Lab-in-a-Backpack and Other POC Initiatives for Resource-Limited Settings

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Adapted from presentations by Rebecca Richards-Kortum and Veronica Leautaud
The Problem of Access
The 10/90 Gap
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Healthcare Innovation: should be available to all the world’s citizens
Aims & Goals

“We challenge students to **reach beyond** their usual geographic and disciplinary borders and help them gain knowledge and skills to advance innovative technologies.”
BTB Initiative: Activities

1. Bioengineering and World Health course at Rice University

2. Global Health Technologies Minor at Rice University

3. Summer international internships
Goal: Increase Access to Diagnostics
Lab-in-a-Backpack
Field Testing in Haiti
The Sally Centrifuge
The Sally vs. Benchtop Centrifuge

![Graph showing the comparison between hand-powered and LW Scientific ZIPocrit centrifuge hematocrit values. The graph includes a linear regression equation: $y = 1.0983x + 0.1605$ with a goodness of fit $r^2 = 0.99878$.](attachment:image.png)
Global Focus Microscope
Global Focus Microscope

Miller et al., *PLoS ONE* 2010
Lab-in-a-Backpack in Myanmar
Lab-in-a-Backpack in Ecuador
POC Anemia Diagnosis

HemoCue ~$700

~$1.00 /cuvette in Malawi

VS.

HemoSpec < $100

~$0.01 /paper
HemoSpec Performance

Training set:
\[ y = 7.531 \times 1.702 \]
\[ R^2 = 0.91 \]

Bond et al., *Lab on a Chip* 2013
HemoSpec Performance

Bond et al., Lab on a Chip 2013
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Questions?

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