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Presentation Title: Fluorogenic probes for point-of-care detection of live *Mycobacterium tuberculosis*

Presentation Synopsis: Poor diagnostic tools to detect active disease plague tuberculosis (TB) control programs and affect patient care. There is an urgent need for point-of-care TB diagnostic methods that are fast, inexpensive and operationally simple. In this presentation, I demonstrate that mycobacteria and other corynebacteria can be specifically detected with fluorogenic trehalose analogs, designed to undergo an increase in fluorescence intensity when transitioned from aqueous to hydrophobic environments. The trehalose-based labeling enabled the rapid, no-wash visualization of mycobacterial and corynebacterial species within minutes, without nonspecific labeling of Gram-positive or Gram-negative bacteria. Furthermore, the labeling was reduced by treatment with TB drugs, unlike the clinically used auramine stain. Lastly, Mtb cells in TB-positive human sputum samples stained comparably to auramine staining, suggesting that this operationally simple method may be deployable for TB diagnosis. Beyond TB applications, fluorogenic dyes offer a unique opportunity to selectively probe molecular activity of live cells in real-time with versatile applications in research and medicine.