**Mycobacterium tuberculosis: Diagnostic Principles and Procedures**

April 21-24, 2020
Centers for Disease Control | Atlanta, GA

Co-Sponsored by the Association of Public Health Laboratories in collaboration with the National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention, Division of Tuberculosis Elimination, and Laboratory Training Team, Division of Laboratory Systems, Center for Surveillance, Epidemiology, and Laboratory Services, Centers for Disease Control and Prevention

**DESCRIPTION**
This intermediate-level course will further educate participants on diagnostic Mycobacterium tuberculosis complex (MTBC) principles and procedures. Lectures, hands-on laboratory exercises, group discussions, and interactive sessions will be used to increase knowledge. State-of-the-art diagnostic molecular and growth-based methods for detection, isolation, identification (ID), and drug susceptibility testing (DST) of MTBC will be discussed and compared. Attendees will be provided with the tools necessary to determine appropriate safety practices and testing algorithms. Case studies will highlight interesting tuberculosis case results including the importance of accurate result interpretation, collaboration with TB Control Programs and other laboratories, lessons learned, and problem-solving. Attendees are expected to present case studies and to participate in group discussions by describing testing algorithms/methods.

**AUDIENCE**
This course is intended for laboratorians with a minimum of one year experience in a laboratory that identifies MTBC and performs detection, isolation, ID, and DST with preference given to laboratorians working in public health laboratories.

**OBJECTIVES**
At the conclusion of this program, the participants will be able to:
- Identify important risk assessment and biosafety practices for the mycobacteriology laboratory.
- Compare and contrast test methods for growth-based DST, ID, and molecular detection of MTBC.
- Describe mutations associated with drug resistance for MTBC and common correlations between mutations and growth-based results.
- Discuss mycobacteriology case studies related to testing algorithms and interpretation of results.
- Explain the importance of assessing local data and quality performance measures for the mycobacteriology laboratory.
- Recognize accepted validation methods and regulatory standards for mycobacteriology testing.
- Describe next generation sequencing (NGS) and its potential use in the mycobacteriology laboratory.
- Demonstrate NGS library preparation.

**CONTINUING EDUCATION**
The Association of Public Health Laboratories (APHL) is approved as a provider of continuing education programs in the clinical laboratory sciences by the ASCLS P.A.C.E.® Program. Participants who successfully complete this program will be awarded 24 contact hours. This course has been approved for 24 contact hours in the category (Microbiology/Mycology/Parasitology) for Florida Laboratory Licensees.

**APPLICATION to ATTEND**
Application Deadline: November 25, 2019
- The preliminary application is to be completed online at [https://www.surveymonkey.com/r/101-20TBApplication](https://www.surveymonkey.com/r/101-20TBApplication).
- Only completed applications received by the deadline will be considered. Application does not guarantee acceptance.
- If you are unable to complete the application online, email Marisa Barley at marisa.barley@aphl.org or phone 240.485.3843.
- Public health applicants must have approval from their state or local laboratory director to apply. Students will be selected according to the degree to which the applicant’s job description, experience, and responsibilities are consistent with the prerequisites. Priority will be given for one applicant per public health laboratory, with a second person considered on a space available basis.
- Notification of acceptance status will be sent via email after December 30, 2019.
- Participants are required to bring a case study and testing algorithm from their laboratory to the course to present to course participants. More details to follow with application acceptance.

**REGISTRATION**
- Registration for this workshop is being offered at No Charge to the participants!
- Registration and logistical details will be provided upon acceptance into the course.

**TRAVEL**
- All travel and logistical details will be provided upon acceptance into the workshop.
- Some states have lengthy travel approval processes so it is important to begin the process as soon as possible. However, DO NOT make any travel arrangements until you are notified of acceptance into the course.
- Participants are responsible for all lodging, meals, and travel costs.
- A group lodging discount is being negotiated at the current federal per diem rate of $164.00 (plus tax and fees) per night.
- Transportation between the hotel and CDC will be provided.

**SPECIAL NEEDS**
In compliance with the Americans with Disabilities Act (ADA), individuals seeking special accommodations should submit their request in writing to Marisa Barley, APHL Customer Support at marisa.barley@aphl.org, at least three weeks prior to the start date of the workshop.

For a complete list of APHL courses, visit [www.LaboratoryTraining.org](http://www.LaboratoryTraining.org)
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**PRELIMINARY AGENDA**

**Day 1** Tuesday, April 21, 2020

8:00 am Introduction and Course Overview  
8:15 Lecture and Lab Demonstration of WGS  
9:00 Lecture and Lab Demonstration of WGS (cont.)  
10:05 Lecture and Lab Demonstration of WGS Quality Control  
12:45 pm Overview of Data Analysis

**Day 2** Wednesday, April 22, 2020

8:00 am Considerations for Specimen Processing and Isolation of MTBC from Culture  
9:00 NAAT for Direct Detection of TB  
9:30 Mycobacterial Identification  
10:00 Break  
10:45 False-Positive and False-Negative Results  
11:15 Case Studies  
11:30 Lunch (on your own)  
1:00 pm Considerations for Growth-based Drug Susceptibility Testing  
2:15 Improving MGIT Pyrazinamide Susceptibility Testing  
2:45 National DST Reference Center  
3:00 Break  
3:15 Molecular Detection of Drug Resistance  
3:55 Monitoring and Assessing Your Laboratory Specific Data  
4:40 Case Studies  
5:00 Adjourn

**Day 3** Thursday, April 23, 2020

8:00 am Introduction to Whole Genome Sequencing (WGS)  
8:15 Lecture and Lab Demonstration of WGS  
9:00 Lecture and Lab Demonstration of WGS (cont.)  
10:05 Lecture and Lab Demonstration of WGS Quality Control  
11:45 Lunch (on your own)  
12:45 pm Overview of Data Analysis  
2:30 Break  
3:45 Molecular Epidemiology  
4:30 Applications of WGS for Drug Resistance  
5:00 Adjourn

**Day 4** Friday, April 24, 2020

8:00 am Beyond the Laboratory Walls: Enhancing your Integrated System  
8:45 Review of WGS Results  
9:00 Case Studies  
9:20 Break  
9:35 Clinical Case Studies: The Big Picture  
10:45 Case Studies  
11:25 Post-Test  
11:45 Review Test Responses  
12:00 pm Final Question and Answer, Evaluation Instructions  
12:15 Adjourn

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**FACULTY**

**Division of Tuberculosis Elimination (DTBE), National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention (NCHHSTP), CDC, Atlanta, GA**

**Laboratory Branch, Office of the Branch Chief**

- Angela Starks, PhD, Branch Chief  
- Tracy Dalton, PhD, Deputy Branch Chief

**Laboratory Branch, Applied Research Team**

- Jamie Posey, PhD, Team Lead  
- Scott Burns, MS, Microbiologist  
- Glenn Morlock, MS, Microbiologist  
- Sarah Talarico, PhD, Epidemiologist

**Laboratory Branch, Laboratory Capacity Team**

- Stephanie Johnston, MS, Team Lead  
- Robert Domaoal, PhD, Laboratory Consultant  
- Cortney Stafford, MPH, MT(ASCP), Laboratory Consultant  
- Mitchell Yakrus, MS, MPH, Microbiologist  
- Monica Youngblood, MPH, M(ASCP), Laboratory Consultant

**Laboratory Branch, Systems Group**

- Melinda Dunn, PhD, Safety Officer

**Laboratory Branch, Reference Laboratory Team**

- Beverly Metchock, DrPH, D(ABMM), Team Lead  
- Katherine Klein, MPH, M(ASCP), Microbiologist  
- David Sikes, BS, MT(ASCP), Microbiologist

**Field Services Branch**

- Sapna Bamrah Morris, MD, MBA, Medical Officer  
- Eileen M. Burd, PhD, D(ABMM), Director, Clinical Microbiology, Emory University Hospital, Atlanta, GA  
- Jessica Gentry, BA, Supervisor, TB/Serology Laboratory, Indiana State Department of Health Laboratory  
- Ryan Jepson, M(ASCP), Supervisor, Microbiology, State Hygienic Laboratory at the University of Iowa  
- Jan Owen, BS, TB Reference Team Lead, Texas Department of State Health Services

**INVITED FACULTY**

- Adam Langer, BS, DVM, MPH, Surveillance, Epidemiology, and Outbreak Investigations Branch  
- Mitchell Yakrus, MS, MPH, Microbiologist

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**NOTE: CDC SECURITY CLEARANCE REQUIREMENTS**

**NON-US CITIZENS** - This course will be held at the CDC Roybal campus. Due to CDC requirements for security clearance, all non-US citizens will be asked to provide information needed to obtain clearance, which will only be used for the purposes of attending this course. Detailed instructions will be provided upon acceptance into the course. Please do not make any nonrefundable travel plans until you have received confirmation of acceptance into the course and security clearance approval.

**US CITIZENS** - If you are a US CITIZEN there is no extra clearance process required.

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[The Association of Public Health Laboratories (APHL) sponsors educational programs on critical issues in laboratory science.](http://www.LaboratoryTraining.org)