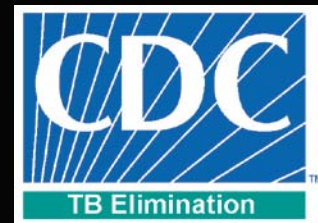


# Molecular Detection of Drug Resistance Service (MDDR)

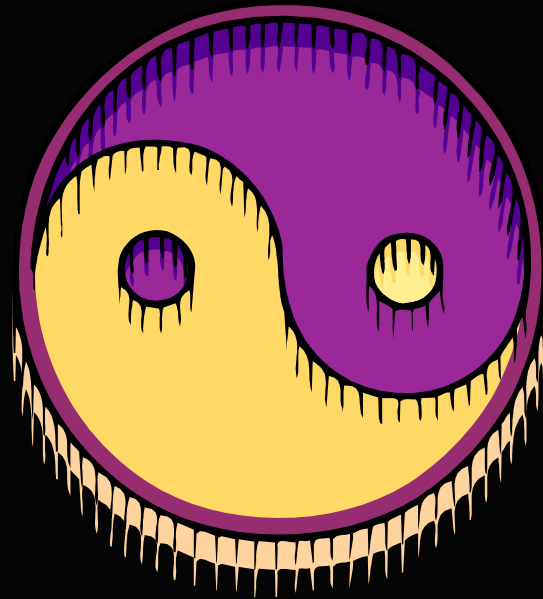
[www.cdc.gov/tb/topic/laboratory/mddr.htm](http://www.cdc.gov/tb/topic/laboratory/mddr.htm)  
**TBLab@cdc.gov**

**Jeff Driscoll Ph.D.**

Mycobacteriology Laboratory Branch  
Division of Tuberculosis Elimination



# Rapid molecular detection of mutations associated with drug resistance



Conventional drug susceptibility testing  
1<sup>st</sup> and 2<sup>nd</sup> line drugs

# Conventional Drug Susceptibility Testing

## Indirect Agar Proportion Method (7H10 medium)

Amikacin (4 µg/ml)

Capreomycin (10 µg/ml)

Ciprofloxacin (2 µg/ml)

Ethambutol (5 µg/ml)

Ethionamide (10 µg/ml)

Isoniazid (0.2 & 1.0 µg/ml)

Kanamycin (5 µg/ml)

Ofloxacin (2 µg/ml)

PAS (2 µg/ml)

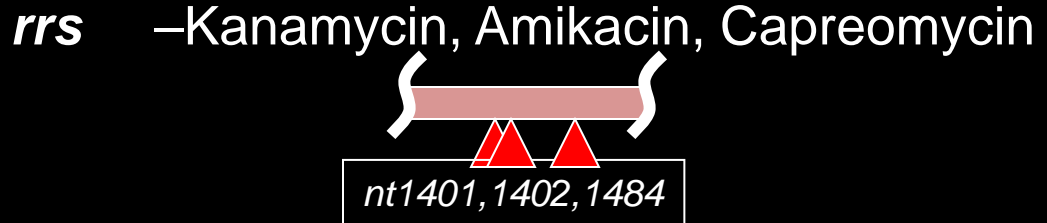
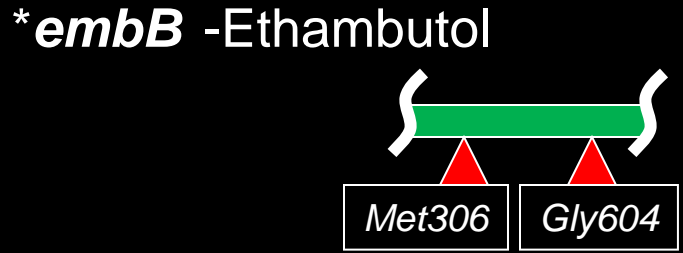
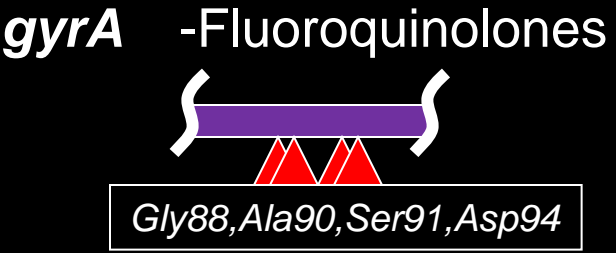
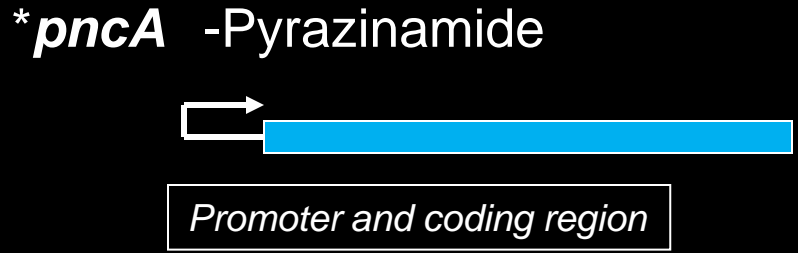
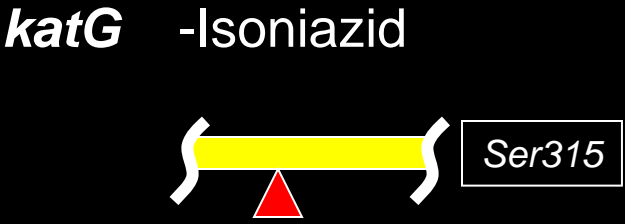
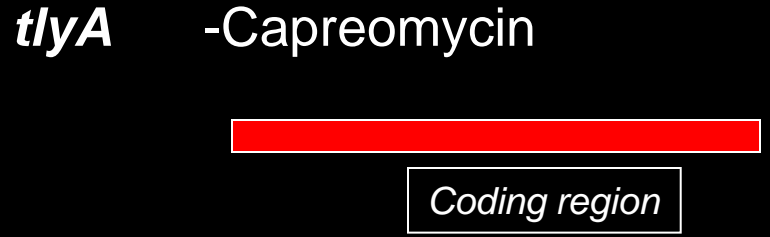
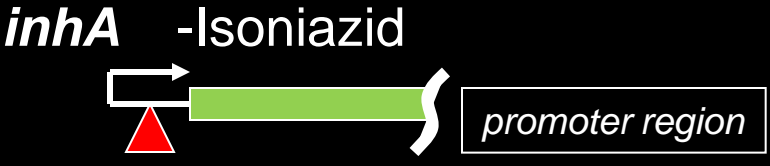
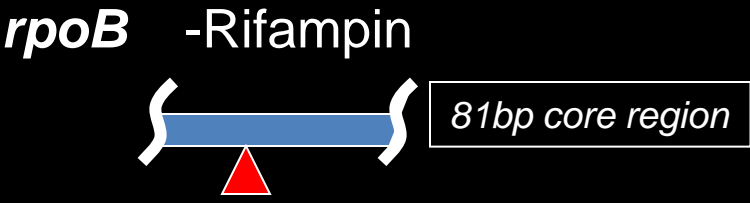
Rifabutin (2 µg/ml)

Rifampin (1 µg/ml)

Streptomycin (2 & 10 µg/ml)

## MGIT 960

Pyrazinamide (100 µg/ml)



\* not reported

# Validation & Verification Considerations

Heat inactivation of cell samples

Ability to PCR from heat killed samples/different media

Ability to amplify all targets from members of MTB complex

Screen panel of most commonly encountered NTM/AFB strains

Ability to detect mixed mutation/wild type sequences  
emerging resistance