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Rwandan minister presents NIH global health lecture

Photo by Stephanie Novak



Rwandan Health Minister Dr. Agnes Binagwaho will deliver a global health lecture at NIH on July 29.

Rwandan Minister of Health, Dr. Agnes Binagwaho, a strong supporter of biomedical research, has been invited to deliver the annual David E. Barmes Global Health Lecture at NIH. Her presentation, titled “Medical Research and Capacity Building for Development: The Experience of Rwanda,” is scheduled for Thursday, July 29 at 11:30 a.m. in Masur Auditorium on the Bethesda campus. The

event honors the late Dr. David Barmes, a public health dentist and epidemiologist, for his career spent improving health in low- and middle-income countries (LMICs). The talk is co-sponsored by NIH’s National Institute of Dental and Craniofacial Research and Fogarty, and will be webcast live and archived for future viewing.

Binagwaho has spoken frequently about the value of research and capacity building at her country’s medical and academic institutions in helping relieve the disease burden that weighs on Rwandan and other LMIC populations. Before becoming minister in 2011, she had served as permanent secretary of health, as executive secretary of Rwanda’s National AIDS Control Commission and as a physician in public hospitals for over 15 years. She trained in pediatrics, specialized in emergency neonatology and the treatment of HIV/AIDS, and earned her doctoral degree from the University of Rwanda in 2014. She holds positions at Harvard University and Dartmouth College, where she teaches courses in health equity, HIV/AIDS, information and communication technologies for health, and pediatric care delivery systems.

NIH supports a range of research and training collaborations with Rwandan scientists, such as clinical trials of an HIV vaccine, development of research skills to study cervical and other cancers, and investigations of how intimate partner violence affects health.

The event will be webcast at: <https://videocast.nih.gov>.

NIH, South Africa partner on \$8M research projects

The NIH and the South African Medical Research Council (SAMRC) have jointly awarded 31 grants to U.S. and South African scientists to support research targeting HIV/AIDS, tuberculosis and HIV-related comorbidities and cancers. The multiyear awards, which total \$8 million in first-year funding, are the initial grants to be issued through the South Africa-U.S. Program for Collaborative Biomedical Research.

Scientists located at eight South African institutions will work with investigators at more than 20 U.S.-based organizations, including NIH. The projects were required

to have one or more principal investigator from each country and were selected through the NIH peer review process.

The collaboration was established under a 2013 agreement between the two nations, which was facilitated by Fogarty. Each country is providing equal funding for the \$40 million initiative.

“South Africa is a major partner in the fight to end both HIV/AIDS and tuberculosis,” said National Institute of Allergy and Infectious Diseases (NIAID) Director,

. . . continued on p. 2

FOCUS



Office of Behavioral and Social Sciences Research (OBSSR)

- OBSSR celebrates 20 years of catalyzing NIH research on behavior
- Studies shed light on the best approaches to behavior modification
- Mobile health tools have the potential to spur healthy habits

Read more on pages 8 – 10

New Fogarty web tools facilitate collaboration

To make it easier for Fogarty grantees to share information and identify possible collaborators, the Center has launched on its website a new searchable database of all current projects. Researchers can search by investigators' names or institutions and use filter tools to locate active Fogarty grants across programs, and by world region, country or topic area. Users can generate lists of grants matching specific criteria, and email search results to a colleague or bookmark them for future reference.

Investigators are providing this information about their projects in order to expand opportunities to form partnerships. Fogarty encourages users to reach out to investigators and the listed partners to share research findings and discuss the possibility of working together on projects.

Information provided through the new Fogarty tools complements the grant details made available via NIH RePORTER, a searchable repository of all NIH-funded research projects. RePORTER also allows users to access information about publications and patents resulting from NIH funding.

The screenshot shows the NIH Fogarty International Center website. The header includes the NIH logo and the text 'Fogarty International Center Advancing Science for Global Health'. Below the header are navigation tabs: Home, About Fogarty, Funding Opportunities, Grants Management, Global Health Resources, Fogarty Programs, and News. The main content area is titled 'Current Grants' and contains a search interface. The search results are filtered by 'Medical Education Partnership Initiative (MEPI)'. The table below shows the search results:

Project Title	Fogarty Program	World Region	Collaborating Country	Research Topic
Programmatic Award: Ethiopia's Medical Education Consortium for Quality Medical Education & Retention	Medical Education Partnership Initiative (MEPI)			
Coordinating Center: Fostering African Medical Education: Community of Excellence	Medical Education Partnership Initiative (MEPI)			
Programmatic Award: KCMC-Duke Medical Education Partnership Initiative	Medical Education Partnership Initiative (MEPI)	Centre		
Pilot Grant: Ghana Emergency Medicine Collaborative Training Program	Medical Education Partnership Initiative (MEPI)	Kwame Nkrumah University of Science and Technology	Donkor, Peter	Ghana
Linked Award: Building Capacity for Cardiovascular Research and Training in Uganda	Medical Education Partnership Initiative (MEPI)	Makerere University	Sewankambo, Nelson K	Uganda
Programmatic Award: Medical Education for Services to All Ugandans (MESAU)	Medical Education Partnership Initiative (MEPI)	Makerere University	Sewankambo, Nelson K	Uganda
Programmatic Award: Stellenbosch University Rural Medical Education Partnership	Medical Education Partnership Initiative (MEPI)	Stellenbosch University	Nachega, Jean	South Africa
Programmatic Award: The Universidade Eduardo Mondlane/UCSD Medical Education Partnership	Medical Education Partnership Initiative (MEPI)	Universidade de Eduardo Mondlane (UEM)	Noomahomed, Emilia Virginia	Mozambique

RESOURCE

Website: www.fic.nih.gov/Grants/Search

NIH, South Africa partner

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Dr. Anthony S. Fauci. "These new awards tap the scientific expertise of both of our countries in an effort to further key research in these disease areas."

Among the newly funded research projects are those targeting HIV prevention, particularly among high-risk young women; identifying HIV-infected individuals and determining how best to link them to and retain them in medical care; developing strategies for optimizing the diagnosis, treatment and prevention of HIV-associated cancers; and addressing scale-up of TB prevention and treatment strategies, particularly among TB-infected mothers and children. Twelve of the awards will support two years of research; 19 awards will fund five-year collaborative projects.

"This commitment to shared funding will lead to new discoveries and help strengthen South African research and research management capacity," said SAMRC President and former Fogarty trainee, Dr. Glenda Gray. "It allows our scientists to work with top U.S. investigators and provides access to the NIH peer review process."

In addition to NIAID and Fogarty, NIH participants include

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Photo by David Reichkind for Fogarty



A U.S.-South African partnership will advance science on HIV/AIDS and other topics.

the National Institute of Child Health and Human Development, National Cancer Institute, National Institute of Mental Health and the Office of AIDS Research. A solicitation for a second round of applications is expected in about two years.

"This dual funding partnership model holds great potential to build collaborations and advance science with our colleagues in South Africa and beyond," said Dr. Roger I. Glass, Fogarty director.

RESOURCE

News release: <http://bit.ly/US-SA-grants>

Global pandemic of fake medicines poses urgent risk, scientists say

Poor quality medicines are a real and urgent threat that could undermine decades of successful efforts to combat HIV/AIDS, malaria and tuberculosis, according to the editors of a collection of journal articles published recently by *The American Journal of Tropical Medicine and Hygiene*. Scientists report up to 41 percent of specimens failed to meet quality standards in global studies of about 17,000 drug samples. Among the collection is an article describing the discovery of falsified and substandard malaria drugs that caused an estimated 122,350 deaths in African children in 2013. Other studies identified poor quality antibiotics, which may harm health and increase antimicrobial resistance.

However, new methodologies are being developed to detect problem drugs at the point of purchase and show some promise, scientists say.

Seventeen articles in all, detailing various aspects of the issue and proposing possible solutions, are included in a special journal supplement titled, "The Global Pandemic of Falsified Medicines: Laboratory and Field Innovations and Policy Perspectives." Several articles suggest policy interventions, including an international framework and the adoption of stricter national laws against drug counterfeiting.

"This problem continues to spread globally, creating an even greater challenge to cooperation among stakeholders, many with limited resources," notes the supplement's co-editor, Dr. Joel Breman, senior scientist emeritus at Fogarty. "The need is urgent for collaboration among those with expertise in policy, science, technology, surveillance, epidemiology and logistics, in order to secure global supply chains."

In an introductory essay, former FDA Commissioner Dr. Margaret Hamburg says globalization has added layers of complexity to the drug supply chain that require greater oversight. "Today's medical-product landscape blurs the line between domestic and foreign production, drawing



Poor quality and fake medicines (top photo) are an urgent threat that could undermine decades of efforts to combat infectious diseases in the developing world.

Photo courtesy of the FDA



Scientists are developing and testing tools that differentiate between fake and authentic drugs.

attention to the need for global quality and safety oversight to prevent patient exposure to falsified products," writes Hamburg, who was recently named foreign secretary of the Institute of Medicine.

Scientists inspected the quality of about 17,000 samples of anti-malarials, anti-tuberculosis medicines, antibiotics and anti-leishmaniasis drugs and reported from 9 to 41 percent failed to meet the specifications. Seven separate studies were carried out, primarily in low-resource settings, and included samples from public and private sources.

"The pandemic of falsified and substandard medicines is pervasive and underestimated, particularly in low- and middle-income countries where drug regulatory systems are weak or nonexistent, as shown by field studies in the supplement," says Dr. Jim Herrington, co-editor of the supplement and director of the University of North Carolina's Gillings Global Gateway. Until recently, Herrington was director of Fogarty's international relations division.

New methodologies to test drug quality are emerging and scientists reported the results of four investigations. Simple paper-based test cards proved to be an economical and portable method to identify very low quality anti-malarials. More sophisticated approaches using fluorescent and luminescent techniques or other novel technologies can measure with greater precision, but may be difficult to use in remote settings. All of these promising tools require further testing to provide a greater evidence base to guide policymakers, the authors say.

An urgent and coordinated international response is required to address the pandemic of poor quality drugs, the scientists maintain. Policy proposals include a global agreement, similar to the *Framework Convention on Tobacco Control*, and harsher penalties for those who knowingly sell counterfeit medicines. In addition to Fogarty, the supplement was sponsored by the Bill & Melinda Gates Foundation and the New Venture Fund.

RESOURCES

Journal articles: www.bit.ly/AJTMHfakedrugs

PROFILE

Fogarty Fellow in Cameroon assesses HIV impact in utero

By Cathy Kristiansen

The first clinic Dr. Anna Babakhanyan saw during a brief trip to Cameroon was dusty and had no electricity or working plumbing. Rather than shy away from the challenges of working in a low-resource environment, she applied for and won a Fogarty fellowship to return to Cameroon to conduct research.

Babakhanyan had dreamed of pursuing a global health career since her childhood in Armenia. Immediately after obtaining her doctoral degree in tropical medicine at the University of Hawaii, she set off for Cameroon. She was funded by Fogarty's Global Health Program for Fellows and Scholars, which provides yearlong mentored clinical research experiences overseas for postdoctoral fellows and pre-doctoral scholars. Also contributing to Babakhanyan's fellowship was NIH's Office of AIDS Research.

The first hurdle arose even before she boarded the plane. "The day I was leaving, my professor told me the project I had planned would not work, because an essential instrument, a flow cytometer, had broken and would take months to fix. So I adapted my project." Once there, while waiting for local study approval, she tested archival plasma samples for immune responses to a malaria antigen, VAR2CSA, which is the target of a candidate vaccine. She had taken with her an instrument for analyzing antibodies in blood and trained Cameroonians how to use it. She also learned about managing research in a developing country, as she put together standard operating procedures and handled logistics. "You have to count how many pipettes you are going to need, everything has to be planned ahead. This is something you can't learn just by listening to somebody's lecture, you have to live through it."

Her revised research project sought to clarify whether HIV-free babies born to mothers with the virus receive normal or lower levels of the maternal antibodies that protect newborns from malaria. The number of such babies is rising globally and studies suggest their health is compromised compared with children never exposed to HIV *in utero*. Neonatal environmental influences such as a sick mother do not account for all the difference.



Anna Babakhanyan, Ph.D.

Fogarty Fellow:	2013 - 2014
Fellowship at:	University of Yaoundé, Cameroon
U.S. organization:	University of Hawaii
Research topic:	Transplacental transfer of antibodies in HIV-positive women

Babakhanyan conducted a case-controlled study of women with and without HIV, measuring antibodies to malaria and tetanus in their blood and, immediately after the birth, in the placenta and umbilical cord blood. In handling placentas, she was mindful of their high value in Cameroon's traditional ceremonies. "It's very important for women to go back home with the placenta," she said. Yet, it was also imperative to avoid giving them an organ full of HIV-infected blood. So nurses, according to hospital guidelines, first soaked the placentas in bleach.

Her analysis—so far completed on maternal and cord blood—shows the malaria and tetanus antibody levels are reduced in uninfected newborns delivered by HIV-positive mothers, compared with newborns never exposed to HIV. The mothers themselves, however, had similar antibody concentrations. Current studies are investigating the mechanisms responsible for lower antibody transfer in HIV-exposed babies. Babakhanyan will return to Cameroon briefly for follow-up experiments to determine what might be dampening transplacental transfer of antibodies.

Another valuable aspect of her fellowship, Babakhanyan emphasized, was the opportunity to mentor Cameroonian students participating in her project, who incorporated the study data in their theses and dissertations. Five are co-authors on an abstract she recently submitted at a professional conference, which will be turned into a paper.

Babakhanyan plans to seek an NIH career development grant and ultimately lead studies on new interventions for HIV and malaria. Her Fogarty fellowship was a "tremendous" force in launching her career, she said. "I am more confident than ever that this is the path for me!"

CHRISTOPHER V. PLOWE, M.D., M.P.H.

Dr. Christopher Plowe is a world-renowned expert in malaria research. For more than 25 years, he has drawn support from NIH, including a long-standing Fogarty training grant to develop malaria research capacity in Mali. He founded and directs the University of Maryland's new Institute for Global Health, which will incorporate the university's Center for Malaria Research and Center for Vaccine Development. He has received a Doris Duke Distinguished Clinical Scientist Award and the Bailey K. Ashford Medal for distinguished work in tropical medicine. He is also a Howard Hughes Medical Institute investigator, focused on accelerating the translation of genomics into health interventions, and is the 2015 president of the American Society of Tropical Medicine and Hygiene.



What are the most pressing questions in malaria treatment and diagnostics?

For one, what to do when we have untreatable malaria. In western Cambodia, there's malaria that's resistant not only to the artemisinin drugs but to some partner drugs. While we're still able to use a different artemisinin-based combination therapy, we're pretty close to having untreatable malaria. And so we desperately need new drugs with different mechanisms of action and of resistance. For another, we badly need ultrasensitive and robust tests to diagnose low levels of malaria infection in rural Africa and Asia. There's perhaps much more malaria than we imagined in asymptomatic people and if we want to eliminate the disease, we must eliminate all malaria parasites, not just those causing fever at a given time. We must also diagnose and treat fevers caused by other pathogens, because as malaria gets less common, more people coming to a clinic with fever will have something other than malaria.

What hope comes from genomics?

We and others are beginning to harness the power of the genomic revolution in ways that are directly relevant to malaria elimination. We've done genome-wide association studies that have helped pinpoint the molecular marker of artemisinin resistance that has now led to tools for surveillance. And we're working on approaches to analyze the genomes of parasites in vaccine trials, with the hope we can better understand the need for multi-strain vaccines to protect against genetically diverse parasites and potentially identify new targets for malaria vaccines by finding out which genes in the parasite are under selection by vaccine-induced immunity.

Until recently, the strategy against drug resistant malaria has been to try to contain it and prevent it from spreading. But some of the genomic studies show that when you see the same resistance mutation in two places, there are some instances of resistance spreading, for example, between Cambodia and southern Vietnam. But there are other cases of completely independent emergence of the same mutations, for example, in Myanmar. If there's resistance

popping up independently, you can't expect to put up a firewall and block it; you have to eliminate malaria from the entire region.

What is the outlook for a malaria vaccine?

We'll have a licensed malaria vaccine relatively soon. It has significant protective efficacy, but not nearly as high as we would like, so one approach is to improve its immunogenicity and/or add additional malaria antigens to make an expanded multistage, multicomponent vaccine. The other approach is a whole organism vaccine. Early clinical trials in the U.S. giving people a whole organism vaccine and then challenging them with the same strain of parasite have shown up to 100 percent protection. Now the big question is, will this work in the field where we have many different genetic variances of parasite? Those studies are happening now in Mali and being planned in Burkina Faso.

What is the state of capacity in endemic areas?

Malaria research capacity is very strong in some lower- and middle-income countries, Mali being a great example of that. But if we want to eliminate malaria everywhere, eventually eradicate it, we must have stronger research capacity in many more places. We have to make the case to the funders as well as local governments that we'll eliminate malaria only by building up research capacity in the malaria endemic areas. Part of that has to do with the science and the need to have scientists engaged in the field who understand the important questions driving the research agenda. But another component involves generating and sustaining political will. If scientists in countries where malaria elimination is moving forward simply collect samples and send them off to the U.S. or Europe, they and their leaders will be a lot less motivated to sustain the support for malaria elimination than if they've built up their own capacity, if they're the ones collecting and analyzing and interpreting the evidence for where, when and how to deploy malaria elimination interventions. That's what it's going to take in the long run.

RESOURCE

Website: www.bit.ly/PloweBio

Cancer research may also advance HIV, malaria work

Reinvigorating research on the most common childhood cancer in Africa, Burkitt's lymphoma (BL), could not only save lives of those with the disease but may also produce discoveries with broader implications, according to a recent lecture by a prominent NIH scientist.

Interest in BL is building again, after several decades in which it “hibernated,” said Dr. Sam M. Mbulaiteye, a senior investigator at the National Cancer Institute (NCI) and Fogarty collaborator. Scientists have long known that there is a connection between malaria and BL, with more cases of the cancer occurring in high malaria areas. Also, although most BL patients are HIV-negative, having the virus is associated with a 60-fold increased risk of BL in developed countries, although most actual instances in Africa are HIV-negative.

New technologies that reveal the genomic and proteomic involvement in this aggressive cancer provide the potential to advance discoveries, Mbulaiteye suggested. Developing partnerships with existing research platforms devoted to HIV and malaria are critical. “Cooperation could prompt studies to investigate the effect of malaria and HIV interventions on the risk for Burkitt's lymphoma,” he said. “In turn, these studies might provide evidence for a causal link between the disease with malaria or with HIV in Africa.” At the same time, he added, multidisciplinary and global collaborations for this cancer could build much-needed capacity for pediatric oncology studies in developing countries.

As part of his own research, Mbulaiteye recently launched a project in Uganda, Kenya and Tanzania to enroll 1,500

Reinvigorating Burkitt's lymphoma research could save lives, like this Kenyan boy's, and also generate discoveries that increase understanding of the interplay among malaria, HIV and the immune system.

children with Burkitt's lymphoma and 3,000 controls. His team will gather clinical and demographic data, specimens of blood, saliva, stool and tissue, and information on a range of risk factors. The study aims to both expand understanding of the disease and contribute biobank samples, which he hopes will advance research in basic science, genomics and precision medicine.

Burkitt's lymphoma is aggressive—doubling in mass every 24-48 hours—and typically attacks the jaw or abdomen. Early discoveries revealed the cancer's link with the malaria parasite and identified a new microbe—Epstein-Barr virus (EBV)—the first indication viruses could help cause cancer in humans. Additionally, studies showing the success of chemotherapy treatment in BL spurred its use in other malignancies. But research attention dwindled, leaving many questions unanswered, such as why some people are more susceptible, how malaria and EBV might raise the risk in combination or singly, which proteins enhance the development of tumors, and how to identify and protect vulnerable children.

In 2012, the NCI renewed its attention to this cancer. Mbulaiteye has collaborated with researchers in Ghana, Japan, Denmark, Norway, the U.K. and Brazil, as well as within NIH, to conduct epidemiological and clinical research on samples of sick and well children. One surprising finding is that malaria infection is both a risk and a protective factor. Children with BL are less likely to have current or recent blood-stage malaria infection than peers, although scientists previously believed children with the cancer had been weakened by malaria. “This is really making us think in a totally different way about how malaria might be interacting in these kids to induce Burkitt's lymphoma,” Mbulaiteye said.

As with malaria, the role of viruses is still unclear, he noted. EBV is ubiquitous in humans, but patients with tumors have significantly higher associated antibodies than average. One hypothesis is EBV interferes with a regulator gene in ways that spur pathological cell growth. The influence of HIV also needs investigating, given the startlingly high increased BL risk faced by infected people.

Today, chemotherapy cures about 90 percent of patients, but only if they are diagnosed and treated in time—often a challenge in resource-strapped health systems. Mbulaiteye noted that roughly 30-50 percent of African children reaching hospital are cured and many others never even seek professional care. Much more research is needed in the years ahead to reduce these deaths, he said. “I don't think the challenges are those of ideas; they're about sparse data and samples to support new scientific directions.”



Photo courtesy of Dr. Sam Mbulaiteye

RESOURCES

Websites: <http://bit.ly/Burkitts>

NIH encourages vets to consider research careers

From Ebola to bird flu to MERS, diseases that travel between animals and humans are some of the most deadly. They hold tremendous potential to cause pandemics, with constant mutations jeopardizing existing vaccines or treatments. The One Health movement aims to integrate the efforts of multiple disciplines to improve health for people, animals and the environment. It has become a global effort, including annual conferences that bring scientists and policymakers together to consider how to control existing and emerging infectious diseases.

At NIH, a stakeholder meeting was convened recently to consider how the agency might incorporate the One Health concept into its activities and how veterinarian-scientists can be better integrated into biomedical research. The conference was sponsored by the Office of Research Infrastructure Programs (ORIP), which funds animal-based resources and research projects and plays a central role at NIH for training veterinarian-scientists.

Despite the importance of zoonoses—diseases that are transmitted from animals to humans—and the great potential animal models hold for advancing science, the NIH funds few veterinarian-scientists. Only about 250 received grants from 2008-2012, according to a recent workforce study commissioned by NIH.

“Our overall goal is to find ways to improve the training of veterinarian-scientists in flat budgetary times,” said Dr. Franziska Grieder, ORIP director. “By building bridges between scientists with different areas of expertise, we can strengthen multidisciplinary research and more quickly make advances that improve the health of both animals and humans.”

Since the majority of diseases that occur in humans also affect animals, it’s important that the biomedical research workforce includes practitioners with broad understanding of animal anatomy, physiology, pharmacology and diseases, according to the NIH report. “Recognition of this is evident in the worldwide One Health initiative that is dedicated to improving the health of all species—human and animal—through the integration of human health care and veterinary medicine,” the report continued.

Recruitment of potential veterinarian-scientists should begin early, suggested Dr. Peter Ernst of the University of California, San Diego. “We need more outreach so students in middle and high schools understand better what veterinarians can do in terms of research and the overall role of vets in society.”

Cancer is one of the many diseases that causes suffering in both animals and humans. The NIH’s National Cancer

Photo by Simone D. McCourtie/World Bank



NIH offers a number of training opportunities for veterinarian-scientists, who have useful insights for studies of diseases that infect both animals and humans.

Institute (NCI) manages a combined residency/Ph.D. program to encourage veterinary graduates to do research in core diagnostics, pathology and other topics, with a view to completing their dissertation and receiving a degree from their home institution. NCI also coordinates one-year and summer pre-doctoral programs geared toward veterinary students.

“The challenge is getting them to apply,” observed Dr. Mark Simpson, of NCI, who oversees the programs. Although the NIH is training about 3,000 research fellows at any one time, veterinarian-scientists are not well-represented. “By engaging veterinarians, it would expose other investigators in training to the benefits of incorporating animals into research and educate them on what D.V.M.s have to offer.” For the veterinarians, it exposes them to potential career opportunities in research. So far, 10 D.V.M-Ph.D. graduates have completed the combined residency/Ph.D. program, with six currently in tenure-track positions.

The main avenue at NIH for potential veterinarian-scientists to receive training is through programs supported by ORIP, which include pre-doctoral, postdoctoral and summer programs. In addition, veterinary students interested in research are eligible to apply to the Medical Scientist Training Program, offered by the National Institute for General Medical Sciences (NIGMS). For those interested in exploring research in low-resource settings, Fogarty offers a yearlong, mentored research experience through its Global Health Program for Scholars and Fellows.

Just as with Ebola, the next pandemic may also be traced to animals that infect humans. Incorporating more veterinarian-scientists into NIH research could be vital to controlling the next outbreak. As Dr. Peter Preusch of NIGMS observed, “Anything that broadens the base of science is to the good and could be helpful to research careers down the line.”

RESOURCES

Web links: www.bit.ly/VetScientists



NIH marks 20 years of advancing behavioral and social sciences

Humans can behave in irrational ways that undermine their health—for instance, starting a smoking habit, ignoring advice to exercise, or failing to take prescribed medicine. Changing negative behaviors can be very difficult. To encourage more research and interventions that predict, prevent and manage behavior and ultimately improve health, Congress in 1995 established the NIH Office of Behavioral and Social Sciences Research (OBSSR), which is now celebrating 20 years of accomplishments in the U.S. and globally.

“We strive to remain a catalyst for advances in behavioral and social sciences research and the dissemination of its findings and contributions,” said Dr. William Riley, OBSSR Acting Director. Over the past decade alone, he observed, the Office has developed new behavioral and social science approaches, encouraged transdisciplinary exploration and embraced scientific developments. In recent years, this field of science has blossomed, producing new evidence that in turn has spurred policies targeting healthy behaviors at the individual and societal levels. For instance, governments have introduced higher cigarette taxes to reduce smoking, funded giveaway programs to encourage condom use and expanded care services for mental health disorders.

More professionals are entering the field, as illustrated by a USA TODAY poll that showed an 89 percent rise in U.S. behavioral science college graduates between 2008 and 2013.

OBSSR, in NIH’s Office of the Director, aims to deepen NIH understanding of behavioral and social sciences and enhance research outcomes. The Office does not issue grants itself, but uses its annual budget—currently about \$27 million—to co-fund NIH Institute and Center projects on a wide range of crosscutting health topics. These include chronic disease management, treatment adherence, health communications, health information technology and mobile health (mHealth). A number of these collaborations have focused on low- and middle-income countries, where research data and capacity in behavioral and social science are very limited.

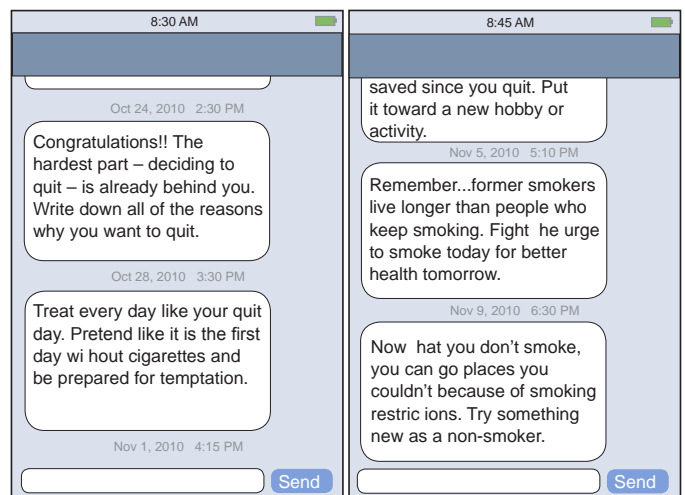
“OBSSR has been instrumental in raising awareness of the enormous impact of behavioral and social influences on overall health,” said Fogarty Director Dr. Roger I. Glass. “Especially in global health, where researchers operate in different countries and cultures, it’s important to incorporate these aspects of health when designing studies.”

In one OBSSR-Fogarty partnership, researchers investigated how to improve pediatric and educational practices for Zambian children with reading disabilities. Although reading struggles occur everywhere in the world, children in developing countries have little access to early diagnosis and treatment, which are essential to minimize the daily burden and shorter lifespan associated with this disability type. The team developed culturally and linguistically appropriate interventions for

OBSSR has led NIH efforts to study how text messages can help change human behavior, for instance, to help people stop smoking.



Photo by David Snyder for Fogarty



Photos by David Reichkind for Fogarty



For over 20 years, NIH's Office of Behavioral and Social Sciences Research (OBSSR) has driven research on how to encourage healthy habits.

a cohort of Zambian children and documented a strong relationship between high adaptive behavior and reading-related progress.

The health hazards of household air pollution, mostly caused by indoor cooking fires, are being studied in another ongoing OBSSR-Fogarty partnership. Scientists must consider the behavioral and social influences that have kept the community cooking the same way for thousands of years, to learn which cookstoves will be acceptable and used correctly—a busy mother might quickly abandon a new solar-powered device that cooks food too slowly for her needs, for instance.

One way to potentially modify health behaviors is through mobile technology—smartphones and other electronic devices, which are increasingly used around the world, including in low-resource countries. Researchers are testing interventions using mHealth to remind patients to take their medications, attend a pending prenatal appointment or answer research questions in real-time for greater accuracy. OBSSR has been a leader at NIH in this behavior-influencing tool, convening workshops and maintaining an mHealth website, among other steps. Although OBSSR has focused mainly on domestic research in this budding field, it has become a partner in Fogarty's new global mHealth initiative.

OBSSR has also rallied NIH interest in behavioral and social sciences via an NIH-wide network, OppNet. Between 2010 and 2014, OppNet's member Institutes and Centers issued 160 grants on topics as diverse as sleep loss, successful aging, addiction and risky behavior patterns. OppNet has sponsored conferences, workshops, symposia and a website with videocasts to raise awareness and encourage collaborative research.

More understanding of how electronic screen use affects adolescent sleep-wake patterns is the topic of one multi-disciplinary OppNet project, funded by OBSSR and the National Institute of Child and Human Development. This is a growing issue, with teens around the world distracted by media and social network access and sleeping too little for optimal cognitive, emotional and physical development. The team based its study in Vietnam—a country that still

has some villages without television and electricity—to allow comparisons between teens in different settings. The researchers predict their study will provide the first direct evidence of causal links between television and changes in adolescent sleep.

OBSSR also encourages the development of more expertise in this young field of science. “Our support of various training efforts prepares the next generation of behavior and social sciences researchers,” Riley said. OBSSR contributes to capacity building by supporting research projects in low-resource countries that incorporate an element of training or by supporting tailored initiatives, such as Fogarty's Global Health Program for Fellows and Scholars. Awardees are funded for a year of mentored research training in a developing country under local mentorship. Over time, OBSSR-funded awardees have investigated topics such as suicidal risk factors among the elderly in India and undiagnosed psychiatric conditions in HIV-positive mothers in Kenya.

To shine light on research needs in unexplored fields, OBSSR has sponsored workshops, seminars and webinar talks by experts. It recently collaborated with NIH's National Institute of Minority Health and Health Disparities to establish the “Aqui Lá” project, which assesses the situation of Brazilians and Dominicans living emotionally, socially and even physically between two nations, exploring how both transnational and local ecologies affect health behaviors and attitudes.

For the past 20 years, OBSSR has focused researcher attention on this burgeoning field, which plays such a large role in the success or failure of many interventions. “OBSSR has helped lead in the development and adoption of these new behavioral and social science approaches as they have unfolded, encouraging transdisciplinary exploration and embracing new scientific developments,” Riley said. By harnessing the power of this science, he added, investigators can “transform biomedical research, clinical interventions and public health.”

RESOURCES

Websites: <http://bit.ly/OBSSR-20>

OPINION

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

Behavioral, social sciences are vital to global health



Have you ever tried to break a bad habit? It's not easy! Whether you're adopting a healthier diet, taking up an exercise program or quitting smoking, it's difficult to change ingrained behaviors.

There's often a disconnect between what scientific evidence tells us we should do, and what we *actually* do. This is universally true, which makes behavioral and social sciences a

key element of global health research. After all, what good are evidence-based solutions if they're not acceptable to the target populations? A solid understanding of the local cultural and social influences is essential for researchers interested in improving health.

People may understand the need to be tested for HIV so that, if the results are positive, they can begin taking the drugs that will save their lives. But fear of being shunned may prevent them from doing so. Women likely comprehend that cooking over an open fire is damaging their lungs and harming their children, who are also exposed. But if that's the only way she can prepare the foods her family enjoys, it can be difficult to get her to switch to an unfamiliar, clean-burning cookstove. Some societies put more faith in injectable medicines rather than those taken orally. Yet, in low-resource settings it's more difficult to provide shots, since they require a higher level of training than pill administration.

These are some of the thorny issues that we at NIH grapple with, under the sage leadership provided by the Office of Behavioral and Social Sciences Research (OBSSR). For the past two decades, OBSSR has focused NIH attention on these cross-cutting topics and catalyzed efforts to advance our understanding of these disciplines. It's critical that scientists consider the various behavioral, social and cultural factors at play in a given population, before planning or undertaking research projects. This information can often mean the difference between success and failure of an intervention.

In partnership with OBSSR, Fogarty has supported numerous groundbreaking behavioral and social science studies. For instance, we jointly funded research that

provided a better understanding of the role of stigma in HIV prevention, which is fundamental to advancing our goal of achieving an AIDS-free generation. Other projects studied how social interactions with neighbors advanced the adoption of bed nets to prevent malaria.

Risky behaviors and risk evaluation in decision making are other areas our grantees have investigated. For instance, studying how best to encourage the use of seatbelts or motorcycle helmets among people whose sense of fatalism overrides their appreciation of scientific evidence. Tobacco cessation research is another area of mutual interest and the studies we've funded have helped make the case for national public smoking bans and increased cigarette taxes—both of which have proven effective at reducing smoking.

OBSSR has also been at the forefront of supporting the study of new communication technologies, methods and tools—such as smartphones—that provide a wealth of opportunities for behavioral and social scientists, particularly those working in low-resource settings. They can now collect and analyze real-time data to better understand how and why individuals behave as they do.

Scientists are studying how to use novel mHealth applications to monitor adherence to drug therapy and compliance, which is a key problem with patients on any chronic medication. From TB and HIV where failure to take medications can lead to recurrence of disease or drug resistance, to noncommunicable problems like hypertension and diabetes, where poor compliance can lead to major complications of the underlying diseases, text messages are being used to advise women who are pregnant about their health needs, encourage smokers to quit smoking, and help alcoholics to refrain from drinking. There are clear research needs that determine the effectiveness of these and similar interventions—all slated to alter peoples behaviors and improve their health.

In addition, there are more advanced brain scanning tools, computer modeling and genome technologies that all hold great potential to increase our understanding of the impact of behavior and social sciences on health. We look forward to sustaining and strengthening our valuable partnership with OBSSR, to continue to advance this incredibly important research agenda in the decades to come.



Fogarty's Glass is honored with Sabin Gold Medal

The Sabin Institute has presented Fogarty Director Dr. Roger I. Glass with its top prize, the 2015 Albert B. Sabin Gold Medal Award. Glass, who is also associate director for international research at NIH, was recognized for his many contributions to improving children's health worldwide, including novel scientific research for preventing gastroenteritis from rotaviruses and noroviruses.



Global expert on science of aging, Suzman, dies

Renowned researcher, Dr. Richard Suzman, who directed the Division of Behavioral and Social Research at NIH's National Institute on Aging, has died at age 72. His research and vision drove the development of aging surveys covering more than half the world's population, enabling scientists to learn how factors can impact health and well-being with age.



NIH Office of AIDS Research's Whitescarver retires

Dr. Jack Whitescarver, Director of NIH's Office of AIDS Research and NIH Associate Director for AIDS Research, has announced his retirement after nearly 40 years at NIH. Whitescarver has been hailed for his commitment to the global fight against HIV and his pioneering work in the field. Also retiring is Wendy Wertheimer, his senior advisor for 24 years.



Hamburg named US Institute of Medicine advisor

The U.S. Institute of Medicine (IOM) has appointed Dr. Margaret A. Hamburg to be its foreign secretary. Hamburg, who previously served as FDA commissioner and has held several IOM positions in the past, will advise the agency's president and council on international matters and also be the liaison to foreign academies of medicine and science.



HIV/AIDS expert wins Gairdner Global Health Award

Global expert in HIV/AIDS, Dr. Peter Piot, has been honored with the 2015 Canada Gairdner Global Health Award. Piot, director of the London School of Hygiene and Tropical Medicine, was selected for his co-discovery of the Ebola virus, contributions to HIV/AIDS research and extraordinary leadership in combating the epidemic, especially in Africa.



Former Fogarty fellow and craniofacial expert dies

Dr. Carlos Francisco Salinas, a 1972 Fogarty Fellow and long-time NIH grantee, has died. Originally from Chile, he was a well-known expert in craniofacial anomalies and most recently was a professor of pediatric dentistry and orthodontics at the Medical University of South Carolina.

NIH to enhance research reproducibility

NIH has launched a new web portal to enhance rigor and reproducibility in scientific research. The site includes the Principles and Guidelines for Reporting Preclinical Research developed during a recent workshop, NIH publications on the topic, online training modules and other information.

Website: www.bit.ly/NIHRigor

Tool created to promote African research

The African Journal Partnership Project has launched a tool to help editors of African publications disseminate health and medical findings to a wider audience, including policymakers, journalists, health care workers and the public. Fogarty helped develop the resource.

Tool: <http://bit.ly/AJPPtool>

Funders strengthen African science

The new Alliance for Accelerating Excellence in Science in Africa, which has been established to encourage scientific excellence and develop research leadership in the region, has received \$4.5 million in seed money from the Wellcome Trust, Bill & Melinda Gates Foundation and UK government.

Press release: <http://bit.ly/AESAlaunch>

Research productivity rising in Africa

Health research productivity in Africa has improved significantly over the past 15 years, an analysis published in the *British Medical Journal* shows. The study includes country data from the World Bank and the 107,662 African articles cited in PubMed.

Full paper: <http://bit.ly/AfricaPapers>

Malaria medicine in pipeline is reviewed

The global nonprofit UNITAID has updated its "Malaria Medicines Landscape" report on current and potential interventions and diagnostics for malaria, including single dose treatments, pediatric formulations and chemoprevention.

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

US government assesses global partners

A dozen innovative public-private partnerships are highlighted in a new report by the U.S. State Department. Examples include collaborations engaging young Africans in leadership, expanding Internet access in poor countries and fighting AIDS, tuberculosis and malaria.

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

Funding Opportunity Announcement	Details	Deadline
International Research Ethics Education and Curriculum Development Award (Bioethics) (R25)	http://bit.ly/Fogbio	May 22, 2015
NIAID Global Infectious Disease Research Administration Development Award for LMIC Institutions (G11)	http://bit.ly/GIDJly15	July 15, 2015
Global Infectious Disease (GID) Research Training Program (D43) (D71)	http://bit.ly/GIDJlyD43 http://bit.ly/GIDJlyD71	July 29, 2015 July 29, 2015
Fogarty HIV Research Training Program for LMICs (D43) (D71) (G11)	http://bit.ly/FogHIVD43 http://bit.ly/FogHIVD71 http://bit.ly/FogHIVG11	July 30, 2015 July 30, 2015 July 30, 2015
Fullbright-Fogarty Postdoctoral Awards	http://bit.ly/FogFul2015	Aug 3, 2015
Global Brain and Nervous System Disorders Research (R21) (R01)	http://bit.ly/BrainR21 http://bit.ly/BrainR01	Jan 5, 2016 Jan 5, 2016

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

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New TB hospital and research center opens in Haiti

A state-of-the-art hospital and research center has opened in Port-au-Prince, Haiti to treat tuberculosis patients and investigate ways to improve care. The Haitian Study Group on Opportunistic Infection and Kaposi's Sarcoma, or GHEKIO, opened the new facility five years after a catastrophic earthquake destroyed the major TB hospitals in Haiti's capital.



GHEKIO—a longtime Fogarty grantee—is a nongovernmental service, research and training center that operates in partnership with Weill Cornell Medical College and the Haitian Ministry of Health.

The new 35-room, open-air hospital will also be the site for clinical trials. A lab located nearby is equipped with cutting-edge technology, enabling physician-scientists to conduct advanced research to discover the molecular underpinnings of TB resistance. The lab's proximity to the hospital ensures that breakthroughs made at the bench can be rapidly translated into new treatments and therapies for patients, and that observations made by clinicians can open new lines of scientific inquiry in the lab. Weill Cornell was recently awarded a seven-year grant by NIH's National Institute of Allergy and Infectious Diseases to support this work.

"We do not have good drugs to treat this disease," said Dr. Jean W. Pape, a professor of medicine at Weill Cornell and founder and director of GHEKIO. "The drugs available to us have horrible side effects, and people get sicker from the drugs than the disease itself. By participating in clinical trials, we hope to improve the lives of our patients in Haiti and around the world."

The new facility was a combined effort of engineering firms from the U.S. and Haiti. It was conceived and supervised by MASS Design Group, headquartered in Boston, built by Chantiers d'Haiti and supervised by GBS, another Haitian firm. Funders included the global medical technology firm Becton-Dickinson and its former CEO Ed Ludwig, USAID, CDC, Weill Cornell and GHEKIO.