

Abstract Submitted
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Adhesion of Mycobacterium smegmatis to Charged Surfaces and Diagnostics Implications.¹ DIANE GORSE, ALI DHINOJWALA, Univ of Akron, FRANCISCO MOORE, Univ of Akron, NSF — Pulmonary tuberculosis (PTB) causes more than 1 million deaths annually. Smear microscopy is a primary rapid detection tool in areas where 95 % of PTB cases occur. This technique, in which the sputum of a symptomatic patient is stained and examined using a light microscope for Mycobacterium tuberculosis (MTB) shows sensitivity between 20 and 60 %. Insufficient bacterial isolation during sample preparation may be a reason for low sensitivity. We are optimizing a system to capture bacteria on the basis of electrostatic interactions to more thoroughly isolate bacteria from suspension and facilitate more accurate detection. Silica supports coated with positively-charged polyelectrolyte, poly(diallyldimethylammonium chloride), captured approximately 4.1 times more Mycobacterium smegmatis, a model organism for MTB, than was captured on negatively-charged silica substrates. Future experimentation will employ branched polymer systems and seek to justify the use of colloidal stability theories to describe initial capture.

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