



Grand Challenges Canada™  
Grands Défis Canada<sup>MC</sup>

## News Release

December 16 2011

### **World Researchers Embark on Historic Grand Challenge: Invent and Deliver Low-Cost Devices to Rapidly Diagnose Diseases in Developing Countries**

***Grand Challenges Canada and the Bill & Melinda Gates Foundation invest  
almost US \$32 million in the discovery and development of new and  
improved diagnostics at point-of-care***

**Toronto.** Grand Challenges Canada and the Bill & Melinda Gates Foundation have teamed up on an unprecedented global effort to discover and develop affordable, easy-to-use tools to help developing country health workers rapidly diagnose diseases in rural communities. The expected result: more timely and appropriate treatment of illnesses in poor countries, potentially saving countless lives.

“Imagine a hand-held, battery-powered device that can take a drop of blood and, within minutes, tell a healthcare worker in a remote village whether a feverish child has malaria, dengue or a bacterial infection,” says Peter A. Singer, MD, Chief Executive Officer of Grand Challenges Canada. “More rapid diagnosis of malaria alone could prevent 100,000 deaths a year. We believe this and other life-saving opportunities are within our reach.”

Innovative point-of-care diagnostic tools such as a piece of woven fabric which can test blood or urine for disease and a simple, easy to use test for diagnosing diarrheal disease which is the biggest killer of developing world children under the age of 5 are some of the projects which are receiving funding.

“Safe, effective methods of diagnosing illness at the point-of-care are vital to improving health in developing countries,” said Chris Wilson, Director of Global Health Discovery at the Bill & Melinda Gates Foundation. “We hope these innovative ideas lead to technologies that allow patients to get the right treatment quickly—speeding recovery, limiting the spread of disease and helping them to lead healthy, productive lives.”

The five research areas of this Grand Challenge break the diagnostic problem down into its component parts: Draw blood (or other biological sample) and prep it for analysis, analyze the sample to identify disease, develop the technologies to obtain and transmit data and receive back results, and ensure the device will work in the field where there is often no electricity or

refrigeration.

One grantee, Bigtec Labs in Bangalore, India, has already developed a handheld analyser called a mini-PCR (Polymerase Chain Reaction) machine capable of identifying malaria from a DNA fingerprint.

“A colleague here one day was ill with what he thought was food poisoning,” said B. Chandrasekhar Nair, Director of Bigtec Labs. “We ran a blood sample through our mini-PCR and it turned out to be malaria.” Immediately treated, the colleague returned to health within a week.

With its CAD \$1.3 million grant, Bigtec will use nano-materials to develop a sophisticated filter to concentrate pathogen DNA from samples of blood, sputum, urine, or nasal and throat swabs. Once concentrated, the DNA can be processed and illnesses identified in the mini-PCR.

The innovative projects receiving funding include:

- Dr. Dhananjaya Dendukuri from Achira Labs in Bangalore India, and Dr. Nandini Dendukuri from McGill University in Montreal are developing a piece of silk that can be used as a cost-effective and simple diagnostic for blood and urine samples. Called Fabchips (Fabric Chips) the woven diagnostic has the added benefit of providing jobs to local artisans and being environmentally friendly.
- Dr. David Goldfarb, a Canadian working in Botswana, is testing a simple, rapid, easy-to-use cotton swab for the detection of diarrheal disease in the developing world.
- Dr. Wendy Stevens from the University of Witwatersrand in South Africa is testing new point-of-care technologies for the integrated management of HIV and TB treatment to encourage equity, affordability and accessibility to treatment.
- Dr. Patricia Garcia at the Universidad Peruana Cayetano Heredia in Peru will look at ways to overcome social and commercial barriers to delivering point-of-care diagnostic tests aimed at improving maternal and child health – two of the UN’s Millennium Development goals for 2015.

### **“Integrated Innovation”**

“The project is analogous to software developers creating new apps for smart phones and tablet computers,” says Rebecca Lackman, PhD, Grand Challenges Canada Program Officer for Diagnostics. “Researchers have accepted the challenge to create novel sampling and testing systems that can be plugged into a standardized analyzer that can test for malaria, tuberculosis, HIV and a variety of tropical diseases. The ‘Integrated Innovation’ approach means they will also investigate the social and business innovations needed for successful product delivery and use.”

“This initiative is unique in many respects: it will allow health workers to identify multiple diseases and pathogens from one patient specimen; plug-and-play platforms will allow best-in-class components to be developed and integrated in a diagnostic device; and we are creating a common application platform; thereby, reducing both commercialization costs and regulatory issues, making it more attractive for industry to invest in diagnostics for global health.”

A presentation by Dr. Singer explaining how the envisioned point-of-care diagnostic tests could plug into a common device for analysis, similar to the way a USB stick plugs into a computer, is online at [http://youtu.be/yYwDLjHT\\_Rw](http://youtu.be/yYwDLjHT_Rw)

For project descriptions and videos of the grantees, please visit [http://www.grandchallenges.ca/pointofcare\\_grantees\\_en/](http://www.grandchallenges.ca/pointofcare_grantees_en/)

**Grand Challenges Canada:**

10 grantees, CDN \$10.8 million over three years

**Bill & Melinda Gates Foundation:**

12 grantees, \$21.1 million US over three years

For more information, visit [grandchallenges.ca](http://grandchallenges.ca)

- 30 -

**About Grand Challenges Canada**

*Grand Challenges Canada is a unique independent not-for-profit organization dedicated to improving the health and well being of people in developing countries by integrating scientific, technological, business and social innovation. Grand Challenges Canada works with the International Development Research Centre (IDRC) and the Canadian Institutes of Health Research (CIHR) and other global health foundations and organizations to find sustainable long-term solutions to the most pressing health challenges. Grand Challenges Canada is hosted at the McLaughlin-Rotman Centre for Global Health.*

[www.grandchallenges.ca](http://www.grandchallenges.ca)

**About Canada's International Development Research Centre**

*The International Development Research Centre (IDRC) supports research in developing countries to promote growth and development. IDRC also encourages sharing this knowledge with policymakers, other researchers and communities around the world. The result is innovative, lasting local solutions that aim to bring choice and change to those who need it most.*

*As the Government of Canada's lead on the Development Innovation Fund, IDRC draws on decades of experience managing publicly funded research projects to administer the Development Innovation Fund. IDRC also ensures that developing country researchers and concerns are front and centre in this exciting new initiative.*

[www.idrc.ca](http://www.idrc.ca)

**About Canadian Institutes of Health Research** *The Canadian Institutes of Health Research (CIHR) is the Government of Canada's health research investment agency. CIHR's mission is to create new scientific knowledge and to enable its translation into improved health, more effective health services and products, and a strengthened Canadian health care system. Composed of 13 Institutes, CIHR provides leadership and support to more than 14,100 health researchers and trainees across Canada.*

*CIHR will be responsible for the administration of international peer review, according to international standards of excellence. The results of CIHR-led peer reviews will guide the awarding of grants by Grand Challenges Canada from the Development Innovation Fund.*



Grand Challenges Canada™  
Grands Défis Canada<sup>MC</sup>

[www.cihr-irsc.gc.ca](http://www.cihr-irsc.gc.ca)

**About McLaughlin-Rotman Centre for Global Health**

*The McLaughlin-Rotman Centre for Global Health is based at University Health Network and University of Toronto. We develop innovative global health solutions and help bring them to scale where they are most urgently needed. The McLaughlin-Rotman Centre for Global Health hosts Grand Challenges Canada.*

[www.mrcglobal.org](http://www.mrcglobal.org)

**FOR MEDIA ENQUIRIES:**

**MS. LYN WHITHAM**

Grand Challenges Canada  
VP Communications & Stakeholder Relations  
647-281-7182  
[lyn.whitham@grandchallenges.ca](mailto:lyn.whitham@grandchallenges.ca)