



FOGARTY INTERNATIONAL CENTER • NATIONAL INSTITUTES OF HEALTH • DEPARTMENT OF HEALTH AND HUMAN SERVICES

Congressional appropriators consider Fogarty's impact

As the Fiscal Year 2018 budget is being considered by Congress, a number of appropriators have discussed Fogarty's role in global health research.

The Center represents only a sliver of the NIH's budget yet it has "an outsized impact" on the prevention and mitigation of outbreaks in the world, observed Rep. Rosa DeLauro during the recent NIH House appropriations hearing.

"The Fogarty Center has actively increased capacity in countries facing health crises like Ebola. They have trained some of the best practitioners on the ground accelerating discoveries," she continued. "As we have seen with diseases like Ebola, Zika, HIV/AIDS, public

health emergencies know no borders."

Dr. Anthony S. Fauci, director of the National Institute of Allergy and Infectious Diseases also gave a strong endorsement of Fogarty's impact, referring to Fogarty trainees around the world as "our brothers and sisters," who are working in partnership to contain Ebola outbreaks, conduct Zika vaccine trials and address other global threats.

At the earlier House hearing on the HHS budget, Subcommittee Chairman Rep. Tom Cole said he saw value in supporting global health. "You're much more likely to die in a pandemic than a terrorist attack," he said. "I'd much rather fight Ebola in West Africa than in West Dallas."

Fogarty cheered by supporters at CUGH annual meeting

Rousing applause and a standing ovation for Fogarty kicked off the recent Consortium of Universities for Global Health annual meeting held in Washington, D.C. In opening remarks, CUGH board chair Dr. Pierre Buekens, of Tulane University, told the 1,700 attendees that Fogarty has been an important champion for global health around the world.

NIH leaders discussed their research priorities during a plenary session moderated by Fogarty Director Dr. Roger I. Glass. Early in his tenure as director of the National Institute of Allergy and Infectious Diseases (NIAID), Dr. Anthony S. Fauci said he appreciated the globality of infectious diseases and set out to organize his institute accordingly. "Global health is integral to really everything we do at NIAID," he said. Underpinning the success of the research his institute funds in low- and middle-income countries (LMICs) is the local scientific expertise cultivated by Fogarty. "If you look at the public health leaders in the

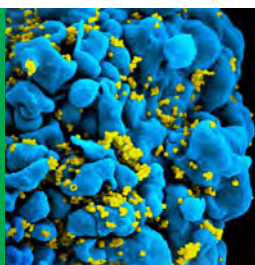
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Photo courtesy of Dr. Roger I. Glass/Fogarty



Fogarty grantees showed their support by donning green bands during the 2017 Consortium of Universities for Global Health annual meeting.

FOCUS



How do Americans benefit from global health research?

- Fogarty trainees participate in Zika research and vaccine trials
- HIV research overseas brings changes to US treatment protocols
- Studies in Colombia may provide breakthrough in Alzheimer's disease

Read more on pages 6-13

Fogarty cheered by supporters at CUGH annual meeting . . . *continued from p. 1*



Photos on left courtesy of CUGH

(Above left) During the CUGH meeting, several NIH leaders explored future directions in global health research. From left, Fogarty's Dr. Roger H. Glass, Acting NCI Director Dr. Doug Lowy, NIAID Director Dr. Anthony S. Fauci, NIMH global health director Dr. Pamela Collins and NHLBI Director Dr. Gary H. Gibbons. (Above right) The Fogarty Fellows and Scholars program was highlighted in a session at CUGH.

developing nations throughout the world," he said, "it's stunning how many were Fogarty trainees at one time in their career."

The global health agenda has expanded to include mental health, which poses a large and growing burden, said Dr. Pamela Collins, who directs the global mental health portfolio at the National Institute of Mental Health. "What we learn in varied contexts and populations can also benefit us at home."

Dr. Doug Lowy, acting director of the National Cancer Institute, echoed that sentiment. An NCI trial of the HPV vaccine conducted in Costa Rica indicates that a single dose is sufficient to ward off cancer, which will result in huge savings globally, as well as in the U.S., where three doses had previously been recommended.

Having grown up with a global perspective, Dr. Gary Gibbons, director of the National Heart, Lung and Blood Institute, says he is looking to see where NHLBI can be

Dr. Judith N. Wasserheit, of the University of Washington (left), spoke at a panel on implementation science, organized by Fogarty's Nalini Anand (right).



the most catalytic. He believes there are numerous research opportunities in LMICs, including studying the impact of the growing popularity of a Western diet on heart disease, environmental exposures that effect lung development in children, sickle cell disease and others.

Another conference session showcased the Fogarty Fellows and Scholars program, which provides early-career scientists with a year-long mentored research experience in a low-resource setting where there are active NIH-funded projects.

Dr. Hod Tamir, of ICAP-Columbia University, spent his Fogarty fellowship studying the impact of social networks on women living with HIV in India. "It can't be overstated what a wonderful impact this fellowship has had on my career, providing a bridge to this world that is so meaningful, with so many people from so many walks of life and with so many different areas of expertise," he said. "It's just incredible."

Fogarty's policy office director, Nalini Anand, organized a panel discussion on implementation science and the critical role it plays in moving research advances into policy and practice. Dr. Judith N. Wasserheit, of the University of Washington, said implementation science is "high impact" but its value is only beginning to be appreciated. She discussed the growing attention devoted to the topic, including conferences, publications and curricula devoted to nurturing this emerging field.

Wasserheit acknowledged the leadership role Fogarty has played in this arena. Anand agreed, noting "over the last 10 to 15 years, implementation science has really taken root and grown across the NIH."

RESOURCE

<http://bit.ly/cugh2017>

Co-founder of Fogarty's RAPIDD modeling program is remembered

By Karin Zeitvogel



Fogarty senior scientist Dr. Ellis McKenzie was remembered at a special conference in May, not just for his role in adding mathematical modeling to the armamentarium of scientists and policymakers, but also for the positive change he brought to researchers' careers.

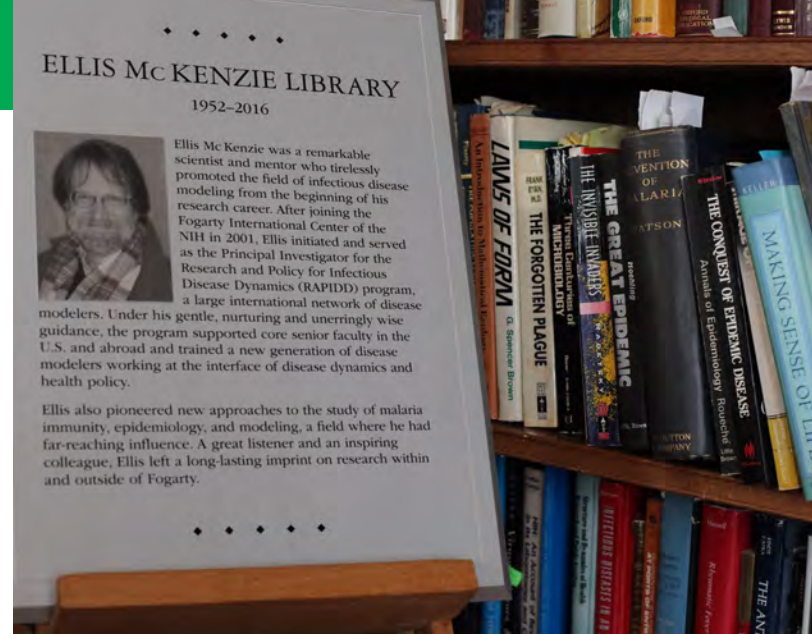
A co-founder of Fogarty's Research and Policy for Infectious Disease Dynamics (RAPIDD) program in 2008, McKenzie "brought modeling from a small area of research that was not fully appreciated to something that is valued today," said Fogarty Director Dr. Roger I. Glass at the two-day symposium held at NIH in honor of McKenzie, who died of cancer in 2016.

McKenzie joined Fogarty in 2001 as a staff scientist. He held a Ph.D. from Harvard and completed a postdoc in applied biology. Early in his career, he had worked in marketing and communications after earning a bachelor's degree at the University of California, Santa Cruz.

The RAPIDD program he helped establish is credited with enhancing the understanding of a range of pathogens—sometimes, as was the case with Ebola and Zika, as they grabbed headlines in newspapers and on home pages of websites in recent years—and of transforming the careers and expanding the horizons of young scientists, conference participants said.

"Ellis reshaped our vision of things, pushed us to orient our models toward a policy-focused audience," said Dr. Matt Ferrari, an associate professor at Penn State University, who was supported by RAPIDD at the start of his research career. "Ellis helped us to make our science more relevant. Many of us thought that we were talking to other scientists—none of us saw that basic science was linked to the kinds of things that were integral to operational government functioning until Ellis connected the dots for us."

The RAPIDD program organizes workshops to provide training in modeling and a platform for collaboration. Its members publish numerous research papers—currently totaling over 1,000, with some 36,000 citations. The career trajectories of the postdoctoral fellows involved in



Fogarty's library in the Stone House has been dedicated to the memory of Dr. Ellis McKenzie.

RAPIDD also speak to the program's success. They have moved on to tenured faculty positions, fellowships at leading universities, jobs in U.S. government agencies or leadership roles abroad. "Choosing the best people, giving them freedom, having strong quality control but with a light touch on outputs...were absolutely key to RAPIDD's achievements," Dr. Bryan Grenfell of Princeton told the conference.

The symposium remembered not only the accomplishments of RAPIDD members, but also the impact McKenzie had on them. Dr. Wendy Prudhomme O'Meara, a former postdoctoral student of McKenzie, said he inspired her work in malaria diagnosis, treatment and drug resistance, and cultivated a love of history in her with his belief that understanding the past helps to better predict the future and act in the present. Dr. David Smith of the Institute for Health Metrics and Evaluation at the University of Washington said he owes "a debt to Ellis for my entire career in malaria and for shaping a lot of my opinions about science. He was a careful thinker and good scientist." Former RAPIDD fellow, Dr. Kim Pepin, a biologist at the U.S. Department of Agriculture, credited McKenzie with teaching her to patiently mentor and lead others. Another RAPIDD fellow, Dr. Seth Blumberg, said McKenzie gave him "a framework for putting science in the broader context of life."

A weeping cherry tree was planted outside Fogarty's Stone House on the NIH campus in memory of McKenzie. The Center's library was also dedicated to him, and scores of books from his extensive collection—many about his research passion, malaria—were aligned on the shelves, the tattered strips of paper that were inserted in them by McKenzie to mark interesting or important sections still protruding from between the yellowing pages.

"Looking at where the bookmarks are, you can see the thoughts and ideas that inspired Ellis," O'Meara said. "He's very sorely missed."

PROFILE

Fogarty Fellow tackles Ebola's unseen mental scars in Liberia

By Karin Zeitvogel

Two years after Ebola killed his entire family, a young Liberian finally met with the first health care professional to speak with him about the invisible, psychological scars the disease has inflicted. That person was Fogarty Global Health Fellow, Dr. Gilberte “Gigi” Bastien.

“Ebola took his mother, father, siblings, aunts, uncles,” Bastien said. “In the space of a few months, this young man’s entire support network was completely obliterated by Ebola, and he told us that not a day goes by that he doesn’t think about taking his own life.”

The man, in his early 20s, had himself contracted Ebola but survived. His physical health has been followed up regularly through an Ebola medical treatment study, but until Bastien and her team asked him to respond to survey questions about the psychological impacts of Ebola on survivors, no one had inquired about his mental health, Bastien said. The young man told them that he wonders every day “why he’s still here when his family’s all gone” and grapples with being shunned by his community “where people think they might catch Ebola if he so much as looks at them,” Bastien said. He’s had to deal with his grief, stigmatization and suicidal thoughts on his own—until now.

In September 2016, Bastien arrived in Liberia, which lost nearly 5,000 people to Ebola during the outbreak, beginning in 2014. Supported by a Fogarty fellowship, the researcher from the Morehouse School of Medicine stood up a project to improve understanding of the mental health and psycho-social challenges facing communities and individuals affected by Ebola, and map out ways for low- and middle-income countries to provide care following a large-scale health emergency or natural disaster.

Bastien recruited and trained six local workers as her research assistants and focus group facilitators. She devised short courses for them, covering everything from data entry to research ethics to the logistics of field operations, and deployed the newly minted researchers to administer surveys and hold focus groups. They targeted burial teams who helped dispose of the bodies of Ebola victims, military personnel involved in the



Gilberte “Gigi” Bastien, M.A., Ph.D.

Fogarty Fellow: 2016-2017

Fellowship at: The Carter Center’s Mental Health Liberia Program, Liberia Center for Outcome Research on Mental Health

U.S. partners: University of North Carolina, Chapel Hill Morehouse School of Medicine

Research Topic: Mental health challenges after Ebola

response, health workers who staffed Ebola treatment units and communities ravaged by the disease.

“By exposing Liberians to the research process and giving them an idea of how to make sense of data, and, importantly, how to circle back and engage communities by sharing what they’ve learned in a socially responsible and culturally informed way, we’re equipping them to be prepared now and for Liberia’s next crisis,” said Bastien.

The Fogarty-supported work Bastien and her team have done will resonate far beyond the West African country, the clinical psychologist predicted. “When we prove the validity and strength of the interventions and constructs we deploy in challenging settings, we demonstrate the potential they have in places like the U.S.,” she said.

“In countries where communities have been devastated, both in terms of physical and mental health, by diseases like Ebola, the impact of having the resources needed and the funding to conduct research and build capacity is palpable. Our research is also relevant to people in America because borders are beginning to be nonexistent—people and illnesses move easily from one place to another.”

Moral and national security arguments also advocate for the U.S. to continue in its leadership role in global health research, Bastien said. “If we measure the accomplishments of global health projects with the same yardstick as national security successes—by what they prevent—then we see that years of investment in global health have created a buffer that’s kept the U.S. protected from diseases and conditions that remain huge challenges and claim many lives in resource-poor countries like Liberia.”

ELIODA TUMWESIGYE, M.D., M.S.C.

Dr. Elioda Tumwesigye was hand-picked by President Yoweri Museveni to lead Uganda's Ministry of Science, Technology and Innovation when it was founded in June 2016. Prior to that, Tumwesigye worked as a medical doctor, led prevention of mother-to-child transmission and other HIV-AIDS programs in Uganda, and has been a member of parliament since 2001. The founder and chair of the first standing committee for HIV-AIDS in an African legislature, Tumwesigye holds an M.D. from Makerere University and a master's degree from Case Western Reserve University in Ohio, which he attended on a Fogarty scholarship.



What impact has Fogarty had on your career?

Without Fogarty, I quite simply wouldn't be who I am today. It all started when I won a scholarship through Fogarty's AIDS International Training and Research Program and Makerere University in Uganda, to do a master's in epidemiology and biostatistics at Case Western Reserve University in the U.S. in 1995.

For the first time in my life, I left Uganda, flew on a plane, crossed the Atlantic—and when I got to Case Western in Cleveland and started studying, I used a computer for the first time! I had gone through primary, secondary school and university, even started working as a doctor without ever touching a computer. Here I was in the U.S., learning how to use WordPerfect, learning how to print, how to have an email address, how to use the internet—and how to do cutting-edge research. After earning my master's degree, I returned to Uganda and began to capitalize on my new skills.

How has your Fogarty training helped Uganda?

One of the first things I did when I went back to Uganda was to establish a research center in a rural area. It has grown to be one of the premiere research centers in the country, providing free care to thousands of AIDS patients, with support from PEPFAR.

At the center, we were able to do the first door-to-door HIV counseling and testing in which we reached out to couples, ensured that the whole community was tested, and provided treatment to those who were found to be HIV-infected. Through the program, we identified a number of discordant couples and, working with the University of Washington, were able to show that by using a single drug, HIV transmission to the negative spouse could be reduced by more than 75 percent.

The training I got with support from Fogarty helped me to achieve this. My Fogarty training has also helped me to reach other career milestones—including starting

the first standing committee on HIV in any African parliament and being chosen to head the ministry of science, technology and innovation that President Yoweri Museveni established in 2016.

What are the goals of the new ministry?

At the ministry, we aim to use science, technology and innovation to reduce hunger, promote good health, fight diseases, ensure that our people are able to get jobs, ensure that we are able to grow the economy of Uganda. I hope to work with Fogarty and NIH to achieve those goals.

Fogarty has already done a lot to support and grow research capacity in Uganda. Many of my colleagues went to U.S. universities with Fogarty support, and you find that a lot of scientists who form the core of research at Ugandan universities—from immunologists to epidemiologists to microbiologists to molecular biologists—have been trained with support from Fogarty. There are many Fogarty fellows and Fogarty-supported scientists in Uganda who have gone on to train others and build capacity, who have established research projects, who have been able to publish and do cutting-edge scientific research. But as a developing country, we're still not where we want to be.

How can Uganda achieve its research goals?

We have to continue to nurture our scientists, to bring them to NIH to get training so that they can go back to Uganda and build research capacity. It's good to train people locally but I think Fogarty needs to be given more money to continue to offer training opportunities in the U.S.

Sure, when you train people locally you can train many more, but when people come to NIH, they are exposed to strong work ethics, they see how labs are run, they look at the way people do things—and they come back to Uganda as changed people.

Americans benefit from global health research

To protect the health and safety of Americans, Fogarty has for three decades managed grant programs that build scientific expertise in developing countries, ensuring there is local capacity to detect and address pandemics at their point of origin, contain outbreaks and minimize their impact. Fogarty also convenes the best scientific minds to address critical global health research problems such as pandemic response, antimicrobial resistance and strengthening research capacity in Africa. Whether developing scientific expertise to help contain and manage diseases such as Ebola and Zika, or enabling unique research abroad to advance our understanding of Alzheimer's disease, Fogarty programs are laying the foundation that makes research possible in many low- and middle-income countries.

Zika vaccine trial site in Peru led by Fogarty trainee

By Shana Potash

A former Fogarty trainee who conducts research in the Peruvian Amazon is part of a multi-site NIH trial to evaluate a Zika vaccine candidate. The experimental DNA vaccine, designed to protect against disease caused by Zika infection, was developed by scientists at NIH's National Institute of Allergy and Infectious Diseases (NIAID).

"A safe and effective vaccine is urgently needed to prevent the often-devastating birth defects that can result from Zika virus infection during pregnancy," says NIAID Director Dr. Anthony S. Fauci. "Evidence also is accumulating that Zika can cause a variety of health problems in adults as well."

The vaccine is being tested at 11 sites in the U.S., and Central and South America where active mosquito-transmitted Zika infection is confirmed or projected. Dr. Martin Casapia is the principal investigator at the site in Iquitos, Peru, a jungle city of nearly 440,000 people on the Amazon river.

As a specialist in infectious diseases and tropical medicine, Casapia complemented his medical degree with Fogarty training that he says had a profound impact on his career and his country's ability to participate in international research collaborations.

"The Fogarty training was, for me, the most important experience of my career as an investigator," he says.

Casapia was a scholar in Fogarty's AIDS International Training and Research Program (AITRP) at the University of Washington (UW), where he earned a Master of Public Health degree. "I learned all the steps for designing, implementing and conducting an investigation, including tools of biostatistics and epidemiology," he explains.

"Right from the get-go, you need to have a very robust understanding of epidemiology to be able to design and implement a clinical trial," says Dr. Carey Farquhar, who directed the UW program and was herself a Fogarty trainee. "You need someone with that kind of depth and exposure to the best training available to then go back and be a leader."

Since his training, Casapia has been involved in numerous epidemiological studies and major international clinical trials and has contributed to nearly 50 scientific papers published in international journals.

The fact that a small country like Peru can participate in international research, and contribute scientific evidence toward eliminating and controlling infectious diseases such as Zika and HIV demonstrates the value of research training, Casapia says.

"We need to do research globally if we're going to continue to advance a research agenda that is very relevant for the United States because we can't find all the answers to all the questions just within our U.S. populations," adds Farquhar. "What Martin is doing with the clinical trial in Peru, many, many other Fogarty trainees are doing in other ways."

Photo by Harold Ruiz/PAHO/WHO



A former Fogarty trainee is managing the NIH Zika vaccine trial site in Peru.



Photo by Harold Ruiz/PAHO-WHO

Fogarty-supported Chagas, dengue researchers redirect efforts to tackle Zika virus

By Karin Zeitvogel

As more and more babies in Brazil were born with microcephaly in 2015, Fogarty-supported scientists rapidly changed gears on work they'd been doing for years on Chagas disease and dengue, and shifted their focus to the Zika virus, which was suspected of causing the spate of birth defects. By the time researchers had confirmed the link between Zika and microcephaly in infants, scientists in Brazil who had been trained with Fogarty support were using the resources in place for Chagas disease brain research to better understand Zika, and collaborating with other groups to advance knowledge of the disease, said Dr. Jamary Oliveira-Filho of Brazil's Federal University of Bahia. Meanwhile, in Mexico, Fogarty-supported scientists researching different aspects of preventing and controlling dengue—transmitted by the same *Aedes aegypti* mosquito as Zika—refocused their work on Zika.

Both Chagas and Zika can cause brain atrophy, which adds to the burden of cognitive defects, including those associated with Alzheimer's and vascular dementia, which affect people in both developed and developing countries. A Fogarty-supported study co-led by Oliveira had already identified that brain involvement, including stroke, can occur in Chagas patients. Brazilian and American researchers are working together to identify the mechanism that causes stroke and testing prophylaxis with aspirin in patients identified via a transcranial Doppler scan as being at high risk for stroke. NIH and local agencies helped Brazil to acquire advanced neuroimaging and other equipment to study Chagas and

other diseases, and this infrastructure has been put to work to try to better understand Zika.

"We know brain volume is decreased in Chagas because of chronic inflammation, so we're investigating whether part of the damage we see in Zika is also mediated by brain inflammation," said Oliveira. "In Chagas, we think this is primarily due to the activation of the immune system, but in Zika we're early in the research process and we don't know how much of the problem is due to the direct effect of the Zika virus in the brain and how much is due to activation of the immune system."

Recent studies have found that Zika affects adults as well as babies, underscoring the urgency to better understand the virus. Other research has found that Zika can persist for weeks in the central nervous system and other tissue. "These studies, like ours, are trying to identify the mechanisms for brain damage in both diseases so that we can target effective treatments and preventive actions," Oliveira said. "Once the mechanism has been identified, we can try to draw conclusions on which treatments would be best. But to get to that point, we need to do the kind of research that Fogarty and the NIH have made possible."

In Mexico, Fogarty-supported researchers have worked for years to reduce dengue transmission, said Dr. Bill Black, a Fogarty grantee and professor at Colorado State University (CSU). "Since we were already down in Mexico when the Zika outbreak began," said Black, "It was natural that the trainees should switch their projects to focus on the new threat."

One trainee found that gene mutations in mosquitoes that make an insecticide ineffective have spiked in recent years. This coincides with mosquitoes building up strong resistance to the pyrethroid family of insecticides, the main tool in Mexico's arsenal against *Aedes aegypti*. "If insecticides become ineffective, people would have little defense against Zika and diseases like dengue and yellow fever," said Black. But CSU's research points to a simple solution. "If you change insecticides when you see the one you use is approaching a mutation frequency of 100 percent, and then come back to the usual insecticide a few years later, you're likely to find that the mosquitoes are more susceptible to it," Black explained.

The findings may be applied anywhere that there are *Aedes aegypti* mosquitoes, including parts of the U.S.

HIV research by Fogarty trainees brings changes to US treatment protocols

By Karin Zeitvogel

When the astounding results of a multi-site international HIV/AIDS study were published in 2011, they had an immediate impact, causing the U.S. and governments around the world to change their treatment protocols, saving countless lives. The research project, known as HPTN 052, demonstrated that providing antiretroviral treatment as soon as an individual is diagnosed with HIV cuts the risk of the virus being transmitted to an uninfected partner by more than 90 percent.

It wouldn't have been possible without the expertise developed through Fogarty's research training programs, said one of the trial's principal investigators.

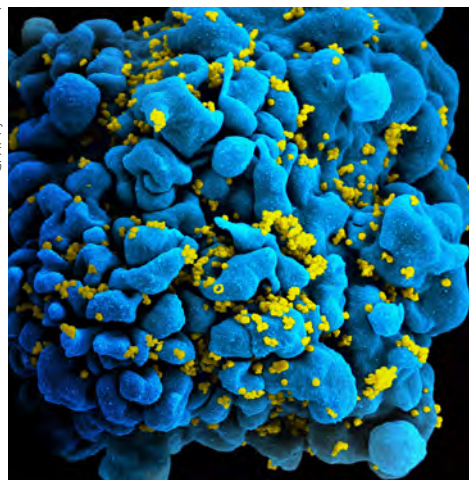


Image courtesy of NIAID

Fogarty trainees and research partners discovered immediate treatment for those diagnosed with HIV can dramatically reduce risk of transmission.

“Long before we launched the pilot study in 2005, Fogarty was offering training in resource-constrained countries where there were few or no doctors, nurses and clinics, and certainly no research capacity,” said Dr. Myron Cohen who, in addition to helping lead the HIV Prevention

Trials Network (HPTN), is a professor of medicine at the University of North Carolina (UNC), Chapel Hill.

“All of the nine countries that we worked in for HPTN 052 had investigators who had Fogarty support during their training. In other words, we were only able to consider running the trial because Fogarty had worked so hard to get people ready for it,” Cohen said.

HPTN 052, which was funded by the National Institute

Photo by Richard Lord for Fogarty



Expertise developed through Fogarty's research training programs helped to make a landmark multi-site international HIV study possible.

of Allergy and Infectious Diseases (NIAID), was the first randomized clinical trial to show that providing an HIV-infected individual with antiretroviral therapy (ART) when their immune system was still relatively healthy dramatically reduces the risk of sexual transmission of HIV to an uninfected partner.

“Treatment as prevention became the centerpiece of stopping the transmission of HIV, both in the U.S. and worldwide. Because Fogarty developed research sites all over the world, because Fogarty trained all those people worldwide, countless lives have been saved, including in the U.S.”

— DR. MYRON COHEN, UNIVERSITY OF NORTH CAROLINA

Many of the local investigators in the nine countries where the study was conducted—Botswana, Brazil, India, Kenya, Malawi, South Africa, Thailand, Zimbabwe and the U.S.—were trained through Fogarty's AIDS International Training and Research Program (AITRP) or its International Implementation, Clinical, Operational and Health Services Research Training Award for AIDS and Tuberculosis (IICOHRTA-AIDS/TB). Both programs prepared personnel to be shovel-ready to conduct research on key global health issues, such as HIV.

Other investigators, like Dr. James Hakim, a professor of medicine at the University of Zimbabwe College of Health Sciences, or Dr. Suwat Chariyalertsak, head of the AIDS Prevention and Microbicide Clinical Research Site at Chiang Mai University in northern Thailand, completed higher degrees with Fogarty support and are now principal investigators with their own Fogarty grants. Still others took part in short-term training programs supported by Fogarty.

Fogarty helps build research expertise

Such support from Fogarty was essential to the success of the HPTN trial, said Dr. David Celentano of Johns Hopkins University. “When I first arrived in northern Thailand in 1991,” Celentano said, “there was an eager, but pretty much untrained group.”

After receiving a Fogarty award a few years later, Celentano said Johns Hopkins brought several people from Chiang Mai University to the U.S. for advanced degree studies and 50-60 people for an intensive, three-week summer institute for epidemiology and biostatistics, Celentano said. “We trained many of the epidemiologists that have been very active in the HIV epidemic in northern Thailand. There are a lot of really well-trained people in Chiang Mai now, which wouldn’t have happened without Fogarty.”

Similarly, when Dr. Mina Hosseinipour, a professor of medicine at UNC Chapel Hill, moved to Malawi in 2001, she found no local scientists trained in internal medicine or infectious diseases, no one with the research experience required to run a study like HPTN 052, and no one with expertise in infectious disease or HIV management.

“But Malawi did have a Fogarty AITRP since 1998, and many faculty members at the College of Medicine were former or current Fogarty grantees,” Hosseinipour said. The first local health care professional who was hired to work on HPTN 052 in Lilongwe in the early 2000s, Dr. Cecilia Kanyama, was not only a Fogarty alumna but also a graduate of the Malawi College of Medicine. “Today, we have in Malawi a wealth of incredibly well-trained people who know how to do research, know how to lead agendas. And they’re all products of Fogarty training—all of them,” said Hosseinipour, who is now the scientific director of UNC-Project Malawi.

At the annual meeting of the HPTN group, held in Washington, D.C. in April 2017, NIAID Director Dr. Anthony S. Fauci, praised Fogarty’s “extraordinary track record in training the future leaders in global health throughout the world.”

“Many of the health leaders in the developing world have had their core research and global health training through the Fogarty International Center,” Fauci said. “Fogarty is a critical component of the NIH’s global health research agenda.”

Training people in developing countries benefits the U.S.

Training people in low- and middle-income countries like Malawi or Thailand to conduct research is in the best interest of the U.S., HPTN investigators said. Not only is the world more interconnected today—“A lot of Americans go to Thailand and elsewhere, and they can encounter a whole lot of infectious diseases in their travels,” said Celentano—but conducting HPTN 052 in developing countries with a higher incidence of HIV infection than the U.S. gave investigators a broader pool of infected people to

study, and produced results more quickly. Because of the geographic spread and diversity of the participants, the study was also easy to generalize to people not from the nine countries studied.

“If HPTN 052 had been run in the U.S. only, it would still be going on,” said Hosseinipour. Instead, initial results became available in mid-2011, after a median follow-up of just a year and eight months.

Within weeks of the interim results being made public, all U.S. organizations that provided HIV care had “amended their guidelines to provide immediate antiretroviral treatment to anyone diagnosed with the virus,” Cohen said. By 2012, countries around the world had followed suit and were providing ART to HIV-infected patients as soon as the virus was detected. Prior to the results of HPTN 052, the WHO recommended that ART be given only when the CD4 lymphocyte count of an infected person fell below a certain level, indicating that HIV had progressed. HPTN 052 showed there were benefits to both members of a couple in providing ART when the immune system was still relatively healthy.

Nearly 90 percent of study participants stayed with HPTN 052 until the study ended in May 2015. The final results showed a 93 percent reduction of HIV transmission when ART was given immediately to infected people.

“Treatment as prevention became the centerpiece of stopping the transmission of HIV, both in the U.S. and worldwide,” said Cohen. “Because Fogarty developed research sites all over the world, because Fogarty trained all those people worldwide, countless lives have been saved, including in the U.S.”

Photo courtesy of NIAID



The study’s final results showed a 93 percent reduction of HIV transmission when antiretroviral therapy was given immediately to infected people.

RESOURCES

<http://bit.ly/HIVHPTN>

Fogarty trainees study Colombian family for clues to prevent Alzheimer's

Research conducted in Colombia may provide clues on how to prevent the ravages of Alzheimer's disease—a global problem that in the U.S. alone could affect 16 million people and cost \$1 trillion annually by 2050, according to the Alzheimer's Association.

Colombia has become significant to Alzheimer's research because it is home to the largest known family with an inherited, early-onset form of the disease. Some of the relatives are participating in an innovative Alzheimer's prevention trial to determine if a drug provided by a U.S.-based company can stave off the decline in memory and brain function associated with the disease.

Fogarty helped set the stage for the trial by supporting the training of Colombian scientists in cutting-edge neuroscience research. Building in-country expertise in brain tissue analysis, advanced microscopy and genetics, for example, created a cadre of scientists equipped to conduct a large clinical trial.

The Alzheimer's prevention study is the first to focus on people who are cognitively healthy but at extremely high risk of developing the disease. The research reflects new thinking that testing therapies before impairment occurs might be most effective. The Colombian clan is at the center of the research because a rare genetic mutation runs in the family—people who harbor it typically develop noticeable symptoms of Alzheimer's around age 45. The NIH-supported trial, begun in 2013,

A longtime collaboration between Colombian neuroscientist Dr. Francisco Lopera (left) and Dr. Kenneth Kosik, of University of California, Santa Barbara, is advancing Alzheimer's research.



Fogarty funding has helped develop scientific expertise in rural Colombia, laying the groundwork for a clinical trial of a drug that might slow progression of Alzheimer's that is being tested on members of an extended family with an inherited early-onset form of the disease.

Photo courtesy of Dr. Yakeel Quiroz

is a collaboration among the University of Antioquia in Colombia, Banner Alzheimer's Institute in Phoenix, and Genentech, a San Francisco-based biotech company that is supplying the test drug, crenezumab.

"There's no doubt in my mind the clinical trial wouldn't have happened if it weren't for Fogarty getting in there and building capacity," says Dr. Kenneth Kosik, a neuroscientist and professor at the University of California, Santa Barbara. Kosik has been studying the Colombian family since the 1990s with his longtime collaborator, Dr. Francisco Lopera, chief of neuroscience at the University of Antioquia. It was Lopera who discovered the early-onset Alzheimer's family in the 1980s when, as a neurology resident, he met a patient who lost his memory in his 40s, just like his father and grandfather. Over the years, the scientists discovered the genetic mutation responsible for the disease, identified more than 5,000 members of the extended family and explored possible gene therapy targets for Alzheimer's.

For nearly a decade, Fogarty and NIH's National Institute on Aging co-funded investigations and training that helped establish a neuroscience research program at the University of Antioquia. "If there's one thing I think we accomplished, it was creating a strong scientific community there interested in neurodegeneration, a local community that is the foundation for a big clinical trial."

Alzheimer's may be "just the tip of the iceberg," says Kosik, noting there are more large families in Colombia's Antioquia region with other inherited neurodegenerative conditions, such as Huntington's. The university's biobank of postmortem brain tissue provides another opportunity for discovery, Kosik says. "We've only just begun to tap the resources that are available there, and the local talent, in terms of the genetic secrets that lie in that population."

Photo courtesy of Dr. Kosik



Fogarty protects US by strengthening pandemic response in West Africa

By Karin Zeitvogel

When Ebola struck West Africa in 2014, countries with little or no scientific capacity suffered the most, and the cost of the U.S. response to help them soared above \$2 billion. A new Fogarty program is aimed at strengthening scientific expertise at institutions in Guinea, Liberia and Sierra Leone so that when the next outbreak comes, they will be prepared to rapidly respond. The goal is for U.S. scientists to partner with their African counterparts to plan research training programs that would enable quick implementation of therapeutic or vaccine trials when the next infectious disease threatens.

Most of the nearly 29,000 confirmed infections and more than 11,000 deaths from Ebola in the 2014-2016 West Africa outbreak occurred in Guinea, Liberia and Sierra Leone. All three countries bear the scars of war and grinding poverty, and were unprepared to try to stop the deadly march of Ebola. Fogarty planning grants are intended to allow grantee organizations to assess what gaps need to be filled and develop research training plans so the countries can compete for larger, long-term Fogarty funding to implement the programs. The grants

“There's a very clear motivation for us to be actively developing capacity in low-income countries—and that is that we don't want Ebola or any other disease to come to the U.S. It's like seeing a raging fire across the street. Even if you say, ‘Why should I care what's happening to the people inside,’ the logical thing isn't to just stand in front of your door with a bucket of water; the logical thing is to protect yourself by helping to put the fire out.”

— DR. DANIEL BAUSCH, TULANE UNIVERSITY



Fogarty is strengthening research expertise in Ebola-affected countries so future outbreaks can be contained.

awarded to Duke, Tulane, Vanderbilt and Yale universities in the U.S. are a vital first step to enabling the Ebola-affected countries in West Africa to develop the scientific capacity to lead the fight against the next infectious disease outbreak that will inevitably hit the region.

“If we want to make the world, including the U.S., a better and safer place, the only way to do it is to help low-resource countries become autonomous in their responses to disease outbreaks,” said Dr. Daniel Bausch, principal investigator on Tulane's grant. “Otherwise, every time there's a health crisis, we'll find ourselves in a situation where there needs to be a massive, extremely costly external response like we had for Ebola in West Africa.”

The U.S. was the top donor to the international Ebola response, allocating about \$2.37 billion, according to data compiled by the CDC. “Instead of spending billions of dollars responding to the outbreak, we could have spent millions to develop capacity in Sierra Leone, Guinea and Liberia, which the Ebola-affected countries could have used to limit the spread of the disease,” Bausch said.

Limiting outbreaks by building independence

In the first six months since the Fogarty awards were made, grantees have identified the resources that already exist in the West African countries, and those that are

lacking. Working with partner institutions on the ground, the scientists have mapped out programs to develop and build local expertise in epidemiology, emerging epidemic virus research, the conduct of clinical trials and laboratory work, the use of transmission modeling to better predict the trajectory of an epidemic, biosecurity regulations, bioethics, data analysis and management, the capacity to apply and share the results of research, and more.

Helping countries in West Africa to help themselves would ensure that Americans remain protected from deadly infectious diseases like Ebola, said Bausch, who has worked on capacity building in the region since 1996.

“Even if you say, ‘OK, Africa or anywhere else outside the U.S. isn’t my problem,’ there’s a very clear motivation for us to be actively developing capacity in low-income countries—and that is that we don’t want Ebola or any other disease to come to the U.S.,” he said. “It’s like seeing a raging fire across the street. Even if you say, ‘Why should I care what’s happening to the people inside,’ the logical thing isn’t to just stand in front of your door with a bucket of water; the logical thing is to protect yourself by helping to put the fire out.”

Providing long-term training

By supporting programs that provide long-term training to people in low-income countries, Fogarty has helped the United States put out health emergency ‘fires’ like Ebola, said Dr. Chris Woods, one of the principal investigators for Duke University. Woods and his team are working to identify clinical research training opportunities at Sierra Leone’s main medical school, the College of Medicine and Allied Health Sciences (COMAHS), that would benefit from Duke’s support, experience and resources. In the long run, the right skill set would enable local scientists to rapidly implement therapeutic or vaccine trials in the early stages of an outbreak, Woods said.

“Fogarty grants are the catalyst to start developing local investigators and support staff who can identify when new outbreaks happen, when new pathogens occur. Eventually, this will make it possible to have trained personnel in place, which means we would be able to respond not at the tail-end of an outbreak, as was the case with Ebola in West Africa, but on the front-end,” he said. “But you can’t achieve that by sending a whole bunch of folks to one-week classes and then patting yourself on the back. You need to support long-term research and that’s what Fogarty is giving us the opportunity to do.”

Slowly but steadily building sustainable capacity, the

way Fogarty-backed programs do, “may not be as sexy or obvious as the rapid response team that comes in to a country once an outbreak is underway,” said Bausch, “But it develops the response in the trenches, and that’s the most important thing we can do in these countries. We need to build the capacity of Sierra Leoneans, Liberians and Guineans to be their own experts and not be dependent on the outside.”

Developing research expertise

The Ebola outbreak flew under the radar for months before it was declared an international public health emergency by the WHO in August 2014—half a year after it began. At the time, Dr. John Schieffelin was working in the Sierra Leonean town of Kenema, near the border with Guinea where the outbreak began. He recalled how, in the absence of trained local scientists and a lack of local knowledge on diagnosing and treating Ebola patients, he and a small team were overwhelmed with patients pouring into the town’s hospital.

“There was a complete breakdown of the healthcare system—I don’t know what else to call it,” said Schieffelin, who is a co-lead on Vanderbilt’s planning grant. “The local

U.S. scientists are training local researchers in Sierra Leone to strengthen their ability to respond to the next pandemic.



Photo courtesy of Tulane University



“The medical community isn’t ready yet to take the lead, to run the public health response, to manage all the research initiatives. We need to continue working with Fogarty to train locals and bring them up to a level where they can contain their own epidemics so they don’t become pandemics.”

– DR. JOHN SCHIEFFELIN, TULANE UNIVERSITY

A rapid response in Nigeria, where Fogarty has invested for decades in research training and provided scholarships and fellowships to local students, allowed Ebola to be nipped in the bud there within weeks of the first case being diagnosed. Twenty cases were confirmed in Nigeria — Africa’s most populous nation—and eight people died. Mali and Nigeria “have a much better trained and organized public health system and workforce than Guinea, Liberia and Sierra Leone,” said Schieffelin. “As a result, Mali and Nigeria were able to mount much better responses and get a foothold on controlling Ebola, while the three countries with weak health infrastructures were limping along.”

“We need to plan and do training at a high level, for the people who are going to be running the show the next time around,” said Schieffelin, who twice returned to Sierra Leone after August 2014, when Ebola was still raging in the region and outside help was just beginning to come in.

Even though the three countries in West Africa have all been declared Ebola-free, Sierra Leone, Liberia and Guinea “still don’t have the experience or expertise to be able to manage a problem of this magnitude,” said Schieffelin.

“We need to invest in further training in those countries because they’re just not prepared,” he said. “The medical community isn’t ready yet to take the lead, to run the public health response, to manage all the research initiatives. We need to continue working with Fogarty to train local scientists and bring them up to a level where they can contain their own epidemics so they don’t become pandemics.”

The U.S. spent more than \$2 billion on the Ebola response but investing in training to develop scientific skills in West Africa costs much less.

health care workers—the ones that were still alive—were petrified to come to work. Three of us were caring for 100 patients a day with, maybe, two or three nurses. It was total chaos in Kenema, and on a national scale, the medical and public health community didn’t have the training to address Ebola at all.”

Vanderbilt University is using its planning grant to prepare a proposal for long-term training in Sierra Leone, focused on advancing implementation science research capacity at COMAHS and building expertise on how to conduct high-level clinical trial research during an epidemic.

Countries with expertise contained Ebola

In Liberia, the health care system also all but collapsed. “The lack of scientific training in Liberia was a contributing factor to the havoc that was wreaked on our country during the Ebola crisis,” said Dr. Mosoka Fallah, a professor at the University of Liberia (UL), and a principal investigator on the Yale University grant. “When you compare our inability in Liberia to rapidly detect Ebola with Mali’s success in doing so, the urgency of preparing local scientists to lead the fight against the next epidemic becomes clear.”

Mali has worked with the NIH for decades, while collaboration with Liberia only began in earnest during the Ebola outbreak. Malian health officials reported eight cases of Ebola and six deaths from the disease, compared to more than 10,600 cases and 4,800 deaths in Liberia.

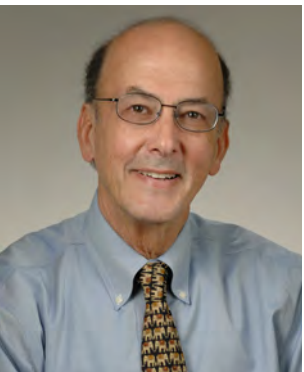
Yale and UL are working together to harness the increased interest in public health research and practice in post-Ebola Liberia, and develop a training program that will build local expertise in epidemiology and outbreak management, including through predictive transmission modeling. Fallah’s co-lead investigator, Dr. Alison Galvani, calls modeling “a relatively cost-effective methodology that informs efficient allocation of limited resources.”



OPINION

By Dr. Roger I. Glass, Director, Fogarty International Center

Empowering countries to direct their own research



Empowerment is one of the underlying themes of HHS Secretary Tom Price's current effort to "Reimagine HHS." It's a concept that is central to Fogarty's mission and the research training programs we support.

In order for low- and middle-income countries to take ownership of their health problems, they must have the necessary tools—a well-trained cadre of scientists capable of setting

research priorities and producing discoveries that are relevant in the local culture and context.

From a security standpoint, nations with scientific expertise are also better prepared to contain infectious disease outbreaks when they occur. As we saw with Ebola in 2014, the countries that have well-trained researchers who are networked with global experts were able to swiftly manage the Ebola cases that crossed their borders, unlike the nations in West Africa, which had few technical or human resources to deploy.

Recently, the Secretary visited Liberia where Fogarty grantees and collaborators told him about our efforts to ensure West African countries will be better prepared to identify and contain the next infectious disease outbreak, which will surely come. Price said his visit was a moving reminder of the worldwide impact HHS has and the respect it enjoys.

Our Medical Education Partnership Initiative (MEPI)

is another example of how Fogarty is helping to empower Africans. By supporting collaborations among U.S. scientists and African medical schools, MEPI is transforming medical education, dramatically increasing enrollment, broadening curricula, upgrading internet access and providing cutting-edge skills labs and other technologies. Because the grantees are linked into a regional network that can leverage resources and encourage South-South partnerships, progress is more likely to be sustainable. Through unprecedented engagement with ministries of health, education and finance, MEPI grantees are aligning program goals with country health needs and priorities, ensuring government buy-in and continued support.

Additionally, Fogarty has now assumed a leadership role in helping to advance genomics research in Africa, through the Human Heredity and Health in Africa Consortium (H3Africa). Not only are we training African scientists so they can use the latest technologies to

study genomics, speed progress and personalize care for themselves, but we Americans also stand to benefit from the knowledge gained. By unlocking the secrets of African genomes, we will gain a better understanding of the genetic roots from which we all came.

By providing research training to developing country scientists through these and other programs, we are empowering them to join our efforts to contain pandemics,

improving global security. We're also inviting them to stand beside us, as equal partners, in our quest to expand the frontiers of science.



HHS Secretary Price visited Liberia in May and met with NIH grantees, among others.



WHO elects first African as director-general

WHO members elected Dr. Tedros Adhanom Ghebreyesus as the organization's next director-general, effective July 1, 2017. Tedros, who goes by his first name, is Ethiopia's foreign affairs minister and previously served as health minister and a Fogarty collaborator. He holds a Ph.D. in community health and a master's in infectious diseases.



Kilmarx earns Public Health Service promotion

Fogarty Deputy Director Dr. Peter Kilmarx has been promoted to Rear Admiral in the U.S. Public Health Service. Kilmarx is an infectious disease expert who has held leadership positions at the CDC, including country director of Zimbabwe. An experienced manager of HIV clinical trials, he also helped mount the response to a number of Ebola outbreaks in Africa.



Katz leads Fogarty's research, training division

Dr. Flora Katz has been promoted to director of Fogarty's Division of International Training and Research. Since joining Fogarty in 2001, she has developed and led programs in multidisciplinary education, innovation, natural products drug discovery, genetics and informatics. Previously, Katz headed research labs at the University of Texas and Texas A&M University.



Spiro directs Fogarty epidemiology division

Fogarty has tapped Dr. David Spiro to direct its Division of International Epidemiology and Population Studies. Spiro was previously with NIH's National Institute of Allergy and Infectious Diseases, where he managed the extramural research portfolios on numerous viral diseases and supervised multiple clinical trials on influenza.



Bansal helms Fogarty HIV portfolio

Dr. Geetha Bansal has joined Fogarty as program officer responsible for Fogarty's HIV Research Training Program. Bansal, who has worked in the Division of AIDS Research at NIH's National Institute of Allergy and Infectious Diseases, most recently was associate dean for research and associate professor at Tulane University.



Hahm new manager for Fellows and Scholars, MEPI

Dr. Jong-on Hahm is the new program officer for Fogarty's Fellows and Scholars Program and the Medical Education Partnership Initiative (MEPI). Hahm most recently served as special advisor for international research at George Washington University and was a program officer at the National Science Foundation.



Planning, evaluation division welcomes Mistry

Fogarty's Division of International Science, Policy, Planning and Evaluation recently welcomed Dr. Amit Mistry as a senior scientist. Mistry earned a doctorate in bioengineering from Rice University and previously was a program manager at USAID's global development lab.

NIH program aids early career scientists

The NIH has launched the Next Generation Researchers Initiative, intended to increase support for early- and mid-career investigators. About \$210 million will be awarded this year to fund additional meritorious early-stage investigators and support mid-career scientists who are about to lose all NIH funding.

Website: <https://grants.nih.gov/ngri.htm>

R&D resource library goes online

The Global Health Technologies Coalition has produced a web portal, the R&D Resource Library, which provides a collection of more than 200 items on global health research and development that can be searched and filtered by resource type, health area or R&D topic.

Website: <http://bit.ly/GHTCLibrary>

Comic books created to promote genomics

Four freely available comic books have been created to promote understanding of heredity, genes and health in Africa. Available online in eight languages, the Genome Adventures series provides information through tales about super heroes. The books were produced with funding from NIH and Wellcome Trust.

Books: <http://bit.ly/GenomicComics>

NASEM reports on future of global health

"Global Health and the Future Role of the United States" is the title of a new report produced by the National Academies of Sciences, Engineering, and Medicine to provide advice to the administration. Recommendations include increasing responsiveness, coordination and efficiency in addressing health threats.

Full report: <http://bit.ly/NASEMglobalhealth>

IHME releases global health financing data

In addition to describing development assistance trends, the Institute for Health Metrics and Evaluation's new "Financing Global Health 2016" report also discusses domestic spending and identifies health financing gaps.

Full report: <http://bit.ly/IHMEfinancing>

Research critical for epidemic response

Building capacity for research should be part of health systems strengthening so that clinical research is embedded within systems, according to a report examining the response to the 2014 Ebola outbreak. The National Academies of Sciences, Engineering, and Medicine convened a committee to analyze clinical trials conducted during the epidemic and produce a report with recommendations.

News release: <http://bit.ly/NASEMebola>

Funding Opportunity Announcement	Details	Deadline
Global Infectious Disease Research Training Program (GID) D71 D43	http://bit.ly/GIDplan http://bit.ly/GIDtrain	July 27, 2017 July 27, 2017
Infrastructure Development Training Programs for Critical HIV Research at LMIC Institutions (G11)	http://bit.ly/FOGg11	Aug 23, 2017
Planning Grant for Fogarty HIV Research Training Program for LMIC Institutions (D71)	http://bit.ly/FOGD71	Aug 23, 2017
Fogarty HIV Research Training Program for LMIC Institutions (D43)	http://bit.ly/FOGHIV	Aug 23, 2017
Mobile Health: Technology and Outcomes in Low- and Middle-Income Countries (R21)	http://bit.ly/MhealthR21	Aug 31, 2017
Global Brain and Nervous System Disorders Research across the Lifespan R21 R01	http://bit.ly/GlobalBrainR21 http://bit.ly/GlobalBrainR01	Nov. 7, 2017 Nov. 7, 2017
Emerging Global Leader Award - Career Development (K43)	http://bit.ly/GlobalLeaderOp	Dec. 14, 2017
Global Noncommunicable Diseases and Injury Research (R21)	http://bit.ly/NCD-injury	Dec. 14, 2017

For more information, visit www.fic.nih.gov/funding

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Fogarty International Center
National Institutes of Health
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Managing editor: Ann Puderbaugh
Ann.Puderbaugh@nih.gov

Writer/editor: Shana Potash
Shana.Potash@nih.gov

Writer/editor: Karin Zeitvogel
Karin.Zeitvogel@nih.gov

Web manager: Anna Pruett Ellis
Anna.Ellis@nih.gov

Designer: Carla Conway

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Fogarty protects US by strengthening pandemic response in West Africa

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Fogarty has produced a number of new fact sheets detailing its history, key accomplishments, economic impact and other information. They are available for downloading and easy printing.

RESOURCE

Website: <http://bit.ly/FogartyFacts>

