

# A Study in Collaboration Between the Iowa TB Control Program and the State Hygienic Lab

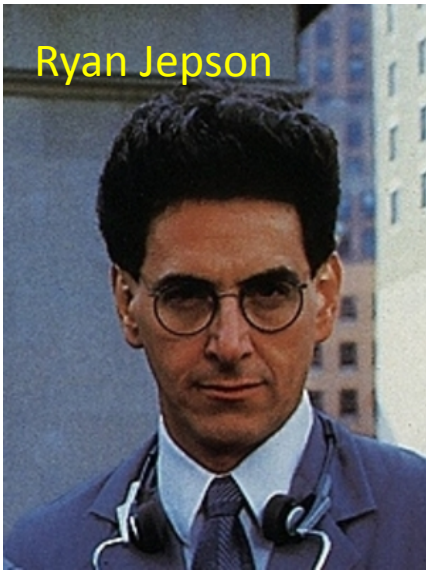
State Hygienic Laboratory-Iowa  
Mary DeMartino, B.S.,MT(ASCP)SM

[mary-demartino@uiowa.edu](mailto:mary-demartino@uiowa.edu)

319-335-4269

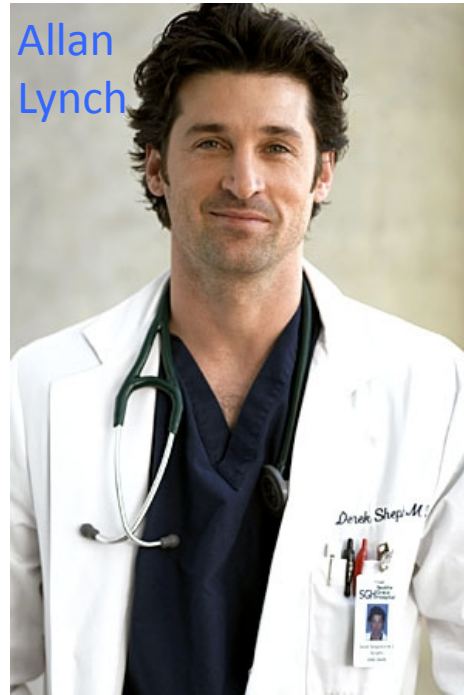
SHL TB Lab

Ryan Jepson



## Iowa TB Controllers

Allan  
Lynch



Bridget  
Konz



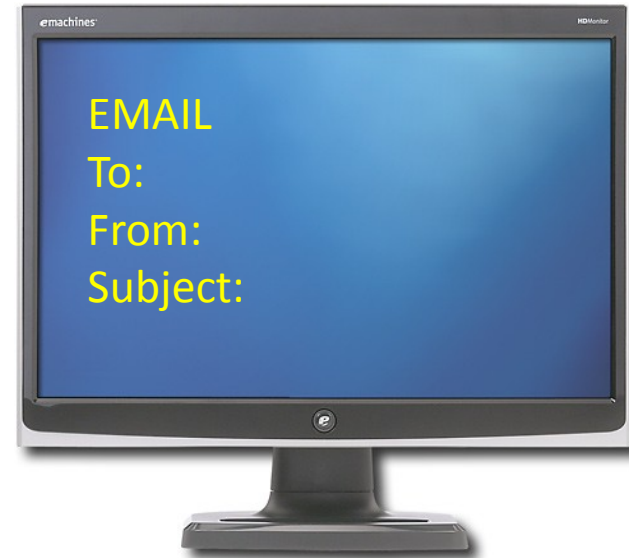
## Local Public Health Nurse

Lois  
Retzl



# Communication Mechanisms

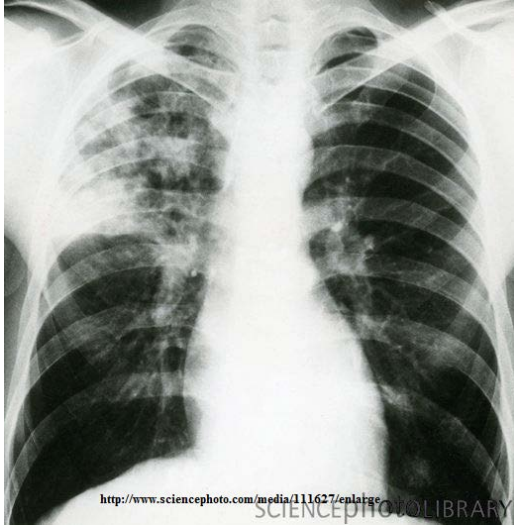
## SHL and IDPH TB Controllers



# Patient Info

- 72 year old African American male
- Hx of Type II diabetes.
- Retired factory worker, but was working part time as janitor in evenings
- Lives with his wife, had an adult son and daughter and grandchildren

# Clinical History



## Chest CT Radiology Report (July 2010)

Two views of chest show lungs are hyperinflated and prominent nodular densities slightly more prominent than prior exam. New nodular density in right lung base on lateral view.

-worked up for history of pneumonia

PHN interview of pt on 10/26/10 patient states he has:

*-occasional cough with sputum in am*

*-decrease appetite*

*-tired*

*-weight loss (which he attributed to his diabetic diet)*

*-denied hemoptysis and night sweats.*

*-hx of asthma (used inhalers and nebulizer as necessary)*

*-Type II diabetes*

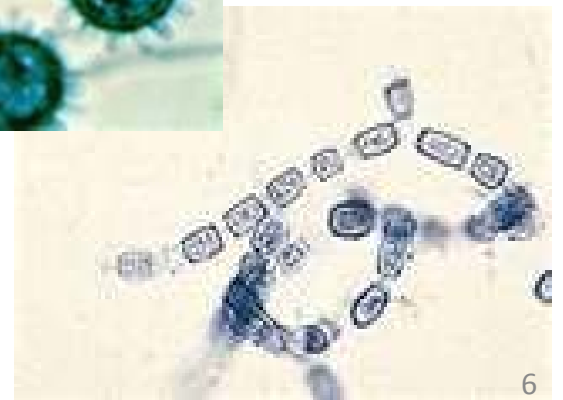
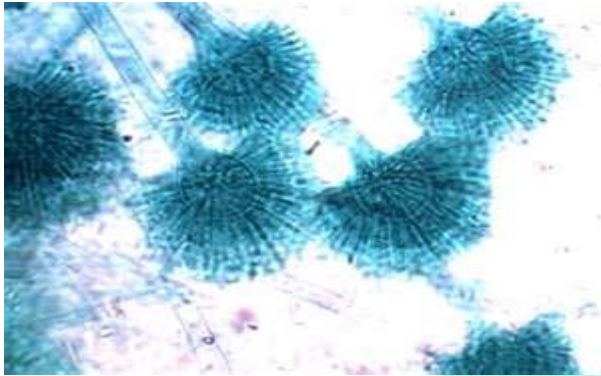
*-arthritis*

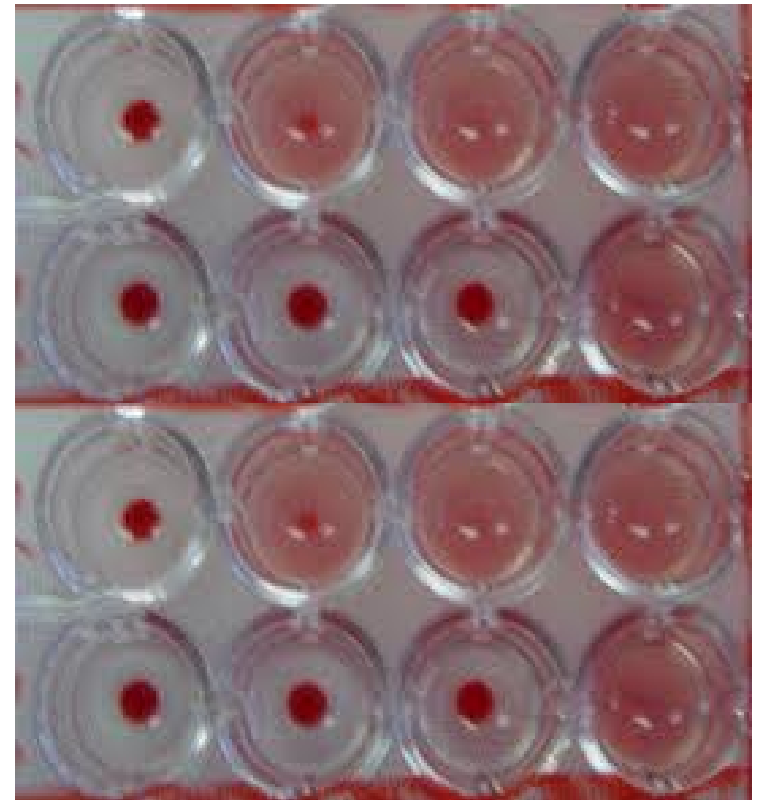
*-hx of stroke in 2001*



# Blood Work

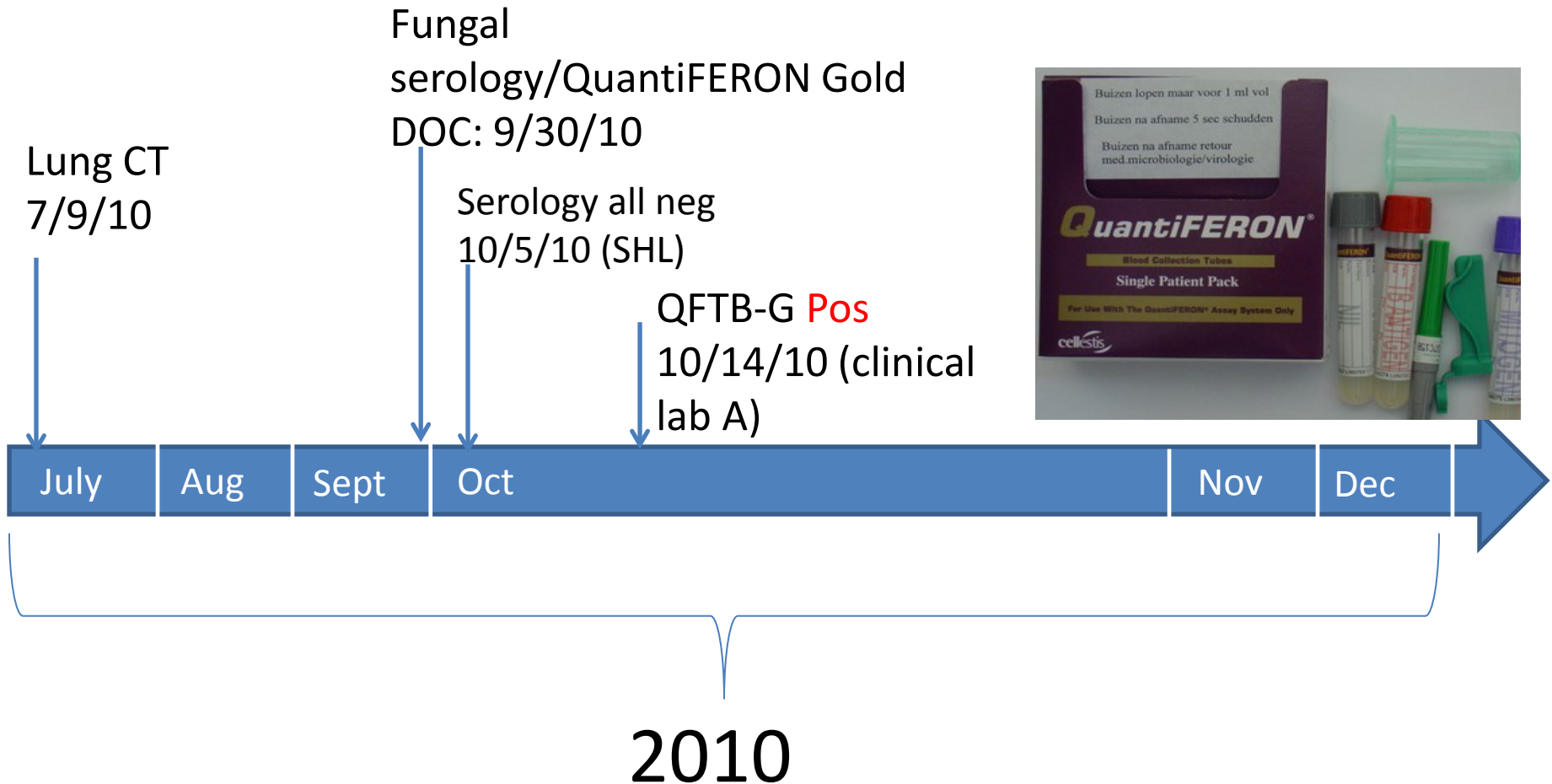
- DOC: 9-30-10 acute serum for *Aspergillus flavus*, *fumigatus* and *niger* and *Blastomyces dermatitidis*, *Coccidioides immitis* and *Histoplasma capsulatum*-all negative (SHL)





QFT-G drawn on 09/30/10 and reported to MD on 10/14/10,  
reported to TB Clinic on 10/20/10 at which time the pulmonologist  
referred the patient to an Infectious Disease physician for evaluation  
("Another Lab")

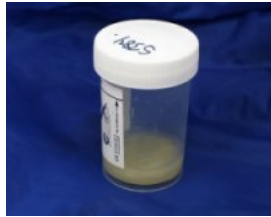
# TIMELINE OF LABORATORY TESTING AND COMMUNICATION



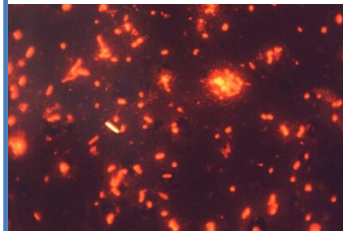


# TIMELINE OF LABORATORY TESTING AND COMMUNICATION

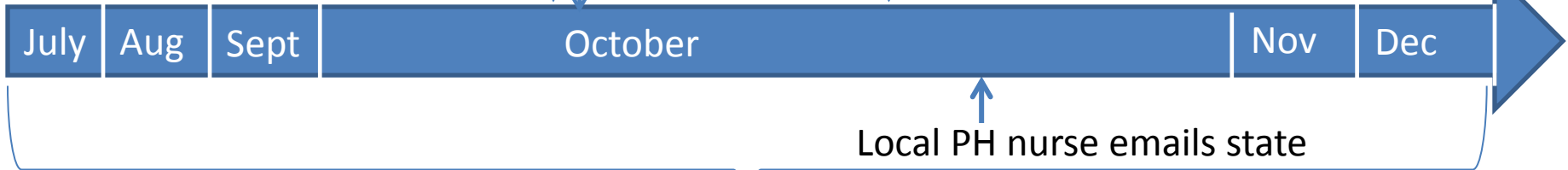
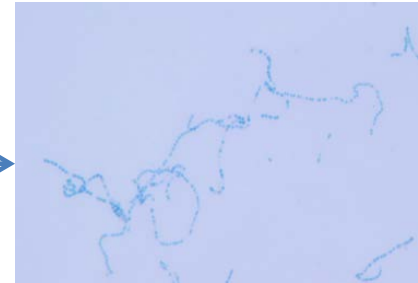
Specimen #1 (sputum) DOC: 10/18/10 sent to Clinical Lab A



Clinical Lab A: AFB + smear 10/19/10



Clinical Lab A refers + liquid to SHL 10/22/10



Local PH nurse emails state TB controller office 10/25/12

2010



From: Lois Retzl [<mailto:retzl@genesishealth.com>]

Sent: Monday, October 25, 2010 10:52 AM

To: Konz, Bridget

Subject: UHL Report on +AFB Smear

Hi Bridget,

Have you seen a report from UHL on the +AFB Smear on Patient X, D.O.B. XX/XX/39? The office reports he had a (+) QFT-G test. MD put him on voluntary home confinement on 10/15/10, but they were waiting for a confirmation report before they referred patient to Dr. XXXXXX, Infectious Disease MD. So I am at a standstill.

Thank you,

Lois

"Konz, Bridget" <[bkonz@idph.state.ia.us](mailto:bkonz@idph.state.ia.us)> 10/25/2010 11:00 AM >>>

When did they submit? I don't see anything in there yet... I can check if you have a submission date and/or collection date. Let me know. Thanks.

Bridget Konz, RN



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From: Lois Retzl [<mailto:retzl@genesishhealth.com>]

Sent: Monday, October 25, 2010 11:26 AM

To: Konz, Bridget

Subject: RE: UHL Report on +AFB Smear

Clinical Lab A called me on 10/19/10 and informed me of the (+) AFB Smear from sputum specimen obtained on 10/18/10. They said they had to wait for the culture before sending to UHL. I just spoke with them, it was sent on 10/22/10, so maybe UHL is just getting it.

Last Thursday, when I spoke with the MD, they were waiting to refer patient to infectious disease MD until get results. So I'm just sitting here waiting for possible orders to come in.

Lois Retzl RN

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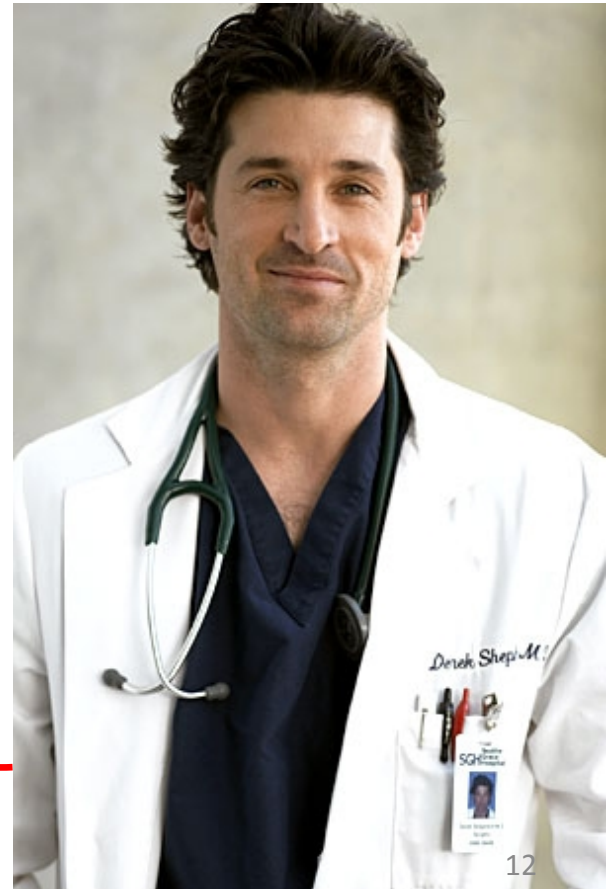
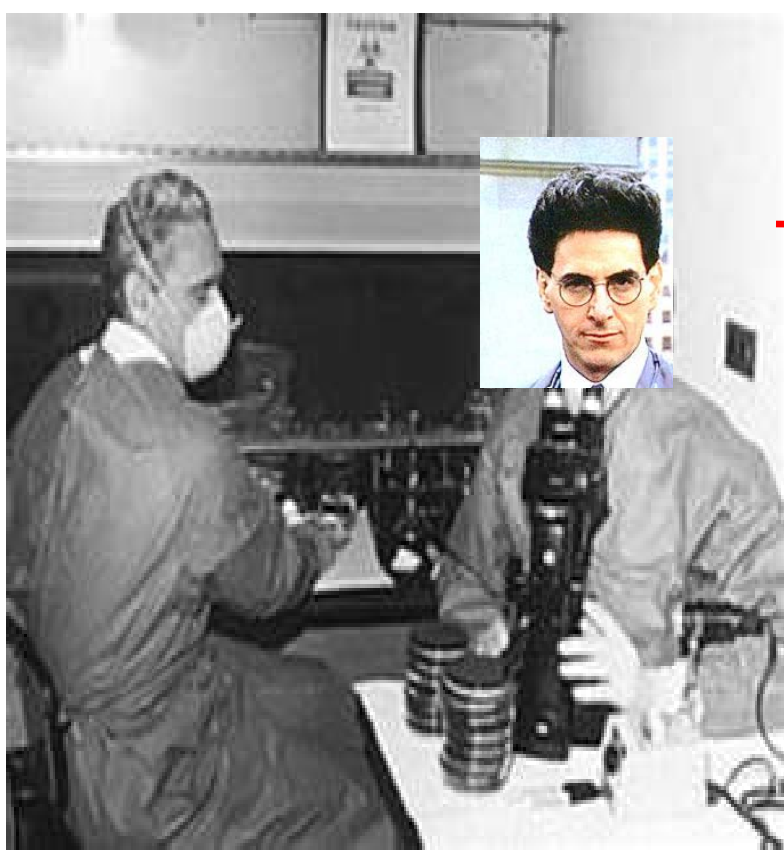
From: Konz, Bridget [[bkonz@idph.state.ia.us](mailto:bkonz@idph.state.ia.us)]

Sent: Monday, October 25, 2010 4:03 PM

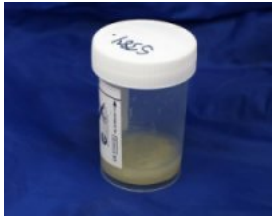
To: Bakkestuen, Cheryl L; Koehler, Jo Lynn; Dunson, Laura; Lynch, Allan; Rose, Patricia M; Jepson, Ryan T

Subject: FW: UHL Report on +AFB Smear

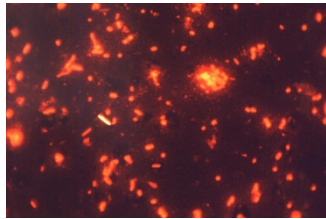
If you have a specimen from Patient A, D.O.B. XX/XX/39, please run an MTD test. Thanks.



# TIMELINE OF LABORATORY TESTING AND COMMUNICATION



Specimen #2-Sputum DOC: 10/26/10-rec'd at SHL 10/27/10  
4+ smear 10/27/10



MTD + 10/28/10



4 drug Therapy started 10/27 or 28



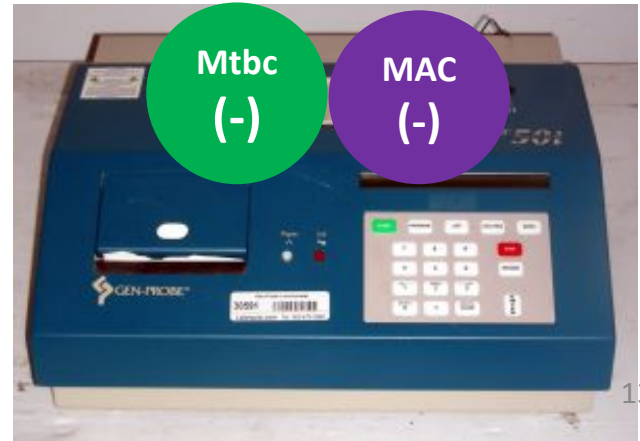
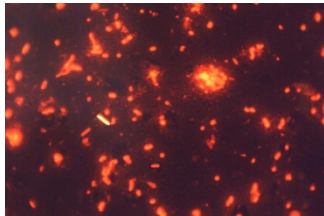
2010

October

November

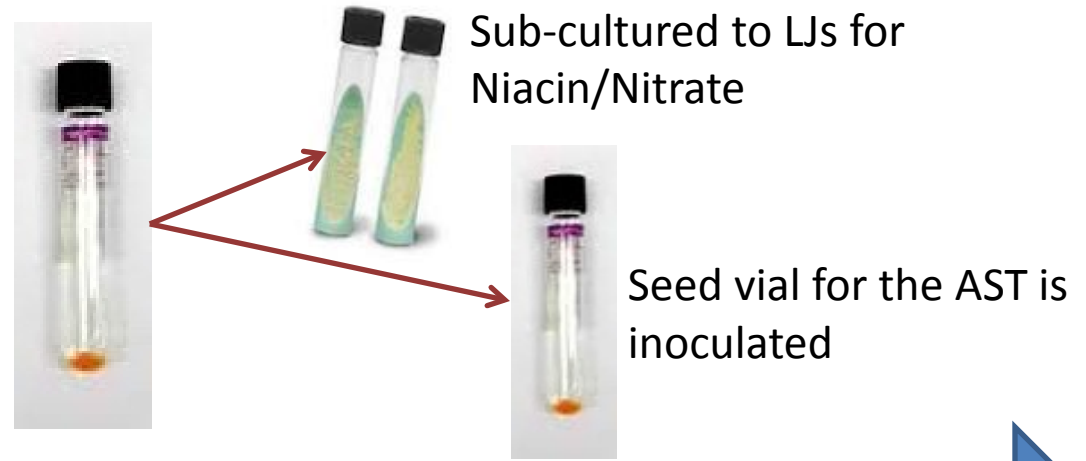
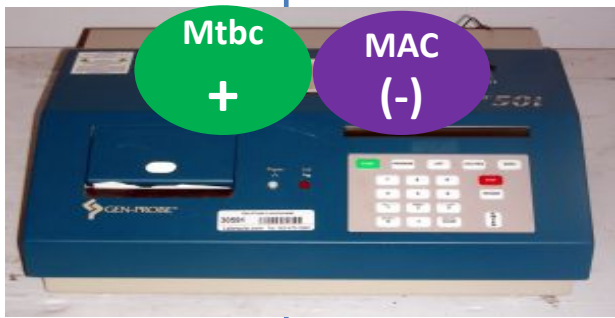
Specimen #3: MGIT flags as positive on 11/2/10; Accuprobe on 11/4/10

Specimen #3-Sputum DOC: 10/27/10-rec'd at SHL  
Specimen #4-Sputum DOC: 10/28/10-rec'd at SHL 10/29/10



# TIMELINE OF LABORATORY TESTING AND COMMUNICATION

Specimen #2: MGIT flags as positive on 11/3/10; Accuprobe on 11/4/10 11/4/10 the MGIT tube is:



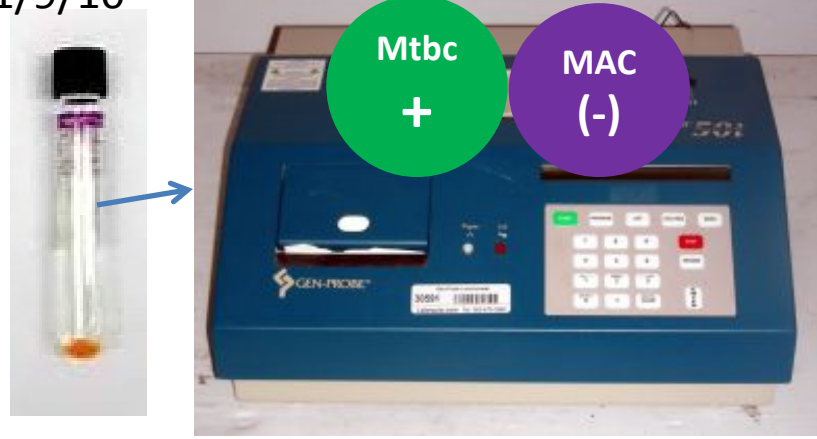
## 2010



Specimen #1: MGIT flags positive on 11/9/10

11/15/10

Specimen #4: MGIT flags positive on 11/8/10



Specimen #6-clinical-sputum DOC 11/10/10; rec'd 11/12/10  
2+ smear; + for growth on 12/7/10; probe: Mtbc+, M. avium neg

Specimen #7-clinical-sputum DOC 11/12/10; rec'd 11/13/10  
1+ smear; + for growth on 12/1/10; probe: Mtbc+, M. avium neg

Specimen #8-clinical-sputum DOC 11/15/10; rec'd 11/16/10  
NEG smear; + for growth on 11/30/10; probe: Mtbc+, M. avium neg

Specimen #9-clinical-sputum DOC 11/22/10; rec'd 11/23/10  
NEG smear; + for growth on 12/09/10; probe: Mtbc+, M. avium neg

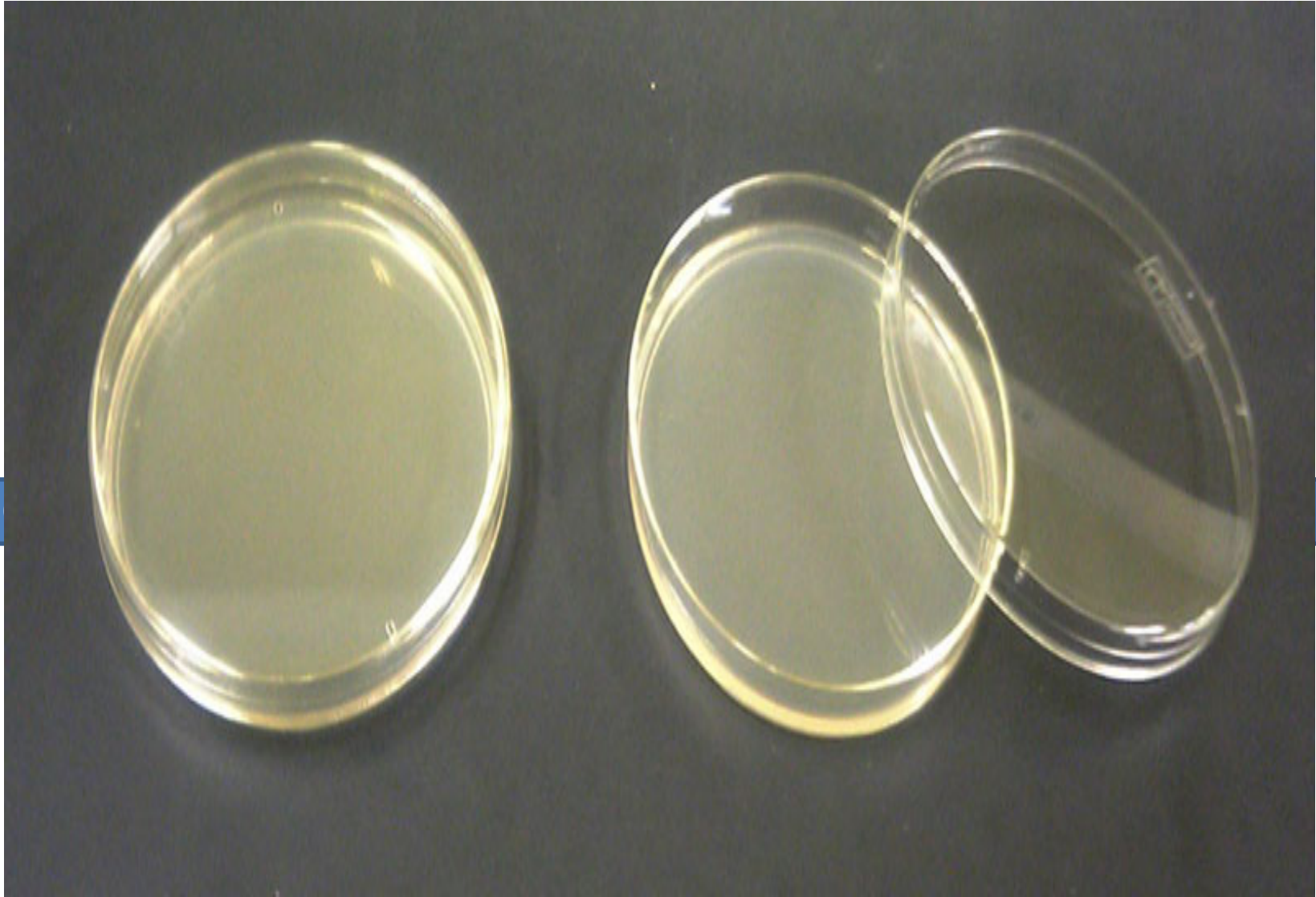


November

Specimen #10-clinical-sputum DOC 11/23/10; rec'd 11/24/10  
NEG smear; + for growth on 12/15/10

Specimen #11-clinical-sputum DOC 11/24/10; rec'd 11/26/10  
1+ smear; + for growth on 12/9/10; probe: Mtbc+, M. avium neg (but at  
higher RLUs

# TIMELINE OF LABORATORY TESTING AND COMMUNICATION



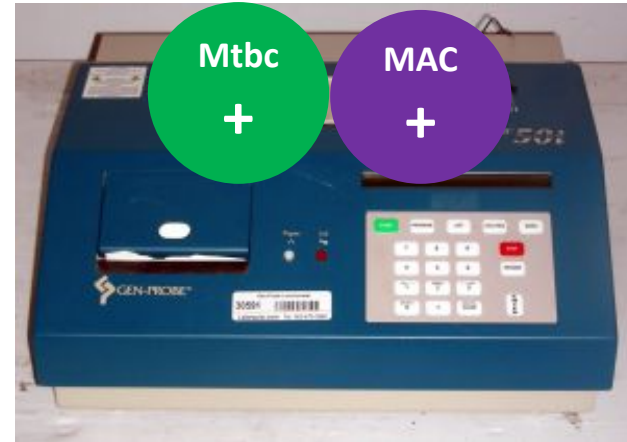
PZA Resistant

SIRE All Resistant

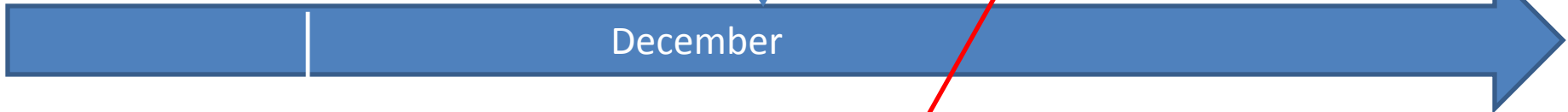




Specimen #10-clinical-sputum DOC 11/23/10; rec'd 11/24/10  
NEG smear; + for growth on 12/15/10; probe on 12/15/10:

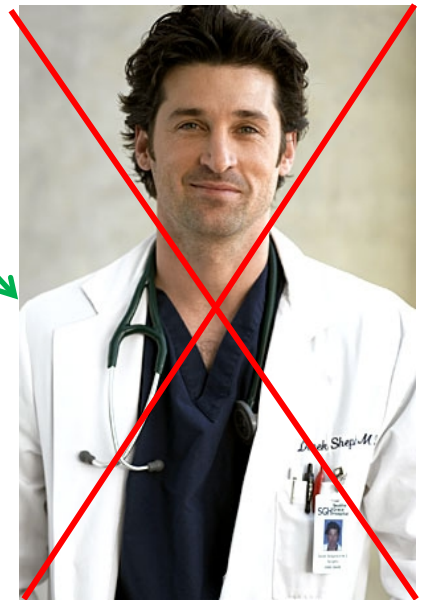


2010



Control vial for AST





From: DeMartino, Mary  
Sent: Wednesday, December 15, 2010 5:21 PM  
To: 'Lynch, Allan'; Konz, Bridget; Pentella, Michael A  
Cc: Jepson, Ryan T; Koehler, Jo Lynn; Bakkestuen, Cheryl L  
Subject: resistant patient

Ryan just called me and told me that the probes on the patient control vial used to set up the susceptibilities are positive for both avium and tuberculosis so it appears that a mixed infection is what is causing the resistance.

Mary



From: Lynch, Allan

Sent: Thursday, December 16, 2010 9:19 AM

To: 'DeMartino, Mary'; Konz, Bridget; Michael Pentella

Cc: Jepson, Ryan T; Koehler, Jo Lynn; Bakkestuen, Cheryl L

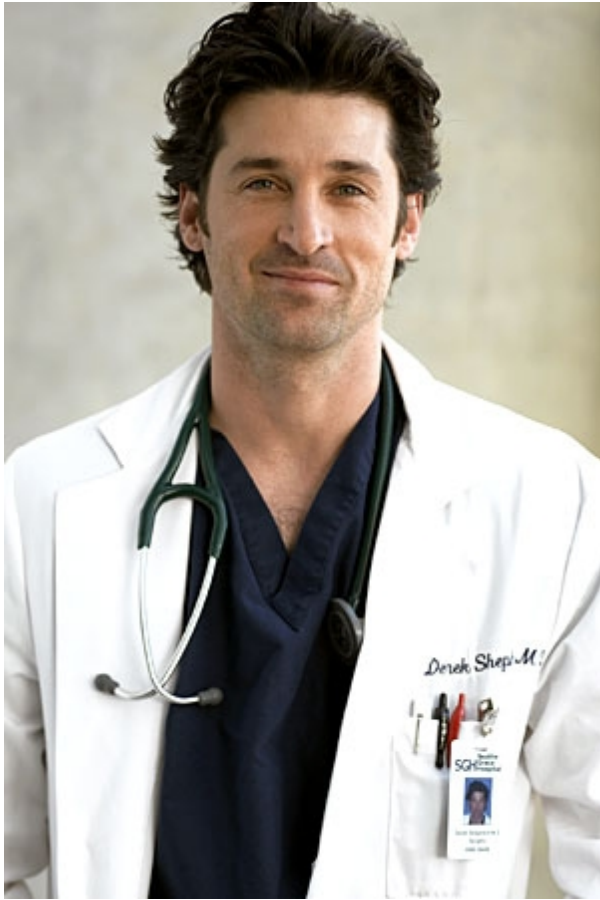
Subject: RE: resistant patient

We will inform the clinician and local health department and let MD determine next step/appropriate testing/TX. Do we have a preliminary report we can fax the doctor's office or simply give verbal? In event MD would like to speak to a lab person, whom should we refer to?

Thanks

Allan Lynch

TB/Refugee Health Program Manager



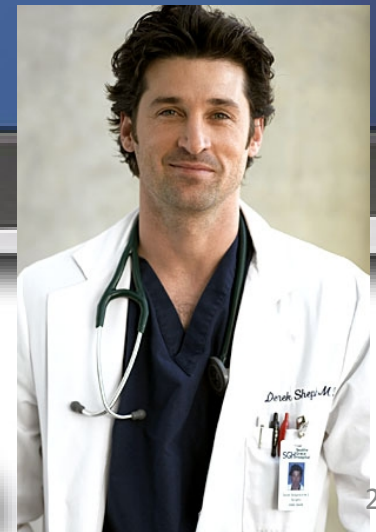
From: Lynch, Allan [alynch@idph.state.ia.us]  
Sent: Thursday, December 16, 2010 10:29 AM  
To: Lynch, Allan; DeMartino, Mary; Konz, Bridget; Pentella, Michael A  
Cc: Jepson, Ryan T; Koehler, Jo Lynn; Bakkestuen, Cheryl L  
  
Subject: RE: resistant patient

Mary: Left you VM asking the following:

Let me make sure I understand this correctly as this is a unique situation - and one I have not seen before. Is it accurate to say we believe the patient is susceptible to the standard TB drug regimen and the initial resistance patterns we are seeing are likely due to dual infection of TB and avium. Final results are pending. Is this accurate?

Thanks AL

Allan Lynch



From: DeMartino, Mary [<mailto:mary-demartino@uiowa.edu>]  
Sent: Friday, December 17, 2010 3:14 PM  
To: Lynch, Allan; Konz, Bridget; Michael Pentella  
Cc: Jepson, Ryan T; Koehler, Jo Lynn; Bakkestuen, Cheryl L  
Subject: [SPAM] - RE: resistant patient - Message was found to be spam: (100%) IP is in RBL  
Importance: High

I just got a call from Jeff at CDC on this isolate. He said that all 9 loci that are testing for resistance showed no mutations. You've all seen these reports before so you know that this does not rule out resistance and he wanted me to emphasize that. But if the isolate was truly an MDR-TB we would like have seen a mutation of some sort. He will have a full report sent on Monday.

Once again: no mutations in the 9 loci tested. Good news but does NOT rule out resistance.

Mary





From: Lois Retzl [\[mailto:RetzlL@genesishealth.com\]](mailto:RetzlL@genesishealth.com)

Sent: Monday, December 20, 2010 10:45 AM

To: Lynch, Allan; Konz, Bridget

Subject: FW: [SPAM] - RE: resistant patient - Message was found to be spam: (100%) IP is in RBL

Hi Allan,

I know everyone is working hard on this patient. This gentleman will have completed 60 days of 4-drug treatment on Sunday, the 26th, and should be changing to the 2-drug. I'm not sure what to tell the physician yet. Will this report be conclusive or will it ever be conclusive? We are working with the holidays for the delivery of the drugs if MD needs to change them.

Thank you,

Lois

Lois Retzl RN

TB Clinic Coordinator

Genesis VNA TB Clinic for Scott County



From: Lynch, Allan

Sent: Monday, December 20, 2010 11:27 AM

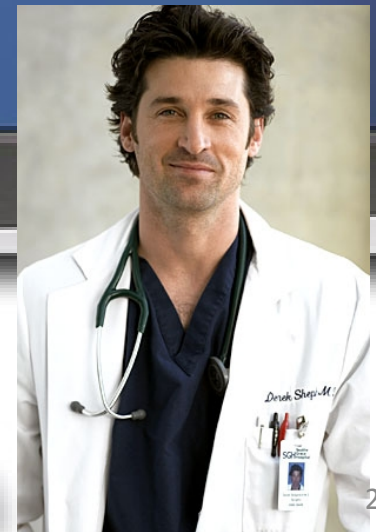
To: Lois Retzl; Konz, Bridget [IDPH]

Subject: RE: [SPAM] - RE: resistant patient - Message was found to be spam: (100%) IP is in RBL

Lois:

The results will be conclusive - I just don't have a target date. We don't believe there is any drug resistance. Appropriate to switch to INH/RIF only regimen.

Allan Lynch



**From:** Jepson, Ryan T [<mailto:ryan-jepson@uiowa.edu>]  
**Sent:** Tuesday, December 21, 2010 4:46 PM  
**To:** Lynch, Allan; Konz, Bridget  
**Cc:** DeMartino, Mary; Bakkestuen, Cheryl L; Koehler, Jo Lynn  
**Subject:** Susceptibility Results 12/21

We repeated susceptibility testing on a different isolate of XXXXXXXX (2010129564). All drugs were susceptible and the MAI Probe was negative.

Thank you-Ryan



From: Lois Retzl [<mailto:retzll@genesishhealth.com>]  
Sent: Thursday, December 23, 2010 10:10 AM  
To: Lynch, Allan  
Cc: Konz, Bridget  
Subject: Re: pan sensitive

Good Morning Allan,

It is truly a good morning, I am relieved with the confirmation. I see the sensitivity was done on the specimen obtained 11/10/10. I will fax this on to Dr. Motwani's office. She also indicated that since his CT shows cavitation in his lungs his treatment is going to be extended to 9 months.

On 12/17/10, XXXXX was started on Azithromycin 500 mg daily. I spoke with Julie ARNP at Dr. Motwani's office yesterday and he has appt with MD office today @ 10 am and she indicated she was going to decrease the dose to 250 mg.

Thank you for all your, Bridget's and UHL's help in this case. I hope the rest of his treatment is uneventful.

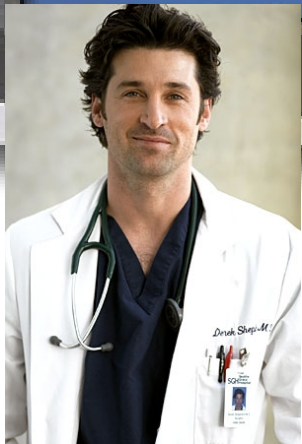
Lois Retzl RN



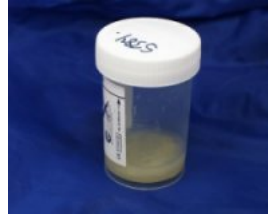
12/23/2010 Allan writes: BTW - there were over 2,500 cases of TB in Iowa in 1950. He likely was exposed by a close relative who had TB. Does he recall anyone who might have had TB when he was growing up?

12/30/2010 Lois (PH nurse) writes: He had a close cousin, when XXX was about 16 y/o, that had TB and had to stay in a sanitarium, that he spent a lot of time with him. Probably the source. That would be about 1955, give or take a couple of years.

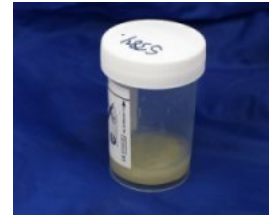
He is feeling good. He tried, unsuccessfully, to get a sputum specimen on Monday, 12/27/10. I said that was a good sign, but keep trying because.... and gave him some hints on how to help get sputum. He said "I have to be doing better because I feel good".



Specimen #13-clinical-sputum DOC 12/7/10; rec'd 12/8/10  
Neg smear; Final: No AFB Isolated

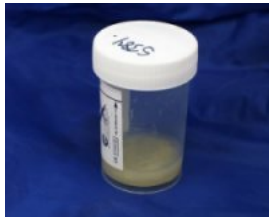


Specimen #14-clinical-sputum DOC 12/8/10; rec'd 12/9/10  
Neg smear; Final: No AFB Isolated



2010

December



Specimen #15-clinical-sputum DOC 12/29/10; rec'd 12/30/10  
Neg smear; Final: No AFB Isolated

Specimen #	DOC	Date Rec'd at SHL	Source	Type C or R	smear	Date cult +	Mtbc	M. avium	Mtbc AST	DATE OF FINAL CULT:
15	12/29/2010	12/30/2010	sputum	C	neg	Negative				2/16/2011
16	12/30/2010	12/31/2010	sputum	C	neg	Negative				2/22/2011
17	1/3/2011	1/4/2011	sputum	C	neg	Negative				2/22/2011
18	1/24/2011	1/25/2011	sputum	C	neg	Negative				3/15/2011
19	1/25/2011	1/26/2011	sputum	C	neg	Negative				3/15/2011
20	1/27/2011	1/28/2011	sputum	C	neg	Negative				3/15/2011
21	3/1/2011	3/2/2011	sputum	C	neg	Negative				4/19/2011
22	3/2/2011	3/3/2011	sputum	C	neg	Negative				4/19/2011
23	3/3/2011	3/4/2011	sputum	C	neg	3/14/2011	neg	pos		3/15/2011
24	4/5/2011	4/6/2011	sputum	C	neg	Negative				4/19/2011
25	4/6/2011	4/7/2011	sputum	C	neg	Negative				5/27/11
26	4/7/2011	4/8/2011	sputum	C	neg	Negative				5/17/11
27	5/9/2011	5/10/2011	sputum	C	neg	Negative				6/24/11
28	5/10/2011	5/11/2011	sputum	C	neg	Negative				6/24/11
29	5/11/2011	5/12/2011	sputum	C	neg	Negative				6/24/11
30	6/14/2011	6/15/2011	sputum	C	neg	6/27/2011	neg	pos		7/1/11
31	6/16/2011	6/17/2011	sputum	C	neg	Negative				7/29/11
32	7/18/2011	7/19/2011	sputum	C	neg	8/15/2011	neg	pos		8/19/11
33	7/19/2011	7/20/2011	sputum	C	neg	Negative				redigested 9/9/11
34	7/20/2011	7/21/2011	sputum	C	neg	8/2/2011	neg	pos		8/5/11



Staff of the TB section at SHL:

- Ryan Jepson
- Jo Koehler

TB Controllers:

- Allan Lynch
- Bridget Konz

Scott Co Public Health Nurse:

- Lois Retzl



# Picture Credits

- Red phone: [http://thepoolandspashoponline.com.au/index.php?main\\_page=index&cPath=36](http://thepoolandspashoponline.com.au/index.php?main_page=index&cPath=36)
- Computer screen: <http://www.lcd-computermonitors.com/flatscreencomputermonitors.htm>
- Fax machine: <http://www.losfresnos.lib.tx.us/contact%20us.html>
- Morgan Freeman: <http://gossip.whyfame.com/tag/morgan-freeman>
- *Histoplasma*: [biogefahr.shopkeeper.de](http://biogefahr.shopkeeper.de)
- *Aspergillus*: [www.under-microscope.com](http://www.under-microscope.com)
- *Blastomyces*: [www.gefor.4t.com](http://www.gefor.4t.com)
- *Coccidioides*: [en.wikipedia.org](http://en.wikipedia.org)
- Chest X-ray: [www.sciencephoto.com](http://www.sciencephoto.com)
- Nurse on phone: [seejanenurse.wordpress.com](http://seejanenurse.wordpress.com)
- Medical chart clipart: [isdanet.net](http://isdanet.net)
- Quantiferon TB Gold kit: <http://mymed.ro/quantiferon-tb-gold-in-diagnosticul-tuberculozei.html>
- Sputum: [http://www.rlbuhth.nhs.uk/jps/sputum\\_m.htm](http://www.rlbuhth.nhs.uk/jps/sputum_m.htm)
- Comp fix plate: [virology-online.com](http://virology-online.com)
- Kinyoun: <http://pathmicro.med.sc.edu/Infectious%20Disease/MYCOBACTERIAL%20DISEASES.htm>
- Versatrek: <http://www.trekds.com/products/versaTREK/mdst.asp>
- MTD box: [http://www.biomerieux-diagnostics.com/servlet/srt/bio/clinical-diagnostics/dynPage?open=CNL\\_CLN\\_PRD&doc=CNL\\_PRD\\_CPL\\_G\\_PRD\\_CLN\\_56&pubparams.sform=4&lang=en](http://www.biomerieux-diagnostics.com/servlet/srt/bio/clinical-diagnostics/dynPage?open=CNL_CLN_PRD&doc=CNL_PRD_CPL_G_PRD_CLN_56&pubparams.sform=4&lang=en)
- GenProbe Leader: <http://www.labequip.com/genprobe-leader-50i-luminometer.html>
- Nurse Betty: <http://www.toutlecine.com/images/film/0013/00135489-nurse-betty.html>
- Guys in respirators: <http://www.allvoices.com/contributed-news/10544200/image/87222210>
- Old laboratorians with test tubes: <http://www.academia.dk/Blog/?p=1186>
- MGIT System: [medwow.com](http://medwow.com)
- MGIT tube: [med.akita-u.ac.jp](http://med.akita-u.ac.jp)
- LJs: [clpmag.com](http://clpmag.com)
- SIRE tubes: <http://www.bd.com/ds/productCenter/MT-BactecMgit960Media.asp>
- CDC: <http://www.panoramio.com/photo/15215038>
- McDreamy: <http://www.sodahead.com/entertainment/mcdreamy-or-mcsteamy/question-183/>
- Old Fashioned nurse: [www.telegraph.co.uk](http://www.telegraph.co.uk)
- Email icon: <http://www.shotcopy.com/order.htm>
- If you use the CDC fluorescent afb pic: CDC/ Ronald W. Smithwick-PHIL
- 7H10 agar: [http://en.wikipedia.org/wiki/File:Agar\\_Plate.jpg](http://en.wikipedia.org/wiki/File:Agar_Plate.jpg)
- Thank you clip art: <http://www.junkaria.com/thank-you-to-junkaria-friends>
- Computer cable: <http://www.cartft.com/catalog/il/858>