300 U)	S-17	S

2/24 clear halo not pinty repeat

reset 2/16

Tubes	48 h	7 day
KIA	K/NC	K/K
H_2S	Neg	Neg
Pseudo P	Neg	Neg
Pseudo F	Neg	Neg
NO_3 reduced		Pos
Gas from NO_3	Tiny Bubble	Neg
NO_2 reduced		Neg
Gas from NO_2	Neg	Neg
+ OF Fructose	Blue/Grn	Yel
+ OF Dextrose	Yel	Yel
+ OF Lactose	Blue/Grn	Yel/Grn
+ OF Maltose	Yel	Yel
− OF Mannitol	Blue	Blue (Dark)
+ OF Xylose	Yel/Grn	Yel/Grn
− OF Sucrose	Blue	Grn/Blue 2/17/12
Arginine	Neg	Neg Neg
Lysine	Pos	Pos Pos
Ornithine	Neg	Neg Neg
Base Control	Neg	Neg Neg
Acetamide	Neg	Neg
Esculin	Pos	Pos
Gelatin	Neg	Neg
Indole		Neg
Malonate	Neg	Neg 2/17 Wt
PAD	Pos	—
Urea Neg 2 h	Neg	Pos
6.5% NaCL	Neg	Neg
10% Lactose	Neg	Neg
ONPG	Pos	Pos
Growth 42^0	Neg	No Tube

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

Figure 345: Stenotrophomonas maltophilia isolate 25-of-50.

Date Inoculated: 1-9-12

Final Identification: Stenotrophomonas maltophilia 1/26/12 P.S

Comments: Yellow on Starch + BAP

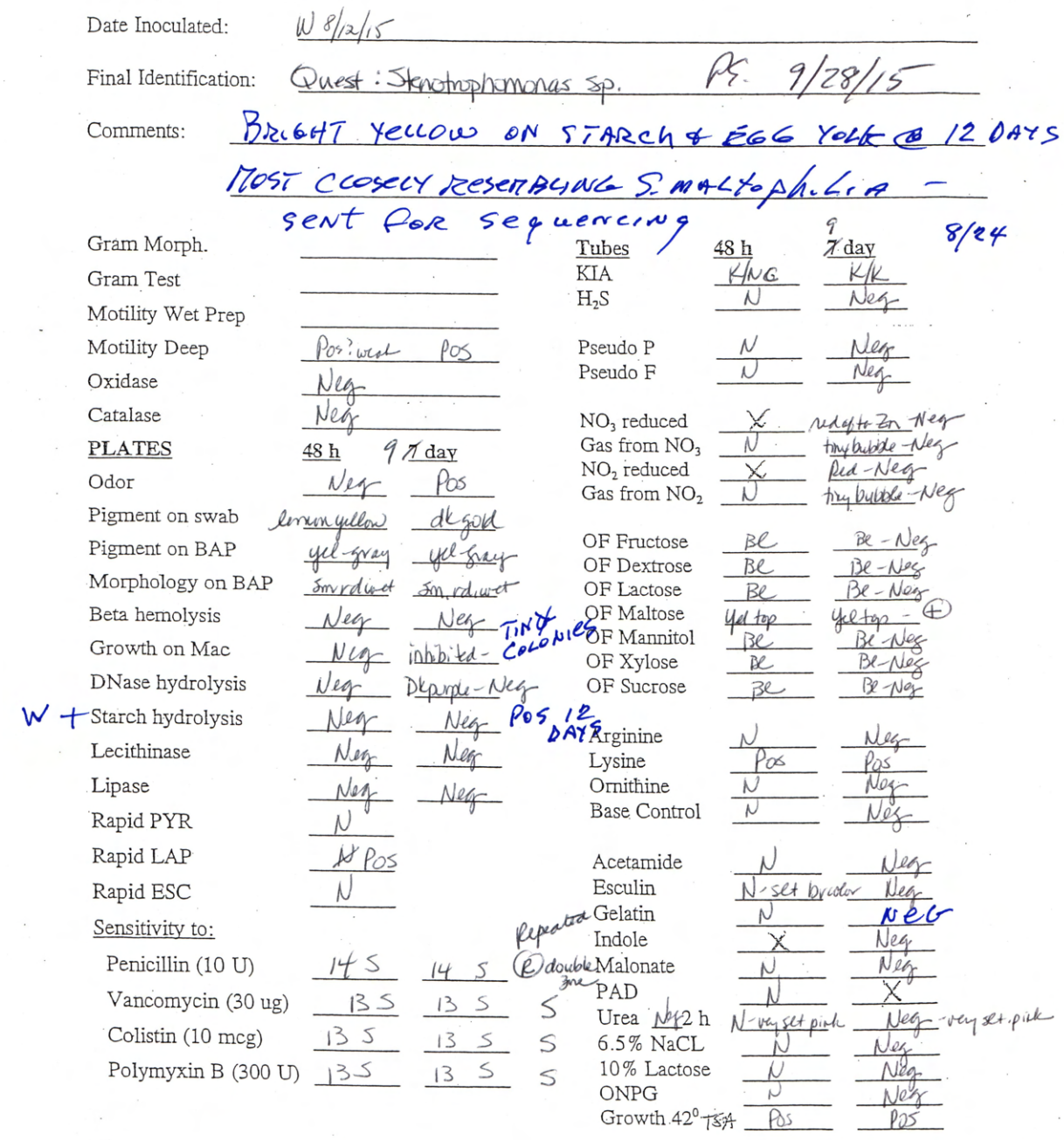
Gram Morph.		
Gram Test	48	
Motility Wet Prep	POS - Rods	
Motility Deep	POS POS	
Oxidase	NEG	
Catalase	POS	
PLATES	**48 h**	**7 day**
Odor	SLIGHT ODOR	
Pigment on swab	CREAM	
Pigment on BAP	Yellow	
Morphology on BAP	SMOOTH	
Beta hemolysis	NEG	
Growth on Mac	POS	POS
DNase hydrolysis	NEG	NEG
Starch hydrolysis	NEG	NEG
Lecithinase	NEG	NEG
Lipase	POS	POS
Rapid PYR	NEG	
Rapid LAP	POS	
Rapid ESC	POS	
Sensitivity to:		
Penicillin (10 U)	R	R
Vancomycin (30 ug)	R	R
Colistin (10 mcg)	S-11	S
Polymyxin B (300 U)	S-12	S

	1/11/12	1/18/12
Tubes	**48 h**	**7 day**
KIA	K/NC	K/K
H_2S	NEG	NEG
Pseudo P	NEG	NEG
Pseudo F	NEG	NEG
NO_3 reduced		NEG
Gas from NO_3	NEG	NEG
NO_2 reduced		NEG
Gas from NO_2	NEG	NEG
+ OF Fructose	YEL	YEL/GRN
+ OF Dextrose	YEL/GRN	YEL/GRN
+ OF Lactose	GRN	GRN
+ OF Maltose	YEL	YEL
— OF Mannitol	BLUE	BLUE
+ OF Xylose	GRN	YEL/GRN
+ OF Sucrose	GRN	GRN
Arginine	NEG	NEG
Lysine	POS	POS
Ornithine	NEG	NEG
Base Control	NEG	NEG
Acetamide	NEG	NEG
Esculin	POS	POS
Gelatin	POS	POS
Indole		NEG
Malonate	POS	POS
PAD	POS	—
Urea NEG 2 h	NEG	NEG
6.5% NaCL	W+	POS
10% Lactose	NEG	NEG
ONPG	NEG	POS
Growth 42^0	POS	POS

Diffusible Brown Pigment

Note: All biochemical tests (except where noted) are incubated at 30^0C 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: Stenotrophomonas sp. PS 9/28/15

Comments: BRIGHT YELLOW ON STARCH & EGG YOLK @ 12 DAYS
MOST CLOSELY RESEMBLING S. MALTOPHILIA –
SENT FOR SEQUENCING 8/24

Gram Morph.		
Gram Test		
Motility Wet Prep		
Motility Deep	Pos? weak	Pos
Oxidase	Neg	
Catalase	Neg	
PLATES	48 h	9 7 day
Odor	Neg	Pos
Pigment on swab	lemon yellow	dk gold
Pigment on BAP	yel-gray	yel-gray
Morphology on BAP	sm, rd, wet	sm, rd, wet
Beta hemolysis	Neg	Neg
Growth on Mac	Neg	inhibited – TINY COLONIES
DNase hydrolysis	Neg	Dk purple – Neg
W + Starch hydrolysis	Neg	Neg POS 12 DAYS
Lecithinase	Neg	Neg
Lipase	Neg	Neg
Rapid PYR	N	
Rapid LAP	W Pos	
Rapid ESC	N	
Sensitivity to:		
Penicillin (10 U)	14 S	14 S
Vancomycin (30 ug)	13 S	13 S S
Colistin (10 mcg)	13 S	13 S S
Polymyxin B (300 U)	13 S	13 S S

Tubes	48 h	9 7 day
KIA	K/NG	K/K
H_2S	N	Neg
Pseudo P	N	Neg
Pseudo F	N	Neg
NO_3 reduced	X	reduced to Zn Neg
Gas from NO_3	N	tiny bubble – Neg
NO_2 reduced	X	Red – Neg
Gas from NO_2	N	tiny bubble – Neg
OF Fructose	Be	Be – Neg
OF Dextrose	Be	Be – Neg
OF Lactose	Be	Be – Neg
OF Maltose	Yel top	Yel top – (+)
OF Mannitol	Be	Be – Neg
OF Xylose	Be	Be – Neg
OF Sucrose	Be	Be – Neg
Arginine	N	Neg
Lysine	Pos	Pos
Ornithine	N	Neg
Base Control	N	Neg
Acetamide	N	Neg
Esculin	N – set brn color	Neg
Gelatin	N	NEG
Indole	X	Neg
Malonate	N	Neg
PAD	N	X
Urea Neg 2 h	N – very set pink	Neg – very set. pink
6.5% NaCL	N	Neg
10% Lactose	N	Neg
ONPG	N	Neg
Growth 42° TSA	Pos	Pos

Repeated (R) double zone

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

Figure 347: Stenotrophomonas maltophilia isolate 27-of-50.

Date Inoculated: 8-19-09

Final Identification: Stenotrophomonas maltophilia 8/26/09 PS

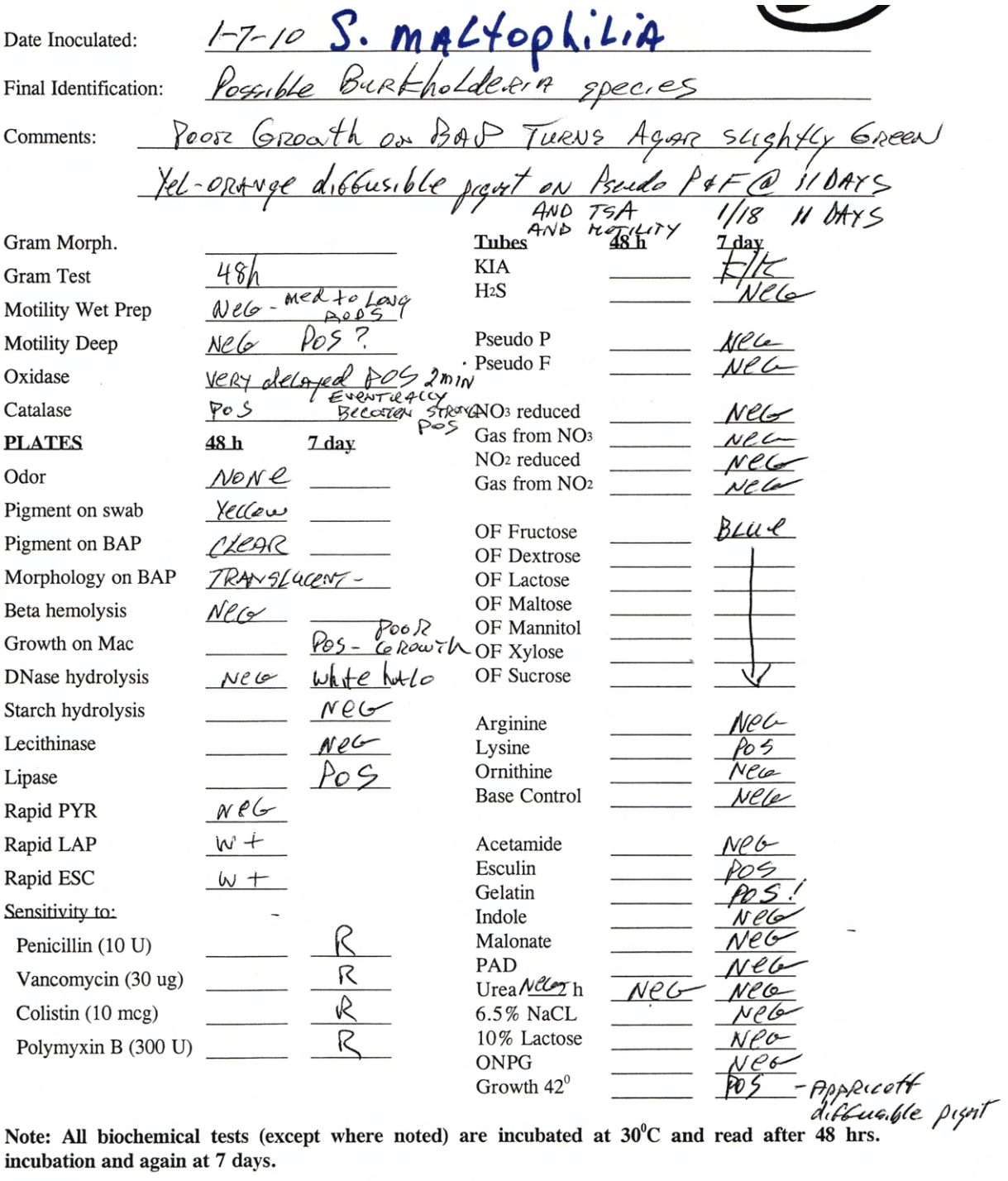
Comments:

Gram Morph.			**Tubes**	**48 h** (8/21)	**7 day**
Gram Test	48h		KIA	NC/NC	K/NC
Motility Wet Prep	Neg - sm. rods & cb		H_2S	Neg	Neg
Motility Deep	Neg	Neg	Pseudo P	Neg	Neg
Oxidase	Neg		Pseudo F	Neg	Neg
Catalase	Pos		NO_3 reduced		Neg
PLATES	**48 h**	**7 day**	Gas from NO_3	Neg	Neg
Odor	None		NO_2 reduced		Neg
Pigment on swab	Light Yellow		Gas from NO_2	Neg	Neg
Pigment on BAP	Grey		OF Fructose	GRN	GRN
Morphology on BAP	Smooth, entire		OF Dextrose	GRN	GRN
Beta hemolysis	Neg		OF Lactose	Blue	Blue
Growth on Mac	Pos	Pos	OF Maltose	Yel	Yel
DNase hydrolysis	Pos	Pos	OF Mannitol	Blue	Blue
Starch hydrolysis	Neg	Neg	OF Xylose	Blue	Blue
Lecithinase	Neg	Neg	OF Sucrose	Blue	Blue
Lipase	Neg	Pos	Arginine	Neg	Neg
Rapid PYR	Neg		Lysine	Pos	Pos
Rapid LAP	Pos		Ornithine	Neg	Neg
Rapid ESC	Pos		Base Control	Neg	Neg
Sensitivity to:			Acetamide	Neg	Neg
Penicillin (10 U)	R	R	Esculin	Neg	Neg
Vancomycin (30 ug)	R	R	Gelatin	Neg	~~Pos~~
Colistin (10 mcg)	S-13	S	Indole		Neg
Polymyxin B (300 U)	S-16	S	Malonate	Neg	Neg
			PAD	Pos	—
			Urea Neg 2 h	Neg	Neg
			6.5% NaCL	Wt	Wt
			10% Lactose	Neg	Neg
			ONPG	Neg	Neg
			Growth 42°	Neg	Neg

Brown pigment

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.



Date Inoculated: 1-7-10 S. maltophilia

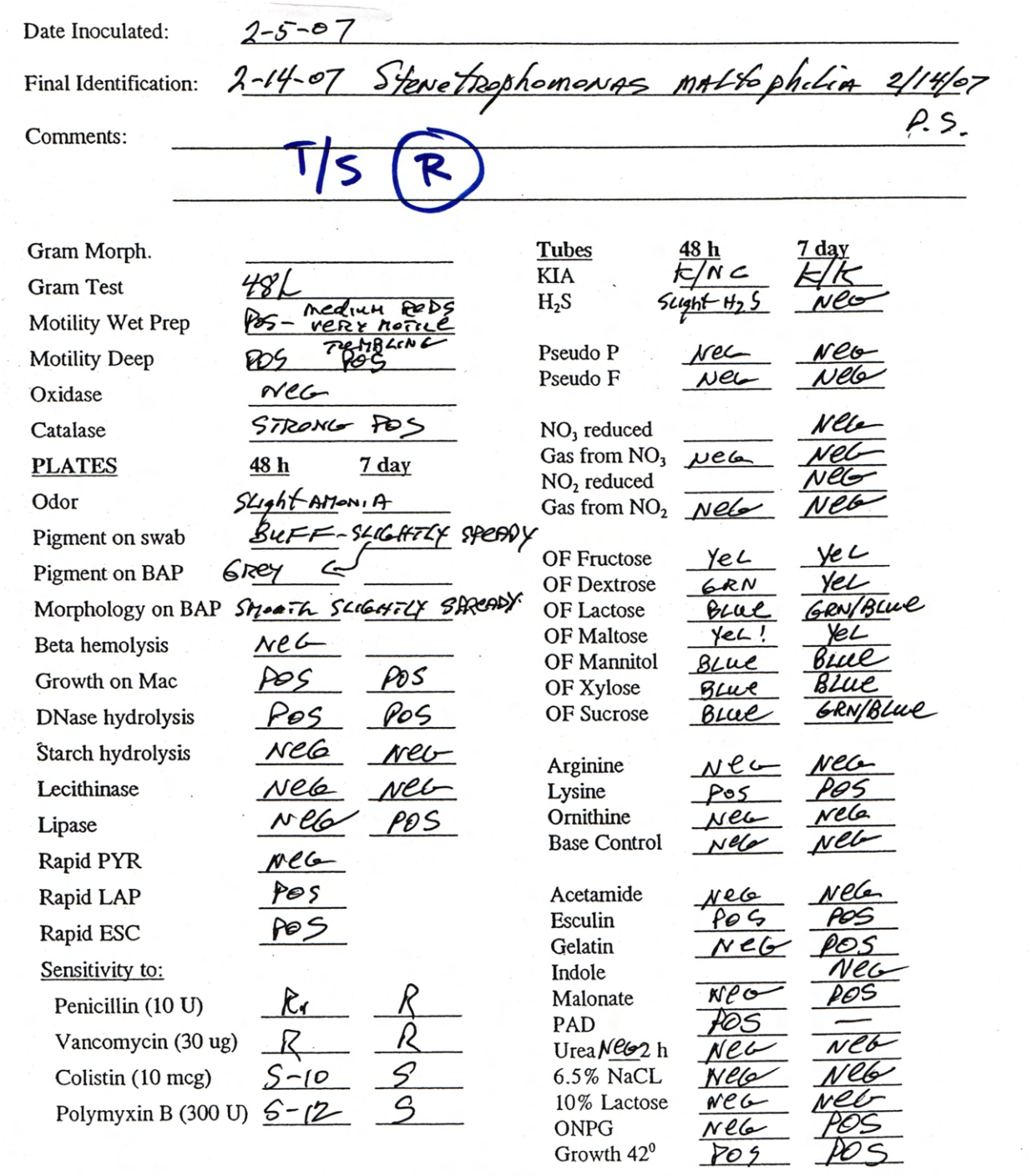
Final Identification: Possible Burkholderia species

Comments: Poor Growth on BAP Turns Agar slightly Green
Yel-orange diffusible pigment on Pseudo P&F @ 11 DAYS AND TSA AND MOTILITY 1/18 11 DAYS

			Tubes	48 h	7 day
Gram Morph.			KIA		R/K
Gram Test	48h		H_2S		Neg
Motility Wet Prep	Neg - med to Long Pos				
Motility Deep	Neg Pos ?		Pseudo P		Neg
Oxidase	very delayed Pos 2 min		Pseudo F		Neg
Catalase	Pos Eventually Becomes Strong Pos		NO_3 reduced		Neg
PLATES	**48 h**	**7 day**	Gas from NO_3		Neg
			NO_2 reduced		Neg
Odor	None		Gas from NO_2		Neg
Pigment on swab	Yellow				
Pigment on BAP	Clear		OF Fructose		Blue
Morphology on BAP	Translucent -		OF Dextrose		
Beta hemolysis	Neg		OF Lactose		
Growth on Mac		Pos - Poor Growth	OF Maltose		
DNase hydrolysis	Neg	White halo	OF Mannitol		
Starch hydrolysis		Neg	OF Xylose		
Lecithinase		Neg	OF Sucrose		
Lipase		Pos			
Rapid PYR	Neg		Arginine		Neg
Rapid LAP	W+		Lysine		Pos
Rapid ESC	W+		Ornithine		Neg
Sensitivity to:	-		Base Control		Neg
Penicillin (10 U)		R			
Vancomycin (30 ug)		R	Acetamide		Neg
Colistin (10 mcg)		R	Esculin		Pos
Polymyxin B (300 U)		R	Gelatin		Pos !
			Indole		Neg
			Malonate		Neg
			PAD		Neg
			Urea Neg 2 h	Neg	Neg
			6.5% NaCL		Neg
			10% Lactose		Neg
			ONPG		Neg
			Growth 42^0		Pos - Apricot diffusible pigment

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

Figure 349: Stenotrophomonas maltophilia isolate 29-of-50.



Date Inoculated: 2-5-07

Final Identification: 2-14-07 Stenetrophomonas maltophilia 2/14/07 P.S.

Comments: T/S (R)

Gram Morph.		
Gram Test	48L	
Motility Wet Prep	POS - medium rods very motile	
Motility Deep	POS TUMBLING POS	
Oxidase	NEG	
Catalase	STRONG POS	
PLATES	**48 h**	**7 day**
Odor	Slight AMONIA	
Pigment on swab	BUFF - SLIGHTLY SPREADY	
Pigment on BAP	GREY	
Morphology on BAP	Smooth SLIGHTLY SPREADY	
Beta hemolysis	NEG	
Growth on Mac	POS	POS
DNase hydrolysis	POS	POS
Starch hydrolysis	NEG	NEG
Lecithinase	NEG	NEG
Lipase	NEG	POS
Rapid PYR	NEG	
Rapid LAP	POS	
Rapid ESC	POS	
Sensitivity to:		
Penicillin (10 U)	R	R
Vancomycin (30 ug)	R	R
Colistin (10 mcg)	S-10	S
Polymyxin B (300 U)	S-12	S

Tubes	**48 h**	**7 day**
KIA	K/NC	K/K
H_2S	Slight H_2S	NEG
Pseudo P	NEG	NEG
Pseudo F	NEG	NEG
NO_3 reduced		NEG
Gas from NO_3	NEG	NEG
NO_2 reduced		NEG
Gas from NO_2	NEG	NEG
OF Fructose	YEL	YEL
OF Dextrose	GRN	YEL
OF Lactose	BLUE	GRN/BLUE
OF Maltose	YEL !	YEL
OF Mannitol	BLUE	BLUE
OF Xylose	BLUE	BLUE
OF Sucrose	BLUE	GRN/BLUE
Arginine	NEG	NEG
Lysine	POS	POS
Ornithine	NEG	NEG
Base Control	NEG	NEG
Acetamide	NEG	NEG
Esculin	POS	POS
Gelatin	NEG	POS
Indole		NEG
Malonate	NEG	POS
PAD	POS	—
Urea NEG 2 h	NEG	NEG
6.5% NaCL	NEG	NEG
10% Lactose	NEG	NEG
ONPG	NEG	POS
Growth 42^0	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 350: Stenotrophomonas maltophilia isolate 30-of-50.

Date Inoculated: 5-10-07

Final Identification: Stenotrophomonas maltophilia P.S. 5-17-07

Comments: Light Yellow on Starch, Yellow on DNAs @ 7D

Gram Morph.		
Gram Test	48/HR	
Motility Wet Prep	POS - med rods	
Motility Deep	POS	POS
Oxidase	NEG (delayed)	
Catalase	POS	
PLATES	**48 h**	**7 day**
Odor	AMONIA	
Pigment on swab	TAN	
Pigment on BAP	YEL-GRN - like S. MALTO	
Morphology on BAP	Smooth-Shinny	
Beta hemolysis	POS	
Growth on Mac	POS	POS
DNase hydrolysis	POS	POS
Starch hydrolysis	NEG	NEG
Lecithinase	NEG	NEG
Lipase	POS	POS!
Rapid PYR	NEG	
Rapid LAP	NEG	
Rapid ESC	POS	
Sensitivity to:		
Penicillin (10 U)	R	R
Vancomycin (30 ug)	R	R
Colistin (10 mcg)	S-10	S
Polymyxin B (300 U)	S-11	S

Tubes	**48 h**	**7 day**
KIA	K/NC	K/K
H_2S	NEG	slight H_2S
Pseudo P	NEG	NEG
Pseudo F	NEG	NEG
NO_3 reduced		POS
Gas from NO_3	NEG	NEG
NO_2 reduced		NEG
Gas from NO_2	NEG	NEG
OF Fructose	YEL	YEL
OF Dextrose	YEL/GRN	YEL/GRN
OF Lactose	GRN	YEL/GRN
OF Maltose	YEL	YEL
OF Mannitol	BLUE	BLUE
OF Xylose	BLUE	YEL/GRN
OF Sucrose	YEL/GRN	YEL/GRN
Arginine	NEG	POS - WAS NEG AT 48h
Lysine	POS	POS
Ornithine	NEG	NEG
Base Control	NEG	NEG
Acetamide	NEG	NEG
Esculin	POS	POS
Gelatin	POS	POS
Indole		
Malonate	NEG	LT. BLUE
PAD	NEG	
Urea NEG 2 h	NEG	NEG
6.5% NaCL	POS	POS
10% Lactose	NEG	NEG
ONPG	NEG	POS
Growth 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 351: Stenotrophomonas maltophilia isolate 31-of-50.

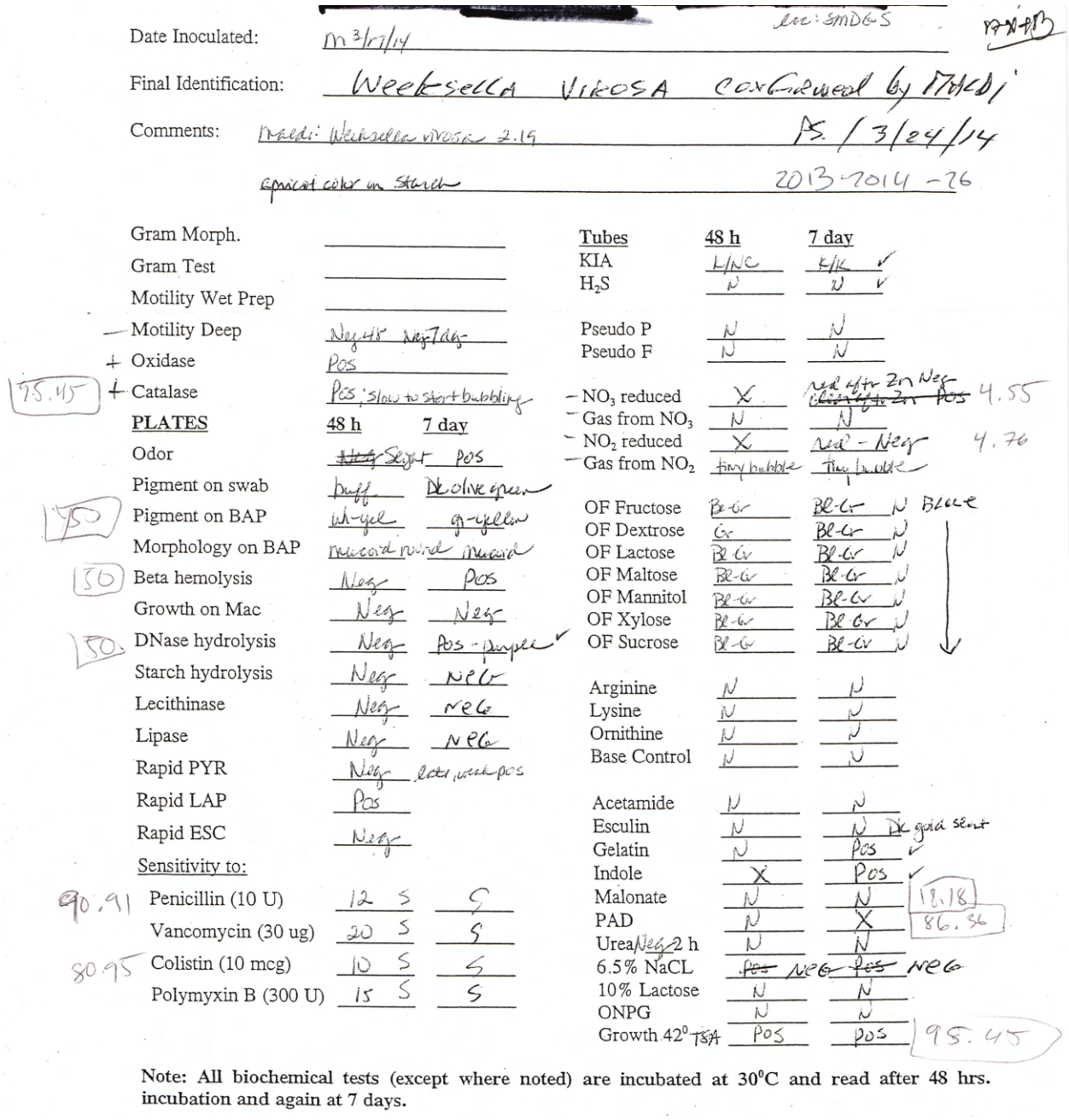
39 GENUS WEEKSELLA

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%**	**W95%**	**Test**	+	−	**Raw%**	**W95%**
Motility	0	23	0.00	7.16	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	11	12	47.83	48.14	NO_3 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_2 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 (30μg)	23	0	100.00	92.84	Lysine	0	23	0.00	7.16
Colistin (10μg)	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.



[redacted] loc: SMDGS

Date Inoculated: M 3/17/14

Final Identification: Weeksella virosa confirmed by MALDI

Comments: maldi: Weeksella virosa 2.19 PS / 3/24/14

apricot color on starch 2013-2014-26

Gram Morph.		
Gram Test		
Motility Wet Prep		
— Motility Deep	Neg 48 Neg 7 day	
+ Oxidase	Pos	
75.45 + Catalase	Pos; slow to start bubbling	
PLATES	**48 h**	**7 day**
Odor	~~Neg~~ Slight	pos
Pigment on swab	buff	Dk olive green
50 Pigment on BAP	wh-yel	gr-yellow
Morphology on BAP	mucoid round	mucoid
50 Beta hemolysis	Neg	Pos
Growth on Mac	Neg	Neg
50 DNase hydrolysis	Neg	Pos - purple ✓
Starch hydrolysis	Neg	NeG
Lecithinase	Neg	NeG
Lipase	Neg	NeG
Rapid PYR	Neg	late, weak pos
Rapid LAP	Pos	
Rapid ESC	Neg	
Sensitivity to:		
90.91 Penicillin (10 U)	12 S	S
Vancomycin (30 ug)	20 S	S
80.95 Colistin (10 mcg)	10 S	S
Polymyxin B (300 U)	15 S	S

Tubes	48 h	7 day
KIA	K/NC	K/K ✓
H_2S	N	N ✓
Pseudo P	N	N
Pseudo F	N	N
— NO_3 reduced	X	red after Zn Neg ~~clear after Zn Pos~~ 4.55
— Gas from NO_3	N	N
— NO_2 reduced	X	red - Neg 4.76
— Gas from NO_2	tiny bubble	tiny bubble
OF Fructose	Bl-Gr	Bl-Gr N Blue
OF Dextrose	Gr	Bl-Gr N
OF Lactose	Bl-Gr	Bl-Gr N
OF Maltose	Bl-Gr	Bl-Gr N
OF Mannitol	Bl-Gr	Bl-Gr N
OF Xylose	Bl-Gr	Bl-Gr N
OF Sucrose	Bl-Gr	Bl-Gr N
Arginine	N	N
Lysine	N	N
Ornithine	N	N
Base Control	N	N
Acetamide	N	N
Esculin	N	N Dk gold slant
Gelatin	N	Pos ✓
Indole	X	Pos ✓
Malonate	N	N 18.18
PAD	N	X 86.36
Urea Neg 2 h	N	N
6.5% NaCL	~~Pos~~ NeG	~~Pos~~ NeG
10% Lactose	N	N
ONPG	N	N
Growth 42° TSA	Pos	pos 95.45

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

Figure 352: Weeksella virosa isolate 1-of-23.

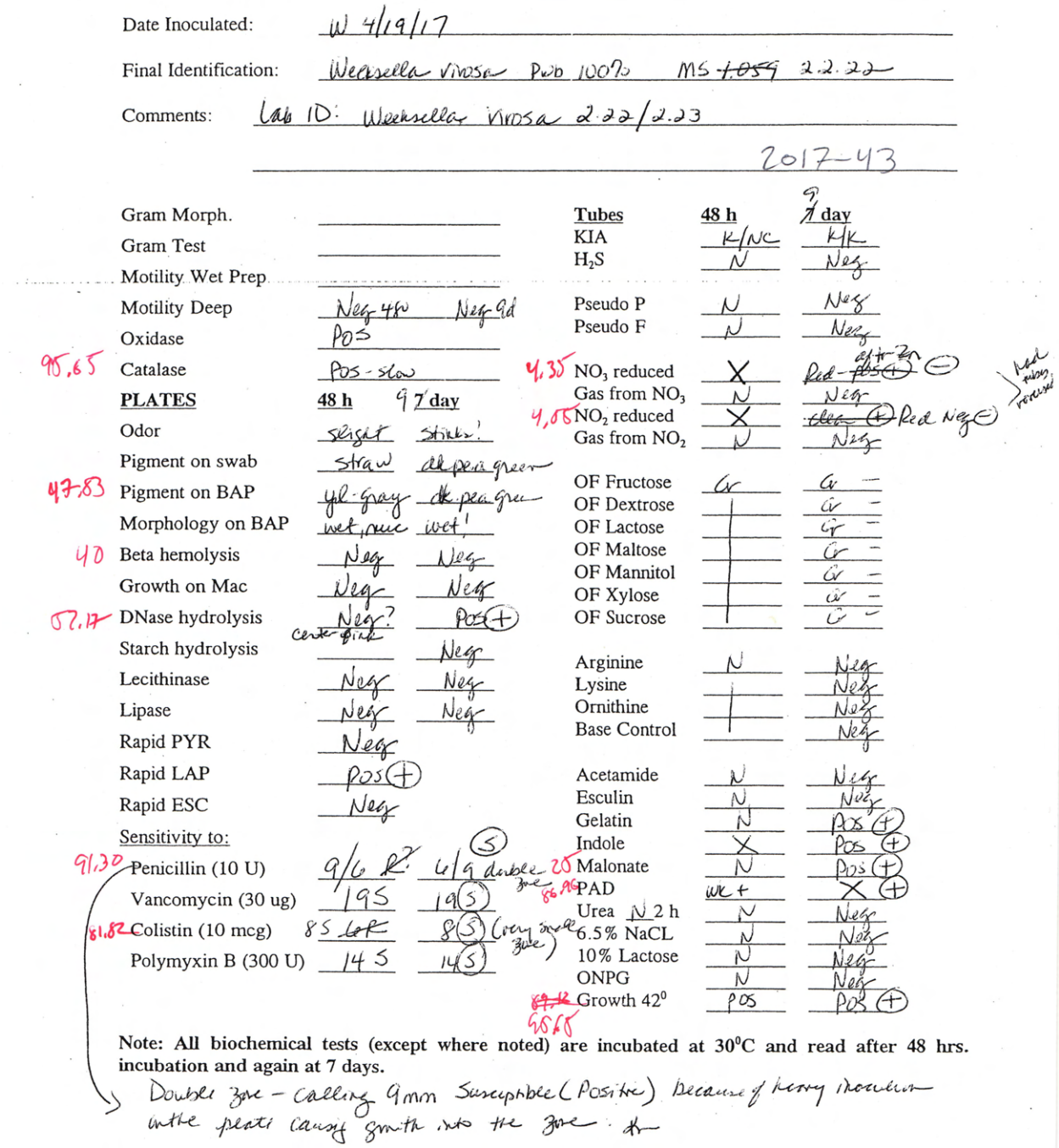


Figure 353: Weeksella virosa isolate 2-of-23.

Date Inoculated: 1-12-11

Final Identification: Weeksella virosa P.S. 1/24/11

Comments: Light orange (squash) on starch after 12 days

Butterscotch on Egg Yolk at 12 days

1/24/11 12 DAYS

			Tubes	48 h	7 day
Gram Morph.			KIA	K/NC	K/K
Gram Test	24hr		H_2S	Neg	Neg
Motility Wet Prep	Neg	SM-med Rods			
Motility Deep	Neg	Neg	Pseudo P	Neg	Neg
Oxidase	Pos		Pseudo F	Neg	Neg
Catalase	Pos				
PLATES	**48 h**	**7 day**	NO_3 reduced		Neg
Odor	None		Gas from NO_3	Neg	Neg
Pigment on swab	Light Butterscotch		NO_2 reduced		Neg
Pigment on BAP	Grey		Gas from NO_2	Neg	Neg
Morphology on BAP	Smooth				
Beta hemolysis	Neg		OF Fructose	Blue	Deep Blue
Growth on Mac	Neg	Neg	OF Dextrose	↓	↓
DNase hydrolysis	Neg - Inhibited - Neg		OF Lactose		
Starch hydrolysis	Neg	Neg	OF Maltose		
Lecithinase	Neg	Neg	OF Mannitol		
Lipase	Neg	Neg	OF Xylose		
Rapid PYR	Neg		OF Sucrose	↓	↓
Rapid LAP	Pos				
Rapid ESC	Neg		Arginine	Neg	Neg
Sensitivity to:			Lysine	↓	↓
Penicillin (10 U)	R - double - Zone same		Ornithine		
Vancomycin (30 ug)	S-24		Base Control	↓	↓
Colistin (10 mcg)	S-9				
Polymyxin B (300 U)	S-16		Acetamide	Neg	Neg
	↓		Esculin	Neg	Neg
			Gelatin		Pos
			Indole		Pos!
			Malonate	Neg	Pos!
			PAD		Pos!
			Urea Neg 2 h	Neg	Pos (slant)
			6.5% NaCL	Neg	Neg
			10% Lactose	Neg	Neg
			ONPG	Neg	Neg
			Growth 42^0	Pos	Pos

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

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

[1] T. N. Bryant, PIBWin – software for probabilistic identification, Journal of Applied Microbiology, Volume **97**, Issue 6, Pages 1326-1327, https://doi.org/10.1111/j.1365-2672.2004.02388.x, 2004.

[2] A.P. Schreckenberger and P.C. Schreckenberger, ASHEX Non-Fermenter ID Matrix, Version 23X, http://www.pschreck.com, The SCHNF ASHEX Project, 2023.

[3] A.P. Schreckenberger, ASHEX Web Identification Program, http://www.pschreck.com, The SCHNF ASHEX Project, 2012.

[4] A. E. Clark, E. J. Kaleta, A. Arora, and D. M. Wolk, Matrix-Assisted Laser Desorption Ionization—Time of Flight Mass Spectrometry: a Fundamental Shift in the Routine Practice of Clinical Microbiology, Clin. Microbiol. Rev., Volume **26**, Issue 3, Pages 547-603, 2013.

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.

[A]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: RALSTONIA pickettii biovar 2

Comments: (TEST AGAINST OF LACTOSE (0% pos), MAC(100%+)

ASHEX23 99.865% | 0.694 R. pickettii Va-2
7.614 under WBM

Gram Morph.	thin straight gnb	
Gram Test	NEG - 72 h.	
Motility Wet Prep	NEG - 24 h.	
Motility Deep	NEG - 48 h Rods	
Oxidase	POS	
Catalase	* NEG	
PLATES	**48 h**	**7 day**
Odor	NONE	
Pigment on swab	flesh	
Pigment on BAP	GREY	
Morphology on BAP	SMOOTH - SMEAR when pick w/ SWAB	
Beta hemolysis	NEG	
Growth on Mac	NO GROWTH	NEG
DNase hydrolysis	inhibited -	NEG - inhibited
Starch hydrolysis	NEG	NEG
Lecithinase	NEG	NEG
Lipase	NEG	NEG
Rapid PYR	POS ~~NEG~~ LIGHT PINK	
Rapid LAP	POS	
Rapid ESC	NEG	
Sensitivity to:		
Penicillin (10 U)	R	R
Vancomycin (30 ug)	R	R
Colistin (10 mcg)	R	R
Polymyxin B (300 U)	R	R

Tubes	**48 h**	**7 day**
KIA	K/NC	K/K
H_2S	NEG	NEG
Pseudo P	NEG	NEG
Pseudo F	NEG	NEG
* NO_3 reduced		POS
* Gas from NO_3	POS	POS!
NO_2 reduced		NEG
Gas from NO_2	NEG	NEG
+ OF Fructose	YEL	GRN
* OF Dextrose	YEL	YEL
* OF Lactose	YEL	YEL
OF Maltose	BLUE	BLUE
OF Mannitol	BLUE	BLUE
* OF Xylose	YEL	YEL
OF Sucrose	BLUE	BLUE
Arginine	NEG	NEG
Lysine	NEG	NEG
Ornithine	NEG	NEG
Base Control	NEG	NEG
Acetamide	NEG	NEG
Esculin	NEG	NEG
* Gelatin	NEG	POS
Indole		NEG
* Malonate	Lt. BLUE	POS
PAD	NEG	
* Urea (−) 2 h	POS	POS
6.5% NaCL	NEG	NEG
10% Lactose	NEG	NEG
ONPG	NEG	NEG
Growth 42°	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 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:

Gram Morph.	gnr	
Gram Test		
Motility Wet Prep	Motile Rods - 48h	
Motility Deep	Pos - Pos	
Oxidase	Pos	
Catalase	Strong Pos	
PLATES	**48 h**	**7 day**
Odor	None	
Pigment on swab	Bugg	
Pigment on BAP	Cream	
Morphology on BAP	Smooth - Cake up	
Beta hemolysis	Neg	
Growth on Mac	Growth	Pos
DNase hydrolysis	Growth - clear halo - Neg	
Starch hydrolysis	Neg	wt?
★ Lecithinase	Pos	Pos
★ Lipase	Pos	Pos
Rapid PYR	Neg	
Rapid LAP	Pos	
Rapid ESC	Neg	
Sensitivity to:		
Penicillin (10 U)	R	R
Vancomycin (30 ug)	R	R
Colistin (10 mcg)	S	S
Polymyxin B (300 U)	S	S

Tubes	**48 h**	**7 day**
KIA	K/NC	K/K
H_2S	Neg	Neg
Pseudo P	Neg	Neg
★ Pseudo F	Pos	Pos !
NO_3 reduced		Neg
Gas from NO_3	Neg	Neg
NO_2 reduced		Neg
Gas from NO_2	Neg	Neg
OF Fructose	Yel	Yel
OF Dextrose	Yel	Yel
OF Lactose	Blue	Blue
OF Maltose	Blue	Blue
OF Mannitol	Yel	Yel
OF Xylose	Yel	Yel
OF Sucrose	Yel	Yel
★ Arginine	Pos	Pos
Lysine	Neg	Neg
Ornithine	Neg	Neg
Base Control	Neg	Neg
Acetamide	Neg	Neg
Esculin	Neg	Neg
★ Gelatin	Pos !	Pos !
Indole		Neg
★ Malonate	Pos !	Pos
PAD	Neg	
★ Urea (−) 2 h	Pos	Pos
6.5% NaCL	Neg	Neg
10% Lactose	Neg	Neg
ONPG	Neg	Neg
Growth 42^0	Neg	Neg

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

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 urethralis - good fit

Comments:

Gram Morph.	gnc
Gram Test	neg 24h
Motility Wet Prep	neg-48h cb
Motility Deep	neg - neg
Oxidase	pos
Catalase	strong pos

PLATES	48 h	7 day
Odor	none	
Pigment on swab	flesh	
Pigment on BAP	Light Grey	
Morphology on BAP	smooth	
Beta hemolysis	neg	
Growth on Mac	sparse	sparse
DNase hydrolysis	No Growth -	No Growth
Starch hydrolysis	neg	neg
Lecithinase	neg	neg
Lipase	neg	neg
Rapid PYR	neg	
Rapid LAP	pos	
Rapid ESC	neg	
Sensitivity to:		
★ Penicillin (10 U)	S-huge zone 35 mm S	
Vancomycin (30 ug)	R	R
Colistin (10 mcg)	S	S
Polymyxin B (300 U)	S	S

Tubes	48 h	7 day
KIA	NC/NC	Ye/NC
H_2S	neg	
Pseudo P	neg	neg
Pseudo F	neg	neg
NO_3 reduced		neg
Gas from NO_3	neg	neg
★ NO_2 reduced		~~neg~~ pos
★ Gas from NO_2	neg	pos
OF Fructose	Blue	Blue
OF Dextrose	↓	↓
OF Lactose	↓	↓
OF Maltose	↓	↓
OF Mannitol	↓	↓
OF Xylose	↓	↓
OF Sucrose	↓	↓
Arginine	neg	neg
Lysine	neg	neg
Ornithine	neg	neg
Base Control	neg	neg
Acetamide	neg	neg
Esculin	neg	neg
Gelatin	neg	neg
Indole		neg
Malonate	neg	neg
PAD	pos	
Urea (−) 2 h	neg	wt slight pink slant
6.5% NaCL	neg	wt
10% Lactose	neg	neg (orange slant & butt
ONPG	neg	neg
Growth 42°	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 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: MORAXELLA NONLIQUEFACIENS (Best Fit)

Comments:

Gram Morph.	GNR & cB (fat)		**Tubes**	**48 h**	**7 day**
Gram Test	Neg 24h		KIA	NC/NC	NC/AC
Motility Wet Prep	Neg-48h	Cocci in prs & chains	H_2S	Neg	Neg
Motility Deep	Neg - Neg		Pseudo P	Neg	Neg
Oxidase	Pos		Pseudo F	Neg	Neg
Catalase	STRONG POS		★NO_3 reduced		Pos
PLATES	**48 h**	**7 day**	Gas from NO_3	Neg	Neg
Odor	NONE		NO_2 reduced		Neg
Pigment on swab	BaGG		Gas from NO_2	Neg	Neg
Pigment on BAP	Light Grey		OF Fructose	Blue	Blue
Morphology on BAP	Smooth	smears when pick w/swab	OF Dextrose	↓	↓
Beta hemolysis	NEG		OF Lactose	↓	↓
Growth on Mac	Neg	Neg	OF Maltose	↓	↓
DNase hydrolysis	NO GROWTH	Neg NO GROWTH	OF Mannitol	↓	↓
Starch hydrolysis	Neg	Neg	OF Xylose	↓	↓
Lecithinase	Neg	Neg	OF Sucrose	↓	↓
Lipase	Neg	Neg	Arginine	Neg	Neg
Rapid PYR	Neg		Lysine	Neg	Neg
Rapid LAP	Pos		Ornithine	Neg	Neg
Rapid ESC	Neg		Base Control	Neg	Neg
Sensitivity to:			Acetamide	Neg	Neg
Penicillin (10 U)	S-9mm-SMALL	S	Esculin	Neg	Neg
Vancomycin (30 ug)	S	S	Gelatin	Neg	Neg
Colistin (10 mcg)	S	S	Indole		Neg
Polymyxin B (300 U)	S	S	Malonate	Neg	Neg
			PAD	Neg	
			Urea (−) 2 h	Neg	Neg
			6.5% NaCL	Neg	Neg
			10% Lactose	Neg	Neg ORANGE-RED SLANT & BUTT
			ONPG	Neg	Neg
			Growth 42^0	Neg	SPARSE GROWTH

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

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 fit Acinetobacter spp.

Comments: Acinetobacter Baumannii complex

ASHEX23: 99.96% | 3.407 AS 4/22/24

Gram Morph.	gnc		**Tubes**	**48 h**	**7 day**
Gram Test	Neg - 24h.		★ KIA	Yel/NC	Yel/orange
Motility Wet Prep	Tiny Rods Neg - 48h.		H_2S	Neg	Neg
Motility Deep	Neg - Neg 6D		Pseudo P	Neg	Neg
Oxidase	Neg		Pseudo F	Neg	Neg
Catalase	Strong Pos		NO_3 reduced		Neg
PLATES	**48 h**	**7 day**	Gas from NO_3	Neg	Neg
Odor	None		NO_2 reduced		Neg
Pigment on swab	Buff -	very light yellow	— Gas from NO_2	Tiny Bubble	Tiny Bubble
Pigment on BAP	Lt. Grey		OF Fructose	Blue	Blue
Morphology on BAP	Smooth -	Spready	★ OF Dextrose	Yel	Yel
Beta hemolysis	Neg		★ OF Lactose	Yel	Yel
Growth on Mac	Growth	Pos	OF Maltose	Blue	Blue
DNase hydrolysis	Growth -	Neg Dark Blue - Neg	OF Mannitol	Blue	Blue
Starch hydrolysis	Neg	Neg	★ OF Xylose	Yel!	Yel
Lecithinase	Neg	Neg	OF Sucrose	Blue	Blue
★ Lipase	Pos	Pos	Arginine	Neg	Neg
Rapid PYR	Neg		Lysine	Neg	Neg
Rapid LAP	Pos		Ornithine	Neg	Neg
Rapid ESC	Neg		Base Control	Neg	Neg
Sensitivity to:			Acetamide	Neg	Neg
Penicillin (10 U)	R	R	Esculin	Neg	Neg
Vancomycin (30 ug)	R	R	Gelatin	Neg	Neg
Colistin (10 mcg)	S	S	Indole		Neg
Polymyxin B (300 U)	S	S	Malonate	Neg	Neg
			PAD	Neg	
			Urea (—) 2 h	Neg	Neg
			6.5% NaCL	Neg	Neg
			★ 10% Lactose	Pos!	Pos - yel slant & butt
			ONPG	Neg	Neg
			Growth 42^0	Neg	Neg

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

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: Stenotrophomonas maltophilia (perfect fit)

Comments:

Gram Morph.	thin small straight gnr		**Tubes**	**48 h**	**7 day**
Gram Test			KIA	K/NC	K/K
			H_2S	slight black at interface	
Motility Wet Prep	Rods motile @ 48h				
Motility Deep	POS - POS		Pseudo P	Neg	Neg
			Pseudo F	Neg	Neg
Oxidase	Neg - wk pos after 1 min				
Catalase	STRONG POS		NO_3 reduced		POS
PLATES	**48 h**	**7 day**	Gas from NO_3	Neg	tiny bubble
			NO_2 reduced		Neg
Odor	Ammonia		Gas from NO_2	Neg	Neg
Pigment on swab	dirty TAN				
Pigment on BAP	Grey-Yel	like Steno	OF Fructose	Yel	Yel
			OF Dextrose	Yel	Yel
Morphology on BAP	Smooth		OF Lactose	Blue	Blue
			OF Maltose	Yel	Yel
Beta hemolysis	Neg		OF Mannitol	Blue	Blue
Growth on Mac	Growth	POS	OF Xylose	Blue	Blue
DNase hydrolysis	POS!	POS	OF Sucrose	X	
Starch hydrolysis	Neg	Neg			
			Arginine	Neg	Neg
Lecithinase	Neg	Neg	Lysine	POS	POS!
Lipase	POS	POS!	Ornithine	Neg	Neg
			Base Control	Neg	Neg
Rapid PYR	Neg				
Rapid LAP	POS		Acetamide	Neg	Neg
Rapid ESC	POS		Esculin	POS	POS - ok
			Gelatin	POS	POS!
Sensitivity to:			Indole		Neg
Penicillin (10 U)	R	R	Malonate	POS!	POS
			PAD	wk POS	
Vancomycin (30 ug)	R	R	Urea (−) 2 h	Neg	Neg
Colistin (10 mcg)	S	S	6.5% NaCL	Neg	POS
			10% Lactose	Neg	Neg
Polymyxin B (300 U)	S	S	ONPG	Neg	POS!
			Growth 42^0	POS	

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

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 aeruginosa (Perfect Match)

Comments:

	Gram Morph.	small gnch		**Tubes**	**48 h**	**7 day**
	Gram Test			KIA	K/NC	K/K
	Motility Wet Prep	MED RODS VERY motile 48 h.		H_2S	SLIGHT BLACK AT INTERFACE	
+	Motility Deep	POS - POS	+	Pseudo P	POS	POS Turquoise Blue
+	Oxidase	POS	+	Pseudo F	POS	Neg
+	Catalase	STRONG POS	+	NO_3 reduced		POS after zinc
	PLATES	**48 h** **7 day**		Gas from NO_3	Neg	Neg
	Odor	fruity - P. aerug	+	NO_2 reduced		POS
	Pigment on swab	flesh - TAN	+	Gas from NO_2	POS	POS
	Pigment on BAP	Grey	+	OF Fructose	Yel	Yel
	Morphology on BAP	Smooth Metallic Sheen	+	OF Dextrose	Yel	Yel
+	Beta hemolysis	POS	-	OF Lactose	Blue	Blue
+	Growth on Mac	Growth - Purple POS	-	OF Maltose	Blue	Blue
	DNase hydrolysis	Growth - Neg - Neg	-	OF Mannitol	Green	Blue
	Starch hydrolysis	Neg Neg	-	OF Xylose	Blue	Blue
	Lecithinase	Neg Neg		OF Sucrose	X	X
+	Lipase	wk POS POS	+	Arginine	POS	POS
+	Rapid PYR	POS		Lysine	Neg	Neg
+	Rapid LAP	POS		Ornithine	Neg	Neg
	Rapid ESC	Neg		Base Control	Neg	Neg
	Sensitivity to:		+	Acetamide	Blue	Blue!
	Penicillin (10 U)	R R		Esculin	Neg	Neg
	Vancomycin (30 ug)	R R	+	Gelatin	POS!	POS!
+	Colistin (10 mcg)	S S		Indole		Neg
+	Polymyxin B (300 U)	S S	+	Malonate	Blue	Blue!
				PAD	Neg	
				Urea (−) 2 h	wk SLANT	POS SLANT & BUTT @ 6D
			+	6.5% NaCL	POS	POS
				10% Lactose	Neg	Neg
				ONPG	Neg	Neg
			+	Growth 42^0	POS	

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

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

Date Inoculated: 6-17-05

Final Identification: Pseudomonas aeruginosa

Comments:

Gram Morph.	small gncb		**Tubes**	**48 h**	**7 day**
Gram Test			KIA	K/NC	K/K
Motility Wet Prep	Pos - 48h.		H_2S	BLACK AT INTERFACE	
Motility Deep	Pos - Pos		Pseudo P	Neg	Neg
Oxidase	Pos		★Pseudo F	Pos	Pos!
Catalase	Strong Pos		NO_3 reduced		Pos after zinc
PLATES	**48 h**	**7 day**	Gas from NO_3	Pos	Pos
Odor	Aromia		NO_2 reduced		Pos
Pigment on swab	Salmon		Gas from NO_2	Pos	Pos
Pigment on BAP	Grey		OF Fructose	Yel/Grn	Yel
Morphology on BAP	Smooth		OF Dextrose	Yel	Yel!
Beta hemolysis	Pos		OF Lactose	Blue	Blue
Growth on Mac	Growth Pos		OF Maltose	Blue	Blue
DNase hydrolysis	Growth-Neg Park Blue center		OF Mannitol	Blue	Blue
Starch hydrolysis	Neg	Neg	OF Xylose	Yel!	Yel!
Lecithinase	Neg	Neg	OF Sucrose	X	
★Lipase	Pos	Pos	★Arginine	Neg Sl. Purple	Pos
Rapid PYR	Neg		Lysine	Neg	Neg
Rapid LAP	Pos		Ornithine	Neg	Neg
Rapid ESC	Neg		Base Control	Sl. Purple	Neg
Sensitivity to:			★Acetamide	Pos	Pos!
Penicillin (10 U)	R	R	Esculin	Neg	Neg
Vancomycin (30 ug)	R	R	★Gelatin	Pos!	Pos!
Colistin (10 mcg)	S	S	Indole		Neg
Polymyxin B (300 U)	S	S	★Malonate	Lt. Blue	Pos
			PAD	Neg	
			Urea (—) 2 h	~~Neg~~ Pos	Pos
			6.5% NaCL	Neg	Pos
			10% Lactose	Neg	Neg
			ONPG	Neg	Neg
			★Growth 42°	Pos	Brown diffusible pigment 4 days

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

Comments: ASHEX23 A deni 96.907% | 39.9 MS

Gram Morph.	Small gneb	
Gram Test		
Motility Wet Prep	TINY RODS - MOTILE 48h	
Motility Deep	POS - POS	
Oxidase	POS	
Catalase	STRONG POS	
PLATES	**48 h**	**7 day**
Odor	NONE	
Pigment on swab	BUGG	
Pigment on BAP	white	
Morphology on BAP	Smooth	
Beta hemolysis	NEG	
Growth on Mac	GROWTH	POS
DNase hydrolysis	GROWTH - NEG - NEG	
Starch hydrolysis	NEG	NEG
Lecithinase	NEG	NEG
Lipase	NEG	NEG
Rapid PYR	NEG	
Rapid LAP	POS	
Rapid ESC	NEG	
Sensitivity to:		
Penicillin (10 U)	SR	R
Vancomycin (30 ug)	SR	R
Colistin (10 mcg)	S	S
Polymyxin B (300 U)	S	S

Tubes	**48 h**	**7 day**
KIA	K/NC	K/K
-- H_2S	BLACK	AT INTERFACE
Pseudo P	NEG	NEG
Pseudo F	NEG	NEG
NO_3 reduced		POS AFTER ZINC
Gas from NO_3	NEG	POS
NO_2 reduced		POS
Gas from NO_2	POS	POS
OF Fructose	BLUE	BLUE
OF Dextrose	BLUE	
OF Lactose	BLUE	
OF Maltose	BLUE	
OF Mannitol	BLUE	
OF Xylose	GREEN	GREEN
OF Sucrose	X	X
Arginine	NEG	NEG
Lysine	NEG	NEG
Ornithine	NEG	NEG
Base Control	NEG	NEG SLIGHT BLUE TIP SLANT
Acetamide	NEG	NEG - SLIGHT BLUE TIP
Esculin	NEG	NEG
Gelatin	NEG	NEG
Indole		NEG
☆ Malonate	BLUE	BLUE!
PAD	NEG	
Urea — 2 h	NEG	NEG
6.5% NaCL	NEG	POS
10% Lactose	NEG	NEG
ONPG	NEG	NEG
Growth 42^0	POS	

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

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 PS. 11/12/07

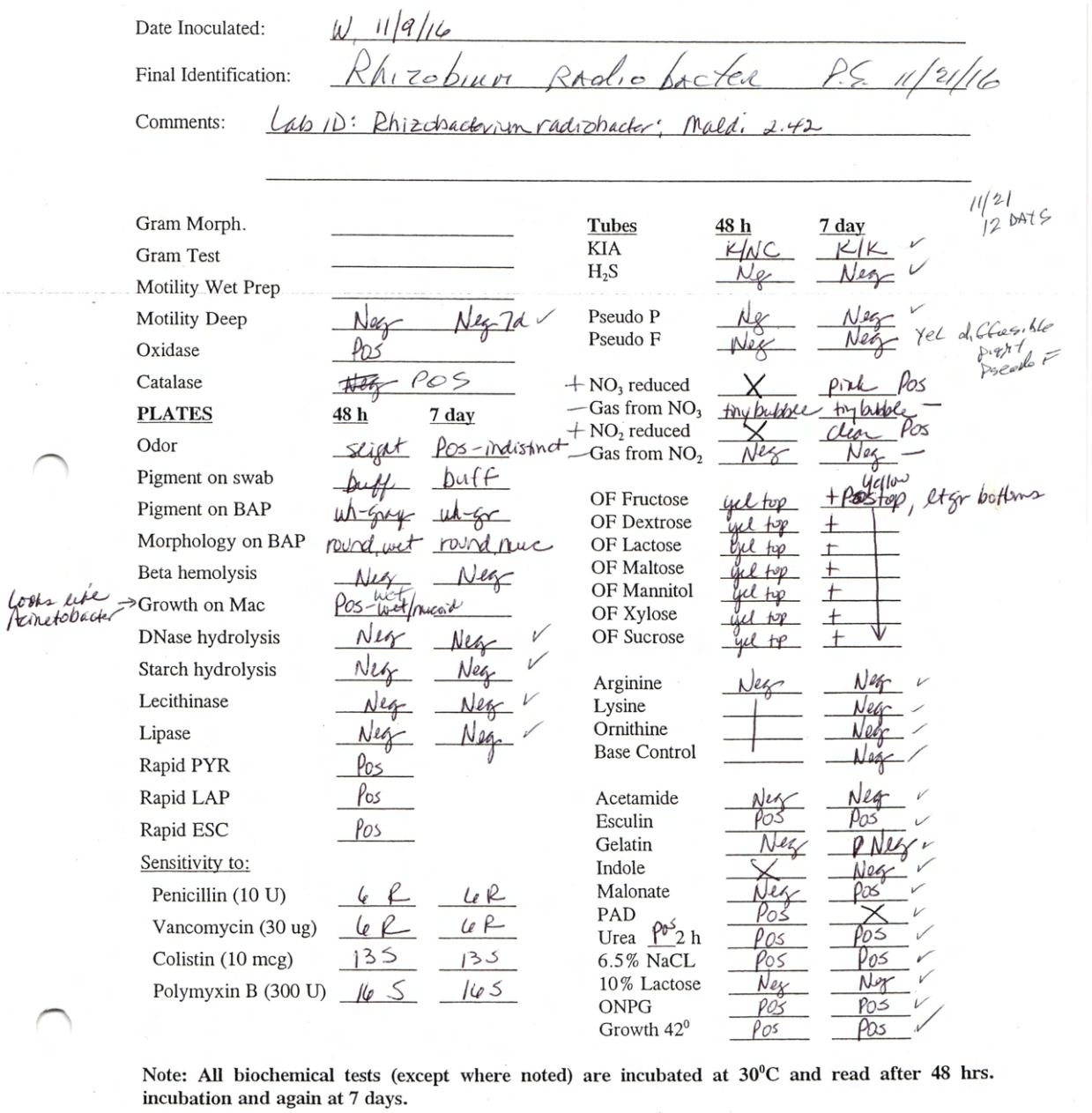
Comments: Yellows on ALL media

Pseudo fulva – ASHEX 23 99.97% 1.01 MS

				48 h	10/29 7 day
Gram Morph.			Tubes		
Gram Test	4D		KIA	K/NC	K/K
Motility Wet Prep	POS- med RODS spinning, darting		H_2S	Neg	Neg
Motility Deep	POS	POS	Pseudo P	Neg	Neg
Oxidase	~~POS~~ NEG		Pseudo F	Neg	Neg
Catalase	STRONG POS		NO_3 reduced		Neg
PLATES	**48 h**	**7 day**	Gas from NO_3	Neg	Neg
Odor	None		NO_2 reduced		Neg
Pigment on swab	~~ORANGE~~ BRIGHT YELLOW		Gas from NO_2	Neg	Neg
Pigment on BAP	Deep Yellows		OF Fructose	Yel	Yel
Morphology on BAP	Shinny - Smooth		OF Dextrose	Yel	Yel
Beta hemolysis	POS (4 DAYS)	POS	OF Lactose	Blue	Blue
Growth on Mac	POS	POS	OF Maltose	Blue	Blue
DNase hydrolysis	Neg	Neg	OF Mannitol	Blue	Blue
Starch hydrolysis	Neg	POS	OF Xylose	Yel	Yel
Lecithinase	Neg	Neg	OF Sucrose	Blue	Blue
Lipase	Neg	Neg	* Arginine	POS	POS
Rapid PYR	Neg		Lysine	Neg	Neg
Rapid LAP	POS		Ornithine	Neg	Neg
Rapid ESC	Neg		Base Control	Neg	Neg
Sensitivity to:			Acetamide	Neg	Neg
Penicillin (10 U)	R	R	Esculin	Neg	Neg
Vancomycin (30 ug)	R	R	Gelatin		Neg
Colistin (10 mcg)	S-13	S	Indole		Neg
Polymyxin B (300 U)	S-14	S	Malonate	Neg	Neg
			PAD		Neg
			* Urea Neg 2 h	POS-SLANT	POS SLANT/TIP OF SLANT BUTT POS @ 16 h.
			* 6.5% NaCL	POS!	POS
			10% Lactose	Neg	Neg
			ONPG	Neg	Neg
			Growth 42°	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 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: W. 11/9/16

Final Identification: Rhizobium Radiobacter P.S. 11/21/16

Comments: Lab ID: Rhizobacterium radiobacter; Maldi 2.42

11/21
12 DAYS

				Tubes	48 h	7 day
Gram Morph.				KIA	K/NC	K/K ✓
Gram Test				H_2S	Neg	Neg ✓
Motility Wet Prep						
Motility Deep	Neg	Neg 7d ✓		Pseudo P	Neg	Neg ✓
Oxidase	Pos			Pseudo F	Neg	Neg Yel d. Grassible light F pseudo F
Catalase	~~Neg~~ Pos			+ NO_3 reduced	X	pink Pos
PLATES	**48 h**	**7 day**		− Gas from NO_3	tiny bubble	tiny bubble −
Odor	slight	Pos-indistinct		+ NO_2 reduced	X	clear Pos
Pigment on swab	buff	buff		− Gas from NO_2	Neg	Neg −
Pigment on BAP	wh-gray	wh-gr				Yellow
Morphology on BAP	round, wet	round, mue		OF Fructose	yel top	+ Pos top, ltgr bottoms
Beta hemolysis	Neg	Neg		OF Dextrose	yel top	+
Looks like Acinetobacter → Growth on Mac	Pos-wet	wet/mucoid		OF Lactose	yel top	+
DNase hydrolysis	Neg	Neg ✓		OF Maltose	yel top	+
Starch hydrolysis	Neg	Neg ✓		OF Mannitol	yel top	+
Lecithinase	Neg	Neg ✓		OF Xylose	yel top	+
Lipase	Neg	Neg ✓		OF Sucrose	yel top	+
Rapid PYR	Pos					
Rapid LAP	Pos			Arginine	Neg	Neg ✓
Rapid ESC	Pos			Lysine		Neg ✓
Sensitivity to:				Ornithine		Neg ✓
Penicillin (10 U)	6 R	6 R		Base Control		Neg ✓
Vancomycin (30 ug)	6 R	6 R		Acetamide	Neg	Neg ✓
Colistin (10 mcg)	13 S	13 S		Esculin	Pos	Pos ✓
Polymyxin B (300 U)	16 S	16 S		Gelatin	Neg	~~P~~ Neg ✓
				Indole	X	Neg ✓
				Malonate	Neg	Pos ✓
				PAD	Pos	X ✓
				Urea Pos 2 h	Pos	Pos ✓
				6.5% NaCL	Pos	Pos ✓
				10% Lactose	Neg	Neg ✓
				ONPG	Pos	Pos ✓
				Growth 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 365: 2016 Isolate, identified by Dr. Paul Schreckenberger as Rhizobium radiobacter – backed both by MALDI and ASHEX methods.

Reference Bacterial Identification - Nonfermenting Gram-Negative Rods Rev. April 2005

Reference No./Name: _____

Date Inoculated: _____

Final Identification: _____

Comments: _____

_____

Gram Morph.	_____	
Gram Test	_____	
Motility Wet Prep	_____	
Motility Deep	_____	
Oxidase	_____	
Catalase	_____	
PLATES	**48 h**	**7 day**
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)	_____	_____
Polymyxin B (300 U)	_____	_____

Tubes	**48 h**	**7 day**
KIA	_____	_____
H_2S	_____	_____
Pseudo P	_____	_____
Pseudo F	_____	_____
NO_3 reduced	_____	_____
Gas from NO_3	_____	_____
NO_2 reduced	_____	_____
Gas from NO_2	_____	_____
OF Fructose	_____	_____
OF Dextrose	_____	_____
OF Lactose	_____	_____
OF Maltose	_____	_____
OF Mannitol	_____	_____
OF Xylose	_____	_____
OF Sucrose	_____	_____
Arginine	_____	_____
Lysine	_____	_____
Ornithine	_____	_____
Base Control	_____	_____
Acetamide	_____	_____
Esculin	_____	_____
Gelatin	_____	_____
Indole	_____	_____
Malonate	_____	_____
PAD	_____	_____
Urea ___2 h	_____	_____
6.5% NaCL	_____	_____
10% Lactose	_____	_____
ONPG	_____	_____
Growth 42^0	_____	_____

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