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YOU ARE INVITED TO ATTEND THE DEFENSE OF THE DOCTORAL DISSERTATION

"Developing highly multiplexed molecular diagnostic tests for drug-resistant *Mycobacterium tuberculosis*"

by
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Monday, September 26th, 2022
01:00 PM

Join in person: ICPH Auditorium C109 – Space limited

Join Zoom Presentation:
https://rutgers.zoom.us/j/7918960425?pwd=VDE3RXN5dU1IUmdDMFV3UCsyWjBiZz09

Meeting ID: 791 896 0425
Password: 173773

ABSTRACT

Multi-drug resistant tuberculosis (MDR-TB) remains a formidable challenge in eradicating the disease. MDR-TB is resistant to the two most potent anti-TB drugs, isoniazid (INH) and rifampicin (RIF). Xpert MTB/RIF Ultra assay (Ultra assay) is a rapid "near-patient" test available for MDR-TB. It targets the RIF resistance determining region (RRDR) but does not include INH-resistance testing. Recent evidence suggests that mutation *katG* 315T, clinically associated with INH resistance, is a harbinger of MDR-TB. Therefore, the dependency on detecting RIF resistance to identify MDR-TB is depriving patients of appropriate treatment. Additionally, the Ultra assay's constraint to target RRDR for RIF susceptibility has resulted in the selection and transmission, and underdiagnosis of resistant strains with mutations outside RRDR. Therefore, we designed, developed, and evaluated a 10-color multiplexed MDR assay that will overcome the current limitations of the Ultra assay. We demonstrated a comparable performance of the MDR assay with the Ultra assay in detailed analytical studies. The MDR assay had a limit of detection comparable to the Ultra assay and successfully detected the most prevalent mutations associated with MDR-TB. As a primary diagnostic system, the MDR assay will expand drug resistance detection of MDR- and pre-MDR-TB at its earliest stage.