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NYU Tandon and Global Public Health Researcher Receives Gates Foundation Grand Challenges Explorations Grant
Grant Funds Technology-Forward Research Using AI to Improve Vaccination Rates in Pakistan

Rumi Chunara, assistant professor of computer science and engineering and global public health at New York University, has won a Grand Challenges Explorations grant—an initiative funded by the Bill & Melinda Gates Foundation. Chunara will pursue an innovative global health and development research project focused on smart immunization targeting in Pakistan using artificial intelligence (AI) and mobile tools.

Grand Challenges Explorations grants support innovative thinkers worldwide to explore ideas that can break the mold in how we solve persistent global health and development challenges. Chunara's project is one of approximately 50 Grand Challenges Explorations Round 22 grants announced by the Bill & Melinda Gates Foundation, out of more than 1,500 submissions. To receive funding, Chunara and other Grand Challenges Explorations winners demonstrated a bold idea in one of seven critical global health and development topic areas.

Focusing on innovations to drive performance in immunization, Chunara's project will use AI and mobile technology for the first province-wide smart targeting of childhood immunization efforts. Vaccination coverage in many low and middle-income countries is poor due to a variety of factors, including limited resources, residents living in rural areas, and a lack of public awareness and knowledge about vaccination.

Recognizing the promise that mobile tools hold for improving vaccination coverage, Chunara's collaborators in Pakistan—led by Umar Saif, UNESCO Chair for Information and Communication Technology for Development—equipped roughly 3,800 outreach and clinic-based vaccinators with a smartphone application called e-vaccs to help health authorities track vaccination progress across Pakistan's Punjab province.

The Grand Challenges Explorations grant takes the project to the next level: incorporating machine learning and prediction algorithms in conjunction with an understanding of the existing vaccination process. Chunara and her colleagues will develop algorithms to prioritize resources and better target efforts of the smartphone-equipped vaccinators. Using data on disease incidence, the researchers will predict and provide feedback on where the best places and times are to deliver vaccinations to minimize disease incidence while accounting for environmental and social variables such as climate and population density.

Based on data and feedback from the vaccinators to date, the efforts will also aim to identify locations where further attention is necessary, and how best to reach them—for instance, locations where vaccinators are being deployed but vaccination coverage is not improving at an expected rate, or marginalized populations that currently aren't getting vaccinations.

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"Our hypothesis is that using AI for smart targeting of our smartphone-equipped vaccinators will result in lower vaccine preventable disease incidence. As community health workers are present in most low and middle income countries, there may be a pathway to scale this both in Pakistan and other countries that use community health workers," said Chunara, who is also a recent recipient of a National Science Foundation (NSF) CAREER Award.

About Grand Challenges Explorations
Grand Challenges Explorations is a US$100 million initiative funded by the Bill & Melinda Gates Foundation. Launched in 2008, over 1420 projects in more than 65 countries have received Grand Challenges Explorations grants. The grant program is open to anyone from any discipline and from any organization. The initiative uses an agile, accelerated grant-making process with short two-page online applications and no preliminary data required. Initial grants of US$100,000 are awarded two times per year. Successful projects have the opportunity to receive a follow-on grant of up to US$1 million.

About NYU's Tandon School of Engineering
The NYU Tandon School of Engineering dates to 1854, the founding date for both the New York University School of Civil Engineering and Architecture and the Brooklyn Collegiate and Polytechnic Institute (widely known as Brooklyn Poly). A January 2014 merger created a comprehensive school of education and research in engineering and applied sciences, rooted in a tradition of invention and entrepreneurship and dedicated to furthering technology in service to society. In addition to its main location in Brooklyn, NYU Tandon collaborates with other schools within NYU, the country's largest private research university, and is closely connected to engineering programs at NYU Abu Dhabi and NYU Shanghai. It operates Future Labs focused on start-up businesses in downtown Manhattan and Brooklyn and an award-winning online graduate program.

About NYU College of Global Public Health
At the NYU College of Global Public Health (NYU GPH), we are preparing the next generation of public health pioneers with the critical thinking skills, acumen, and entrepreneurial approaches necessary to reinvent the public health paradigm. Devoted to employing a nontraditional, inter-disciplinary model, NYU GPH aims to improve health worldwide through a unique blend of global public health studies, research and practice. The College is located in the heart of New York City and extends to NYU's global network on six continents. Innovation is at the core of our ambitious approach, thinking and teaching. For more, visit: http://publichealth.nyu.edu/

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