Dear Friends,

The field of global health continues to thrive and attract faculty and students who understand that an interdisciplinary approach is key to solving the critical health challenges facing our world today. With the recruitment of 11 new faculty over the past 14 months (page 1); growth across our education offerings, particularly our undergraduate major and minor (page 2); addition of new partners around the world (page 6) and a robust research program (page 8), the Duke Global Health Institute is certainly at the forefront of this trend.

There were many new developments at DGHI over the past year. Perhaps the most important one came just as our sixth cohort of master’s students and second cohort of undergraduates were graduating last spring: a $20 million grant from the Bill & Melinda Gates Foundation. That grant, half of which includes the opportunity for a one-to-one match, will have a total impact of $30 million. It is designated as an investment in DGHI’s growth and sustainability. We are gratified by this vote of confidence from one of the world’s best known philanthropic organizations engaged in global health, and we are deeply thankful for Duke alumna Melinda Gates’ support of our work. See page 12 for more details.

I want to thank all of our supporters and colleagues at Duke and around the world for all you have done to contribute to DGHI’s vitality and success.

MICHAEL MERSON
Director, Duke Global Health Institute
Wolfgang Joklik Professor of Global Health

Cover Photo:
Titled Déye Món Gen Món (Beyond the Mountains, More Mountains), by Lauren Zalla, 2014 winner of the Duke Global Health Institute’s annual student field work photo contest. All over the world, community health workers fill the gaps in access to health care. These community health workers are conducting home visits to deliver health education, vaccines and check-ups to young children in Leogane, Haiti.
NEW FACULTY

2014-2015

ALBA AMAYA-BURNS
Associate Professor of the Practice, Global Health
Field: Medicine/global burden of disease

LAUREN FRANZ
Assistant Professor, Psychiatry and Global Health
Field: Global mental health

GREGORY GRAY
Professor, Medicine and Global Health
Field: Infectious diseases

LIJING YAN
Associate Professor of Research, Global Health
Field: Cardiovascular disease

2015-2016

ABU ABUDULLAH
Professor of Research, Global Health
Field: Chronic diseases

ERIC GREEN
Assistant Professor of the Practice, Global Health
Field: Maternal and child health

JEFFREY MOE
Professor of the Practice, Global Health
Field: Health economics

LAWRENCE PARK
Associate Professor, Medicine and Global Health
Field: Infectious diseases

MATTHEW RUBACH
Assistant Professor, Medicine and Global Health
Field: Infectious diseases

GAYANI TILLEKERATNE
Medical Instructor and Assistant Professor of
Research, Global Health
Field: Infectious diseases

GAVIN YAMEY
Professor of the Practice, Global Health and
Public Policy
Field: Global health policy

LEADERSHIP TEAM

JOHN BARTLETT, Associate Director, Research
JOSH BOND, Development Director
SARAH CAO, Assistant Director, International Operations
DENNIS CLEMENTS, Senior Advisor
RALPH COREY, Director, Hubert-Yeargan Center for Global Health
DIANA HARVEY, Associate Director, Communications and Marketing
RANDALL KRAMER, Deputy Director
MICHAEL MERSON, Director
MARY STORY, Associate Director, Academic Programs
SHENGLAN TANG, Associate Director, Duke Kunshan University and China Initiatives
CHRISTINE TOBIAS, Associate Director, Administration and Finance
KATHRYN WHETTEN, Director, Center for Health Policy and Inequalities Research
GAVIN YAMEY, Associate Director, Global Health Policy

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Robert Steel, Perella Weinberg Partners
Duke University offers one of the most comprehensive portfolios of global health education programs of any U.S. university. DGHI’s research-intensive programs prepare future global health leaders with the skills to solve complex problems and the experience of working in communities at home and abroad, in teams and across disciplines.

UNDERGRADUATE GLOBAL HEALTH MAJOR & MINOR

Since welcoming the first global health minors and co-majors in 2013, Duke’s undergraduate global health program has experienced explosive growth, with nearly 250 students currently enrolled in the program. This growing interest among students reflects their understanding that the world is interconnected and that the most vexing problems can be best solved through the integration of multiple disciplines.

Students choose co-majors in fields that span the curriculum and mirror their curiosity about the world. Students are studying subjects in the humanities, social sciences and natural sciences in nearly equal proportions.

HUMANITIES
- Asian/Middle Eastern Studies
- Dance
- French Studies
- German
- History
- Philosophy
- Romance Studies
- Russian
- Spanish
- Visual and Media Studies

NATURAL SCIENCES
- Biology
- Chemistry
- Computer Science
- Environmental Science
- Evolutionary Anthropology
- Neuroscience

SOCIAL SCIENCES
- Cultural Anthropology
- Economics
- International Comparative Studies
- Political Science
- Psychology
- Public Policy
- Sociology
- Women’s Studies

JAMAL EDWARDS
Global Health & Journalism, Robertson Scholar

Jamal Edwards, a first-generation college student majoring in global health and journalism, entered Duke with one fellowship and will leave with another when he graduates next year.

As a high-achieving student committed to preparing for a profession in health care, Edwards was selected as a Cardea Fellow as a freshman. Edwards is particularly interested in multimedia storytelling, health policy, the experience of illness and messaging strategies to effect behavior change.

Edwards has already applied what he’s learned in the classroom to a number of fieldwork experiences—including working on a health communication campaign with a community action group in rural eastern Kentucky, interning at the Joint United Nations Programme on HIV/AIDS, and supporting communication efforts in the Merck for Mothers’ initiative to reduce maternal mortality.

“This spring, Edwards was named a Thomas F. Pickering Fellow by the Woodrow Wilson Foundation, which will afford him the opportunity to pursue graduate school in international/public affairs focusing on global health, complete two internships and join the Foreign Service at the U.S. Department of State. What’s in store for Edwards long-term? “I’m looking forward to a career in diplomacy and global health,” he says. We’d say he’s well on his way.
The Master of Science in Global Health, one of the first programs of its kind in the U.S., emphasizes interdisciplinary collaboration and includes a research experience in a low- or middle-income setting and mentorship from expert faculty. One of DGHI’s primary education goals is to prepare graduates to reduce health disparities. Duke also offers this program at Duke Kunshan University in China.

Nanjala Wafula, a Master of Science in Global Health candidate from Eldoret, Kenya, is passionate about eradicating malaria. She’s particularly concerned about the excessive prescription of anti-malaria drugs in Kenya and the resulting waste of resources and potential resistance of mosquitoes to these drugs.

This summer, Wafula returned to Kenya to complete her fieldwork under the mentorship of associate professor of medicine and global health Wendy Prudhomme-O’Meara. She’s investigating the use of agricultural chemicals and their potential influence on mosquito resistance to insecticides used in the treatment of bed nets—the primary mode of protection against malaria in sub-Saharan Africa.

Wafula’s research involved collecting mosquito larvae, raising the larvae to adults, exposing them to insecticide and counting those that die as a result. She relished her accomplishment of successfully raising the mosquitoes: “Seeing them emerge from the pupae stage brought me such joy!” She hopes her research will help strengthen current vector control programs in targeting agricultural areas.

In the future, Wafula, who holds a nursing degree, sees herself working to combat malaria and other diseases in Kenya. She believes nurses are an “underutilized resource that can be more effectively harnessed to reduce the global burden of disease.”
DGHI offers two pathways for Duke doctoral students in other disciplines. The Global Health Doctoral Certificate provides an opportunity for students to engage in global health through coursework, a research-based field experience and engagement with peers and faculty. The Global Health Doctoral Scholars Program enables students to work on a global health project, develop a global health dissertation and become more deeply involved in DGHI’s intellectual community.

**SARAH DIRINGER**  
**Doctoral Scholar**

Sarah Diringer, a PhD student in civil and environmental engineering and a global health doctoral scholar, wants to understand how human activity affects the local and global cycling of naturally existing toxic compounds in the environment. She’s currently conducting a study on heavy metals and epidemiology in Peru with associate professor of civil and environmental engineering Heileen Hsu-Kim and assistant professor of global environmental health William Pan.

For her dissertation fieldwork, Diringer collected sediment, water and fish samples along the Madre de Dios River. The research team determined that the mercury from local artisanal gold mining operations accumulates in fish, leading to hazardous levels of the neurotoxin in the food chain for up to 350 miles. People in these mining areas, they concluded, cannot safely consume carnivorous fish. Published in *Environmental Science: Processes & Impacts*, the study was the first of its kind to look at the effects of mercury contamination from gold mining in this Amazon region.

The study has helped Diringer understand the complexity of the political, environmental and health issues in the Peruvian Amazon. “I particularly appreciate how DGHI’s doctoral scholars program has enabled me to connect two research worlds: a chemistry lab and a remote field location,” she said.

In the future, Diringer hopes to work in environmental health as a scientist, consultant and advocate.

I appreciate the incredible synergy between research and teaching that DGHI cultivates. I involve all levels of students in my research, and their contributions strengthen my research program. In turn, students get hands-on experience that helps them develop a strong foundation for future global health work.

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DGHI provides opportunities for medical students to understand the depth and interdisciplinary nature of global health challenges. Programs like the week-long Second Year Health Policy and Global Health course, the Third Year Global Health Study Program and the Doris Duke International Clinical Research Fellowship allow medical students to view their studies through a global lens.

The Global Health Residency/Fellowship Pathway, offered through DGHI’s Hubert-Yeargan Center for Global Health, delivers tailored postgraduate training experiences integrating specialty-based research opportunities, masters-level training and faculty mentorship to prepare residents and fellows for a career in global health.

**PROFESSIONAL**

The Global Health Diploma program, comprised of four courses and a final project, is taught by faculty from Duke and Peking Universities. Each year, 35-40 Chinese graduate students and professionals participate in the two-week program based at Duke Kunshan University in China.
EXPERIENTIAL LEARNING

Experiential learning is a cornerstone of DGHI’s academic programs. These diverse fieldwork opportunities give global health students and trainees of all levels the chance to apply their classroom learning, gain hands-on experience and develop a deeper understanding of the health challenges in low- and middle-income communities from Durham to Delhi and beyond.

Student Research Training (SRT) Program

The Student Research Training (SRT) Program engages undergraduates in the development, implementation and assessment of a community-based project alongside a DGHI faculty advisor and partner organization from the local community.

In 2014, sites included Guatemala*, Haiti*, India*, Sri Lanka, Tanzania and Uganda. With three to four students at each site, projects ranged from documenting nutrition and breastfeeding practices in rural Mayan communities to assessing motor vehicle injury rates in urban Sri Lanka.

*New sites

Bass Connections Global Health Theme

Bass Connections, a university-wide initiative at Duke, exposes students to cross-disciplinary inquiry, partnership with fellow students of all levels and team-based mentorship. In 2014, after a year of pilot projects, including two led by DGHI professors, Bass Connections initiated five projects under the Global Health theme.

Students explored elderly caregiving in China, health effects of artisanal gold mining in the Amazon, refugee mental health issues in Jordan, prenatal genetic screening in India and health challenges of urban living in Texas.

Master of Science in Global Health Fieldwork

Students in the Master of Science in Global Health (MSc-GH) program develop their own project and 10-week field experience with a faculty mentor.

MSc-GH fieldwork ranges from independent projects to small group and team-based models such as those offered through Bass Connections.

In 2014, 32 MSc-GH students conducted research in 18 countries on four continents on topics such as malaria surveillance, cervical cancer screening and the financial burden of diabetes.
DGHI’s education, research and capacity-building initiatives are built on a strong network of partnerships with institutions around the world. These Priority Partnership Locations provide opportunities for faculty and students and are based on a bi-directional, mutually-beneficial relationship with partners and institutions. DGHI has invested in capacity-building, research and education program development in a number of strategically important locations.
STUDENT FIELDWORK LOCATIONS

DGHI faculty members, fellows, scholars and students are engaged in research in low- and middle-income communities in more than 40 countries across six continents, and fieldwork opportunities and locations continue to expand each year. In 2014-15, the number of students participating in fieldwork jumped to 100 from 65 in the previous year.
Greg Gray, professor of medicine, global health and the environment, recently mentored a U.S. and Chinese research team that demonstrated that swine production workers have an increased risk of infection with swine influenza viruses, and thus have the potential to spread these diseases in their communities.

Published in *PLOS ONE*, the study was conducted in China’s Guangdong Province, an area heavily invested in pork and poultry production. Because of the significant contact between humans and animals and the variety of swine and avian-like viruses that circulate in Chinese pigs, southern China is considered a potential hotspot for new diseases that can be passed from animals to humans.

The research team recommended that the Chinese government monitor for novel influenza virus among China’s swine workers and offer them seasonal influenza vaccines to reduce virus transmission.

“I’m proud of graduate students Mary Ma and Ben Anderson, who led this project and worked with researchers from five local organizations,” said Gray. “This type of multi-institution, multi-disciplinary collaboration is how we move science forward.”

This study is part of Duke’s rapidly expanding research portfolio in One Health, an interdisciplinary approach that encompasses animal, human and environmental health. Led by Gray, the Duke One Health initiative includes projects in Mongolia, Romania, Singapore, China, Sri Lanka, Tanzania and the U.S. This year, DGHI launched a new graduate One Health Training Program in collaboration with colleagues from Duke, North Carolina State University and RTI International.

Exposure to high levels of pollution can have a significant impact on fetal growth and development. That’s the conclusion of a recent Beijing-based study in *Environmental Health Perspectives*, co-authored by Jim Zhang, professor of global and environmental health.

In the months leading up to and during the 2008 Beijing Olympics, the Chinese government launched a series of aggressive air quality improvement measures, which significantly decreased the concentrations of particulate and gaseous air pollution for six or seven weeks. The study found that women who were pregnant during this timeframe gave birth to children with higher birth weights—by 23 grams on average—compared to those who were pregnant before and after the games.

A prior study by this group, also conducted in conjunction with the Beijing Olympics, demonstrated that the air pollution reductions also resulted in improvements in several risk factors for cardiovascular disease.

“While Beijing’s pollution is particularly noteworthy, many of the world’s other cities face similar air quality problems,” said Zhang. “This study shows that pollution controls—even short-term ones—can have positive public health benefits.”
In Tanzania, only about 10 percent of pediatric cancer patients survive, contrasted with an 85 percent survival rate in the U.S. But when standardized protocols are used and free care is provided, survival rates increase to 60 percent. These startling statistics have inspired Kristin Schroeder’s research as a fellow in the Global Health Residency/Fellowship Pathway program hosted by DGHI’s Hubert-Yeargan Center for Global Health. Schroeder, the only fellowship-trained pediatric oncologist in Tanzania, has spent the past year working at the Bugando Medical Centre in northern Tanzania.

Through a DGHI pilot grant, Schroeder is developing a regional cancer registry in collaboration with Duke and Tanzanian colleagues. She’s tracking the number of patients as well as their diagnoses and outcomes. By the end of 2015, she hopes to have more than 1,500 patients in the registry and the infrastructure to sustain it.

In addition to the cost of treatment, another barrier to pediatric cancer survival is that many of the patients’ families do not understand their child’s diagnosis and treatment plan, so Schroeder conducts training for parents of newly diagnosed children. These parents then assist in educating other families, which helps reinforce their knowledge and build a support community.

Schroeder has also led training for the Bugando nursing staff to effectively treat pediatric cancers. She hopes her research will be used as a springboard for developing interventions that increase access to high-quality cancer care and improve patient outcomes.

In this era of global health research, it is no exaggeration to say that nothing of scientific, practical and policy significance can be achieved without collaboration, either domestically or across national borders, and in many cases, both.

LIJING YAN
Associate Professor, Global Health, Duke University and Duke Kunshan University
In the U.S., young HIV-positive men who have sex with men (MSM) are far less likely to receive HIV care and comply with treatment than adults. Sara LeGrand, assistant professor of global health at DGHI’s Center for Health Policy and Inequalities Research, thinks mHealth can be a game-changer for this population.

HealthMpowerment, an interactive website LeGrand and colleagues at the University of North Carolina-Chapel Hill (UNC) are testing, is geared toward young African-American MSM. With social features such as discussion forums, an outlet to submit videos and written pieces, and a Q&A option that gives users access to a physician, the mobile-friendly site addresses many topics related to HIV prevention and treatment. The randomized controlled trial includes one of the largest-ever samples of young black MSM.

She’s also working on a mobile app, Epic Allies, in collaboration with DGHI’s Joseph Egger, local web development firm Caktus and partners at UNC. Through the HIV medication adherence app, young HIV-positive MSM can play mini-games, access learning resources, connect with peers and engage in surveys about factors that can affect adherence. According to LeGrand, social networking is key to the success of these digital interventions. Epic Allies will be tested in 14 U.S. cities this fall.

When the Nepal earthquakes took devastating physical and psychological tolls on many Nepali communities this spring, Brandon Kohrt—assistant professor of psychiatry, global health and cultural anthropology—was well-positioned to respond. He’s been designing interventions to treat post-traumatic stress disorder and other mental health issues in Nepal for the past 20 years.

In the weeks after the earthquakes, Kohrt co-led a team that combed through nearly 250 program reports and research articles and created a document to help relief organizations understand Nepal’s cultural context to inform their psychosocial response services.

In July, Kohrt collaborated with the World Health Organization (WHO), the Nepal’s Ministry of Health and Population and Nepal’s Transcultural Psychosocial Organization (TPO Nepal) to train 14 Nepali psychiatrists on the WHO’s mental health Gap Action Programme – Humanitarian Intervention Guide model. These psychiatrists, in turn, will train and supervise doctors and others working in earthquake-affected districts to integrate mental health care into primary health care.

Throughout 2015, Kohrt will work with TPO Nepal to expand the scope of an existing grant through which Kohrt has been studying the effectiveness of similar training models in other regions of Nepal.

“Through DGHI’s partner TPO Nepal, we’re providing trainings and services that will reach thousands of people,” Kohrt said. “By combining this with rigorous research, we are rapidly adapting these services to best meet the public’s needs.”

SARA LEGRAND
Assistant Professor, Global Health
One of the most exciting global health developments is the use of technology to improve the health of those who’ve been disconnected historically. We’re designing tools to support patients, providers and aid workers. These innovations aren’t being exported to low-income countries—they’re being created there.

GARY BENNETT
Professor, Psychology, Global Health and Medicine
Director, Duke Global Digital Health Science Center

HEALTH SYSTEM STRENGTHENING
WHO Selects Duke Kunshan University as One of Three Research Hubs

In 2014, Duke Kunshan University (DKU) was selected by the Asia Pacific Observatory on Health Systems and Policies (APO) as one of three research hubs for health policy and systems research. The APO is hosted by the World Health Organization’s Western Pacific Regional Office in Manila.

Headed by DGHI’s associate director for DKU and China initiatives, Shenglan Tang, the DKU Research Hub goals include creating knowledge on health systems in the Asia Pacific region, engaging with stakeholders to inform a shared assessment of health systems, recommending health policy change within participating countries, and developing capacity in research, analysis and knowledge translation.

The hub combines the strengths of ten research institutions in the region, including the DKU Global Health Research Center, Duke-National University of Singapore (Duke-NUS) Graduate Medical School, and institutions in Malaysia, China, Vietnam, Fiji and Laos.

The APO has endorsed its first set of proposals to fund two projects. The first, a study of long-term care models in Asian countries, will be led by Duke-NUS assistant professor Chang Liu and DGHI professors Tang and Chee-Ruey Hsieh. DGHI associate professor Lijing Yan will lead the second project, examining the WHO’s guidelines related to the control of non-communicable diseases in resource-poor settings in Asia.

“Having the research hub at DKU provides an excellent opportunity to generate new knowledge for strengthening health systems in Asian and Pacific countries, thus improving the health of the people in the region,” said Tang.
In the past year, we’ve been able to support undergraduate experiential learning opportunities for more than 33 students thanks to the generous support of the Muglia Family Global Health Experiential Learning Fund, Bains Family Research Grants, the Aalok S. Modi Fund and the Paul Farmer Global Health Fund.

The grant provides $10 million in endowment support to sustain the growth of DGHI. The other $10 million will support a challenge that will match one dollar for every dollar given—making the total impact of the grant $30 million—and will allow other donors to partner with the foundation to support and strengthen the Institute’s education and research efforts in the U.S. and around the world.

This grant will contribute to Duke Forward, the seven-year, university-wide fundraising campaign that aims to raise $3.25 billion by June 30, 2017.

For information about the Bill & Melinda Gates Foundation Global Health Matching Grant, please contact:

Josh Bond, Director of Development
Duke Global Health Institute
joshua@duke.edu

I’m excited that our support can help to increase the visibility of the Institute as well as raise the capacity of the global health sector.

MELINDA GATES
Co-chair, Bill & Melinda Gates Foundation

Private support of DGHI’s top priorities—education, research and international partnerships—is critical to our success.

In the past year, we’ve been able to support undergraduate experiential learning opportunities for more than 33 students thanks to the generous support of the Muglia Family Global Health Experiential Learning Fund, Bains Family Research Grants, the Aalok S. Modi Fund and the Paul Farmer Global Health Fund.

Through the Hymowitz Global Health Education Enhancement Fund, part of the Global Health Theme in Bass Connections, we’ve been able to increase global health education opportunities for undergraduate, graduate and professional students, both in the classroom and in the field.

Other gifts, like the generous support provided by DGHI board of advisors chairman, Tom Gorrie, and his wife Meg, are focused on building the capacity of partner sites and providing generous fellowship support to three Master of Science in Global Health students from Sudan, Zimbabwe and Kenya.

We’re grateful to our friends for making important investments in the people and programs that power the Institute.
**BY THE NUMBERS**

**FUNDING SOURCES—FY15**
- Sponsored Projects: $15,255,431
- University Support: $5,385,909
- Gifts/Endowment income: $865,294
- Tuition/fees: $2,525,340

Total: $24,031,974

**FUNDING USES—FY15**
- Personnel Costs: $13,261,248
- Other/non-payroll: $8,725,470
- Scholarships/fellowships: $1,785,160

Total: $23,771,878

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**RESEARCH**

125 active externally funded grants awarded to DGHI faculty

$36.5 million

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**EDUCATION** Academic Year 2014-2015

**UNDERGRADUATE MAJORS**
- 139 enrolled
- 20 graduated

**UNDERGRADUATE MINORS**
- 100 enrolled
- 53 graduated

**MASTER OF SCIENCE**
- 74 enrolled

**DOCTORAL SCHOLARS**
- 9 active
- 38 graduated

**DOCTORAL CERTIFICATE**
- 11 enrolled

**DORIS DUKE FELLOWS**
- 3 enrolled

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students and scholars performed field work in 24 locations around the world.
Death toll of Malaria last yr was 50 times > than that of Ebola. Must read on maliaday by @randall_kramer @DukeGHI

And the winner is ... mBadlaav, an app to help doctors treat victims of sexual assault in India! The winning team at mHealth@ Duke's Shark Tank's 4/3 event is pictured below with judges (Parth Chodavadia, Suhani Jalota, and Preeti Prabhu).

“Where there’s life, there’s hope.” New blog post by @DukeU student Shalini Subbarao in Honduras. #honduras #globalhealth

Last night, senior global health majors presented their capstone research at Trent Hall. Kudos to all of them on their hard work and accomplishments!

Home Is Where the Heart Is
Blog by Samantha Truong
Student Research Training Program

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