

2016-2017 ANNUAL IMPACT REPORT



Duke

GLOBAL HEALTH
INSTITUTE

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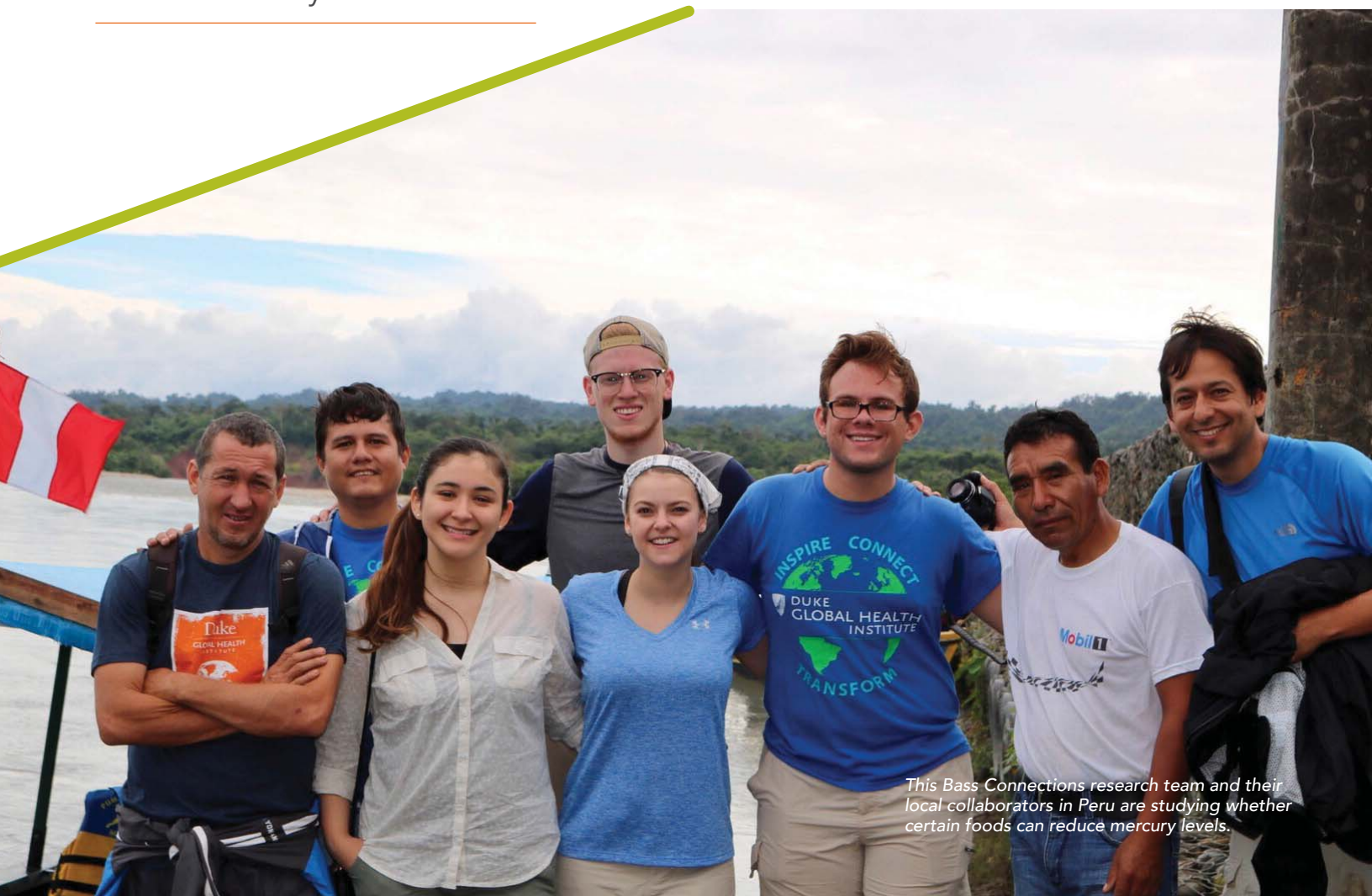
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DGHI works to **reduce health disparities** in our local community and worldwide.

Recognizing that many global health problems stem from economic, social, environmental, political and health care inequalities, DGHI brings together **interdisciplinary teams** to solve complex health problems and train the next generation of global health leaders.

COVER PHOTO:

Members of a Bass Connections research team from Duke and the University of Antananarivo consult with each other while conducting household surveys in Mandena, Madagascar.



This Bass Connections research team and their local collaborators in Peru are studying whether certain foods can reduce mercury levels.



DIRECTOR'S MESSAGE

Dear friends,

As I step down from my position as director of the Duke Global Health Institute, it seems an appropriate time to reflect not only on the past year, but also on the past decade, during which time the Institute has grown tremendously in terms of numbers of faculty and staff, educational programs, research productivity and impact.



I am deeply grateful to Duke leadership for its support of the Institute, particularly Victor Dzau, former chancellor of Duke Health, Peter Lange, former provost, and Richard Brodhead, former president, whose vision enabled the establishment of DGHI. Current Provost Sally Kornbluth and Duke Health Chancellor Eugene Washington have likewise been enthusiastic backers of DGHI and our vision for global health equity.

We celebrated our 10th anniversary last fall with a day-long symposium featuring *Lancet* editor Richard Horton as our keynote speaker and a series of TED-style presentations by DGHI faculty members about some of our most intriguing and cutting-edge research and our innovative educational programs. We are pleased that many of our partners from around the world joined the celebration. Please see pages 8 to 11 for highlights from that event and the past 10 years.

Over the last year, we enhanced our policy work with the establishment of the Center for Policy Impact in Global Health, led by Gavin Yamey (see page 17 for more). On July 1, we added to our center lineup with the establishment of the Global Health Innovation Center, led by Krishna Udayakumar. It is critical that we continue to innovate and stay ahead of the curve with regard to developments across the spectrum of global health. I see exciting developments ahead using digital technology and big data, and in the pursuit of planetary health, which is rooted in the multidisciplinary examination of the interdependence of human and natural systems.

We are nearing completion of the \$10 million challenge grant put forth by the Bill & Melinda Gates Foundation. Gifts from our generous donors have gone to support endowed chairs, student scholarships and an annual director's lecture. Please see page 18 for more about this critical support. In addition, Duke University completed its five-year Duke Forward campaign on June 30, which resulted in a total of more than \$89 million raised university-wide for the Global Health Initiative, and just over \$59 million in support for DGHI. Thanks to this support from so many of you, we are positioned to thrive well into the future and will continue to make meaningful impact in the field of global health. For that, I offer my profound thanks.

And finally, thank you for sharing in the success of the Institute's first decade. Here's to the next one!

Yours in health,

MICHAEL MERSON

Director, Duke Global Health Institute

Wolfgang Joklik Professor of Global Health

DGHI's undergraduate and graduate education programs prepare students with a wide variety of disciplinary interests to work across boundaries to solve complex health challenges facing our communities and our world. Likewise, DGHI faculty members represent multiple disciplines and teach students about—and indeed model—the power of interdisciplinary inquiry. DGHI's education programs are an integral part of what makes Duke a truly global university and demonstrate what it means to be a university seeking knowledge in service to society.

EDUCATION

Field Research Was Formative for Global Health Undergraduate

As a global health and evolutionary anthropology co-major, Azfar Hossain '17 interned at the World Health Organization in Switzerland and co-authored a paper on polio elimination strategies in Nigeria.

“My teammates and I got to design every aspect of the research project, from IRB to publication, and having that level of autonomy as an undergraduate has helped me grow a lot as a student and as a person.”

AZFAR HOSSAIN
Undergraduate Student

The experience that stands out most to him, though, was being a part of the Student Research Training (SRT) program the summer after his sophomore year. Under the mentorship of David Boyd, Hymowitz Professor of the Practice of Global Health, Hossain and his teammates conducted research on the relationship between E. coli contamination and cognitive development in Guatemala.

“The SRT program gave me the opportunity to see the challenges of providing care in low-income settings first-hand,” Hossain reflected. “And more importantly, the program enables students to have both short- and long-term impact in a community.”

The team implemented a dental hygiene education program in several of the elementary schools in the indigenous Mayan community where they were based, and their E. coli research is still ongoing. They're planning to submit a manuscript to a peer-reviewed journal later this year. “We hope our research will provide insights that NGOs and local partners can use to inform solutions to the problems E. coli causes,” he said.

This summer, Hossain began a one-year fellowship at Global Health Strategies, an international consulting company, where he's assisting organizations such as the Rockefeller Foundation with media outreach efforts. And after that? Medical school. “I'm interested in providing clinical care,” he said, “but eventually, I'd like to translate those clinical perspectives into broader change by developing interventions or engaging in policy work.”



Hossain conducts a cognitive assessment with a girl at her home in Santa Cruz, Guatemala.

Master's Student Finds Niche in Pulmonary and Critical Care

Describing Devon Paul as a 2017 Master of Science in Global Health (MSc-GH) graduate barely scratches the surface of his roles at Duke and beyond. He's also a physician, the first pulmonary and critical care graduate of the Global Health Pathway program at DGHI's Hubert-Yeargan Center for Global Health, a former Fogarty International Center fellow, the winner of DGHI's 2017 Outstanding Graduate Student Award and a Duke faculty member.

Paul's global health aspirations began when he witnessed extreme health disparities while visiting an American Indian reservation in South Dakota in middle school. Since then, he's worked with non-profit organizations in Mexico, Haiti, South Africa and Zambia.

For his MSc-GH thesis and Fogarty fellowship research, Paul conducted a community-based study to assess the burden of pulmonary disease in Uasin Gishu County, Kenya. He collaborated with his Duke advisor—DGHI affiliate Peter Kussin—and partners at Moi University and the Moi Teaching and Referral Hospital in Eldoret, where he also cared for patients.

In July, Paul joined the Duke School of Medicine faculty full-time as a medical instructor. He provides clinical care in the Department of Medicine and conducts research in chronic lung disease with a focus on asthma.

"Through my extensive DGHI coursework in quantitative and qualitative methodologies, I now understand how to formulate research questions and choose the right approaches to answer those questions. These skills will be critical to my career success."

DEVON PAUL
MSc-GH Graduate



Paul accepts the Outstanding Graduate Student Award at DGHI's Commencement.

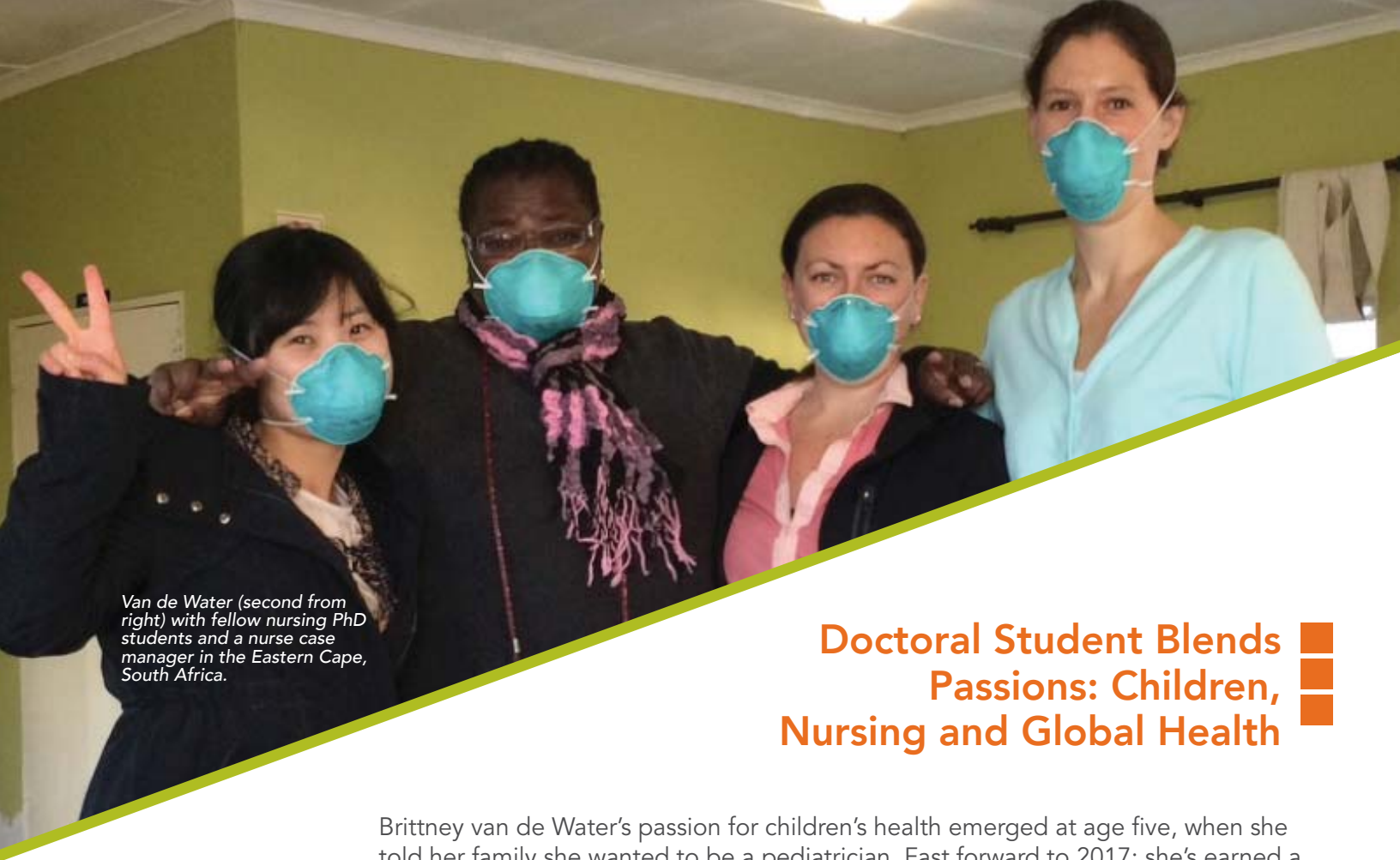
New Leaders Take Helm of Master's Program

In 2016, associate professor of global health Melissa Watt assumed leadership of DGHI's Master of Science in Global Health program. Medicine and global health professor Nathan Thielman stepped into the associate director role.

Medicine and global health professor Christopher Woods led the program from its inception in 2008 to 2016.



Nathan Thielman and Melissa Watt



Van de Water (second from right) with fellow nursing PhD students and a nurse case manager in the Eastern Cape, South Africa.

Doctoral Student Blends Passions: Children, Nursing and Global Health

Brittney van de Water’s passion for children’s health emerged at age five, when she told her family she wanted to be a pediatrician. Fast forward to 2017: she’s earned a PhD in nursing and a global health doctoral certificate, and this passion still inspires her daily. “My drive to improve the health of children is what wakes me up in the morning and keeps me up at night,” she reflected.

“Gaining extra training specific to global health, getting funding for my research abroad and having faculty mentorship through my doctoral journey were all instrumental in my success at Duke.”

BRITTNEY VAN DE WATER
Doctoral Certificate Graduate

After multiple short-term volunteer stints in Bolivia and Honduras between high school and graduate school, van de Water (formerly Sullivan) wanted to use her nursing experience and skills to make a more enduring impact on people’s lives. In 2013, she joined Seed Global Health and the Peace Corps as a nurse educator at Mzuzu University in Malawi, where she taught pediatric nursing. This experience solidified van de Water’s decision to pursue a PhD.

Van de Water’s dissertation, a secondary analysis of an ongoing clinical trial, focused on age-appropriate treatment of drug-resistant tuberculosis in South Africa. Her fieldwork helped her understand the systems necessary for data storage, the importance of building strong relationships with your study team and the complexities of large clinical trials in low-resource settings.

Another formative experience for van de Water was her participation in two Bass Connections research projects. Her work with these interdisciplinary teams gave her valuable insight into health system strengthening, teaching and healthcare in low-resource settings.

This summer, van de Water headed back to her home state of Massachusetts to begin a post-doctoral fellowship at Harvard Medical School, where she’s exploring new protocols for children exposed to drug-resistant tuberculosis. She is also the director of pediatric nursing for Seed Global Health and has a part-time clinical appointment at Spaulding Rehabilitation Hospital in Boston.

EDUCATION HIGHLIGHTS

DGHI Conducts First Comprehensive Alumni Survey

62% of Master of Science in Global Health graduates who responded to the survey are employed. Of those, 82 percent are working in global health.

23% are enrolled in graduate or medical school.

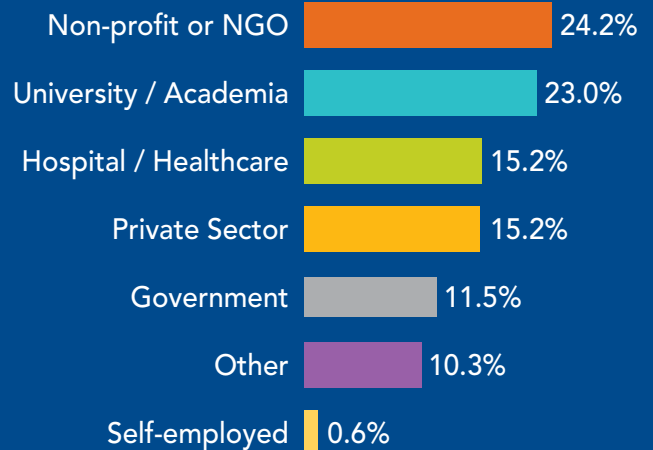
9% are participating in an internship, residency or fellowship.

Doris Duke International Clinical Research Fellowship Is Renewed

The Doris Duke International Clinical Research Fellowship (DDICRF) gives medical students the unique opportunity to conduct clinical research in Kenya, Peru, Sri Lanka or Tanzania under the mentorship of Duke faculty. DGHI accepted its first DDICRF fellows in 2013 and has hosted three fellows each year since then.

DGHI's DDICRF award was renewed in 2017 for an additional two years. The 2017-2018 cohort includes two Duke medical students.

Industry Sectors of Employed Alumni (undergraduate and graduate)



Global Health Master's Program Receives Positive External Review

After completing an extensive self-study report for a Duke Graduate School review, two global health faculty members from Emory University and Stanford University concluded that "the quality of DGHI's Master of Science in Global Health is excellent" and that the program "has rapidly built a solid reputation in providing excellent research-based training in global health."

Amount Given In
GRADUATE SCHOLARSHIPS

\$2,866,804

Global health is a field where doing, seeing and experiencing issues and challenges firsthand are integral to fully appreciating both its challenges and potential solutions. This is why breaking free of the confines of classroom and the comfort of the familiar are essential ingredients in DGHI's education programs.

Undergraduate students participate in one of several fieldwork programs, including DGHI's Student Research Training (SRT) program, Bass Connections, DukeEngage or independent research. Master of Science in Global Health students undertake a research project between their first and second years, typically in a global setting, that forms the basis of their thesis.

EXPERIENTIAL LEARNING



The annual health fairs in Naama, Uganda, draw a large crowd each year.

Students Facilitate Free Health Services in Rural Uganda

In Naama, Uganda, health care is hard to come by; the hospital is far away, and many people are unable to access services at the local health center. That's why the community appreciates the free health fair co-organized each summer by undergraduate Duke global health students in collaboration with local partners. The fair—where people can learn about health topics and receive medical services and medication—typically draws more than a thousand people.

The students are part of DGHI's Student Research Training (SRT) program, and the partnership in Uganda began in 2008 under the leadership of Sumi Ariely, assistant professor of global health, and Christopher Kigongo, a Ugandan physician who's now a lead clinical research coordinator at Duke. From the start, Ariely and Kigongo have prioritized developing deep, sustained collaborations with local professionals such as Robinah Jvelah, the full-time field coordinator for student research and service.

Students in the SRT Uganda program have also conducted research on anemia and malnutrition in infants and children, assessed cardiovascular disease risk and developed a social support program for orphaned and vulnerable children.

"The fair has given community members a new perspective on their health. By encouraging them to come to the fair even though they're not feeling sick, we're giving them an opportunity to educate themselves on health risks and see the value of preventive care."

CHRISTOPHER KIGONGO
SRT Uganda Co-Mentor

of students who completed fieldwork

144

of countries in which students did fieldwork

29

of DGHI faculty members mentoring student field research

30+

“Through my fieldwork, I learned first-hand that working with a global community is a truly symbiotic process—you have to give of yourself in some capacity to gain trust, and in turn, you become more enlightened about the community and yourself.”

ORANE DOUGLAS

Global health minor '14; conducted fieldwork in Sri Lanka
MPH '17 in Healthcare Management from Emory University's Rollins School of Public Health
Healthcare advisory services associate, Grant Thornton



Douglas and a community member on their way to talk with workers at a tea plantation.

STUDENT FIELDWORK LOCATIONS *(in orange)*



Manus collects skin microbes from a study participant as part of her master's thesis research.

“Conducting a skin microbiome study of people and cattle in rural Madagascar allowed me to apply my interests in ecology and evolution to better understand health. This experience was integral to my scientific training and has opened doors for continued research both locally and in Madagascar.”

MELISSA MANUS

Master of Science in Global Health '16; conducted fieldwork in Madagascar
Assistant director, Triangle Center for Evolutionary Medicine
Associate in research, Evolutionary Anthropology, Duke University



OF GLOBAL HEALTH LEADERSHIP

■ DGHI Marks ■ 10-Year Anniversary ■ with Symposium

On October 5, 2016, more than 250 guests gathered to celebrate DGHI's 10th anniversary at a day-long symposium and reception. Participants included Duke faculty members, staff and students, as well as DGHI board members, 25 of DGHI's international partners and many others.

Designed to provide a range of current, emerging and future perspectives on the field of global health, the symposium featured themed sets of TED-style talks and panels on topics such as integrating science and service, tapping into the power of experiential learning and using human-centered design to address global health challenges.

Speakers included DGHI faculty members, a Master of Science in Global Health alumnus, a global health doctoral certificate alumna and two of our partners from Tanzania and Peru.

One of the most well-received sessions featured Duke leaders—Richard Brodhead, President; Gene Washington, Chancellor for Health Affairs, Duke University, President and CEO, Duke University Health System; and DGHI Director Michael Merson—reflecting on the future of global health at Duke.

Richard Horton, editor-in-chief of the *Lancet*, gave the closing keynote address, "Global Health: The Basic Science of Humanity."

"The symposium was a wonderful celebration of DGHI's 10-year milestone. It illustrated the broad range of exciting work our faculty, students and partners are engaged in globally, and it provided thought-provoking discussions about key issues in global health and new directions for the Institute."

MICHAEL MERSON
DGHI Director

Lancet editor-in-chief Richard Horton delivers the keynote address at the symposium. In background: DGHI director Michael Merson.



Partners listen to a presentation.
In foreground: Charles Ibingira (left)
of Makerere University in Uganda,
and Gileard Masenga of Kilimanjaro
Christian Medical Centre in Tanzania.



DGHI associate
professor David
Walmer talks with
Xu Qian, professor at
Fudan University and
DGHI adjunct.



■ DGHI Gets ■ Face Time with ■ 25 International Partners

DGHI convened 25 of our international collaborators for a partnership conference held in conjunction with our 10th anniversary symposium. The purpose of gathering was to exchange insights on education, research and capacity building in global health; strengthen our partnerships; and identify new avenues for collaboration.

DGHI faculty and our partners presented sessions on our research priority areas, distance learning technology, research administration and competing for research funding.

Key outcomes of the conference include:

- A pilot grant program to support new collaborations among DGHI faculty and our partners
- Use of a digital platform to facilitate communication
- Mechanisms for sharing educational resources
- More language and cultural training opportunities for global health students



2006

2007

2008

2009

2010

**DGHI
through
the Years**

Duke Global Health Institute established
Michael Merson appointed as founding director

Postdoctoral fellowship program begins

Global Health Residency/ Fellowship Pathway established

DGHI Board of Advisors holds first meeting

DGHI adds new priority partnerships in Beijing, China and Galle, Sri Lanka

Center for Health Policy and Inequalities Research joins DGHI

Duke Hubert-Yeargan Center for Global Health joins DGHI

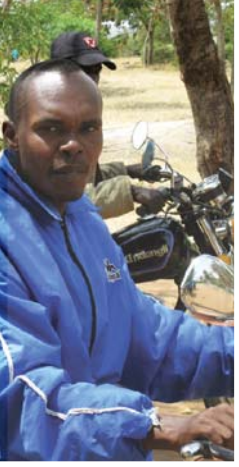
First Master of Science in Global Health cohort matriculates

First priority partnerships established in Moshi, Tanzania; Eldoret, Kenya; Kampala, Uganda; Singapore; and Leogane, Haiti

"I see global health becoming more and more important in the identity and the service of this university in the future."

RICHARD BROADHEAD
Former President,
Duke University

celebrat



2011

2012

2013

2014

2015

2016

Doctoral Scholars program begins

DGHI adds new priority partnerships in Shanghai, China and Delhi, India

Faculty complement grows to 43

DGHI launches undergraduate Student Research Training program

Undergraduate global health co-major and minor and Doris Duke Clinical Research Fellowship begin, Doctoral Certificate program accepts its first students

Center for Global Women's Health Technologies established

Duke Global Digital Health Sciences Center established

DGHI adds new priority partnership in Kunshan, China, and Duke Kunshan University accepts its first Master of Science in Global Health students

Bill & Melinda Gates Foundation gives \$20 million endowment gift to DGHI

DGHI adds new priority partnership in Cape Town, South Africa

Faculty complement totals 81

Research productivity tops \$39 million with 152 projects in nearly 40 countries

DGHI adds new priority partnership in Lima, Peru

ing 10 years

DGHI's research program is broad and deep—spanning multiple disciplines and many faculty interests and delving into the intricacies of its seven research priority areas. DGHI faculty members collaborate with partners at universities and organizations around the world to develop projects that address particular global health challenges in a local context. Our research impact comes in the form of innovative disease interventions, new products and technologies and a systems-based approach to developing solutions to vexing global health problems.

Mohanan (left) and the field team talk to community members in rural Bihar. Photo by Margaret Pendzich.

RESEARCH



■ Study Finds Franchising Program Failed to Improve Children's Health

HEALTH SYSTEMS STRENGTHENING

Preventable illnesses such as diarrhea and pneumonia claimed the lives of nearly a half million Indian children in 2013. In 2011, World Health Partners launched an award-winning social franchising program in Bihar, India, to create a vast telemedicine-linked network of informal practitioners across the state. Funded in part by the Bill & Melinda Gates Foundation, the program aimed to improve quality and availability of care to ensure that children receive appropriate treatment for diarrhea and pneumonia.

Manoj Mohanan, assistant professor of public policy, economics and global health, led a study, also funded by the Gates Foundation, to evaluate the program's effectiveness. The researchers collected data from 68,000 randomly selected children ages five and under between 2011 and 2014. Findings published in *Health Affairs* and the *Bulletin of the World Health Organization* revealed that the program had no effect on children's likelihood of receiving appropriate treatment, health care utilization patterns or quality of care.

"Future social franchising efforts that aim to deliver higher quality health care services might want to first rigorously test their assumptions about demand among potential franchisees, and the patients' willingness to pay for improvements in quality of services."

MANOJ MOHANAN
Assistant Professor, Public Policy,
Economics and Global Health

International Team Seeks to Improve Postpartum HIV Care Engagement in Tanzania

MATERNAL, ADOLESCENT & CHILD HEALTH

DGHI associate professor Melissa Watt and Blandina Mmbaga, director of the Kilimanjaro Clinical Research Institute, are using implementation science methods to improve postpartum HIV care engagement in Tanzania. The study involves students, postdoctoral scholars and junior physicians as a way to build local capacity for implementation science research.

Under Option B-plus, a new approach to prevent mother to child transmission, all HIV-infected pregnant women in Tanzania begin lifetime antiretroviral therapy during pregnancy. While this approach holds great promise for improving women's long-term health and preventing transmission, research suggests that women are at high risk of HIV care drop-out in the postpartum period.

With funding from the National Institute of Allergy and Infectious Diseases, the team is examining the implementation of Option B-plus in nine sites in the Kilimanjaro region to understand facility- and patient-level factors that facilitate or obstruct women's engagement with HIV care following childbirth, and to identify opportunities to support successful implementation of Option B-plus. They're using a range of methods, including clinical observations, interviews with key informants and study participants, patient record reviews and focus groups with providers and patients.

The researchers hope to uncover innovative implementation solutions that can be further refined and tested in a multi-site intervention trial.



Members of the research team sport their "Option B-plus" t-shirts.



A mother squeezes antiretroviral drugs from a Pratt Pouch into her baby's mouth.

A Tiny Packet Is Making a Big—and Growing—Dent in Childhood HIV

EMERGING INFECTIOUS DISEASES

In 2008, engineering and global health professor Robert Malkin and a team of Duke engineering students developed the Pratt Pouch, a tiny packet of antiretroviral drugs that HIV-positive mothers can squeeze into their newborns' mouths to help prevent mother-to-child HIV transmission. The pouch has saved thousands of lives in Ecuador, Zambia and Tanzania, with expansion plans well underway.

With funding from USAID, Malkin is collaborating with the Elizabeth Glaser Pediatric AIDS Foundation and the Ugandan Ministry of Health to scale up access to the Pratt Pouch in Uganda, with the goal of reaching 40 percent of HIV-infected mothers giving birth in that country. A new centralized filling process using machines designed and tested by Duke engineering students will cut the production time from seventeen seconds to four seconds per packet.

And with a grant from GSK and Save the Children, Malkin is partnering with Fundación VIHDA, an HIV services organization in Ecuador, to expand the pouch's availability to upwards of 80 percent of HIV-positive mothers giving birth in that country.

Review Highlights Need to Study Autism in Low-Resource Settings

GLOBAL MENTAL HEALTH

Autism spectrum disorder (ASD) affects people across the world, yet almost everything we know about ASD comes from high-income countries. Lauren Franz, assistant professor of psychiatry and global health, and her colleagues at the University of Cape Town in South Africa reviewed all research on ASD published in sub-Saharan Africa (SSA) to identify ASD knowledge gaps in this part of the world.

The review, published in *Autism Research*, underscores a significant need for large-scale clinical, training and research programs to improve the lives of people with ASD in SSA. The researchers noted, though, that SSA has the potential to make globally significant contributions to ASD etiology and treatments.

This fall, Franz and colleagues at the University of Cape Town will continue working on her National Institute of Mental Health-funded study, in which they'll assess the impact of a brief caregiver-coaching intervention for young children with autism.

Two pastors participate in a Spirited Life workshop as part of the clergy health project.

Clergy Health Intervention Helps Reduce Risk Factors

CARDIOVASCULAR DISEASE AND OBESITY

American pastors of multiple denominations have alarming rates of obesity, making them vulnerable to chronic diseases. But a recent study led by DGHl associate research professor Rae Jean Proeschold-Bell showed that it's possible to turn the tide. An intervention for more than 1,100 United Methodist clergy in North Carolina resulted in improvements in weight, cholesterol and blood pressure that were sustained over 24 months. The program encouraged participants to set their own health goals and engage in behaviors to support those goals.

The study, published in the *American Journal of Preventive Medicine*, was part of a 10-year, \$17 million clergy health project funded by The Duke Endowment.

"We believe these findings have broad applications for other population groups, including regular church goers and non-clergy caregivers."

RAE JEAN PROESCHOLD-BELL
Associate Research Professor, Global Health

Publication Highlights

This list represents a small sample of the more than 150 journal articles published by DGHI faculty in 2016-2017. DGHI authors are bolded.

NEXT GENERATION MATERNAL HEALTH: EXTERNAL SHOCKS AND HEALTH-SYSTEM INNOVATIONS | *The Lancet* | Margaret E. Kruk, Stephanie Kujawski, Cheryl A. Moyer, Richard M. Adanu, Kaosar Afsana, Jessica Cohen, Amanda Glassman, Alain Labrique, K. Srinath Reddy, **Gavin Yamey**

BIOGAS STOVES REDUCE FIREWOOD USE, HOUSEHOLD AIR POLLUTION, AND HOSPITAL VISITS IN ODISHA, INDIA | *Environmental Science and Technology* | Jessica J. Lewis, John W. Hollingsworth, Ryan T. Chartie, Ellen M. Coope, William Michael Foste, Genna L. Gomes, **Peter S. Kussin**, John J. MacInnis, Bijaya K. Padhi, Pinaki Panigrahi, Charles E. Rodes, Ian T. Ryde, Ashok K. Singha, Heather M. Stapleton, Jonathan Thornburg, Cora J. Young, **Joel N. Meyer**, **Subhrendu K. Pattanayak**

DEFINING AND DEVELOPING AN EMERGING FIELD: GLOBAL HEALTH HUMANITIES | *The Lancet* | **Kearsley Stewart**, Kelley Swain

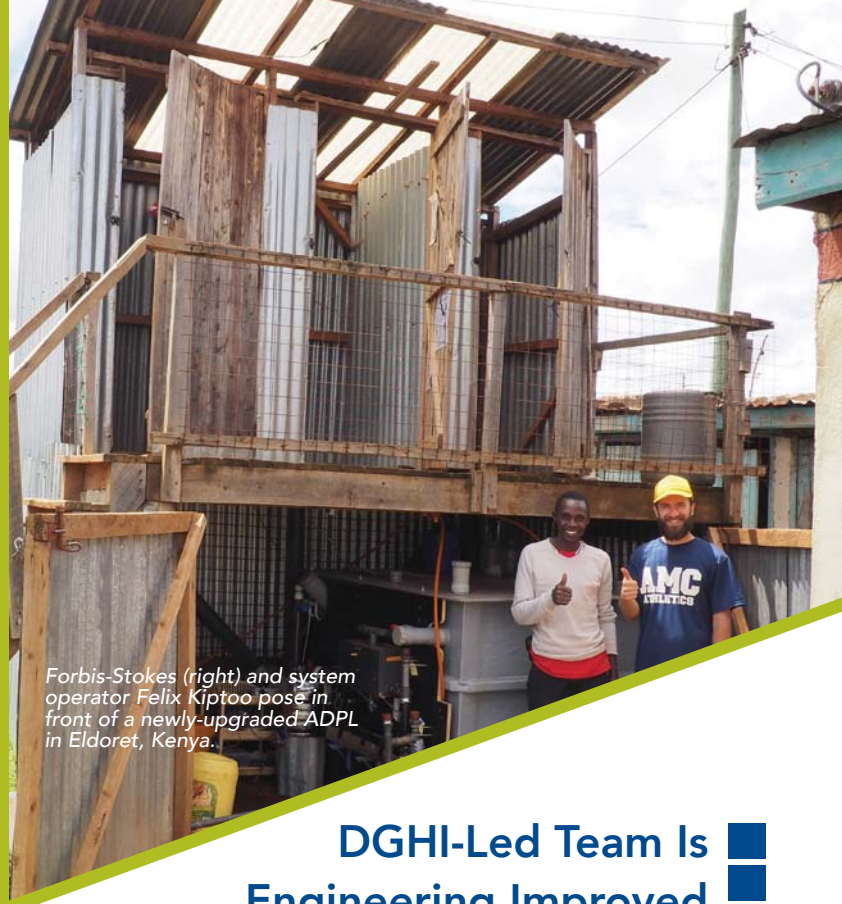
ARE PEOPLE LIVING NEAR MODERN SWINE PRODUCTION FACILITIES AT INCREASED RISK OF INFLUENZA VIRUS INFECTION? | *Clinical Infectious Diseases* | **Paul M. Lantos**, Kate Hoffman, Michael Höhle, **Benjamin Anderson**, **Gregory C. Gray**

DIABETES, CARDIOVASCULAR DISEASE, AND CHRONIC KIDNEY DISEASE IN SOUTH ASIA: CURRENT STATUS AND FUTURE DIRECTIONS | *The BMJ* | Anoop Misra, Nikhil Tandon, Shah Ebrahim, Naveed Sattar, Dewan Alam, Usha Shrivastava, K. M. Venkat Narayan, **Tazeen H. Jafar**

ACHIEVING EQUITY IN MATERNAL HEALTH IN CHINA: MORE TO BE DONE | *The Lancet Global Health* | Hong Jiang, **Xu Qian**, **Shenglan Tang**

EFFICACY OF IRON SUPPLEMENT BARS TO REDUCE ANEMIA IN URBAN INDIAN WOMEN: A CLUSTER RANDOMIZED CONTROLLED TRIAL | *American Journal of Clinical Nutrition* | Rajvi Mehta, **Alyssa C. Platt**, Xizi Sun, Mukesh Desai, **Dennis Clements**, and **Elizabeth L. Turner**

THE IMPACT OF A FAMILY SKILLS TRAINING INTERVENTION AMONG BURMESE MIGRANT FAMILIES IN THAILAND: A RANDOMIZED CONTROLLED TRIAL | *PLOS One* | **Eve S. Puffer**, Jeannie Annan, Amanda L. Sim, Carmel Salhi, Theresa S. Betancourt



Forbis-Stokes (right) and system operator Felix Kiptoo pose in front of a newly-upgraded ADPL in Eldoret, Kenya.

DGHI-Led Team Is Engineering Improved Sanitation in Three Countries

GLOBAL ENVIRONMENTAL HEALTH

Marc Deshusses, professor of civil and environmental engineering and global health, is helping to bring sanitary bathroom facilities to some of the 2.4 billion people at high risk of diarrheal disease because they lack this basic amenity. He and his team have developed the Anaerobic Digestion Pasteurization Latrine (ADPL) and are piloting this low-cost technology at five sites in Kenya, the Philippines and India.

Funded by the Bill & Melinda Gates Foundation, the ADPL provides clean, self-sufficient, odor-free latrines for communities of 15-50 people with limited water supply. Anaerobic digestion of the fecal waste generates biogas, which is burned to pasteurize the system's liquid effluent, which can then be used as fertilizer.

This year, the team improved the design of the ADPL and installed micro-controllers to enhance the systems' efficiency. The controllers enable remote, real-time monitoring and text message notifications when a system component requires attention—a feature that will be particularly valuable when the project is scaled up.

Deshusses' team includes Aaron Forbis-Stokes, a recent PhD graduate in civil and environmental engineering, former DGHI doctoral scholar and lead author on a paper about the project that was one of the top-read articles in *Environmental Engineering Science* in 2016.

DGHI is home to six centers engaged in research across several disciplines. Centers are established to focus on a specific population (such as women's health), application of technology (such as digital health) or global health topic (such as policy). Centers attract researchers with complementary skills and experiences to address the center's priorities, lending tremendous potential for synergy, enhanced productivity and the translation of research into practical solutions.

CENTERS

Center for Health Policy & Inequalities Research

Led by Kathryn Whetten, the center's mission is to improve the health of individuals and communities, locally, nationally and internationally, by addressing health inequities through interdisciplinary policy-relevant evaluative and intervention-based research. Activities focus on population-based health research, health systems research, and intervention and evaluation research.

This year, the center had 22 active research projects, which focused on vulnerable youth, access to care, intervention development and optimizing HIV care and prevention.

Duke Global Digital Health Science Center

Led by Gary Bennett, the center seeks to close health disparities through the design, testing and dissemination of effective digital health interventions to populations who need them most. The center believes that ensuring access to critical health information and interventions in an increasingly connected global society will improve health outcomes and contain healthcare costs.

This year, center faculty and staff managed 12 grants, the majority of which are funded by the National Institutes of Health. The projects include work on diabetes, mental health, cancer and nutrition for pregnant women.



A Duke Global Digital Health Science Center study participant uses her cell phone to track her diet and exercise behaviors to manage her weight.

Center for Policy Impact in Global Health

Led by Gavin Yamey, the center is an innovative policy lab that addresses challenges in financing and delivering global health. It aims to address three gaps in global health financing: a gap in financing “global functions” that benefit the poor; a “middle income gap” that can arise when countries graduate from development assistance for health; and a domestic health financing gap in low- and middle-income countries.

This year, the center published “Strengthening the United States Government’s Role in Research and Development for Global Health,” a report commissioned by the Global Health Technologies Coalition.

“It’s a new kind of policy lab. We’ll design, prototype, and model alternative solutions to help mobilize and target financing to improve the health of the world’s poor.”

GAVIN YAMEY

Director, Center for Policy Impact in Global Health

Center for Global Women’s Health Technologies

Led by Nimmi Ramanujam, the center’s mission is to increase research, training and education in women’s diseases with a focus on women’s cancers and maternal-fetal health. The Center also works to increase the pipeline of young women and men who will build careers at the intersection of technology and global women’s health.

This year, the center continued to make progress in scaling and bringing to market a portable colposcope for use in low-resource settings to screen women for cervical cancer. Image quality of the “pocket colposcope” is comparable with that of traditional colposcopes.



Yamey announces his new center at DGHI’s 10th Anniversary Symposium.

Duke Hubert-Yeargan Center for Global Health

Led by Ralph Corey, the center’s mission is to develop the next generation of globally educated, socially responsible healthcare professionals dedicated to improving the health of disadvantaged populations.

This year, the center sent 16 clinical residents and fellows to 10 sites around the world to complete a rotation in global health, hosted 11 foreign trainees at Duke and received a five-year training grant from the Fogarty International Center.

Global Health Research Center

Led by Shenglan Tang, the center uses innovative approaches to research and solve important health and health policy challenges in China and around the world. Duke Kunshan University and DGHI established the center at Duke Kunshan University in 2013.

This year, the center engaged in a robust research program across numerous areas of global health and convened major events, including a meeting of the Chinese Consortium of Universities for Global Health.

Support from alumni, parents and friends is critical to advancing the work of the Institute, and we're grateful to everyone who supports the students, faculty and international partnerships that are central to our mission. These investments are critical to moving Duke, DGHI and the field of global health forward.

PHILANTHROPY

DGHI RAISED
more than
\$59 million

■ Duke Forward: ■ Partnering for the Future

Launched in 2012 and running through June 30, 2017, the \$3.25 billion comprehensive campaign, "Duke Forward: Partnering for the Future," raised funds to support priorities across Duke's 10 schools, Duke Health and a range of university programs, including global health. At the close of the campaign, we had raised more than \$59 million for DGHI.

OUR SUCCESS IN THIS CAMPAIGN HAS POSITIONED THE INSTITUTE TO ADDRESS GLOBAL HEALTH CHALLENGES BY:

ADDING
global health
faculty across
the University

INCREASING
the number of
international
partnership
locations

BOLSTERING
cross-campus
research
collaborations

EXPANDING
educational
opportunities for
undergraduate,
graduate and
professional students
and medical residents

"We're grateful for the generous investments in the people and programs of the Duke Global Health Institute, which will preserve and elevate Duke's role as an internationally-recognized leader in global health for many years to come."

MICHAEL MERSON
DGHI Director

DGHI Closes in on Gates Foundation Matching Grant

In 2017, DGHI secured an additional \$1,175,000 in matching gifts and pledges toward the Bill & Melinda Gates Foundation Global Health Matching Grant, bringing the total amount raised to \$6.8 million and resulting in an overall impact of \$13.6 million to date. The remaining \$3.2 million of available matching funds is being held in reserve for gift proposals under consideration. We're grateful to the Gates Foundation and our matching grant donors for supporting our work.

Total Impact of Gates Foundation Matching Grant by Category

Education Programs

\$3.4
million

Graduate Fellowships

\$2.8
million

Faculty Support

\$7.1
million

Unrestricted

\$300
thousand



Master of Science in Global Health student Alexandra Whitcomb (second from left) conducts a small focus group in Kenya with users of a new digital health screening tool.

Fellowship Fund Supports Students from Low- and Middle-Income Countries

Elaine Leavenworth, Trinity '80, a member of DGHI's Board of Advisors, has created The Frances Wilson Leavenworth Global Health Fellowship Fund, an endowed fund to provide fellowships to DGHI graduate students. The fund, established in memory of Leavenworth's mother, will give preference to students from low- and middle-income countries who are pursuing research in the area of maternal, adolescent and child health. The fellowship reflects Elaine's and her mother's lifetime philanthropic commitment to supporting vulnerable populations.

Duke Alumnus Pledges Support for Trainee Research in Africa

Inspired by a belief that giving doctors the opportunity to practice medicine in underserved settings reinforces the altruistic spirit of the health professions, retired doctor and two-time Duke alumnus Craig Brater and his wife, Stephanie, have established The Craig and Stephanie Brater Global Health Fund. Their gift will support experiential learning and international research for third-year medical students, residents and fellows pursuing global health at Duke. Priority will be given to trainees working in Kenya, sub-Saharan Africa or other low- and middle-income countries.

Leadership Team

- John Bartlett, *Associate Director, Research*
- Joshua Bond, *Director of Development*
- Sarah Cao, *Assistant Director, International Operations*
- Dennis Clements, *Senior Advisor*
- Diana Harvey, *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, *Director, Finance, Administration and Operations*
- Gavin Yamey, *Associate Director, Global Health Policy*

New Faculty Members

JOY NOEL BAUMGARTNER
Assistant Research Professor
Director, DGHI Evidence Lab



JOSEPH EGGER
Assistant Professor of the Practice of Global Health, Associate Director for Education, Research Design & Analysis Core



SUSAN EMMETT
Assistant Professor of Surgery and Global Health



MEGAN HUCHKO
Associate Professor of Obstetrics & Gynecology and Global Health



GITA SUNEJA
Associate Professor of Radiation Oncology and Global Health



STEVE TAYLOR
Assistant Professor of Medicine and Global Health

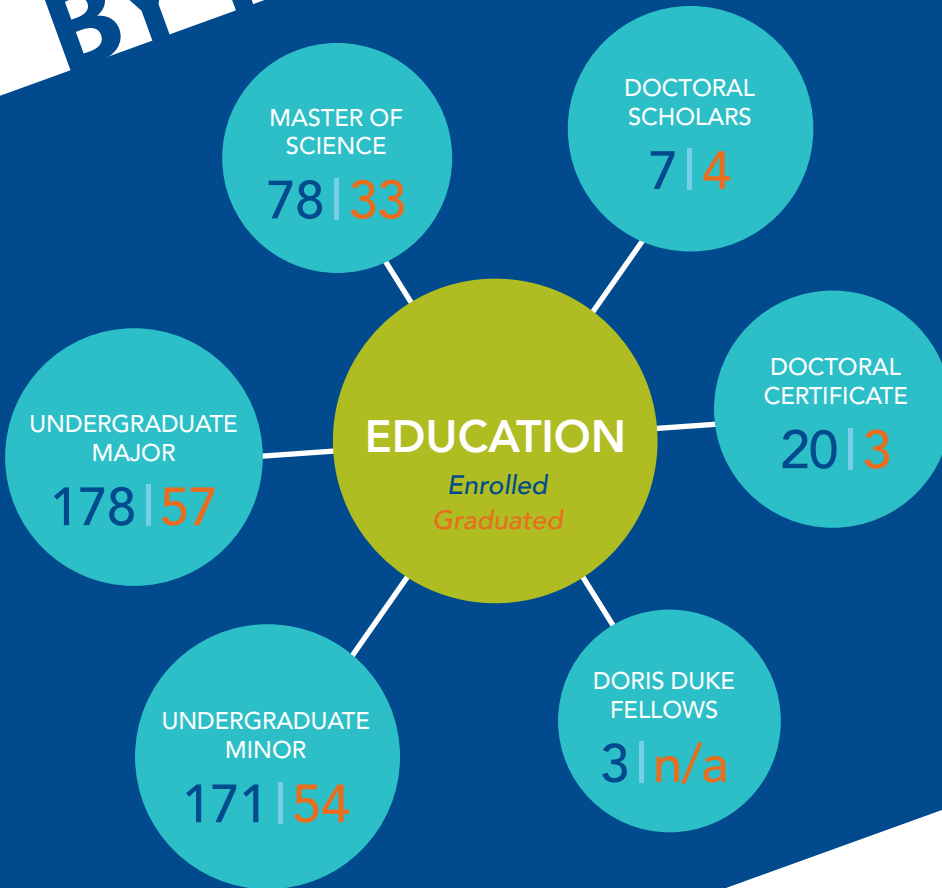


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- D. Craig Brater
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- Brian Clement
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- Peter Piot
London School of Hygiene and Tropical Medicine
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BY THE NUMBERS

People



OF FACULTY
81

OF AFFILIATES
50

OF ADJUNCTS
10

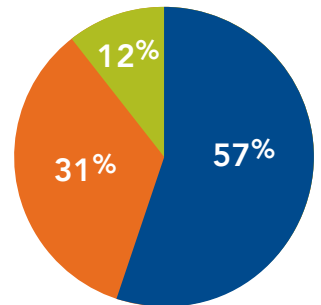
OF STAFF
65

Finance



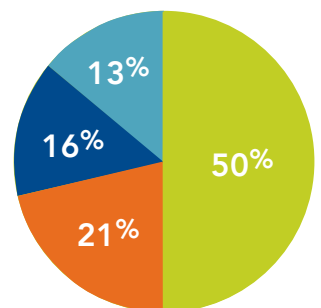
Funding Uses

Faculty and Staff	\$13,135,635
Other/Non-Payroll	\$7,157,219
Scholarships/Fellowships	\$2,866,804
Total	\$23,159,658



Funding Sources

Sponsored Projects	\$13,298,836
University Support	\$5,556,361
Gifts/Endowment income	\$4,166,113
Tuition/fees	\$3,629,353
Total	\$26,650,663



Research

Active Externally Funded Grants and Contracts Awarded to DGHI Faculty

AWARDED
\$59,232,018

OF SPONSORED PROJECTS
215



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