

PATH Today

A Newsletter for Friends and Supporters

Spring 2006

A laboratory on a card

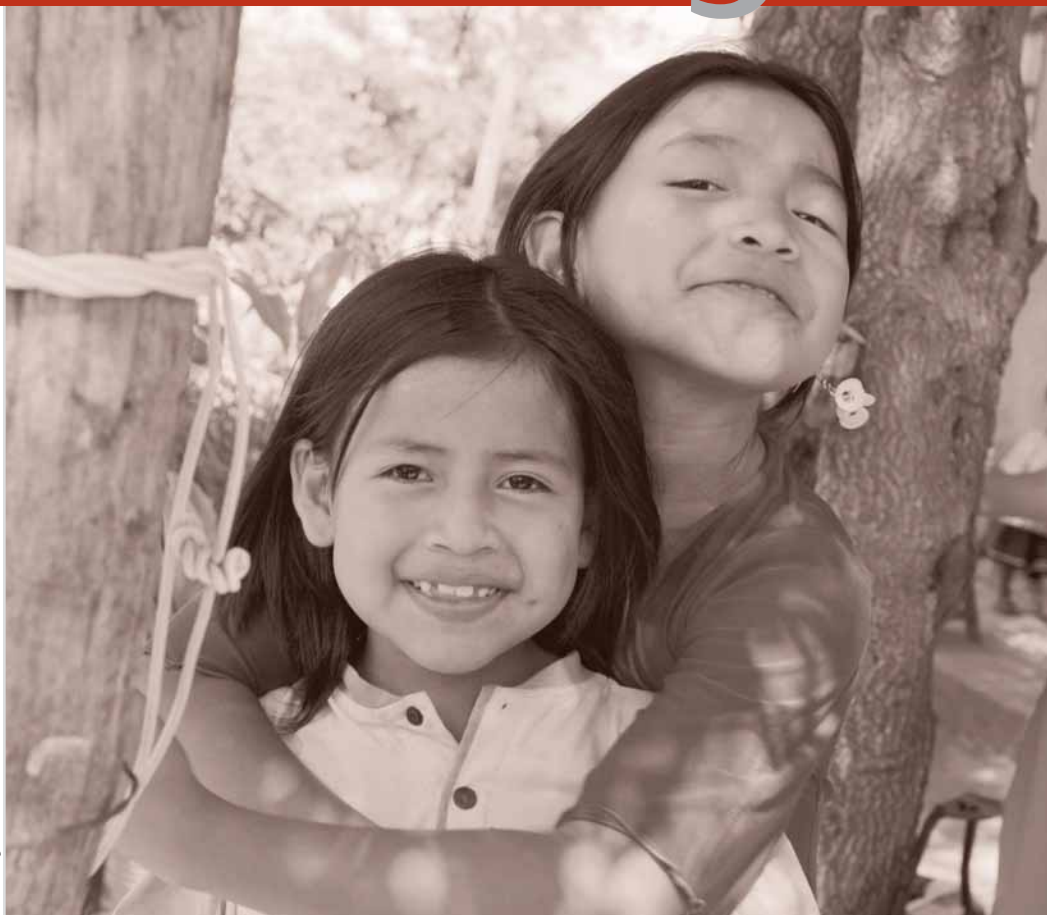
Using microfluidic tests to identify infection

Good health care comes through good networks. When a little girl in the United States has a stubborn stomachache or a fever, her pediatrician checks her over and sends a blood or stool sample to a laboratory for processing and accurate diagnosis. Results come back, usually by fax or email, and her parents get a prescription that can be easily filled at a nearby drugstore. In the meantime, the child has as much ginger ale as she can drink, a comfortable bed, and expert help standing by at the hospital switchboard. Everything's in place, ready to catch her before she gets too sick to save.

There's no single solution that can give all that to the children who live in developing countries. But networks of solutions will catch those children just as effectively. One of PATH's new technologies, an innovative tool for diagnosing disease, may take the world one big step closer to the safety net developing-world children need.

A credit card that buys lives

PATH is working with two teams to develop a point-of-care, microfluidics-based diagnostic tool—the “lab-on-a-card.” The first team includes the University of Washington, Washington University, and Micronics; the second, the University of Washington, Micronics, and Nanogen.



Mike Wang

With the microfluidics-based “lab-on-a-card,” health workers will be able to collect samples in remote areas and carry them back to the nearest health center.

Both teams are examples of that combination of private- and public-sector resources that has become an indispensable tool for bringing equitable health care to low-resource regions.

The lab-on-a-card is a credit card-sized piece of plastic that is riddled with tiny channels and chambers filled with the chemicals needed to translate a stool or blood sample into a diagnosis. Inject a sample into one end and place the card in a small, portable device that provides a little agitation and pretty soon—less than 20 minutes, in most cases—the clinician knows what to treat and how.

The right tool in the right place

Health care workers without a lot of training will be able to collect samples

and carry them back to the nearest health center without having to use any high-tech equipment to keep them cool and clean. Once a sample is in the card, it will be protected from contamination. Because processing happens immediately, the sample won't degrade in the intense heat present in so many developing-world settings.

Most of the tests that can give results this quickly and in extreme conditions can identify only one disease-causing pathogen at a time. The lab-on-a-card will be a much better diagnostic, able to test for multiple pathogens at once. And that matters a lot when antibiotics are in short supply, when there's no supportive care, when the

Continued inside

DEAR FRIENDS,

I just returned from Washington, DC, where I joined the annual forum for InterAction, the largest alliance of United States-based international development and humanitarian nongovernmental organizations. Throughout the forum, I was reminded of how powerful a force partnership can be. When

hard-working groups come together, they work faster, better, and with far greater impact than they could on their own. We are proud to be partnering with InterAction, as well as with the ONE Campaign, another important coalition that is fighting AIDS and poverty globally.

Partnership has always been at the core of PATH's work. The technologies and interventions we advance are developed with the communities who will use them. To make these interventions a reality—quickly and affordably—we partner with a spectrum of global health players, from United Nations agencies to grassroots organizations, and with the private sector. We excel at bringing people together and advancing our collective endeavors.

Each of you is an essential partner in the effort to improve global health. Your interest is helping shift the world's attention to neglected issues, and your support is helping us explore the ideas that will one day be taken to scale. Together, we are making a profound difference in lives around the world.



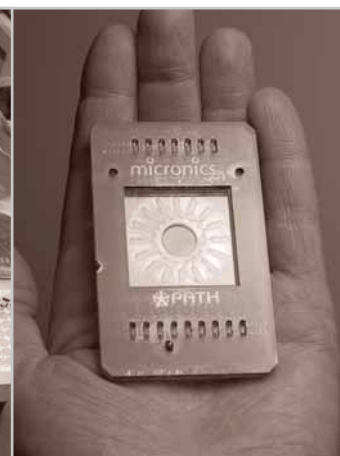
Christopher J. Elias, MD, MPH
President



Dr. Phil Tarr, University of Missouri, St. Louis



1 to 4 days, \$200 to \$500



Patrick McKern, PATH

20 minutes, \$1 to \$5

The microfluidics card (right) will replace a host of laboratory equipment (left) and complicated protocols, will be less expensive to administer, and will deliver results in minutes instead of days.

Continued from front page

wrong treatment could mean a life-threatening delay. It matters even more, for families and communities, when a child is carrying bacteria or a virus that's capable of spreading quickly from person to person. Then, fast treatment with the right antibiotic can be the only way to halt an outbreak.

Deadly dehydration

Childhood diarrhea is the first illness we are targeting with the lab-on-a-card. More than three million people, mostly in the developing world, die each year of infection with any of the myriad bacteria that can colonize the intestines, causing diarrhea, dehydration, and severe illness. Some of these cases can be easily treated with oral rehydration, but health workers need a way

to identify children who need immediate antibiotics to survive. Halting an outbreak, once it has taken hold in a community, also depends on quick and accurate identification of the bug that's causing the disease.

Global response

A version of the lab-on-a-card that will help reduce the threat of diarrheal disease has already been tested extensively in research labs in the United States. We hope to have it in field tests (the last step in the testing phase) by 2007.

The lab-on-a-card will save lives every day—and it's one part of a long-term strategy for solving global health problems, creating solutions and systems that are as unique as the needs they meet. ●

Sign up for our email newsletter!

Every other month, in *Bridging the Gap*, we highlight new projects and accomplishments, events at PATH or in global health, and news items of interest. This is the place to hear about our latest and best ideas.

Sign up by dropping an email to development@path.org, or visit our website: www.path.org.

You are invited . . . Breakfast for Global Health

Once every year, PATH opens the doors of our Seattle headquarters for the Breakfast for Global Health—a celebration of what's possible when will and creativity come together to solve global problems.

Join us at this year's Catalyst Fund benefit, sponsored in part by Lee D. Hwang, executive director of Hanover Investments LLC. After breakfast and a short program, guests are invited to visit our product development shop, where engineers and designers roll up their sleeves to create health technologies specially designed for low-resource settings.



**HANOVER
INVESTMENTS LLC**

Investing with a social conscience

The event is on Tuesday, May 23, from 8:00 to 9:00 a.m., at PATH's Seattle headquarters. Seating is limited, so reserve your place now: contact Tina Kurfurst at tkurfur@path.org or 206.788.2469.

Common proteins for common prevention

PATH is seeking to develop a vaccine that will protect children the world over from life-threatening pneumonia. *Streptococcus pneumoniae*, or "pneumococcus," causes pneumonia and infections of the brain and blood, and nearly one million children under age five die of it each year. Most of these children are in the developing world, where the strains of pneumococcus are somewhat different and the vaccine that protects kids in industrialized countries would not afford broad protection.

PATH is convening researchers from all over the world to systematically identify proteins in pneumococcus that are common to most strains. These common proteins could be used to make vaccines that will protect equally against all strains of the bacterium.

John Boslego, MD, is leading PATH's effort. He joined PATH in February after leading vaccine development at Merck and Co., Inc. Dr. Boslego hopes to "encourage as many scientists and manufacturers as possible to advance their research toward preventing this childhood disease."

PATH receives top rating from Charity Navigator—again!

For the second year, Charity Navigator, America's largest independent evaluator of nonprofits, has awarded PATH its highest possible rating! According to Trent Stamp, executive director of Charity Navigator, the four-star rating means that PATH "outperformed most other charities in America in the efficient management of its finances." Fewer than 12 percent of the rated charities have received four stars in two consecutive years.



Four stars for efficiency!

Read more about our high standards for financial stewardship on our website: www.path.org/charity_navigator/php. Access the full evaluation of PATH at www.charitynavigator.org. ●

PATH'S MISSION

*is to improve
the health of people
around the world by
advancing technologies,
strengthening systems,
and encouraging
healthy behaviors.*



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A donor writes

Dear PATH,

While seeking out information that could possibly benefit my extraordinarily sick children, I came across alarming statistics about rotavirus infection around the world. I was shocked to learn that there wasn't (at the time) an approved vaccine for rotavirus, so I did a bit more digging around and found your organization.

I also wrote about rotavirus in my blog:

The pediatrician we've been lucky enough to not see much of over the years finally came up with a diagnosis for the disease our family has been battling for nearly a month: rotavirus.

I did a bit of reading once we had the diagnosis. I wanted to know how we caught it and how to avoid getting it again. I also wanted to see how other parents coped with this, because when I say this is the sickest I have ever seen my family in fifteen years, I'm not kidding!

What I learned was staggering: an estimated 1,205 children die from rotavirus disease each day, and 82

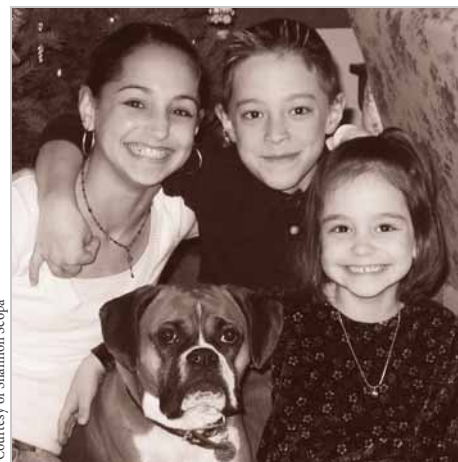
percent of these deaths occur in children in the poorest countries. The proportion of deaths in children under 5 attributable to diarrhea is 1 percent for high-income countries and 21 percent for low-income countries.

But for a stroke of fate, my kids are in the 1 percent, not the 21 percent. Because we have access to clean water, Pedialyte® pops, hot running water, and chlorine-based disinfectants—not to mention reliable medical care—we get to live to tell the horror story that is rotavirus infection. Other children are dying from what basically amounts to nothing more than a bad case of diarrhea.

I've lived through some pretty unpleasant things in my life. But I have never lost a child to something as simple as diarrhea, and the odds are I never will.

With that in mind I've decided I have to do what I can for the kids who have parents without the odds in their favor. One-thousand, two-hundred and five children a day is just too many.

I want to thank you for the work PATH does. It is important and worthy, and



Nearly every child gets a case of rotavirus at some point, as Shannon Scopa recently learned when her three children (above) were infected with the virus.

I hope to be able to contribute more in the future.

Sincerely,
Shannon Scopa

Thank you for your letter and generous donation, Shannon!

PATH is working to make rotavirus vaccines available where needed most. Read more on our website: www.path.org/rotavirus.

Printed on recycled paper.

Please let us know if you would like to add someone's name to our mailing list or if you would like your name removed.

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