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## Gates Foundation Invests in 104 Novel Ideas for Global Health

### Scientists from diverse set of disciplines and regions receive \$100,000 each to explore bold, untested projects

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BANGKOK -- The Bill & Melinda Gates

Foundation today announced 104 grants to explore bold and largely unproven ways to improve global health. The grants of US\$100,000 each will be made to scientists from 22 countries and five continents. They mark the first round of funding from Grand Challenges Explorations, an initiative to help lower the barriers for testing innovative ideas in global health.

The initial set of grants will inject fresh perspective into research for preventing or curing infectious diseases such as HIV/AIDS and TB, and limiting the emergence of drug resistance. Successful applicants showed how their project falls outside current scientific paradigms and could lead to significant advances if successful—in just two pages.

“We were hoping this program would level the playing field so anyone with a transformational idea could more quickly assess its potential for the benefit of global health,” said Dr. Tachi Yamada, president of global health at the Gates Foundation, who announced the grants at the fourth annual meeting of the Grand Challenges in Global Health initiative in Bangkok. “The quality of the applications exceeded all of our expectations. It was so hard for reviewers to champion just one great idea that we selected almost twice as many projects for

funding as we had initially planned.”

104 grants were selected from nearly 4,000 proposals, with the geographic distribution of applicants largely matching the geographic distribution of awards. The applicant details were not provided to reviewers, helping them to focus on the innovation of the idea instead of a scientist’s credentials, geographic location, or organization’s reputation.

All levels of scientists are represented, including young investigators who never before have received a research grant, and those who were applying experience from other fields like bioengineering. Grants were made to universities and other nonprofit organizations, government agencies, and six private companies.

Projects cover a wide range of innovation, including a “mosquito flashlight” to prevent malaria transmission by disrupting wavelengths, self-destructing TB cells, and studying anti-infective properties of the eye to help prevent HIV/AIDS and other infectious disease. A few examples of funded projects follow:

#### MIMICKING EFFECTIVE NATURAL PROCESSES TO LIMIT INFECTIOUS DISEASE:

- Pattamaporn Kittayapong at Mahidol University in Thailand will explore new approaches for controlling dengue fever by studying bacteria with natural abilities to limit the disease.
- Suzanne Fleiszig at the University of California, Berkeley, in the U.S. will focus on the natural defenses of the human eye to discover new classes of broad-spectrum anti-microbial agents.
- Elizabeth Sockett at the University of Nottingham in the U.K. will study whether the best medicine against some disease-causing bacteria may be a “living antibiotic” made up of microorganisms that naturally prey on harmful ones.

#### ENGINEERING WAYS TO ENHANCE THE NATURAL HUMAN IMMUNE SYSTEM:

- Leonard Damelin at the National Health Laboratory Service in South Africa will attempt to improve bacteria that naturally line the walls of the vagina and cervix in order to enhance their ability to fight infections.
- Yen Wah Tong at the National University of Singapore will attempt to create nanoparticles to “soak up” viruses circulating in the body; the particles will be imprinted with the viruses in order to mimic the three-dimensional structure of cells that the virus normally tries to infect.

Jord Stam at Utrecht University in the Netherlands will attempt to create “two-sided” antibodies to fight HIV; one side would attach to HIV, and the other side would safely deposit the virus in cells in which it cannot replicate.

- Sanah Jowhari at TheraCarb, a biotechnology company in Canada, will apply technology to capture and remove the cholera toxin from the body of a host, and validate an approach to developing an effective drug candidate for cholera.

#### PROBING UNEXPECTED RESULTS FOR GLOBAL HEALTH:

- Elijah Songok at the Kenya Medical Research Institute will explore whether natural resistance to HIV may be linked to genetic markers for type 2 diabetes.
- Huan Nguyen at the International Vaccine Institute in Korea will follow up on the unexpected finding that a fluorescent green protein originally intended as a research control could be the basis of a highly effective influenza vaccine.

#### EXPLORING HYPOTHESES THAT CHALLENGE CONVENTIONAL WISDOM:

- Mike McCune at the University of California, San Francisco, in the U.S. suggests that the best immune response to HIV may be no response at all, because the immune cells that are marshaled to fight the virus are the same cells that HIV infects.
- Hiroyuki Matsuoka at Jichi Medical University in Japan thinks it may be possible to turn mosquitoes that normally transmit disease into “flying syringes,” so that when they bite humans they deliver vaccines.

A complete list of the funded projects is available at the [Grand Challenges Explorations web site](#).

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