



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

Universities meet to consider global health challenges

As the deadline approaches for achieving the Millennium Development Goals (MDGs), the global health community must re-evaluate priorities and consider how best to meet the remaining challenges, according to speakers at the fifth annual meeting of the Consortium of Universities for Global Health, held in May in Washington, D.C.

More than 1,500 leaders, researchers, policymakers, educators and students from over 24 nations participated in the three-day meeting, titled "Advancing Global Health in the Post-MDG Era."

The U.S. remains committed to being the global leader in health and development, said President Barack Obama, in a videocast message to attendees. "We changed the way we approached development with a new focus on partnerships that empower countries to break the cycle of poverty and dependence," he said. "We're building the capacity of countries to care for the health of their own people."

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Photo courtesy of CUGH



National Cancer Institute Director Dr. Harold Varmus and National Institute of Environmental Health Sciences Director Dr. Linda Birnbaum addressed the Consortium of Universities for Global Health meeting.

Fogarty encourages use of technology in research

To better harness the great potential of technology to advance research in low-resource settings, Fogarty has launched a new program to encourage the use of information and communications technology (ICT) in global health interventions and increase technical expertise among scientists. Through the Global Health Research and Research Training eCapacity Initiative, Fogarty is providing \$1.6 million to five institutions in the first funding round.

The three-year grants will support projects to train researchers in seven countries and target a wide range of public health issues, including trauma, infectious diseases, mentoring and research skills, biostatistics, data sharing and management, software

programming and research ethics. The program's goal is to develop adaptable ICT users whose research activities continue to evolve as technological changes take place. The eCapacity initiative is aligned with Fogarty's new strategic plan, which describes expanding the use of ICT as a key priority.

"As low- and middle-income countries become increasingly wired, it's crucial that we leverage opportunities for telemedicine, mobile health applications, distance learning and online research efforts," said Fogarty Director Dr. Roger I. Glass. "These new eCapacity grants will provide a powerful catalyst for our grantees to discover how these technologies can foster innovation."

FOCUS



FOCUS on Deafness and Communication Disorders

- Global research identifies genes behind various communication disorders
- Studies of large families outside the U.S. reveal causes of stuttering
- Building capacity in deafness research will speed path to treatments

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Universities meet to consider global health challenges

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Nowhere is the impact of this approach more evident than in sub-Saharan Africa, where the U.S. Medical Education Partnership Initiative (MEPI) has spurred countless actions to strengthen medical education and research capacity.

“The MEPI program has been absolutely transformative,” said Dr. Roger I. Glass, director of Fogarty, which co-administers MEPI with the Health Resources and Services Administration. Glass, who moderated a panel of MEPI grantees, emphasized how synergies are extending the program’s reach. “Many of the MEPI leaders said, ‘If we are going to improve medical education in our country we have to include everyone, not just our own institution,’” he recounted. “It was an eye-opener and something we never anticipated.”

The MEPI investigators cited many examples of how medical and research capacity have expanded in the program’s first four years. Dr. James Kiarie of the University of Nairobi said new e-learning facilities have enabled high-level education in rural areas and now 306 medical students are receiving training in specialties ranging from pediatrics to dentistry. Nine have additionally embarked on mentored research projects. In Mozambique, MEPI sparked the creation of master’s programs and new research opportunities to encourage faculty to remain in their institutions rather than flock to the private sector, said Dr. Emilia Noormahomed of the University of Mozambique.

Over the past decade, Ethiopia has seen the addition of 23 medical schools and a surge in student enrollment, according to Dr. Miliard Derbew of Ethiopia’s Adisas Ababa University. He said medical schools now have an extensive e-learning platform, digitized textbooks and networks for sharing information and resources.

Fogarty grantee Dr. Peggy Bentley with Dr. James Tielsch of George Washington University catch up with Fogarty Director Dr. Roger Glass at the Consortium of Universities for Global Health meeting.



Photo courtesy of CUGH

As capacity builds at African universities, many of these scientists are likely to seek NIH research support. A panel of NIH directors discussed the opportunities that abound.

Photo courtesy of CUGH



NIAID’s Dr. Anthony Fauci discusses global health research successes.

Dr. Anthony Fauci, director of the National Institute of Allergy and Infectious Diseases (NIAID), noted that HIV/AIDS has been the highest priority for the last three decades, with NIH devoting \$56.9 billion to research on the disease, half through NIAID projects. The virus, once an unstoppable killer, can now be held at bay

by about 30 drugs. “It is also a lesson that when we make a major investment in a global health issue, the real returns are extraordinary,” Fauci said.

Preventing diseases from developing in the first place is key, stated Dr. Linda Birnbaum, director of the National Institute of Environmental Health Sciences, which supports about 120 global research projects. She increasingly believes the adage “a good start lasts a lifetime” should guide thinking on environmental risks, which include air and water pollution, exposure to heavy metals and radon, climate change and other hazards.

Cancer’s many different types make it hard to diagnose and treat, said Dr. Harold Varmus, National Cancer Institute director. To enhance coordination of global research across his Institute, he established a new Center for Global Health which, among other goals, seeks to study disease risk factors found everywhere, such as pathogens, tobacco, alcohol and obesity.

Neurological disorders are particularly tragic in low-resource settings, said Dr. Walter Koroshetz, deputy director of the National Institute of Neurological Disorders and Stroke. He noted the vast majority of people affected in developing countries receive no treatment; misinformation and stigma surrounding these diseases are prevalent.

Increasingly reaching out to such untreated populations are U.S. universities, whose global health programs have grown substantially over the past two decades. A new survey presented at the meeting showed student demand continues to grow at all educational levels, causing many institutions to add undergraduate degrees to their offerings. The study found the overall outlook is optimistic for global health on university campuses, a sentiment echoed by many at the conference. The report concluded, “While the tremendous expansion of university global health activities raises concerns about future sustainability and growth, there remains tremendous optimism.”

RESOURCE

Website: www.cugh.org

Collins hails US-Brazil science collaborations

U.S.-Brazilian research partnerships were celebrated by NIH Director Dr. Francis S. Collins recently during a weeklong visit to Brazil. Collins toured top research sites and discussed the “exceptional opportunities” to expand scientific collaborations between the two countries, in fields such as HIV/AIDS, cancer, heart disease, neuroscience and bioengineering.

Brazil has a long history of research engagement with NIH and is the most successful country in Latin America in competing for its grants. But as Brazil has strengthened its scientific capacity, it is increasingly looking to NIH for technical assistance and research partnerships, rather than funding.

During his travels, Collins gave speeches to the Brazilian Society for Biochemistry and Molecular Biology, University of São Paulo’s School of Medicine, the State of São Paulo Research Foundation (FAPESP) and the NIH equivalent, Fundação Oswaldo Cruz (FIOCRUZ).

At the events, a number of Brazil’s scientific leaders expressed interest in establishing parallel funding partnerships with NIH to help speed translation of findings into clinical practice, implement personalized medicine and better integrate electronic medical records and mobile technologies into the research enterprise. They also requested jointly funded research initiatives be established to study AIDS and HIV-associated malignancies, among other topics.

Collins used the occasion to announce a new collaboration between NIH and Brazil to identify therapeutic agents from

NIH Director Dr. Francis Collins met with young scientists and gave several lectures during his weeklong trip to Brazil.

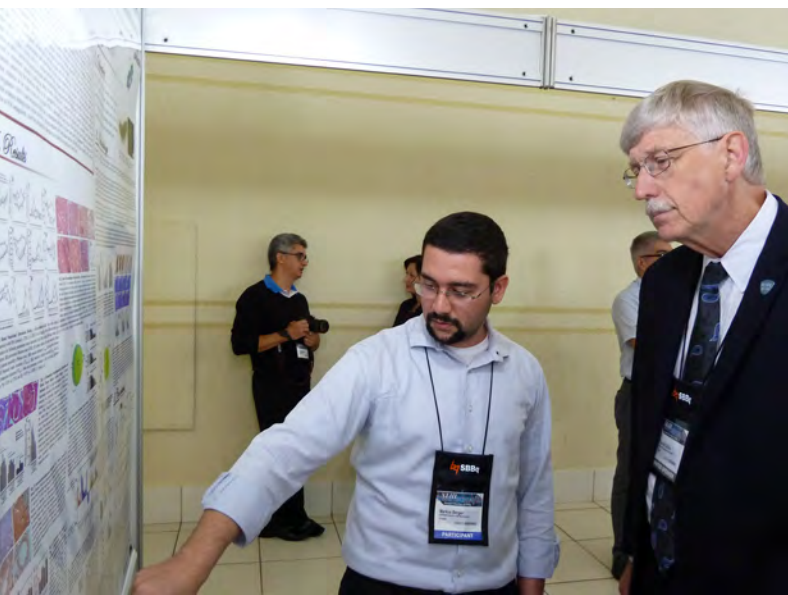


Photo by Kevin Blahy/Fogarty



Photo by Dr. Roger Glass/Fogarty

During a recent weeklong visit to Brazil, NIH Director Dr. Francis Collins watched a demonstration of a mechanical exoskeleton designed for paraplegics, based on NIH neuroscience research.

studying the symbiotic bacteria carried by ants. The bacteria can prevent growth of some fungi and might lead to new antifungal drugs. The potential is virtually unexplored, Collins noted, and will result in greater understanding of the chemical ecology of these complex interspecies relationships. Fogarty and FAPESP will jointly fund this biodiversity project.

Training plays a critical role in the success of the U.S.-Brazil partnership, Collins observed, commending Brazil’s National Council for Scientific and Technological Development for contributing the bulk of funding for its postdocs to train at NIH, which simultaneously helps build long-term research collaborations. The fellowships are part of the \$2 billion “Science without Borders” initiative, which aims to train about 100,000 Brazilians in science, technology, engineering and math.

On his tour, Collins cited several examples of cutting-edge science projects stemming from NIH-Brazil collaborations. One initiative has produced a mechanical exoskeleton that paralyzed patients can control by a brain-computer interface—remarkable science that a young Brazilian paraplegic aims to demonstrate with the first kick of the upcoming FIFA World Cup soccer championship. Collins also mentioned Brazil’s leading role in an international project mapping the genomics of melanoma and in a multisite study examining ischemic heart disease treatments and HIV prevention.

PROFILE

Fogarty scholar studies health on US-Mexico border

By Arthur Allen

On a daily basis, Dr. Victoria Ojeda commutes along the path that defines the lives of her research subjects. From her home in San Diego, it's a 20-minute drive to the Mexican border, followed by a brief walk to a medical clinic in the heart of the Tijuana *Zona Norte*, a section of town known for its cantinas, illicit drug use and prostitution.

Ojeda's Fogarty Global Health Fellowship was focused on the health status and social incorporation of Mexicans deported from the United States, in particular male drug users. Male deportees make up about 40 percent of the heroin, cocaine and methedrine injectors who come to the Health Frontiers Clinic in Tijuana, where Ojeda conducts her work. In general, research has shown that Mexican migrants use fewer drugs than other U.S. residents, but more than Mexican residents.

"My background is focused on immigrant health, so I am trying to understand what it was about this population that put them at such a high risk of drug abuse," says Ojeda, whose Fogarty fellowship was supported by the University of California, San Diego (UCSD), and Mexico's Universidad Autonoma de Baja California (UABC). "We also see a high rate of HIV infection among the drug injecting deportees. Disentangling that relationship is of great interest to me."

An estimated 10,000 injection drug users live in Tijuana, a city of 1.6 million. Their rates of HIV and other blood-transmitted diseases are high. Yet though the U.S. deported 725,000 Mexicans in 2011-2012—more than 200,000 of them to the Tijuana area—there's little empirical research on this population, especially on what happens once they are "home."

"Some of these men and women have been deported five or 10 times. What role does that have on their families, on their communities?" asks Ojeda. "That has relevance not just to Mexico but to the U.S. as well. The ones who have TB or HIV or other sexually transmitted diseases, these transmissions are not contained by borders. These people come and go, and both countries can benefit if we improve health on both sides of the border."



Victoria Ojeda, Ph.D., M.P.H.

Year:	2012-2013
Fellowship site:	Universidad Autonoma de Baja California in Mexico
Sponsor:	University of California, San Diego
Topic:	Social reintegration of migrant male injection drug users
Website:	http://bit.ly/ojeda

Ojeda and her colleagues are also collecting data on family separation, including the economic impact of family members abandoned by deportees. "If you send a breadwinner out of the country, it has repercussions. Does it mean you are contributing to needs for public programs, food stamps, welfare that family members might be eligible for, if some are American citizens? What about families who now have to support a deported relative in Tijuana who has no Mexican documents? There's not much systematic research on the effect of deportation on the families left behind."

Most of the men are homeless. Police and other authorities victimize them in Mexico, she says. And some have lived in the U.S. for so long they no longer have good Spanish language skills. "I want to understand what it means for them to reincorporate back into Mexican society after being deported," says Ojeda. "What does it mean to reincorporate into an environment you didn't even want to come to?"

The National Institute on Drug Abuse also supports Ojeda with a career development award focused on the intersection of substance abuse, HIV and migration in female sex workers in Tijuana. The Health Frontiers clinic where she works is staffed largely by medical students from UCSD and Mexico's UABC.

Ojeda gives seminars on research methodology, migration and health issues to medical students working at the clinic. "It's a nice way for us to give the students an understanding of the value of research from the health and policy perspectives. It helps them understand the factors that led the patients they're seeing to the clinic." The medical students are trained in giving outreach talks on mental health, HIV prevention and other issues.

PATRICIA JANNET GARCIA, M.D., PH.D., M.P.H.

Dr. Patricia Garcia, of the Universidad Peruana Cayetano Heredia in Lima, Peru (UPCH), is dean of the School of Public Health and Administration and adjunct professor in the School of Sciences. A former Fogarty trainee, she helped her institution successfully compete for many of the 40 NIH grants it has secured, as well as for additional funding from a number of foundations and other sources. She is also affiliated with the University of Washington and Tulane University.



How are researchers in Peru incorporating ICT into science?

With computers, cellphones and other information and communications technology (ICT) becoming more widely available, in 1999 we launched a program with Fogarty support to train young professionals in the use, development and application of informatics for health, linking them with ongoing research that uses new technologies. This has achieved considerable success in the development of sustainable biomedical informatics research and training programs in Peru.

How did this lead you to reach out regionally?

At UPCH, we now have the critical mass of professionals, experience and collaborations needed so we decided to take the next step and develop a regional center to train professionals to apply ICT to global health issues and also for developing experts capable of linking informatics with health research. We obtained funding from Fogarty in 2010 to establish this center in the Andean region, where the need is great.

What are some capacity building examples?

The center provides high-quality informatics training to emerging investigators at a fraction of the cost of similar programs in the U.S. Since its launch, the center has created a range of options for emerging investigators, from diplomas to master's degrees to doctoral degrees, and also small grants for innovative, closely mentored research. For instance, one project is improving home blood pressure monitors, another is using bioinformatics for cysticercosis control and a third is incorporating electronic health records in the fight against tuberculosis.

What are some of the challenges?

We are in an era of chaos in informatics. Health authorities are getting all kinds of proposals. Right now, we are investigating how the different systems can talk the same language and become interoperable. We are moving toward linking informatics infrastructure throughout Peru, while maintaining our collaborations with the University of Washington. It is key to have partners from north and

south to help train experts in developing countries. We envision global health informatics as an umbrella for integrating health informatics and bioinformatics into clinical, biomedical and behavioral research issues that are critical to advancing the health of populations in our area and around the globe.

What other ways are you employing technology?

To ensure broad access to the new bioinformatics training, both in Peru and other countries, we have placed all our diploma courses and some master's programs online. Distance learning is very popular, especially with health professionals. But trainees should also have the opportunity for one-on-one interaction, either in person or by videoconference. Along with the bioinformatics courses, trainees can access other relevant training, for instance an online Spanish-language course on the responsible conduct of research. Importantly, online training helps increase the program's sustainability.

What about mobile tools?

Several of our projects are focusing on how text message programs might improve health. We have one that establishes electronic medical records for maternal health and arranges for text messages to pregnant women, designed to motivate them to keep healthy lifestyles and remind them of appointments. We are finishing evaluation of a randomized controlled trial measuring the impact of these messages. We are also working with a trainee to develop a pilot program that continues after the baby is born. An adaptation for rural areas, where some mothers cannot read but have cellphones, is to send voice messages instead, in the local Quechua languages. Another student is working on texts for tuberculosis patients to encourage drug adherence, and a third student is investigating the use of texting for diabetes care. Former trainee Dr. Walter Curioso defended his thesis evaluating the use of cellphones for HIV treatment adherence. So we are creating the critical mass to sustain and expand our progress. We are positioned as a leader in the field.

RESOURCE

QUIPU website: www.andeanquipu.org

Global research is vital for deafness, speech disorders

A Pakistani baby never hears her mother sing and a Cameroon teen who stutters is teased by peers. They both struggle with communication conditions that can undermine their health and quality of life. By studying these disorders in populations outside as well as within the U.S., NIH scientists and funded researchers are working to discover new causes and improve interventions.

The WHO estimates 360 million people—over 5 percent of the world’s population—have disabling hearing loss, with the burden falling disproportionately on populations in low- and middle-income countries—as much as 80 percent of the total. Up to 1 percent of people stutter, and others have voice, speech, or language disorders.

The National Institute on Deafness and Other Communication Disorders (NIDCD) supports more than 1,000 research and training awards—including a number in low-resource settings—focusing on genes, infections, toxic compounds, brain and ear injury, and other factors that can contribute to communication disorders. Although most of the NIDCD’s research is for hearing loss and deafness, NIDCD staff scientists and grantees also study

NIH’s National Institute on Deafness and Other Communication Disorders supports studies in countries such as Pakistan, for research that may lead to new treatments for deafness, stuttering and other conditions.

disorders involving voice, speech or language, as well as balance, taste and smell.

“Communication disorders can have an overwhelming effect on individuals of all ages, ethnic groups and socioeconomic status,” said NIDCD Director Dr. James F. Battey, Jr. “NIDCD’s research is helping improve the lives of individuals throughout the world, while at the same time, individuals across the globe have led our scientists to significant discoveries in communication disorders.”

These conditions can bring substantial costs throughout the lifespan. Untreated hearing impairment in the very young can hold back language development and education, and in adults can hurt professional and social lives. Over time, these types of health burdens are likely to increase as more premature infants and victims of traumatic injury survive. Also, as the aging population grows, so will the numbers of individuals with hearing loss, speech difficulty after stroke and other communication hurdles.

Many NIDCD-supported scientists have some global health research involvement. By studying large families that have a particular communication disorder, NIDCD scientists have discovered a number of genes associated with deafness and stuttering. These findings are steadily increasing scientific knowledge and moving science closer to more effective tools to diagnose and treat people with these communication disorders.

About NIDCD

The National Institute on Deafness and Other Communication Disorders (NIDCD) is one of the 27 Institutes and Centers that constitute NIH. It was established by Congress in 1988 and its director is Dr. James F. Battey, Jr. The NIDCD’s mission is to reduce the burden of communication disorders and improve public health through basic and clinical research and training in both normal and disordered processes of hearing, balance, voice, speech, language, taste and smell. It also supports efforts in disease prevention and health promotion and the special biomedical and behavioral problems associated with people who have communication disorders. With an annual research budget of about \$383 million, the NIDCD supports staff scientists plus more than 1,000 research and training awards to scientists throughout the United States and beyond. Like NIH as a whole, about a tenth of the funding is for research by NIDCD staff scientists, with the rest supporting research conducted by external (extramural) researchers.

Website: www.nidcd.nih.gov



Photo by Center for Communication Programs/Photoshare

This section was produced by Cathy Kristiansen.

Studies in developing countries identify causes of stuttering

Speech disorders can severely affect a person's well-being, leading to shunning, behavioral and emotional problems, and impaired economic opportunity. Scientists investigating causes of stuttering—a common speech condition—have discovered through research in Pakistan, Cameroon and Brazil that genes play a surprisingly large role.

“Stuttering research was an unmet need,” according to Dr. Dennis Drayna, of NIH's National Institute on Deafness and Other Communication Disorders (NIDCD). “It's in every language group in every population around the world. It can have a very profound impact on the lives of those who are affected. Speech therapy helps in some cases but not in all. There are no effective drugs, and few other effective interventions.” He said data are limited, but perhaps between 0.5 and 1 percent of the world's population suffers from severe stuttering.

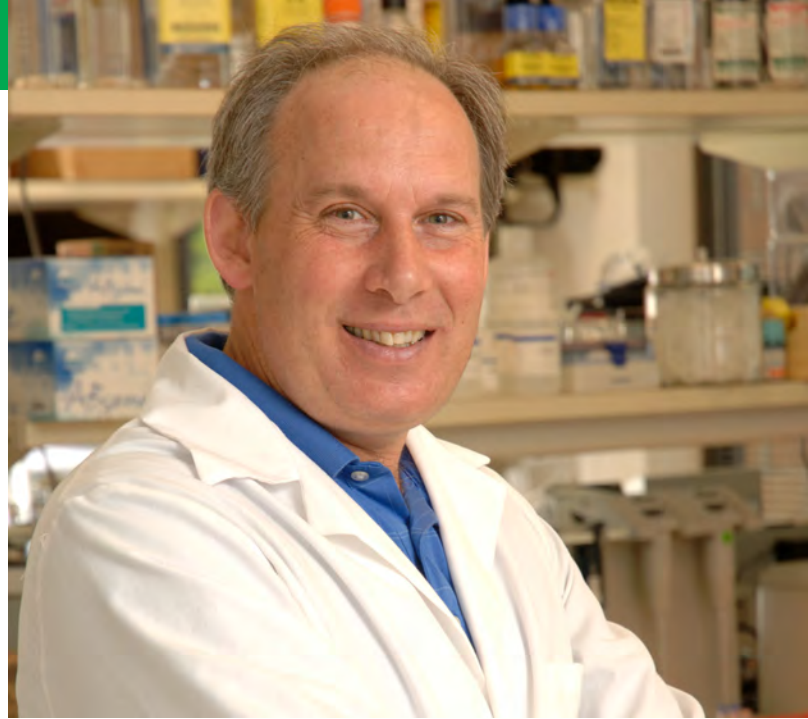
The lion's share—more than 80%—is now thought to have a genetic cause, Drayna observed. “We don't know what the other contributing factors are, but it's not overly strict toilet training, overprotective mothers, or many other speculative causes.”

Drayna, who heads NIDCD's Section on Systems Biology of Communication Disorders, has led studies pinpointing candidate genes, while also training researchers in relevant skills. His interest in stuttering stems in part from a mild family history, including twin sons who stuttered.

After early efforts in the U.S. to identify stuttering gene locations came up empty-handed, he extended his research to rare large families elsewhere, including Pakistan, Cameroon and Brazil. It was by extensively analyzing DNA data from a group of Pakistani families that Dr. Changsoo Kang from South Korea, then a visiting fellow in Drayna's lab, identified the first gene behind inherited stuttering.

Research gathered momentum. An internet contact led to the discovery of a remarkable Cameroonian family with more than 40 members who stutter. “Initially, I thought the family probably had an inherited neurological disorder with many other symptoms,” Drayna recalled. “But they were high functioning and perfectly fine, except they all had a significant stutter.” By studying this and other large Cameroonian families,

Photo by Bill Bronson/NIH



Global research by Dr. Dennis Drayna, of the National Institute on Deafness and Other Communication Disorders, and colleagues has uncovered several genes that cause stuttering.

Drayna and collaborators have identified locations for four new genes linked to stuttering.

In other research investigating Pakistani families, he and collaborators at the University of Punjab identified over 100 families with multiple cases of stuttering. Pakistani culture favors marriages between cousins, even though these unions increase the odds that recessive disorders will come to light. The researchers found stuttering was a solitary manifestation of a mutated gene already being studied for its role in a metabolic condition. Enzyme treatment is being examined for this class of disorders and may also someday be helpful in treating stuttering.

Genetic research in other global populations continues to uncover stuttering-susceptibility genes. “It's in these rare, very large family clusters where we find the genes, but the genes that we find, it turns out, cause stuttering everywhere in the world,” Drayna said. “So, for instance, the Pakistani genes also appear to cause stuttering in about 13 percent of Americans who stutter.”

The genetic discoveries clearly demonstrate stuttering is a biological disorder, Drayna noted. “This takes us further away from the view that stuttering is caused by interactions with other people, or that it is a social disorder or an emotional disorder.” That may help remove the stigma associated with stuttering, he said.

There is still much to be learned, Drayna concluded. “Another important reason to investigate stuttering is to better understand the neural structures and functions within the human brain that generate human speech, which are poorly understood.”

RESOURCES

Lab website: <http://bit.ly/draynalab>
More Info: <http://1.usa.gov/1okcSwH>

Deafness studies will speed path to new treatments

Genes are behind much of the deafness that exists worldwide and research supported by the National Institute on Deafness and Other Communication Disorders (NIDCD)—in large part from global health studies—has uncovered about half of the 50 known genes in which mutations cause deafness inherited as a recessive trait. This project is an ongoing collaboration with Dr. Sheikh Riazuddin, a researcher in Lahore, Pakistan.

Clusters of deaf people within large families, fairly rare in the U.S., occur more frequently in some other countries. That has provided research opportunities for NIDCD-sponsored scientists and their collaborators to identify deafness-causing genetic mutations in Pakistan, the West Bank, Israel, India, Indonesia, Costa Rica and Brazil.

“Geneticists need large families to find the variants that cause a disorder,” said Dr. Thomas B. Friedman, chief of NIDCD’s Laboratory of Molecular Genetics. “You can find them in single individuals or small families, but it’s much harder to be convinced that you’ve got the right change in the right gene.”

By exploring genes in intermarried or large extended families with several deaf members, researchers have revealed dozens of mutations and tracked them in

NIH-supported studies in Pakistan and elsewhere have found that some genes that rob children of hearing are linked to other conditions.



Photo by Jacob Sirkkin/Photoshare

populations everywhere. “All of the genes that we’ve identified in Pakistan are the same genes that cause deafness worldwide, every single one of them,” Friedman said. “None is unique to a particular country.”

In the early 1990s, Friedman’s research took him to Bali, Indonesia, to a village where deafness was so common that hearing people and non-hearing alike used a unique sign language. His team examined the DNA of 45 deaf people among the 2,200 residents and traced their hearing loss to a genetic mutation on chromosome 17. “It’s a big, big gene and working on it taught us a lot about how the auditory system functions,” Friedman said. “You might think, isn’t that fun working in a Balinese village? But it allowed us to discover a major gene for deafness worldwide, including in the United States.”

He has subsequently collaborated on global projects that have pinpointed genes culpable in deafness and other disorders as well. In Usher syndrome, which in the U.S. occurs in 1 per 25,000 births, children suffer not only from hearing problems but some of them also progressively lose their sight and develop balance issues. “The Usher mutations that we identified, which are found throughout the world, were all identified in Pakistani families.”

Very few genes are exclusive to the auditory system, Friedman noted. “Most are expressed widely and some even ubiquitously,” he said. “Unless you know what the mutation is, you don’t know whether you’re at risk for other, hidden disorders.”

This was the case in Perrault syndrome, where a deafness gene found in three Pakistani families was subsequently linked to ovarian failure, abnormal organ development, movement disorders, learning disabilities and peripheral neuropathy. These discoveries came from international collaborations among several research teams in Pakistan, the U.K. and the U.S.

Hearing loss from genes most often manifests in childhood, but at the other end of the spectrum, populations worldwide hear less as they age. That group is growing quickly and nearly half of people 75 years and older face some hearing loss, according to the NIDCD. To improve understanding of how this occurs, Dr. John H. Grose of the University of North Carolina, a Fogarty and NIDCD grantee, is measuring how listeners pick up speech amid background noise, so-called temporal masking, which can decline with age. His project includes English speakers in the U.S. and Portuguese speakers in Brazil.

Infectious diseases and their treatments, as well as insults to the brain or auditory system, can also damage hearing.

These include repeated ear infections, loud noises, head injuries, hypoxia in newborns and more than 200 drugs—including some chemotherapies.

Relatively new on the scene is HIV and its antiretroviral treatments, which are both suspected of contributing to hearing loss. NIDCD grantee Dr. Jay C. Buckey of Dartmouth Medical School is leading a study with Muhimbili University in Tanzania to assess hearing in patients with HIV, either on treatment or not, and in those with tuberculosis coinfection. Early findings reveal increased hearing loss in adults with HIV who are on antiretrovirals.

NIDCD is supporting ongoing studies to generate more information on the environmental and genetic causes of deafness and hearing loss. Improved understanding of mutated genes will provide important information on hearing and brain processing. The identification of the

Photo by Maggie Barlett/NHGRI



NIH-funded global research has uncovered more than 50 recessive genes tied to hereditary deafness, bringing science closer to better treatments.

relevant genes will also permit early and more accurate diagnosis of certain forms of hereditary hearing and communication impairments, as well as loss of sight.

RESOURCES

Lab website: <http://bit.ly/Friedmanlab>

More Info: <http://1.usa.gov/1okcSwh>

Research in Pakistan yields findings on hereditary hearing loss

Dr. Sadaf Naz is investigating the world's largest cohort with hereditary moderate-to-severe hearing loss, which requires driving to remote Pakistani villages never before visited by a researcher and screening willing residents for auditory impairments. Naz, an associate professor at the University of the Punjab, has received NIH support as both a trainee and grantee, which led her to establish her institution's first human genetics laboratory.

"Most of my advanced training in molecular biology was at NIH," Naz said. "It allowed me to come back and establish an independent human genetics lab. I've been able to train students and build research capacity here in Lahore." Her current master's and doctoral trainees specialize in hearing, movement disorders and cleft palate; one has just completed a phase of training in deafness research training at the National Institute on Deafness and Other Communication Disorders (NIDCD).



Dr. Naz's team conducts hearing tests in various remote locations.

Naz found her way to the U.S. in large part by chance, she recalls. "In 1996, human molecular genetics was such a nascent field in Pakistan and there were very few opportunities," so she sent out a

blanket of emails to global experts in hearing loss genetics—her field of research during her Ph.D. degree. The NIDCD invited her to the U.S. to train and later offered her a postdoctoral fellowship.

Back at home, she secured funding from the Pakistani government and then was the first scientist in Pakistan to obtain an R01 research grant from the NIH—a Fogarty Global Research Initiative Program award. This enabled her to hunt for genetic mutations involved in moderate-to-severe hearing loss. "It's harder to find people with this condition," Naz said. "In profound deafness, people use sign language and attend special schools, so are easier to identify. For our research, we have to do a lot of audiograms [hearing tests] and field-work to find families with a high prevalence."



Dr. Sadaf Naz (right) and colleagues are studying hearing loss in Pakistan.

From their efforts thus far, Naz and her team have studied more than 80 large families and identified mutations in three new genes which cause progressive or stable hearing loss, findings that extend the world's knowledge about the inheritability of moderate-to-severe symptoms and increase the hope of eventual interventions.

"I'd like human genetics to come into its own in Pakistan. We have a lot of genetic defects, the reason being marriages between cousins or other close relatives," she said, noting that the health care system does not automatically conduct newborn screening as happens in the U.S. "We now have mapping, identification of human genes, but no genetic counselors, no center where people can get information or testing. If I could establish such a facility, I would be very happy."

RESOURCE

Website: <http://faculty.sadaf-naz.pu.edu.pk>

Photos courtesy of Dr. Sadaf Naz

OPINION

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

Implementing technology to advance science



Information is the most valued currency in our increasingly wired world. That's why it's critical we invest to expand the use of information and communications technology (ICT), especially in low-resource settings. With the growing availability of broadband—even in Africa—and the ubiquity of smart phones, we must take advantage of the tremendous opportunities these

technologies present for facilitating online research collaborations, developing novel distance learning curricula, and analyzing huge and complex data sets, among others. All of these avenues hold great potential but require funding and study to determine which are the most effective.

As we met recently at Fogarty to consider the changing landscape of global health research and our role in it, we identified ICT as one of the areas that holds the most promise. Indeed, it is a key priority in our new strategic plan. I'm delighted that we have already begun to find ways to catalyze progress in this area—first, with our new eCapacity program and soon with a mobile health initiative that we hope will encourage research in that burgeoning field.

ICT tools are transforming biomedical research and it's essential we ensure they are extended to our developing country partners. To speed the discovery process, we must enhance capabilities for projects involving the use of surveillance, epidemiology, geospatial technology tools and more.

Through our new Global Health Research and Research Training eCapacity Initiative, we aim to develop innovative educational approaches that enhance the biomedical research enterprise at low- and middle-income country (LMIC) institutions by expanding the use of ICT. With our first round of five grants, we are encouraging the development of adaptable ICT users whose research activities continue to evolve as technological changes take place. This \$1.6 million investment will support researcher training in seven countries and target a wide range of public health issues, including trauma, infectious diseases, mentoring and research skills,

biostatistics, data sharing and management, software programming and research ethics.

Global health research projects are increasingly distributed across multiple countries, resulting in collaborations and networks that require ICT, data sharing and new forms of research training. While a growing number of Western e-learning materials are being made available globally, it is vital that LMIC institutions develop the capacity to create their own electronic learning tools and collaboration resources that are tailored for the local needs and context.

We continue to build on the framework established through our informatics training program, begun in 1998. A number of the projects have since expanded to form regional networks, leveraging the teaching tools and lessons learned to benefit researchers elsewhere. For instance, Brazilian scientists are sharing materials with counterparts in Mozambique, where Portuguese is also the national language. Meanwhile, researchers in Peru are building a Latin American training network, and a university in South Africa is working to strengthen biomedical informatics throughout the region.

Eventually we hope to stimulate “learning laboratories” in LMICs that are empowered to develop and evaluate different models of distance learning and other ICT strategies, as well as adapt open access platforms for the needs of research and research education. Studies will be needed to identify new models for training in the use of ICT tools and strategies that can be implemented in low-resource settings, to foster the next generation of tech-savvy, multidisciplinary scientists.

These Fogarty investments help ensure that scientific advances are accessible to students and scientists in LMICs. This capacity will allow professionals in LMIC institutions to assess the vast resources available and stimulate technological innovation and locally relevant solutions to address global health problems.

In our vision for the future, students, faculty and researchers will access, teach and share information in creative and transformative ways, enabling new approaches to collaborative learning and problem-solving, in partnership with colleagues in the next room and across continents.



Renowned vaccine expert de Quadros has died

Dr. Ciro de Quadros, renowned for his vaccine work and drive in polio eradication, has died at age 74. He was executive vice president of the Sabin Vaccine Institute and was recently named a Public Hero of the Americas by the WHO and its Pan American arm.



Institute of Medicine selects Dzau as its president

The U.S. Institute of Medicine has named Dr. Victor J. Dzau as its president. Currently chancellor for health affairs at Duke University and president of its health system, he previously held posts at NIH, including chair of the Cardiovascular Disease Advisory Committee.



Omura is chosen as Gairdner Global Health awardee

Dr. Satoshi Omura was selected to receive the 2014 Gairdner Global Health Award. A recognized global expert in bioorganic chemistry, he partnered with Merck on collaborative research to discover and develop ivermectin, a broad-spectrum antiparasitic agent that is widely used to treat river blindness.



Santosham receives Sabin gold medal for Hib

Longtime NIH grantee, Dr. Mathuram Santosham of Johns Hopkins University, has received the Albert B. Sabin Gold Medal Award, for his pioneering role in preventing deadly *H. influenzae* type b diseases and for his research on oral rehydration to limit fluid loss in diarrhea.



Fogarty grantee Kline wins pediatric research award

Fogarty grantee Dr. Mark W. Kline of the Baylor College of Medicine has been recognized for his global child health contributions by the Hospital for Sick Children in Toronto, which gave him its 2014 Program for Global Pediatric Research Award.



Bioengineer Povlich named Fogarty program officer

Fogarty has welcomed Dr. Laura Povlich as a new program officer in its Division of International Training and Research. Povlich, a bioengineer and synthetic chemist, has been at Fogarty for over a year as an American Association for the Advancement of Science Fellow. She helped develop the eCapacity and mHealth programs.



Weymouth to manage Fogarty's advisory board

Fogarty has named staff member Kristen Weymouth to be Executive Secretary of the Advisory Board, holding responsibility for planning board meeting activities and handling correspondence.

Life expectancy rising, WHO reports

People everywhere are living longer, according to "World Health Statistics 2014," published recently by the WHO. Based on global averages, a girl who was born in 2012 can expect to live to around 73 years, and a boy to 68. This is six years longer than the average for a child born in 1990, with the greatest gains made in low-income countries.

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

Global health spending still trending up

Despite sluggish economic growth in developed countries, global health spending attained an all-time high of \$31.3 billion in 2013, according to "Financing Global Health 2013: Transition in an Age of Austerity," from the Institute for Health Metrics and Evaluation.

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

Tool helps researchers manage projects

A new resource, "Implementation Research Toolkit," is available from the WHO and the Special Program for Research and Training in Tropical Diseases.

Investigators can use it to plan a project, set up a study, monitor progress and disseminate results.

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

Africans strongly support health funding

Most Africans want their governments to provide more health care facilities and deal with HIV/AIDS, a Pew Research survey in six countries showed.

Respondents also placed priority on access to drinking water, prenatal care and immunization.

Survey report: <http://bit.ly/1mp7Ht3>

Report covers plans for Africa's children

Better integrated, multisectoral and preventive approaches to improving child health in sub-Saharan Africa are described in a report from the nonprofit Accordia, based on its 2013 Summit on Child Wellness.

Full report: <http://bit.ly/1s397x2>

WHO reports on adolescent health

Depression is the predominant cause of illness and disability for boys and girls aged 10-19 years, according to the WHO report, "Health for the World's Adolescents." The top three causes of death in this demographic are road traffic injuries, HIV/AIDS and suicide. Worldwide, about 1.3 million youths died in 2012.

Full report: <http://bit.ly/4iM7PaA>

Funding Opportunities

Funding Opportunity Announcement	Details	Deadline
Fogarty HIV Research Training Program (D43) (D71) (G11)	http://1.usa.gov/QFOauP http://1.usa.gov/NqFOVm http://1.usa.gov/NqFFkW	July 24, 2014 July 24, 2014 July 24, 2014
Global Infectious Disease (GID) Research Training Program (D43) (D71)	http://1.usa.gov/1lzFC34 http://1.usa.gov/1sOz17Y	July 29, 2014 July 29, 2014
Fulbright-Fogarty Fellows and Scholars in Public Health Postdoctoral Research Scholars Award Fellowships for medical or graduate students	http://1.usa.gov/PNTLxU	Aug 1, 2014 Oct 14, 2014
Mobile Health (mHealth): Technology and Outcomes in LMICs (R21)	http://1.usa.gov/1lwXFY3	Feb 19, 2015
Junior Research Scientists (IRSDA) (K01)	http://bit.ly/IRSDA15	Mar 4, 2015
International Research Ethics Education and Curriculum Development Award (Bioethics) (R25)	http://1.usa.gov/15jRbAB	May 22, 2015

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

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Institute of Medicine studies global child health

Children whose development languishes in their first few years of life may never entirely catch up, so it is essential to do more for them when the window is open. To devise cost-effective investments for this goal, the U.S. Institute of Medicine recently launched a high-level project, "Forum on Investing in Young Children Globally," a series of nine workshops that will culminate in a report.

At the first session, attendees discussed health, education, nutrition and social protection factors that are important for child development through age 8. They also summarized the current state of the world's young children and their caregivers, and examined the possible economic gain if children reach their full potential.

In future meetings, forum participants will explore existing, new and innovative science and research from around the world and weigh how best to translate this evidence into strategic investments in policies and practices. Successful implementation will require indicators and measures to track progress.

The project will produce a report after its last workshop, planned for September 2016.

Photo by Okwen Patrick Mbah/PhotoShare



The U.S. Institute of Medicine is studying ways to improve young children's development so they are better able to reach their full potential.

RESOURCE Website: <http://bit.ly/1eDHbx0>