

# PATH to TB INNOVATION

TB was first identified in 460 BCE by Hippocrates and initially named "phthisis," which means "consumption" in Greek. Throughout history, TB has had many names, including "white plague." However, since Dr. Koch's discovery, "tuberculosis" became the more common medical term.

**1882**  
Robert Koch discovered TB using the microscope

**1895**  
Development of chest x-ray diagnostic

**1907**  
Tuberculin skin test developed



BCG initially proved a resounding success, reducing mortality from TB by **90%** in vaccinated children. However, BCG does not prevent primary infection or reactivation of latent TB.

**1921**  
BCG vaccine introduced

**1936**  
Solid culture first used to identify TB



**1943**  
First anti-TB drug discovered: Streptomycin



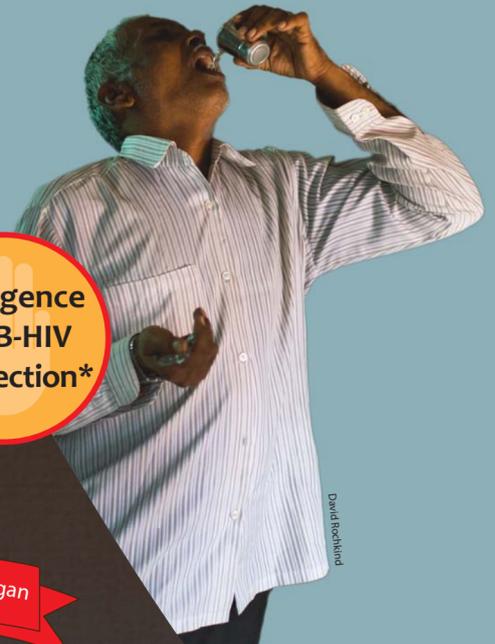
**1952**  
First anti-TB regimen used: Streptomycin, PAS, isoniazid



Monotherapy (single-drug regimen) resistant mutations began to appear within a few months of the introduction of the drug Streptomycin. It was soon demonstrated that this problem could be overcome by treating TB with a **combination** of two or three drugs.

**1963**  
Rifampin and Capreomycin discovered

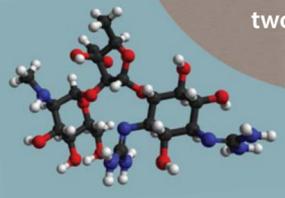
**1974**  
British Medical Research Council trials added Rifampin and Pyrazinamide



**Emergence of MDR-TB\***

**1980**  
Liquid culture developed

**Emergence of TB-HIV co-infection\***



**1994**  
Directly Observed Treatment, Short-course (DOTS)

USAID's Tuberculosis Program Began

**Emergence of XDR-TB\***

**1998**  
Rifapentine approved

**2009**  
iLED microscope, line probe assay developed

Increasing pipeline for new drugs, diagnostics and vaccine candidates



**GeneXpert MTB/RIF® assay** is a new molecular test that can detect TB and mutations associated with Rifampicin resistance in fewer than 2 hours with far greater accuracy than smear microscopy.

**2010**  
Xpert MTB/RIF rapid test for TB receives CE IVD marketing

**2011**  
New drug development approach: CPTR (critical path to TB [drug] regimens)

**2012**  
FDA approves Bedaquiline, the first new anti-TB drug since Rifapentine in 1998



**2014**  
Clinical trials begin on PaMZ, the 3-drug cocktail that could shorten treatment for TB, including MDR-TB

## One Day We Hope to Have...

- ✓ A tool that can diagnose TB and MDR TB within 24 hours for children, adults, and HIV-infected individuals
- ✓ A shorter treatment regimen that can cure TB in 10 days or less that will also work with antiretroviral drugs
- ✓ A vaccine that can prevent new TB infections or recurrences of the disease

\*NOTES: MDR-TB: Multidrug-resistant tuberculosis, TB-HIV: Tuberculosis and HIV Co-infection, XDR-TB: Extensively drug-resistant tuberculosis