



# Antimicrobial Resistance Fellowship – Tuberculosis

Marisabel Etter, PhD

Microbial Diseases Laboratory

California Department of Public Health



# Antimicrobial Resistance Fellowship

- One year - possible additional year
- Orientation at the CDC (1 month TB Track)
- Rotations in other public health labs
- Professional development
  - Conferences
  - Public Health Laboratory Competencies webinars



# Laboratory rotations



## CDC Division of TB Elimination – Lab Branch

- Molecular detection of drug resistance (MDDR)
- Agar proportion DST
- NGS – Genotypic DST

## Bureau of Public Health Laboratories – Jacksonville

- GenoType MTBDR*plus*
- Sensititre MIC plate
- Sanger sequencing –  
Genotypic DST



# TB Drug Susceptibility Testing Lab National TB DST Reference Center



MTBC ID and DST for 1<sup>st</sup> and 2<sup>nd</sup> line drugs

- Molecular and phenotypic methods

# Projects

# Validation of PSQ for Detecting Mutations Conferring Resistance to Ethambutol

# Ethambutol

- 1<sup>st</sup> line TB drug
- Mutations in codons 306 and 406 of *embB* are associated with resistance
- PSQ sequencing results will be compared to Sanger sequencing results

# PSQ

- Nucleotides detected as they are incorporated
  - 10 to 80 bp reads

- Can detect MDR and XDR TB

- Isoniazid and rifampin (MDR)
- MDR + fluoroquinolones + injectable drugs (XDR)



PyroMark Q96 ID

- Used for smear-positive specimens and clinical isolates



# Validation of the Xpert MTB/RIF Assay for Non-sputum Samples

# Xpert MTB/RIF

- Real-time PCR assay
  - MTBC
  - Rifampin resistance
  - For sputum specimens



- Used in our lab for smear-negative specimens

# Other Lab Activities

- MGIT DST reporting
- Training in laboratory methods
  - Emphasis on conventional methods
- Participation in CLIA inspection preparation and follow-up
- Assisting with writing of the Xpert MTB/RIF assay validation for bronchoalveolar lavage specimens

# Other Training Activities

- APHL Annual Meeting
- ASM Microbe 2018
- The National Conference on Laboratory  
Aspects of Tuberculosis 2019

# Other Training Activities

- APHL TB Subcommittee
- Training for Public Health Microbiologist certification
- MDR meetings with TB Control Branch at CDPH



# Acknowledgements



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- Kelly Wroblewski, MPH
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- Nikki Marchan, MPH

## CDPH – MDL

- Ed Desmond, PhD
- Grace Lin, MS
- M&M members

## CDC

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- Beverly Metchock, DrPH
- Jeff Driscoll, PhD
- Connie Lam, PhD

## BPHL – Jacksonville, FL

- Marie-Claire Rowlinson, PhD
- Calin Chiribau, PhD
- Charise Tanner
- Beth Burden

# TB DST Lab

