



**Indiana**  
**Department**  
**of**  
**Health**

# TB TESTING AT IDOH LABORATORY

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MYCOBACTERIOLOGY LABORATORY  
SUPERVISOR

3/25/26

OUR MISSION:

To promote, protect, and improve the health and safety of all Hoosiers.

OUR VISION:

Every Hoosier reaches optimal health regardless of where they live, learn, work, or play.



# IDOH TB Laboratory Testing

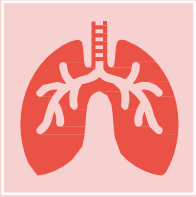
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1. Sputum collection
2. Packaging & shipping
3. TB lab testing interpretation
4. LimsNet
5. Educational resources



# Laboratory Testing

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**Pre-analytic:** Specimen collection, test ordering and transportation



**Analytic:** Laboratory testing and results interpretation

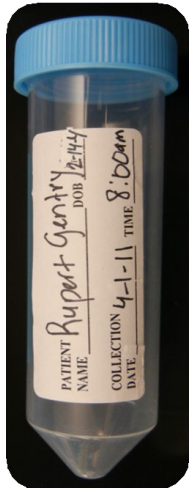


**Post-analytic:** Other considerations

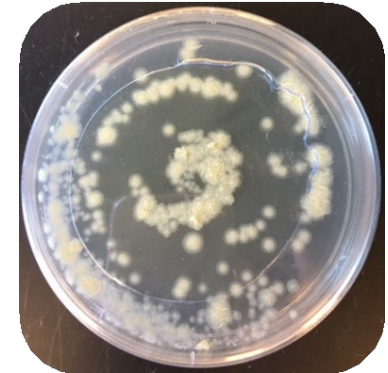
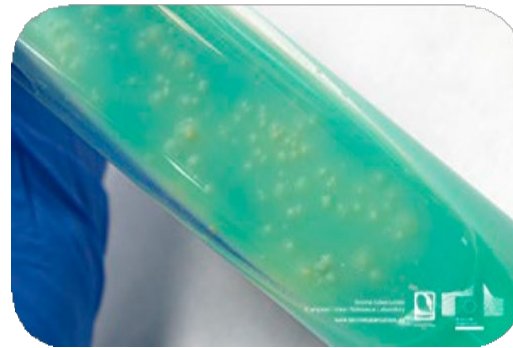
# Terminology

**Specimen** — Material that was produced directly by the patient

Example: Sputa, tissue, BAL or pleural fluid



**Isolate or culture** — Material that was grown in the laboratory using a specimen (can be liquid or solid media culture)



Lab reports commonly include a combination of results for both the primary specimen and the resulting cultures.



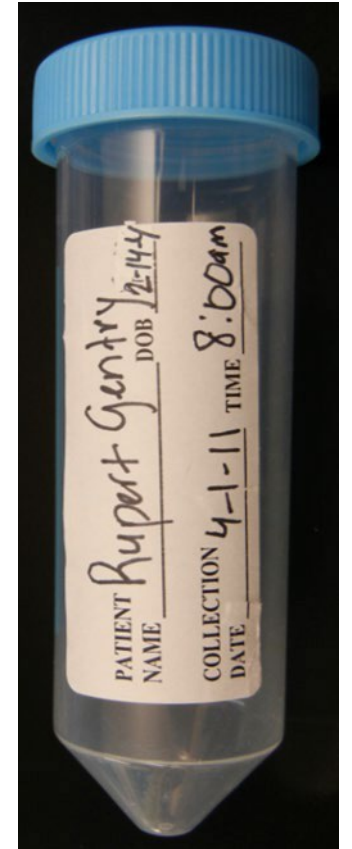
# Pre-analytic: Specimen Collection



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# Sputum Collection

- **Collect three sputa:**
  - At least eight hours apart
  - At least one first thing in the morning
- **5-10 mL is optimal:**
  - More is better than less
  - Smaller specimens MAY be accepted in some labs
  - Ensure the patient is not just collecting saliva
  - The more mucous and viscous, the better the specimen
  - Refrigerate until shipment; transport to the lab as soon as possible on ice packs
- **Must be received cold and within 7 day of collection**



# Resources for Sputum Collection

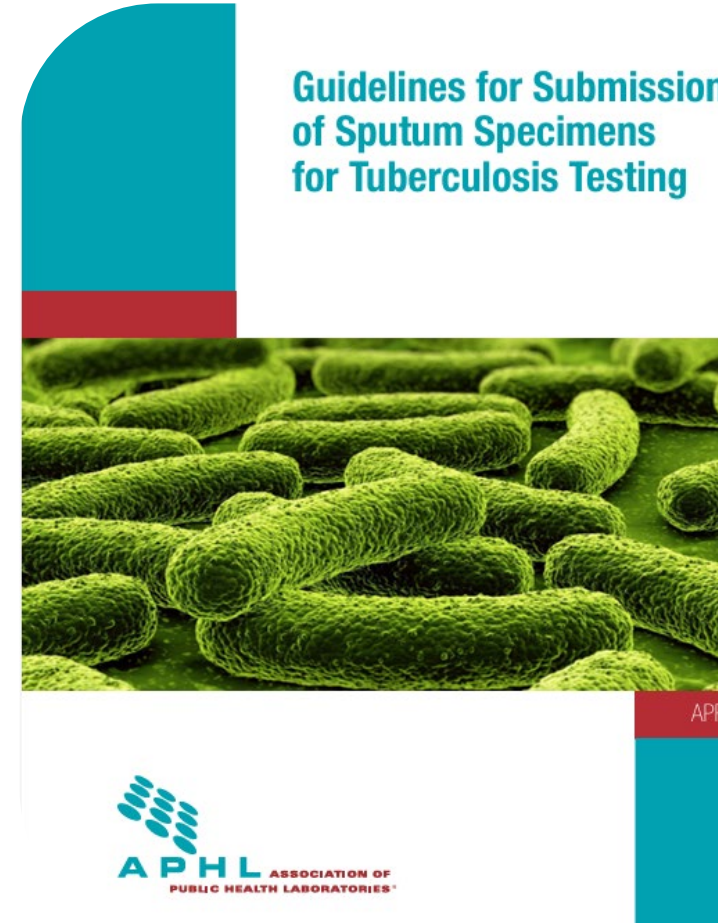
Rutgers Global Tuberculosis Institute's animated videos are designed to educate the patient on how to properly collect and handle their sputa, including both home and induced collections. The videos are available in both English and Spanish.



# Resources for Sputum Collection

## APHL Guidelines for Submission of Sputum for Tuberculosis Testing

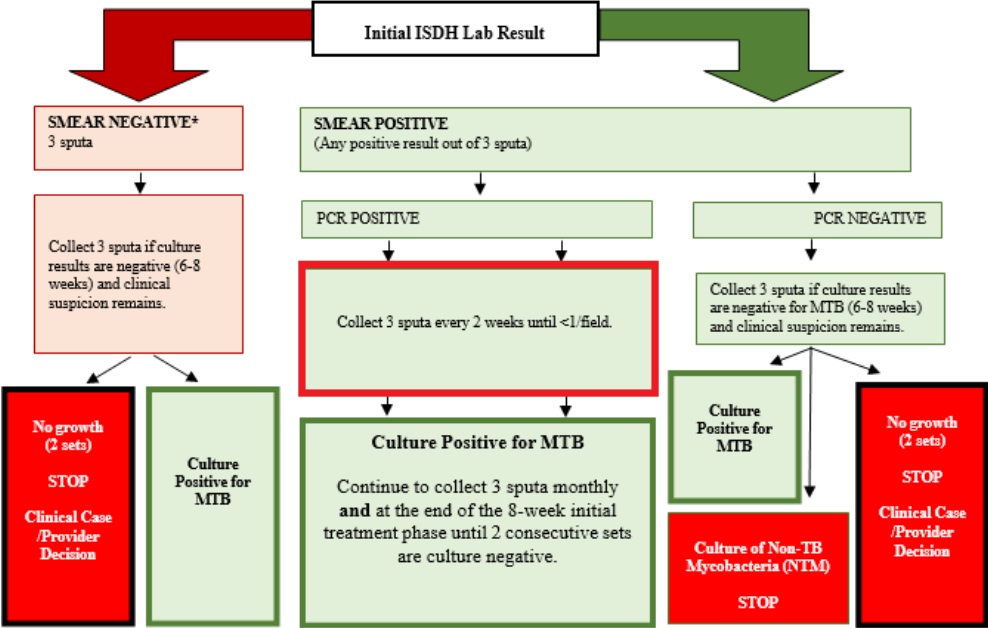
This guide describes best practices for sputum collections, including different reasons patients may require a sputum collection, frequency of collection, and what materials are required. It also includes step-by-step instructions for both induced and spontaneous collections.



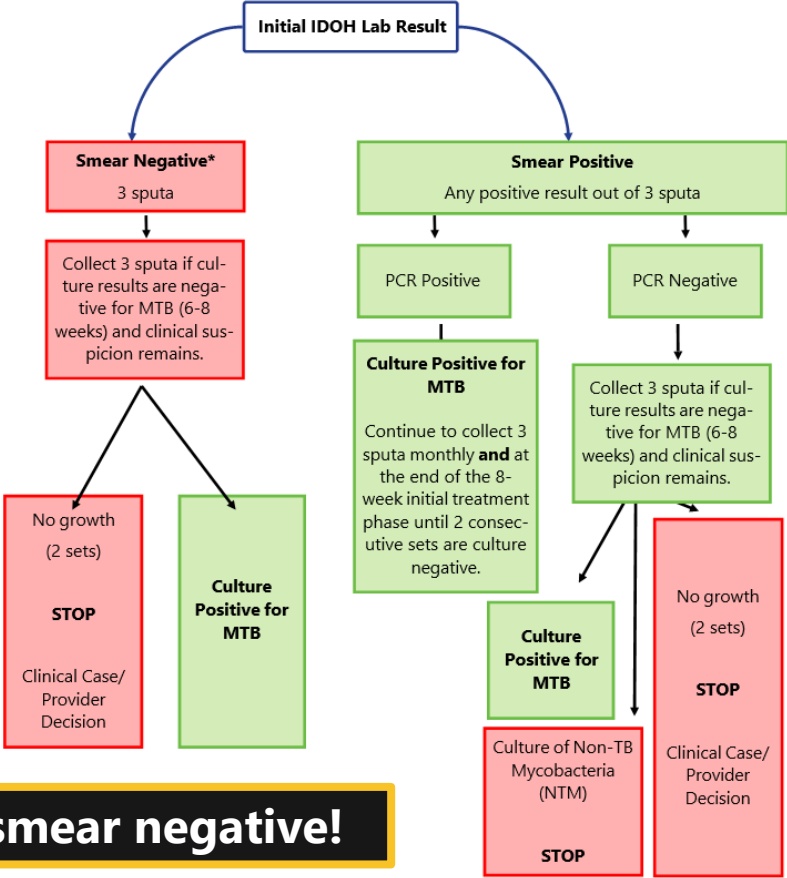
# Updated Sputum Collection Algorithm

Previous version

ISDH TB Control Sputum Collection Algorithm



NEW updated version



**Removed: Weekly sputum collections until smear negative!**



# Updated Sputum Collection Algorithm

- After the first set of sputa:
  - Collect three sputa monthly
  - Collect three sputa at the end of eight weeks of the initial treatment phase (until two consecutive sets are culture negative)
    - Assumes adequate treatment and pan susceptibility
    - Receiving rapid molecular DST is helpful supportive evidence

Exception: Patients with extensive respiratory isolation restrictions (RIR) due to special circumstances such as drug resistance, laryngeal TB, highly vulnerable contacts, etc.

**Positive smear status is longer justification to require respiratory isolation**

# Extrapulmonary Specimens

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- IDOH TB Lab accepts non-sputum specimens on a case-by-case basis, including:
  - BAL, lung tissue, CSF, urine, wound drainage/tissue, pleural fluid, lymph node
  - Larger volume may be needed for sterile sites
- Specimens must be collected in a sterile container and kept refrigerated
- Specimen PCR will be performed; however, due to the wide variety of possible specimen types, results will include a disclaimer.
- Formalin fixed tissues are not acceptable for testing at IDOH, but testing may be able to be performed at the CDC (molecular only)

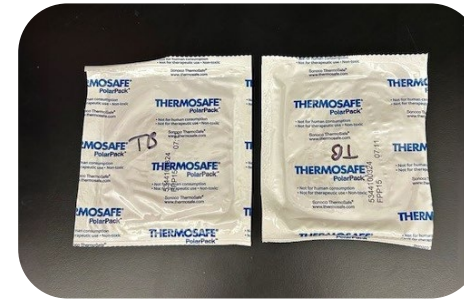
# NEW TB Shipping Requirements

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- TB specimens (sputum) are now required to be stored/shipped refrigerated and should be received at 2-8°C.
- This is to ensure specimen integrity from the time of collection through the time of testing.
- All specimens should be stored in a refrigerator prior to shipment.
  - Specimens sent via STAT courier are to be sent as “route refrigerated”
  - Specimens dropped off by LHD personnel should be transported in coolers w/frozen ice packs
  - Specimens sent via UPS/FedEx should now be shipped in insulated shippers w/two frozen ice packs

# Shipped Packages

- Each sputum tube should be placed in an individual biohazard bag w/absorbent material
- Two frozen ice packs
- Insulated shipper box
- Shipping label on the outside



# STAT Courier Delivered Packages

- Each sputum tube should be placed in the white plastic can and then in the 6A outer can
- 6A cans should be placed in a plastic bag with the STAT label affixed to the outside
- Specimens should be sent in STAT portal as "route refrigerated"



# Local Health Department Delivered Packages

- Each sputum tube should be placed in the white plastic can and then in the 6A outer can
- 6A cans should be transported in a cooler with ice packs



# LimsNet Kit Ordering

LimsNet now has two options for TB Specimens:

|                          |    |   |                      |                         |
|--------------------------|----|---|----------------------|-------------------------|
| <input type="checkbox"/> | 6A | TB (Returned via UPS)<br>Min: 1, Max: 8<br>*Whole kit consist of 3 sputum tubes w/biohazards bags and absorbent material, 2 ice packs, insulated shipper w/box, and 1 UPS return label. | <input type="text"/> | Sputum Tubes<br>Max: 12 |
| <input type="checkbox"/> | 6A | TB (Returned via STAT courier or Marion Co)<br>Min: 1, Max: 8<br>* Whole kit consist of 3 sputum tubes with inner and outer containers.   | <input type="text"/> | Sputum Tubes<br>Max: 12 |

# STAT Courier Updates

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- STAT courier service reduced in early 2025 due to significant funding cuts
- Routes slightly expanded in late 2025
- Small expansion planned for April-May 2026
- Second larger expansion later in 2026



# FedEx Shipping

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- Pilot study to trial FedEx for TB specimens
  - Many issues with delayed UPS packages
  - Significant cost savings (\$15 vs. \$75)

FedEx locations include Walgreen's and Dollar General:

- <https://local.fedex.com/en/search>
- Will need to verify the hours at each location



# Analytic: Microscopy and NAAT



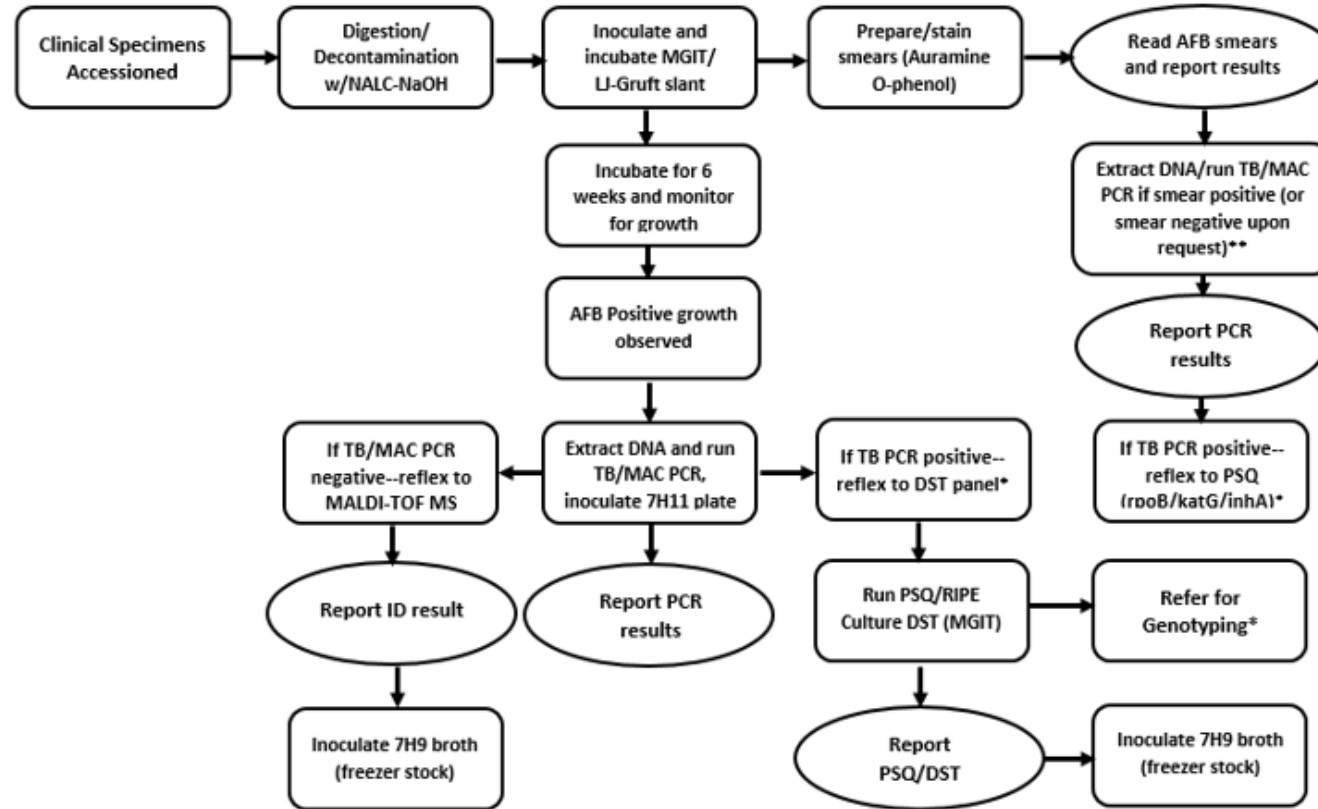
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# Testing Objectives

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1. Identify Acid Fast Bacilli (AFB) in specimens
2. Use Polymerase Chain Reaction (PCR) to detect *Mycobacterium tuberculosis* complex (MTBC) DNA in smear positive sputa
3. Culture specimen
4. Identify culture growth as MTBC (or not)
5. Determine antibiotic susceptibility
6. Ship the culture for genotyping

# IDOHL Testing Algorithm



\*DST/PSQ run on first isolate per patient

\*\*Specimen PCR run on first sputa set per patient

IDOHL Workflow for TB Clinical Specimens

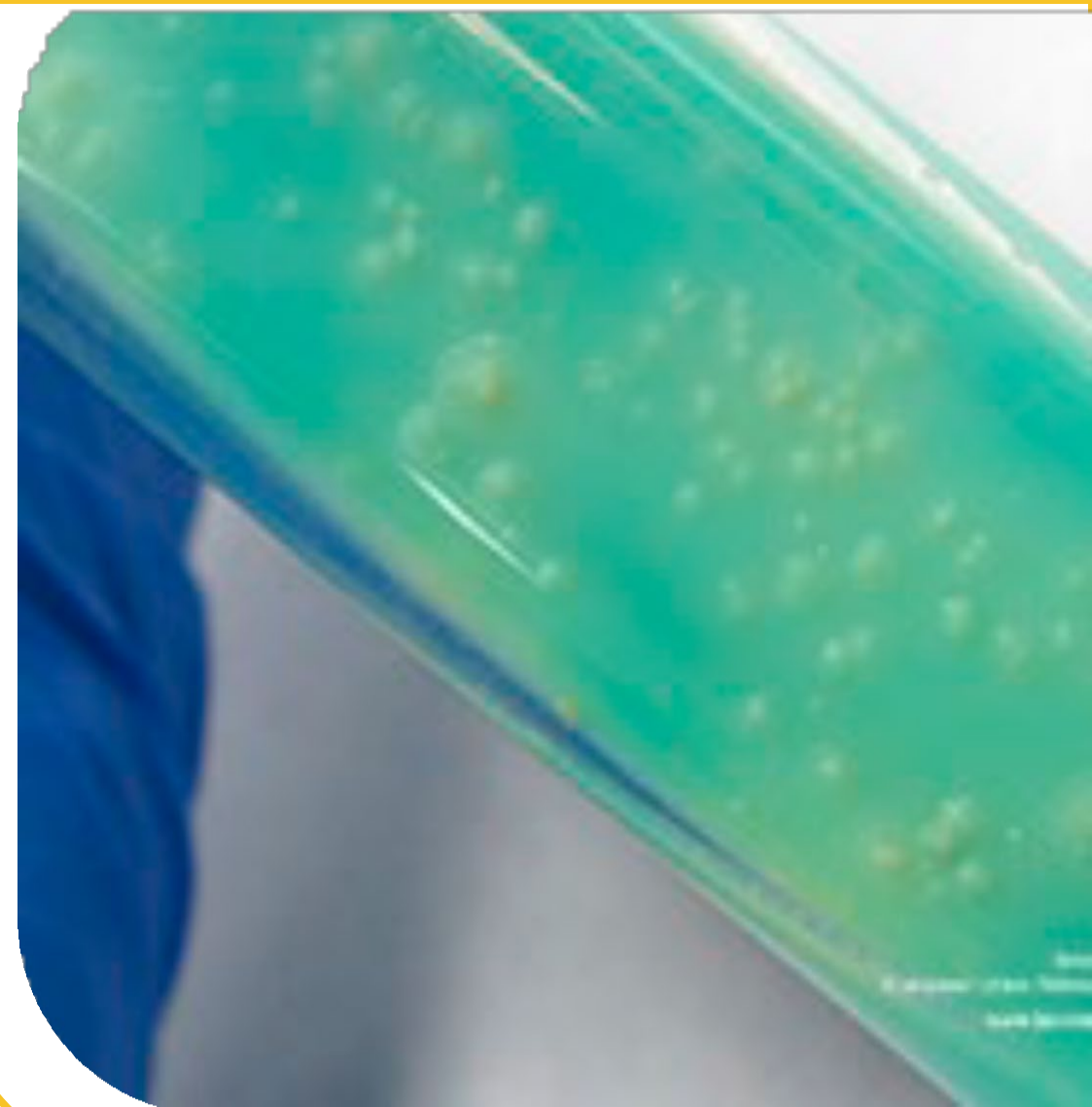
# Sputum Specimen Processing

- Sputum is a challenging specimen to work with — specimen must first be processed:
  - “Digested” with a mucolytic agent to liquify the mucus so AFB are more accessible
  - “Decontaminated” to kill off the normal flora from the respiratory tract
    - Otherwise, normal flora will rapidly overgrow the cultures and mask any mycobacteria
  - Centrifugation to concentrate the sediments for testing



# Specimen Processing

- Laboratories may process specimens once per day or only on certain days of the week
- Specimens from sterile sites do not usually require processing
- After processing, the resulting sediments may be used for:
  - Preparing an AFB smear
  - Inoculating AFB cultures—usually both a liquid and solid media
  - NAAT



# AFB Microscopy

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- **Acid fast bacilli (AFB smear):** Sputum sediments are smeared on a glass slide, stained, and examined under a microscope
- **Results:** **AFB found** (positive) or **not found** (negative)
- Positive slides are quantified as the number/field:
  - AFB positive: >50/field, >10/field, 1-10/field, <1/field
    - Many labs report as 1+, 2+, 3+
  - Equivocal (or rare, scanty): only one, two, or three bacteria on the entire slide

# AFB Microscopy

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- **AFB positive** result could indicate TB or another *Mycobacterium* spp. (*M. avium*, *M. abscessus*, etc.)
  - NAAT is needed to confirm or rule out TB
- Sometimes used for airborne isolation decisions
- **AFB positive** could indicate living or dead bacteria - Patients on TB therapy sometimes have positive smears with negative cultures

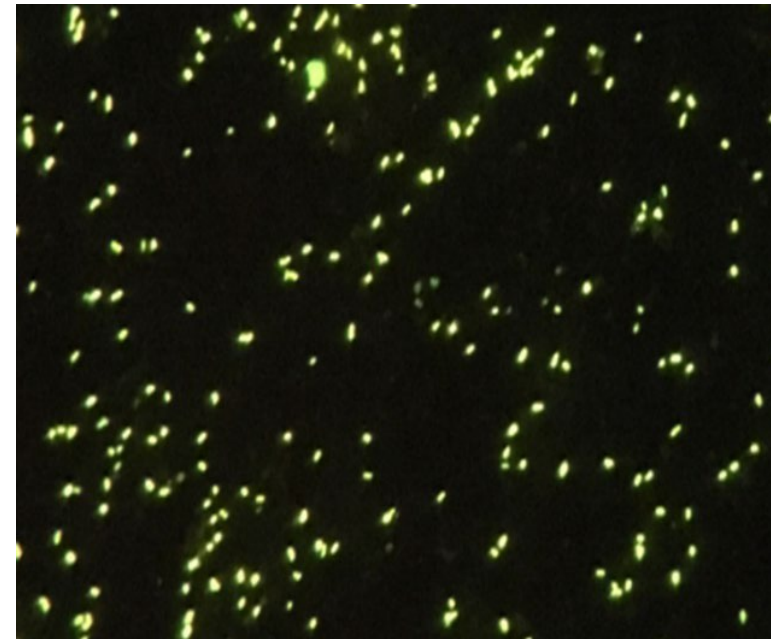
# AFB Microscopy

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AFB Found, <1/field



AFB Found, >50/field



*Sputum smears stained with Auramine O-phenol under high magnification.*

# Nucleic Acid Amplification Testing (NAAT)

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**Nucleic acid** - DNA of MTBC bacterium

**Amplification** - Process makes many copies of the DNA

Instrument detects the presence of the amplified DNA

# Nucleic Acid Amplification Testing (NAAT)

## Advantages

- More sensitive than smear microscopy
- More rapid than culture (1-2 days vs. 3-4 weeks)
- Specific to MTBC

## Caveats

- Culture is still the gold standard
  - ~20% of sputa may be NAAT negative but culture positive
- Culture is still needed for susceptibility testing and genotyping
- Most reliable in smear-positive specimens

**NAAT can detect either live or dead bacteria, so this is most useful for testing patients with unknown TB status**

**Often requires a separate test order**

**NAAT should be performed on a respiratory specimen from each patient with signs and symptoms of active pulmonary TB disease.**

# NAAT— GeneXpert MTB/RIF

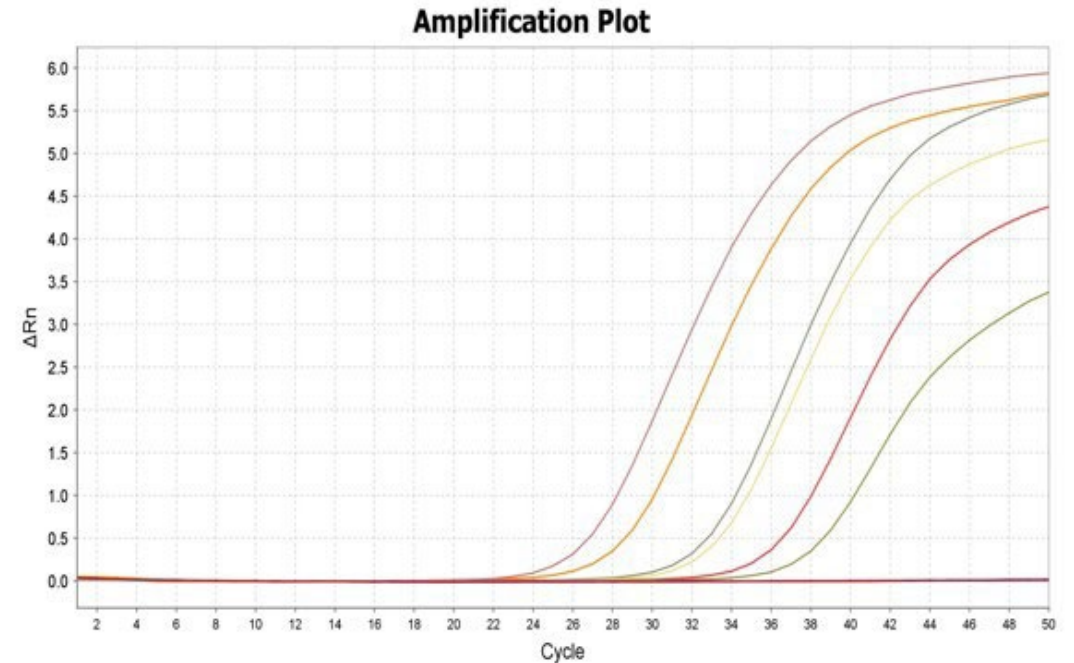
- FDA-approved assay for use in sputa of “patients for whom there is clinical suspicion of tuberculosis”
- Provides results for the presence/absence of MTBC DNA as well as for Rifampin resistance
- **Results:** MTB detected (positive) or MTB not detected (negative)
- “Should be used in conjunction with mycobacterial culture to address the risk of false negative results and to recover organisms for further characterization and drug susceptibility testing.”



[www.cepheid.com](http://www.cepheid.com)

# NAAT—TB PCR

- Lab developed assay to detect MTBC DNA
- Used at IDOH Lab and some other PHLs
- **Results:** **Detected** (Positive) or **Not Detected** (Negative)
- IDOH automatically performs this test on smear positive sputa for new patients and up to one specimen per patient for smear-negative patients
- May be performed on extrapulmonary specimens, but will be reported with a disclaimer



# *M. avium* complex (MAC) PCR

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- **Specimen MAC PCR**—molecular test that detects *M. avium* complex DNA—very sensitive, can detect very small quantities, specific to MAC
- **Results:** **Detected** (Positive) or **Not Detected** (Negative)
- Will only be run on smear positives that are TB PCR not detected
- Purpose is to help rule out TB for smear positive patients
- *M. avium* complex includes both *M. avium* and *M. intracellulare-chimaera* group



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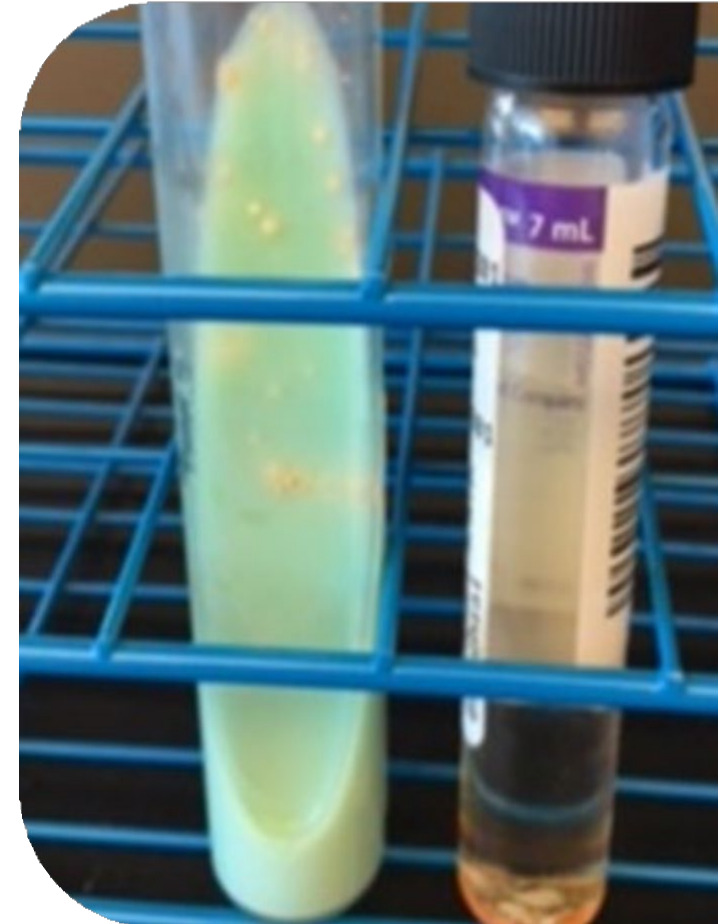
# Analytic: Culture and Identification



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# Mycobacterial Culture

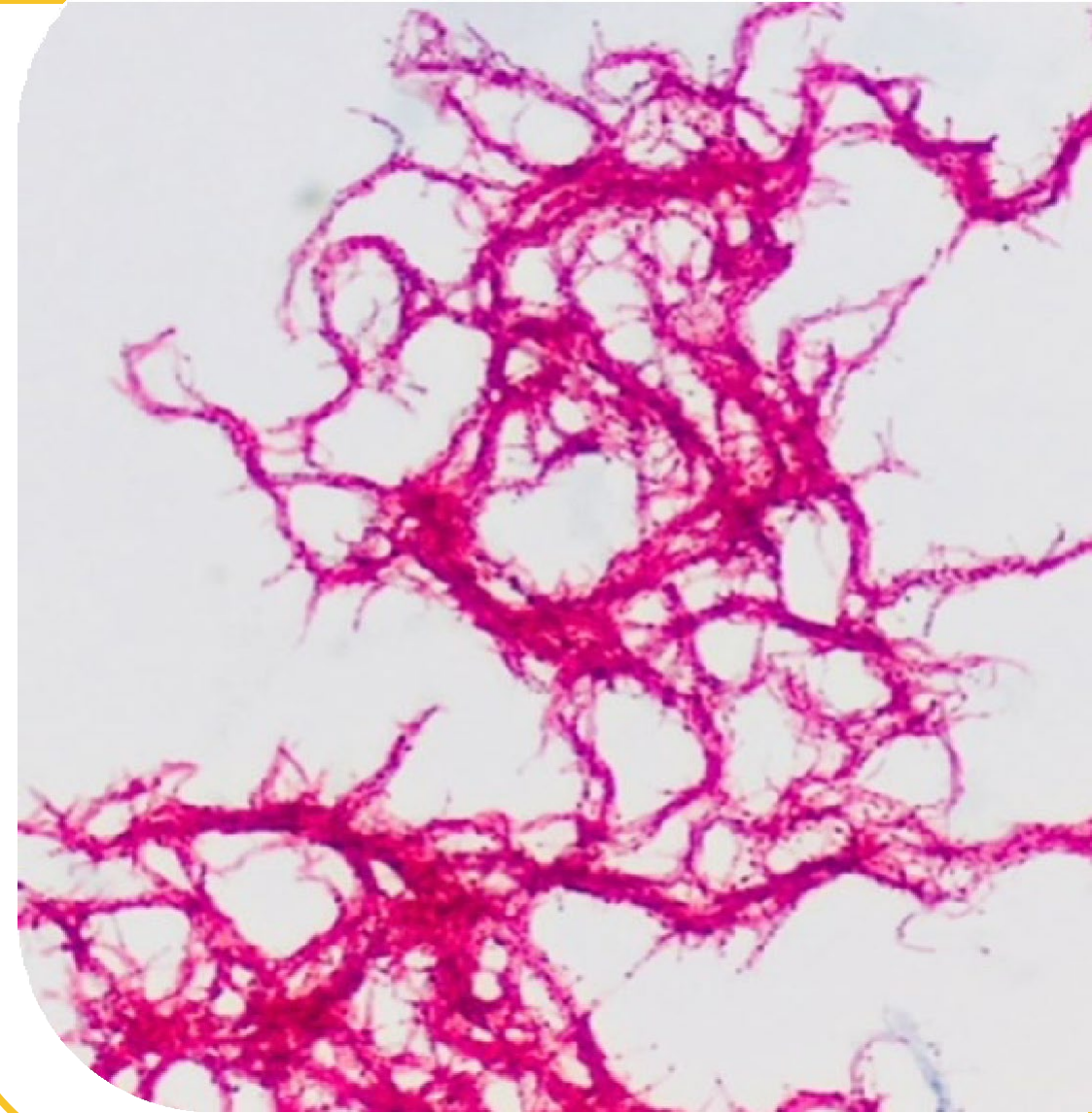
- Two sets of media are inoculated for all specimens:
  - **M**ycobacterial **G**rowth **I**ndicator **T**ube—MGIT broth
  - **L**owenstein-**J**ensen slant—LJ
- MGIT 960 is considered “rapid” liquid culture for MTBC—most laboratories use this
- Both cultures are incubated for six weeks
  - MGIT tubes are continually monitored for growth by MGIT 960 instrument
  - LJ slants are checked at weeks one, four and six (some labs weekly)
- Once growth is detected in either culture additional testing is performed to identify the organism



# Mycobacterial Culture

- Culture growth is checked to confirm the presence of mycobacteria — culture is smeared on a glass slide, stained, and examined under a microscope
- Presence of AFB could indicate TB or another mycobacteria
- Some laboratories issue a preliminary report: “Culture growth at three weeks”

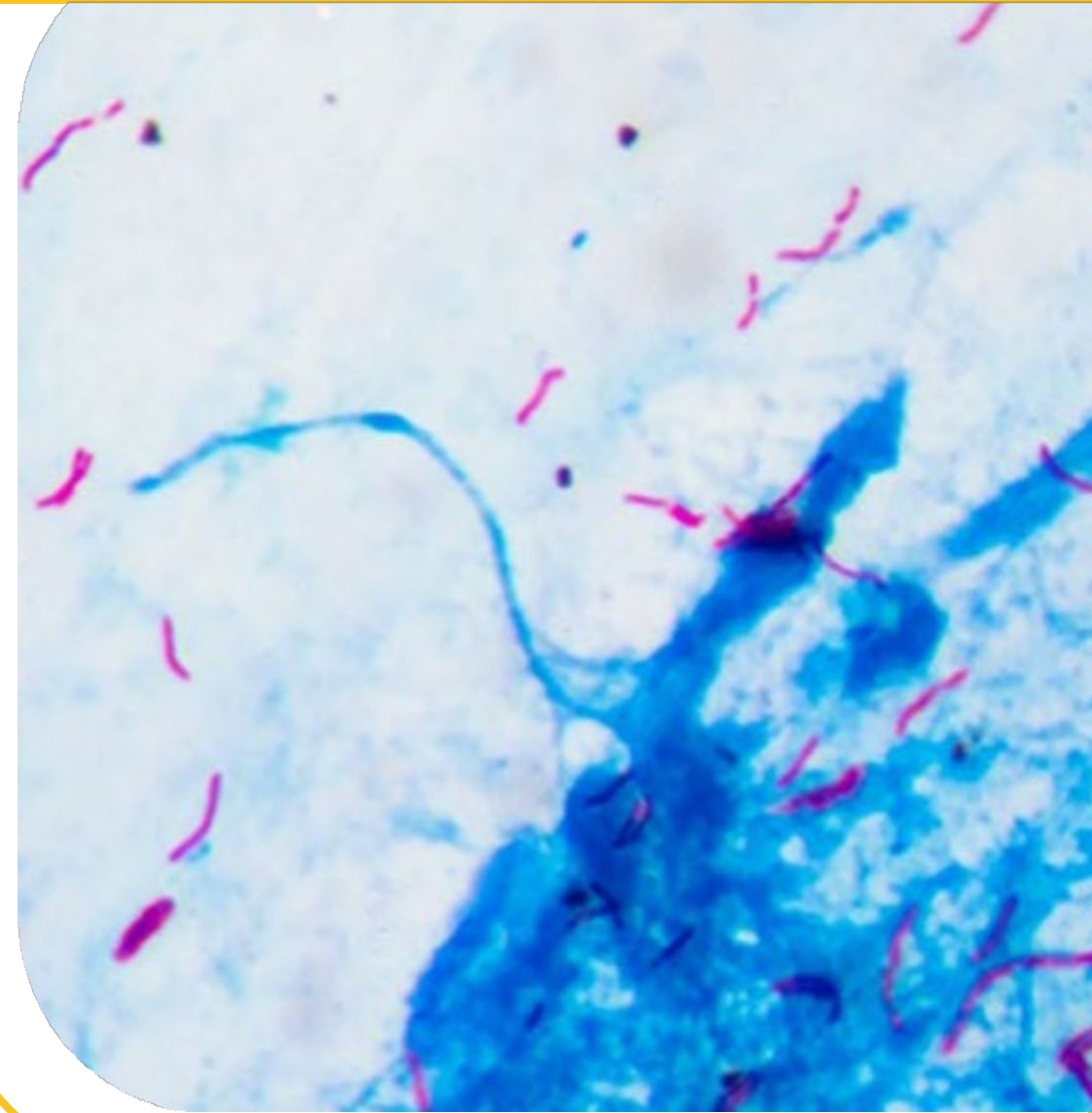
Taken at IDOHL, this photo shows MTBC from MGIT stained with Kinyoun stain under high magnification.



# Culture Identification

AFB positive culture growth must be identified. Common methods:

- Culture PCR/NAAT
- MALDI-TOF
- Sequencing



# Culture Identification – PCR

- **Positive cultures are first tested by Culture PCR to rule in or rule out TB**—same test as specimen PCR, but performed on the culture instead of the specimen
- **Results:** **Detected** (Positive) or **Not Detected** (Negative)
- All AFB positive cultures will be tested by both TB and MAC Culture PCR
- Lab Report will show each PCR test as a separate line



# Culture Identification — MALDI-TOF MS

- MALDI-TOF MS is used to identify Non-Tuberculous Mycobacteria (NTMs)
- **M**atrix **A**ssisted **L**aser **D**esorption **I**onization-**T**ime **o**f **F**light **M**ass **S**pectrometry
- Technology uses a laser beam to analyze the protein composition of bacteria and fungi
- Can be used to differentiate many species of mycobacteria—library includes dozens of species

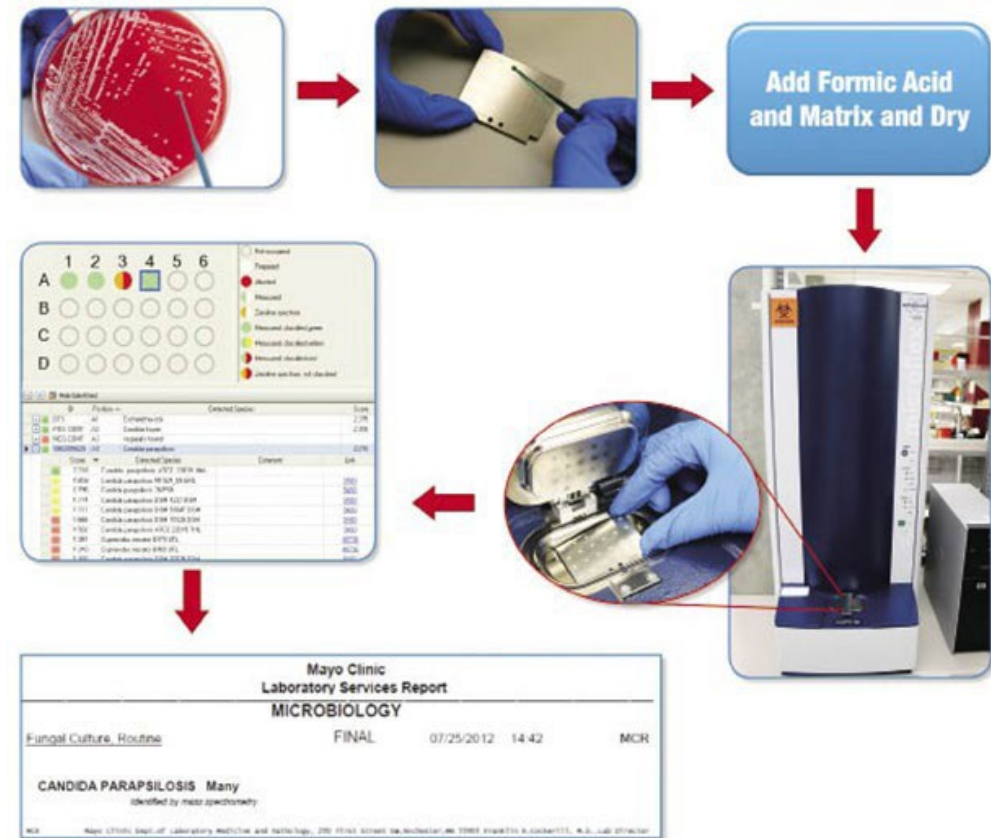


Figure 3. Matrix-Assisted Laser Desorption Ionization-Time of Flight Mass Spectrometry Workflow

MALDI-TOF MS graphic from Bruker Corporation website

# Culture Negative Results

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- If no growth is observed in either the MGIT tube or the LJ slant, the culture is reported as negative
- **Result:** Final Conclusion: No Mycobacteria Isolated
- Culture negative results are finished after 6 weeks
  - Usually, this is exactly 6 weeks after the initial AFB smear date
- A culture negative indicates:
  - No mycobacteria were present in the sputa; or
  - Any AFB present were dead



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# Analytic: Susceptibility Testing

# Drug Susceptibility Testing (DST)

## Molecular DST (mDST)

- Detects mutations associated with drug resistance in MTBC DNA
- More rapid than culture DST
- Limitation — not all mutations are known
- Less widely available

## Phenotypic DST (pDST)

- Based on the ability of the MTBC culture to grow in the presence of specific concentrations of anti-TB drugs
- May take several weeks from collection

**The best approach is to use a combination of mDST and pDST—mDST to rapidly detect MDR-TB, followed by pDST.**

# Molecular DST — GeneXpert

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- MTB/RIF GeneXpert — If MTBC DNA is detected in a specimen, a second result for Rifampin resistance will be provided:
  - MTB detected; RIF resistance not detected
  - MTB detected: **RIF resistance detected**
- Assay relies on the binding of labeled probes at the Rifampin resistance determining region (RRDR) of the *rpoB* gene of the MTBC genome
- Assay has the potential for falsely resistant results — It is important to follow up MTB/RIF resistant results with sequencing-based testing

# Susceptibility Testing – Pyrosequencing

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**Pyrosequencing**—molecular sequencing assay, detects mutations causing the majority of antibiotic resistance to RIF and INH

IDOH's pyrosequencing panel consists of three assays:

- **rpoB**—Rifampin
- **katG**—Isoniazid resistance (high level)
- **inhA**—Isoniazid resistance (low level)

**Results: Mutation Detected** (Positive)—likely antibiotic resistant

**Mutation Not Detected** (Negative)—approx. 90% chance the strain will be susceptible—culture DST needed for confirmation

# Susceptibility Testing – Pyrosequencing

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- The purpose of this assay is to detect MDR TB as early in infection as possible
- IDOH can perform this assay on TB PCR positive specimens or cultures
- Assay is typically performed once per TB patient
- Specimens can be submitted from other laboratories in Indiana upon request
- Specimens with mutations are typically forwarded to the CDC for additional testing

# Targeted Next Generation Sequencing (tNGS)

| tNGS Panel                           |   |
|--------------------------------------|---|
| Drug                                 | Genetic loci tested                                       |
| Rifampin                             | <i>rpoB</i> RRDR, <i>rpoB</i> -170, and <i>rpoB</i> -491  |
| Isoniazid                            | <i>inhA</i> promoter, <i>katG</i> gene, <i>fabG1</i> -203 |
| Ethambutol                           | <i>embB</i>   |
| Pyrazinamide                         | <i>pncA</i>   |
| Fluroquinolones                      | <i>gyrA</i> and <i>gyrB</i>                               |
| Amikacin, Kanamycin, and Capreomycin | <i>rrs</i>  |
| Kanamycin                            | <i>eis</i>  |
| Bedaquiline                          | <i>atpE</i> , <i>rv0678</i> , and <i>pepQ</i>             |
| Clofazimine                          | <i>rv0678</i> and <i>pepQ</i>                             |
| Linezolid                            | <i>rplC</i> and <i>rrl</i>                                |

- CDC's mDST panel
- Includes 16 genes for 12 different TB drugs
- Allows for testing of both PCR+ specimens and isolates
- Growth-based DST will also be performed

# Phenotypic Drug Susceptibility Testing

- Growth-based DST — Based on the ability of the MTBC culture to grow in the presence of specific concentrations of anti-TB drugs
  - Liquid culture: BACTEC MGIT, VersaTREK — Both FDA cleared
    - Resulted as “resistant” or “susceptible” at a critical concentration
  - Sensititre plates
    - Resulted as MICs (minimum inhibitory concentration)
    - May also include an interpretation
  - Agar proportion (solid media culture) — Gold standard, but labor intensive
    - Resulted as “resistant” or “susceptible”

Repeat pDST is sometimes needed for extended culture positivity to rule out acquired drug resistance.

**pDST should be performed on the first positive culture to ensure that appropriate therapy is used.**

# Phenotypic DST Results

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## Critical concentration:

- The lowest concentration of a drug that inhibits 95% of wild type strains (that have never been exposed to anti-TB drugs)
- An MTBC strain will either fail to grow at this concentration (Susceptible) or will have growth at this concentration (Resistant)
- May miss low-level resistant strains

## Minimum inhibitory concentration (MICs)

- The lowest concentration of a drug in a series of dilutions that will inhibit visible growth of the organism
- Interpretations (susceptible, intermediate, resistant) may be provided for some TB drugs
  - Based on clinical data
  - There are not established breakpoints for all TB drugs

# Susceptibility Testing — BACTEC MGIT

- MGIT tubes are inoculated with TB culture and antibiotics are added:
  - Rifampin (1  $\mu\text{g}/\text{mL}$ )
  - Isoniazid (0.1  $\mu\text{g}/\text{mL}$ )
  - Ethambutol (5  $\mu\text{g}/\text{mL}$ )

The tubes are incubated for 10-14 days and monitored for growth.



MGIT tubes at IDOHL

# Susceptibility Testing — BACTEC MGIT

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## Results:

**Susceptible** — No growth in the MGIT tube indicating the drug is effective against the TB strain

**Resistant** — Growth in the MGIT tube, indicating that the drug is ineffective against the TB strain

- IDOHL performs this test on the first positive culture for each TB patient
- Resistant strains are sent to the CDC for further testing for second line antibiotics

# Susceptibility Testing – Sensititre

- Microplate is coated with antibiotics in different concentrations
- Growth in a well is an indication that the organism is resistant at that concentration
- MIC - The lowest concentration of a drug that will inhibit the visible growth of the organism
- Interpretations may be provided for each MIC, but not all MTBC drugs have established breakpoints

|   | 1           | 2           | 3           | 4           | 5           | 6           | 7          | 8          | 9          | 10          | 11         | 12         |
|---|-------------|-------------|-------------|-------------|-------------|-------------|------------|------------|------------|-------------|------------|------------|
| A | OFL<br>32   | MXF<br>8    | RIF<br>16   | AMI<br>16   | STR<br>32   | RFB<br>16   | PAS<br>64  | ETH<br>40  | CYC<br>256 | INH<br>4    | KAN<br>40  | EMB<br>32  |
| B | OFL<br>16   | MXF<br>4    | RIF<br>8    | AMI<br>8    | STR<br>16   | RFB<br>8    | PAS<br>32  | ETH<br>20  | CYC<br>128 | INH<br>2    | KAN<br>20  | EMB<br>16  |
| C | OFL<br>8    | MXF<br>2    | RIF<br>4    | AMI<br>4    | STR<br>8    | RFB<br>4    | PAS<br>16  | ETH<br>10  | CYC<br>64  | INH<br>1    | KAN<br>10  | EMB<br>8   |
| D | OFL<br>4    | MXF<br>1    | RIF<br>2    | AMI<br>2    | STR<br>4    | RFB<br>2    | PAS<br>8   | ETH<br>5   | CYC<br>32  | INH<br>0.5  | KAN<br>5   | EMB<br>4   |
| E | OFL<br>2    | MXF<br>0.5  | RIF<br>1    | AMI<br>1    | STR<br>2    | RFB<br>1    | PAS<br>4   | ETH<br>2.5 | CYC<br>16  | INH<br>0.25 | KAN<br>2.5 | EMB<br>2   |
| F | OFL<br>1    | MXF<br>0.25 | RIF<br>0.5  | AMI<br>0.5  | STR<br>1    | RFB<br>0.5  | PAS<br>2   | ETH<br>1.2 | CYC<br>8   | INH<br>0.12 | KAN<br>1.2 | EMB<br>1   |
| G | OFL<br>0.5  | MXF<br>0.12 | RIF<br>0.25 | AMI<br>0.25 | STR<br>0.5  | RFB<br>0.25 | PAS<br>1   | ETH<br>0.6 | CYC<br>4   | INH<br>0.06 | KAN<br>0.6 | EMB<br>0.5 |
| H | OFL<br>0.25 | MXF<br>0.06 | RIF<br>0.12 | AMI<br>0.12 | STR<br>0.25 | RFB<br>0.12 | PAS<br>0.5 | ETH<br>0.3 | CYC<br>2   | INH<br>0.03 | POS        | POS        |

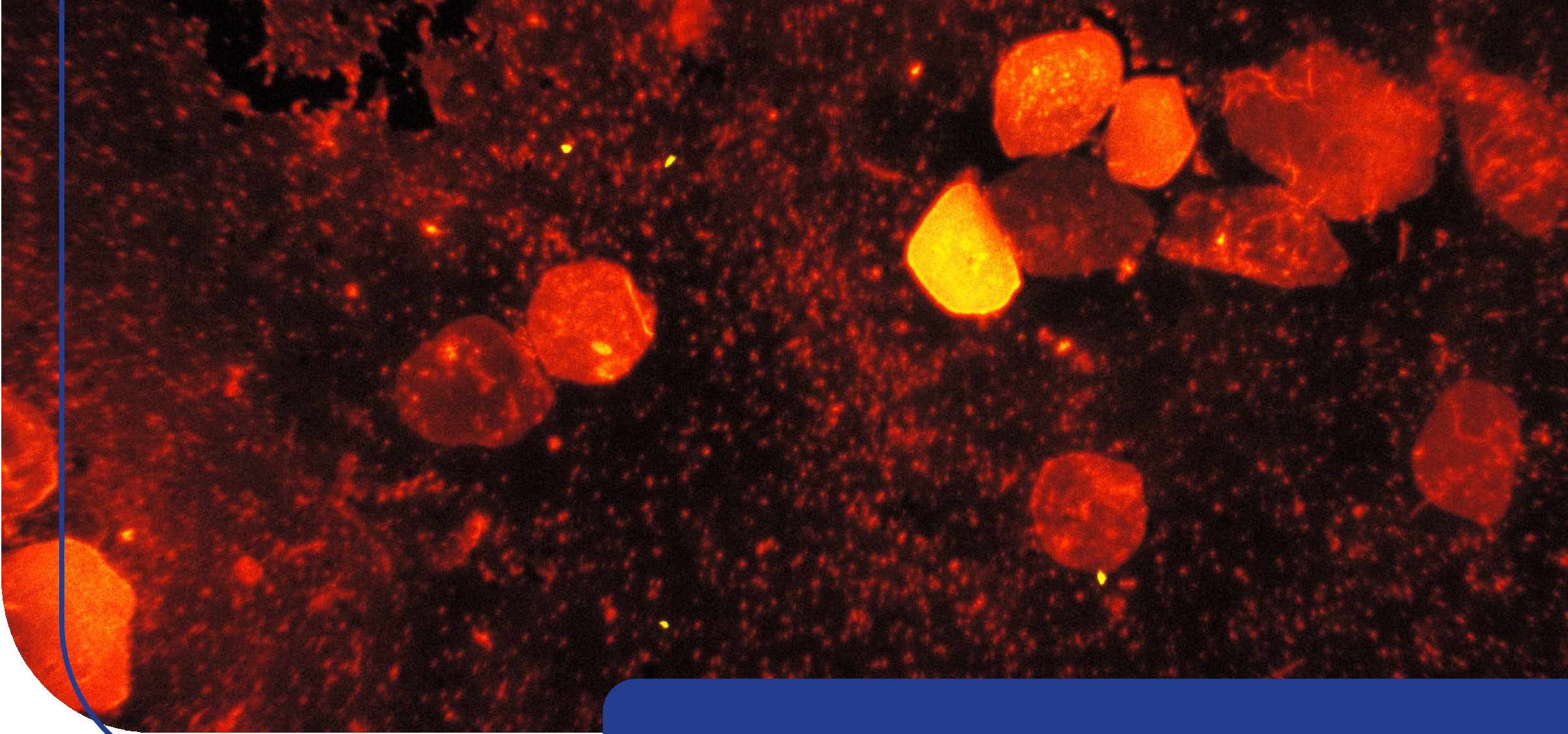
Sensititre TB plate

# Agar Proportion

- Like Sensititre, but utilizes agar plates that have anti-TB drugs of varying concentrations
- Usually includes only a couple of concentrations for each drug
- Compares growth on drug-containing agar to growth on agar without drugs to calculate percentage resistant

| <b>MTBC Agar Proportion Susceptibility*</b> | <b><u>% Resistant</u></b> | <b><u>Interpretation</u></b> |
|---|---------------------------|------------------------------|
| Isoniazid 0.2 µg/mL                         | 33 %                      | Resistant                    |
| Isoniazid 1.0 µg/mL                         | 0 %                       | Susceptible                  |
| Isoniazid 5.0 µg/mL                         | 0 %                       | Susceptible                  |
| Rifampin 1.0 µg/mL                          | 0 %                       | Susceptible                  |
| Ethambutol 5.0 µg/mL                        | 0 %                       | Susceptible                  |
| Streptomycin 2.0 µg/mL                      | 33 %                      | Resistant                    |
| Streptomycin 10.0 µg/mL                     | 0 %                       | Susceptible                  |

CDC Lab Report



# Post-analytic



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# TB Genotyping

- IDOH receives MTBC isolates from clinical laboratories throughout the state for genotyping
- One isolate from each TB patient is sent for genotyping
- National genotyping lab is the Michigan Department of Health
  - Molecular testing is used to compare strains of MTBC
  - Genotyping results aid IDOH TB epidemiologists in creating links between patients to track how TB may be spreading



TB on 7H11 plate at IDOHL.

# Discordant Results

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Mycobacteriology testing is very complicated...results do not always agree from lab to lab (or even in the same lab!)

## **Different methods used:**

- Molecular vs. culture
- Pyrosequencing vs. GeneXpert
- MGIT 960 vs. agar proportion

## **Specimen quality:**

- Sputa collected on different days may give inconsistent results
- BAL may give different results than sputa

**Mixed population of MTBC — Heteroresistance**

**It is important to consider the sensitivity and limitations of each assay to resolve discordant results.**

# What Tests do I need to order?

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- IDOH Lab will automatically perform a smear and culture for every specimen submitted
  - If the smear is positive, TB PCR will be performed (new patients only)
- Susceptibility testing and pyrosequencing will be performed once per TB patient
- PCR can also be performed on up to one smear negative sputa/patient upon special request
- When a culture grows, culture PCR will be performed
- At other laboratories, initial orders often only include AFB smear and culture. Separate orders may be needed for NAAT and DST.

# How long does it take for results?

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| Lab test         | Typical timeline    |
|------------------|---------------------|
| AFB smear        | One day             |
| NAAT             | Two days            |
| Pyrosequencing   | Two to seven days   |
| Culture PCR      | Three to four weeks |
| MALDI-TOF MS     | Four to five weeks  |
| Culture DST      | Six weeks           |
| Negative Culture | 42 days             |

**Each laboratory is different. These times are approximate and dependent on how fast the strain grows and how many bacteria are present.**

# What is LimsNet?

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- IDOH Lab's electronic specimen submission system—eliminates paper submission forms
- No need to fill out submission forms in triplicate—use patient lookup feature for multiple sputum collections
- Results are available more quickly
- Testing delays due to incomplete patient/submitter information are virtually eliminated
- Submitters are able to view, print and save laboratory reports as PDF files at their convenience
- 99% of TB specimens are submitted via LimsNet

# How do I Sign up for LimsNet?

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- Contact the LIMS helpdesk at [LimsAppSupport@health.in.gov](mailto:LimsAppSupport@health.in.gov)
- Provide your name, contact info, organization, IP address



<https://eportal.isdh.in.gov/limsnet/login.aspx>

# QuantiFERON-TB Gold Plus



- Offered to LHDs for \$20 per test or for free (if insurance/Medicaid provided)
  - Green top tubes and packaging/shipping supplies included
  - Order kits through LimsNet
  - Shipping boxes fit up to 6 tubes
- Collection instructions found on IDOH website
- Minimum of 5 mL of blood is required:
  - Blood must be stored/shipped 2-8°C and received within 48 hours
  - Ship for overnight delivery
  - Cannot collect on Friday or day prior to a state holiday



# TB Lab Resources

## Tuberculosis Laboratory Resources



### IDOHL Specimen Submission

Find updated specimen submission and shipping instructions online for:

- QuantiFERON-TB Gold Plus (QFT-Plus tube collection) testing
- QuantiFERON-TB Gold Plus (Single Tube) testing
- Tuberculosis/Mycobacteriology Isolates testing
- Tuberculosis/Mycobacteriology Specimen testing



To view the instructions to collect and submit blood specimens to the IDOH Laboratory for QuantiFERON-TB Gold Plus testing, scan the QR code located to the right.

### TB Specimen Submission at IDOHL

Scan the QR code to the right to view Jessica Gentry's 2023 TB Summit presentation that covers:

- Specimen collection, packaging, and shipping
- Testing and results interpretation
- The process for ordering testing
- LimsNet
- QuantiFERON-TB Gold Plus



# APHL Course: Lab Testing for TB Nurses

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**Understanding Tuberculosis (TB) Laboratory  
Testing for Public Health Nurses**

**Let's get started**

# When should I call the lab?

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-  If you have a question
-  If you need testing expedited
-  If you have a special test request
-  If you need help interpreting a lab report
-  If you need help finding lab results
-  If you have a patient at a hospital and want to arrange for testing at IDOHL

# Questions?

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