



Grand Challenges Canada®
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News Release

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SEVEN INNOVATORS FROM PERU RECEIVE \$100,000 SEED GRANTS FROM GRAND CHALLENGES CANADA

Low-cost pneumonia detection system and safe, dry toilet among scores of bold ideas to improve global health, with focus on mothers, newborns, children

Toronto, Canada – Grand Challenges Canada, funded by the Government of Canada, today announced \$100,000 seed grants to enable seven innovators from Peru to pursue promising bold ideas to help address pressing health issues in Peru.

Announced during the State Visit to Canada of His Excellency Ollanta Humala Tasso, President of the Republic of Peru, the projects involve innovative approaches to maternal, newborn and child health-related issues – a major global priority of the Government of Canada – such as tuberculosis, pneumonia, sanitation and food security, as well as HIV and diabetes. The projects will create:

- Low-cost, non-imaging ultrasound device for pneumonia detection
- Portable, safe, hygienic dry toilet and waste collection for urban households
- New ultraviolet light system for in-home tuberculosis control
- Smartphone app for cough monitoring of tuberculosis patients
- Using cell phones to encourage potential HIV patients to enter health centres
- Smartphone app foot thermometer for early detection of infection in diabetic patients
- Single vaccine treatment to control swine infections.

"These newly awarded grants strengthen the relationship between Canada and Peru through closer ties in science, technology and innovation," says Dr Gisella Orjeda, President of CONCYTEC, Peru's National Council for Science, Technology and Technological Innovation.

A recent agreement between Grand Challenges Canada and CONCYTEC will further strengthen bilateral collaboration and spur even more innovative ideas in the future. Grand Challenges Canada recently received more than 100 new applications from Peru under its Stars in Global Health competition. It is expected that more Peruvian bold ideas with big impact will be funded this fall as the peer review process is completed.

To date, Grand Challenges Canada has committed \$3.9M to 15 innovations in Peru. Of these, 12 (\$2.4M) are being implemented by Peruvian institutions as part of the Stars in Global Health, Saving Brains, Global Mental Health, and Point-of-Care Diagnostics Programs.

BOLD IDEAS WITH BIG IMPACT®

Grand Challenges Canada's Stars in Global Health program seeks groundbreaking, affordable ideas that can transform the way low-resource nations address disease and health issues – innovations that can often benefit the developed world as well.

Seed grant projects proven effective and that secure a private sector or other financial partners are eligible for additional Grand Challenges Canada matching scale-up funds of up to \$1M.

"We are proud to support these bold ideas with big impact from Peruvian innovators that save and improve the lives of people, including many women and children, and also strengthen the Canada–Peru relationship in innovation and global health," says Dr. Peter A. Singer, Chief Executive Officer of Grand Challenges Canada.

The seven projects funded today are:

MATERNAL, NEWBORN AND CHILD HEALTH

SANITATION

Two and a half billion people worldwide lack access to proper sanitation. Three million of them are in Lima, Peru's capital. Although poor sanitation in slums also affects men, it is women in the slums who suffer the greatest burden, as they are unable to relieve themselves discreetly due to a variety of factors, including their modesty and susceptibility to sexual attacks. This is in addition to other health risks, especially diarrhea, which kills 1.5 million children under five each year. Poor sanitation also contributes to developmental delays in children through infections. Many latrine designs are out there, but few are suitable for poor urban areas.

A portable, safe and hygienic dry toilet for urban households

X-runner is a sustainable sanitation system that provides homes with a safe, portable dry toilet and a responsible service that removes and converts the human waste into nutrient-rich compost, thus improving the daily lives, health and environment of many people. By the end of Phase I, the project will have installed over 500 toilets in Lima slums, as well as directly employed 20 people.

(For details and video: www.grandchallenges.ca/grantee-stars/0543-01-10/)

PNEUMONIA

Pneumonia is the world's leading cause of child mortality, causing 1.4 million deaths per year in children under five. Pneumonia is usually diagnosed based on x-ray images and laboratory/clinical examination, requiring trained medical professionals. In poor-resource settings, however, the most stricken by pneumonia, neither this technology nor the trained health care workers are present.

Low-cost, non-imaging ultrasound for pneumonia detection in resource-constrained settings

Innovators at Universidad Peruana Cayetano Heredia are developing a low-cost, non-imaging ultrasound device that produces an easy-to-interpret signal to find pneumonia's infiltration of a lung and improve diagnosis. It will allow non-highly trained personnel to detect pulmonary infiltrates as a point-of-care test.

(For details and video: www.grandchallenges.ca/grantee-stars/0542-01-10/)

AGRICULTURE AND FOOD SECURITY

Between 60–80 % of food in most developing countries is produced by women; thus, women play a critical role in household food security. Intensive pork production is key to sustained food security and it is therefore critical to address diseases that lead to reduced pork production. As men increasingly seek alternative employment in urban areas, raising of livestock for sale (e.g., pigs) has fallen to women.

Single vaccine for controlling classical swine fever and porcine cysticercosis

Classical swine fever (CSF) and porcine cysticercosis (PC) (a tissue infection by the pork tapeworm) are often fatal diseases of pigs worldwide, causing major economic loss among farmers. The cysts causing PC also cause human neurocysticercosis, triggering adult onset seizures in most low-income countries.

Universidad Peruana Cayetano Heredia is developing a vaccine that protects against both CSF and PC, simplifying and lessening the expense of vaccination, and thereby increasing vaccine compliance among farmers and avoiding pig loss and pork condemnation. The new vaccine will also improve human health by interrupting the growth of the cysts responsible for human neurocysticercosis.

(For details and video: www.grandchallenges.ca/grantee-stars/0540-01-10/)

TUBERCULOSIS

According to the World Health Organization, an estimated 2.9 million women fell ill with TB in 2012, resulting in 410,000 deaths. TB is classified as one of the top killers of women of reproductive age. Peru has the highest incidence of Multidrug-resistant Tuberculosis (MDR-TB) cases in South America. Almost 16% of TB patients have primary resistance, many of them being women. Women's health is further affected by their additional responsibility of taking care of families and children.

A novel UV light system for tuberculosis control in the home

Poor housing conditions contribute to the spread of TB. Currently, ultraviolet (UV) light is used as an indoor environmental control in medical waiting rooms and commercial environments, but the technology is currently too expensive to introduce in an average family home. Innovators at Universidad Peruana Cayetano Heredia are developing a low-cost LED UV light system powered by solar panels for indoor use in low-income communities. The novel light device will offer an affordable and sustainable air purification method that will decrease TB burden, potentially

preventing 200 MDR-TB cases per year in Peru.

(For details and video: www.grandchallenges.ca/grantee-stars/0537-01-10/)

Smartphone app for cough monitoring of tuberculosis patients

Early detection of Multidrug-resistant TB can save lives. However, laboratory resources for treatment monitoring are not available in many low-resource environments. Studies have shown that cough frequency changes in patients receiving effective TB treatment but remains unchanged in patients with MDR-TB. Universidad Nacional de Ingenieria is developing software and hardware that enables a smartphone to record and count coughs during first-line tuberculosis (TB) treatment, offering a way to measure the effectiveness of treatment and to identify MDR-TB cases.

(For details and video: www.grandchallenges.ca/grantee-stars/0539-01-10/)

INFECTIOUS DISEASES

HIV

In Peru, the national HIV prevention strategy is focused on referrals by educators to local health centers for testing. It is estimated that less than half of the gay community has been tested for HIV and many of them are unaware of their status.

Cell phones for bringing gay men from the Internet to the health center

A team at the Universidad Peruana Cayetano Heredia is developing a platform that sends tailored text messages promoting HIV testing at a health centre. The team aims to reach men visiting niche websites and encourage them to join existing health centre users receiving text reminders about HIV testing. The messages will address the reasons for not getting tested, and tackle the fear and stigma associated with HIV. The project hopes that, by the end of Phase I, the percentage of gay men who will have adequate knowledge, attitudes and behaviours regarding HIV prevention will have increased by 200% and those who get tested will increase by 45%.

(For details and video: www.grandchallenges.ca/grantee-stars/0541-01-10/)

CHRONIC NON-COMMUNICABLE DISEASES

DIABETES

Almost three-quarters of diabetics live in the developing world. Foot ulceration (infection) has been identified as a precursor in 84% of lower extremity amputations in diabetics. It is often only after a wound develops on the feet that patients recognize that they are suffering from diabetic complications and they are at risk of foot amputation. Self-care is an essential element of diabetes management. However, visual inspection and palpation usually do not detect changes in skin integrity on time.

Smartphone-enabled, dermal thermometer for early detection of foot infection in diabetic patients

Universidad Nacional de Ingenieria is working on a low-cost and easy to use, dermal thermometer on a smart phone can detect probable future foot ulcerations, thereby giving ample time for appropriate response. Temperature measurements will provide immediate quantitative information about potential pre-ulcerative inflammation. The device will reduce amputation rates and suffering in diabetic patients.

(For details and video: www.grandchallenges.ca/grantee-stars/0538-01-10/)

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Including today's grants, total investments to date under the Stars in Global Health program is \$43M, representing 392 projects.

For more information, visit grandchallenges.ca

About Grand Challenges Canada

Grand Challenges Canada is dedicated to supporting Bold Ideas with Big Impact® in global health. We are funded by the Government of Canada; we support innovators in low- and middle-income countries and Canada. The bold ideas we support integrate science and technology, social and business innovation to find sustainable solutions to health challenges – we call this Integrated Innovation®. Grand Challenges Canada focuses on innovator-defined challenges through its Stars in Global Health program and on targeted challenges in its Saving Lives at Birth, Saving Brains and Global Mental Health programs. Grand Challenges Canada works closely with Canada's International Development Research Centre (IDRC), the Canadian Institutes of Health Research (CIHR) and the Department of Foreign Affairs, Trade and Development Canada (DFATD) to catalyze scale, sustainability and impact. We have a determined focus on results, and on saving and improving lives.

www.grandchallenges.ca

– 30 –

For Media Enquiries:

Lode Roels
Grand Challenges Canada
Press Officer
T. +1 647.328.2021 / +1 416.673.6570
E: lode.roels@grandchallenges.ca