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Press Release from the MGH Ambulatory Practice of the Future (APF)

\$400,000 Awarded to Three Students for Primary Healthcare Technology

Each year this unique competition for student innovations in primary-care technology has awarded \$400,000 in prizes to the most promising of the projects submitted. With this announcement, the portfolio of student-led primary-care projects supported by Prize funds over its eight-year history expands to eighty. The objective of all these projects is to improve care delivery at the frontlines of medicine, primary care.

Anurup Ganguli, a graduate student in Bioengineering at the University of Illinois, Urbana-Campaign, leads the team winning this year's First Prize award of \$150,000. Their project "**Personalized Multiplexed Molecular Diagnostics for Point-of-Care Setting**" offers a novel technology for rapid detection of infectious diseases in all primary-care settings. The students' passion is to drive cost down and allow testing in resource-limited countries, using blood samples from a simple finger prick. The other members of the team are Akid Ornob, Tanmay Ghonge, and Damhorst Gregory. Professors Rashid Bashir and Brian Cunningham guided and mentored their efforts. The team's further work to refine and propagate the technology will be accelerated by this \$150,000 award, with the ultimate goal of having a significant impact on healthcare challenges worldwide.

Lindsey Fernandez, a Bioengineering candidate at the University of Pennsylvania wins the second prize of \$100,000 to support her further work. Her team's unique development is a simple lot-cost device for individuals to self-screen for cervical cancer without the need for a central lab. With early diagnosis and treatment invasive cervical cancer is highly preventable. Yet at present nearly 300 thousand deaths from this cancer occur worldwide each year. With the aid of community health workers, her technology could have extraordinary impact. Other members of her team are Divyansh Agarwal, Sonya Davey, Kent Grosh, Alex Kubo, and Thulani Tsabedze. Professor Mark Yim mentors the effort.

Third place and \$50,000 goes to Bioengineering graduate student **Nuttada Panpradist** of the University of Washington. Her team's project addresses another one of the many primary-care needs of low-resource settings – providing technology for easy and accurate assessment of HIV drug resistance. Nearly 40 million individuals worldwide are living with HIV, with antiretroviral therapy as key to the potential for near-normal lives and near-zero risk of transmission. Yet resistance to those drugs is on the rise. Ongoing testing is routine in developed countries, but is too expensive for low-resource areas of the world most plagued by the disease. Their technology could offer rapid point-of-care testing for more effective management and improved outcomes. This work was developed under the guidance of Associate Professor Barry Lutz.

In addition, seven other Finalists in this competition have received \$10,000 each to further their work and careers. They are all listed at the end of this announcement.

In announcing the winners of this eighth annual national Prize for Primary Healthcare, Ronald Newbower, PhD, Strategic Advisor of the MGH APF and Director of its Prize competition, stated, “We are delighted with the quality of the entries this Prize competition has elicited each year from engineering students. They are clearly eager to develop innovative technologies to address international as well as national challenges in primary care. We believe the winners of these major awards are headed toward truly significant careers and may well serve as role models for others in their field. We are proud to be able to support their efforts.”

Dr. Benjamin Crocker, Medical Director of the MGH APF, added “In our commitment to improve the paradigm of care for patients, we seek new tools, enabled by novel technologies, which can improve our ability to make rapid and more accurate medical decisions and engage patients in their care, whether patients are in the clinic or elsewhere. We believe that with such tools, the primary-care teams of the future will play an even more effective role in streamlining diagnosis and treatment, thereby reducing the cost and adverse outcomes that result from inefficiency and delay in appropriate care.”

About This Prize for Student Innovation in Primary Healthcare

These awards have been made possible through a generous gift from the Gelfand Family Charitable Trust. “The challenge of delivering affordable excellent primary care presents an opportunity for those students interested in engineering solutions to make truly profound contributions” said Mark Gelfand, a principal in the trust. “I am pleased with the continued success of this unique competition in driving toward that goal. Innovation in primary care could help many families, and I am confident that much good will result from these inspiring projects.”

The Ten Finalists for 2016

(alphabetically by University):

Mustafa Unal, Case Western Reserve University

[An Automated Point-of-Care Raman \(POCR\) Device for Facile and Rapid Diagnosis of Crystal Induced Arthropathies](#)

Kunaal Naik and Manav Sevak, Georgia Institute of Technology

[Using Mobile Messaging to Streamline Care Transitions](#)

Niko Temofeew, Saint Louis University

[Reducing Debilitating and Costly Foot Complications for Patients with Diabetes](#)

Hayley Chong, University of California, San Diego

[Open Viral Load](#)

Anurup Ganguli, University of Illinois at Urbana-Champaign
Personalized Multiplexed Molecular Diagnostics for Point-of-Care Setting

Qian Cheng, University of Illinois at Urbana-Champaign
Population Screening for Chronic Disease Using Smartphone Sensors

Lindsey Fernandez, University of Pennsylvania
SelfCerve: Low-cost, At-home, Visual Screening Tool for Cervical Cancer in Low Income Countries

Rahil Jain, University of Washington
Cloud Connected System for Augmenting Existing Rapid Diagnostic Test Performance

Nuttada Panpradist, University of Washington
OLA-SIMPLE: A Point-of-Care Genotyping Device to Enable HIV Drug Resistance Testing

Allen Osgood and Robert Chen, Washington University in St. Louis
Memento – Alzheimer’s Diagnostics on Mobile

About the Ambulatory Practice of the Future

Launched in 2010, The Ambulatory Practice of the Future (APF) is an innovative team-based patient-centered primary care practice at Massachusetts General Hospital (MGH). APF serves its employee population and their dependents in innovative ways not tied to the traditional office-visit paradigm, and with a reimbursement model reflecting quality of overall care outcomes rather than volume of visits or encounters. APF’s Innovation Learning Program collaborates with academic and industry partners to explore new pathways of care and new technologies to address the challenges in primary care with an eye towards building more efficient and cost effective care, improving the patient experience, increasing career satisfaction for primary-care teams and improving long-term medical outcomes. With this Student Prize Competition, the APF extends its reach for new ideas nationally, and has engaged the creativity of engineering students at dozens of universities.

Additional Information

Additional information about the Prize for Primary Healthcare as well about the MGH APF may be found at <http://www.apf.partners.org>