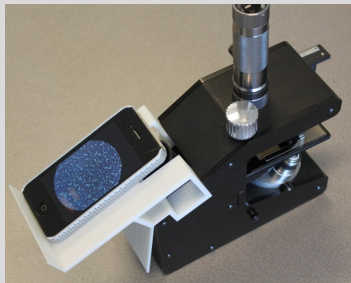


Global Focus Microscope



The low cost, compact design of the Global Focus Microscope combines fluorescence and bright-field microscopy.



To capture and transmit digital images, the Global Focus Microscope comes with shelf for an iPhone 4.

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The Global Health Challenge

In developing countries, bright-field microscopic evaluation of stained sputum smears is the primary method for diagnosing *Mycobacterium tuberculosis* infection. Although it is well known that fluorescence microscopy can increase diagnostic sensitivity and reduce the time and expertise needed to interpret results, sophisticated microscope technologies are not widely available in developing countries, especially outside of centralized health centers. To address this need, we developed the Global Focus Microscope (GFM): a portable, battery-powered, inverted bright field and fluorescence microscope with up to 1000x magnification. The GFM can be manufactured for approximately \$240.

Appropriate Solution

The Global Focus Microscope, with up to 1000x magnification, is designed for the detection of tuberculosis and malaria and can be manufactured for about \$220, which is less than 1/10th the cost of conventional fluorescence microscopes. The microscope bypasses many conventions of microscope construction by incorporating low-cost parts such as a flashlight as the light source. The microscope will allow for a streamlined diagnostic pathway at the point-of-care. Because of its small size and weight (less than 2 pounds), mobile screening efforts will be able to bring the fluorescence microscopy standard of care to all patients, regardless of location.

Current Status

In partnership with the Pasteur Institute of Tehran and Methodist Hospital, a clinical study in 2010 compared the diagnostic capability of the GFM to a laboratory grade fluorescence microscope. Sixty-four samples of *Mycobacterium tuberculosis* were prepared and evaluated as being positive or negative for *M. tuberculosis*. Concordant results were obtained in 98.4% of cases. 20 beta prototypes have been manufactured in partnership with an industrial design firm and are currently being field-tested with partners in low-resource settings.

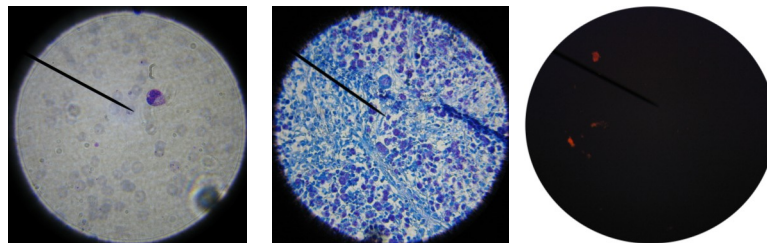


Figure 1. From left to right: Malaria parasites imaged at 1000x in bright field mode, tuberculosis imaged at 400x in bright field mode, tuberculosis imaged at 400x using fluorescence techniques.

An initiative for the advancement of appropriate, high-value innovations in global health biotechnology

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