



DIAGNOSTICS FOR ALL

Low-cost, easy-to-use, point-of-care diagnostics for the developing world.

While a range of diagnostic tests exists for use in well-equipped laboratories with well-trained staff, few are relevant to populations living in resource-poor settings. As a result, people in the developing world die unnecessarily each year from infectious diseases or from complications caused by their treatments simply because their health providers do not have access to suitable diagnostic tools.



Combining elements of a non-profit organization with the activities of a biotech company, Diagnostics For All (DFA) is creating elegantly simple and inexpensive diagnostic devices based on microfluidic technologies developed by George Whitesides at Harvard University. Made almost entirely of paper and roughly the size of a postage-stamp, each diagnostic device is patterned with a network of channels that wick a drop of blood, urine, sweat or other biological sample to regions of the paper-chip that are impregnated with colorimetric tests.

- **DFA diagnostic paper-chips are designed specifically for use in rural and resource-poor settings and are significantly less expensive to manufacture and deploy than alternatives.**
- **Minimal training is required to operate a DFA device, no sample preparation is involved, and no electricity or additional equipment is needed to process or quantify results.**
- **DFA devices are portable, simple, and robust enough for community healthcare workers to use in places beyond the reach of clinics or hospitals. DFA devices are also easily integrated into telemedicine networks.**
- **By providing diagnostically relevant information, DFA devices enable better-informed treatment decisions, improved patient care, and ultimately saved lives.**

DFA's initial project addresses the need for a low-cost, point-of-care liver function test, which is critical for monitoring the adverse side effects of drug regimens used to treat HIV/AIDS and TB, and for monitoring the course of viral hepatitis. Of the roughly 2.8 million individuals in the developing world being treated for HIV/AIDS, 25% suffer from liver damage caused by the side effects from their medications. Yet in the United States, of the 975,000 being treated for HIV/AIDS only 2% suffer from liver damage caused by their treatments. In more industrialized nations, complications from treatments are extremely rare and are prevented with regular screenings, but this practice is economically impossible in the developing world due to the constraints and cost of current technologies.

In the future, DFA plans to extend the functionality of the liver diagnostic device to measure kidney function, develop diagnostics devices TB, malaria, HIV/AIDS, diabetes and other infectious and parasitic disease, and explore other breakthroughs in diagnostic technologies. While created with the developing world in mind, DFA devices also have potential for a range of other applications and we foresee our devices also being useful in more developed countries, particular in pediatrics, emergency response, environmental control, veterinary medicine, and for military applications.

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Grants, Awards, and Appointments

July 2009
DFA secures exclusive licensing of paper-based diagnostic technologies developed the Harvard University laboratories of George Whitesides

May 2009
Designated subcontractor in a 5 year grant from the Gates Foundation to Harvard University for the development of a Critical Organ Function Test for the liver

June 2008
James Barber, former CEO of Metabolix, appointed as DFA's Executive Director.

April / May 2008
DFA wins the MIT \$100K Entrepreneurship Competition, and the Harvard Business School's 12th Annual Business Plan Contest.

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