

Inside this issue

Creating health equity through community-based participatory research . . . p. 5



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Fogarty's "Global Brain" program enters its third decade

Fogarty's Global Brain and Nervous System Disorders Research across the Lifespan program is all grown up now: the initiative celebrates its 20th anniversary this year. Global Brain provides grants to help investigators build research capacity in low- and middle-income countries (LMICs) while conducting research on health issues related to the brain and extended nervous system that affect people living there. The program's long-term goal is to sustain the advancement of research capabilities in the areas of nervous system function and nervous system impairment across the globe.

"Since the program's inception in 2002, Fogarty has conferred 314 total awards to support research in 66 low- and middle-income countries," said Dr. Kathleen Michels, who founded the program and has since retired.

The need for this program is clear. According to the Global Burden of Disease survey, neurological disorders are the leading cause of disability and the second leading cause of death worldwide. Over time, death and disability due to neurological diseases have risen substantially, particularly in LMICs. In fact, a concerning paradox exists: positive trends in LMICs—such as improvements in health care and increasing life expectancy—lead to more children surviving past age 5 into adulthood (and into advanced age) with their brain health impaired due to early illnesses, malnutrition, and adverse environmental impacts and experiences.

In the past, Global Brain program investigators have addressed a range of diseases and disorders. For example, Dr. Jelena Radulovic of Northwestern University received an award to study post-traumatic stress disorder (PTSD) in Serbia. Radulovic's team enhanced research capacity

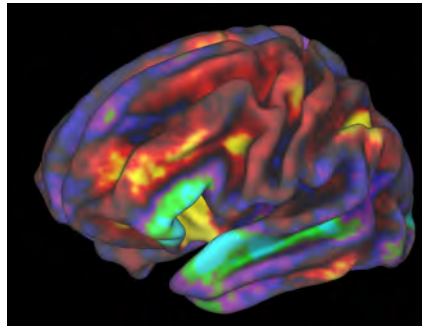
at Serbia's Vinca Institute while developing a strong cross-cultural program in basic and translational research in partnership with a Northwestern University laboratory. This collaboration accelerated the discovery of therapeutic, diagnostic, and prognostic targets for PTSD. Her most recently published paper explored the molecular and cellular mechanisms of how memories of stressful events contribute to depression-like behavior.

Another case in point: the NeuroGAP-Psychosis project, led by Dr. Karestan Koenen, is a collaboration of Addis Ababa

University in Ethiopia, Makerere University in Uganda, and the University of Cape Town in South Africa in partnership with the Harvard T.H. Chan School of Public Health. The ongoing project aims to build and expand the capacity of African scientists to conduct large-scale genetic studies of schizophrenia and other psychotic disorders by enabling the local generation, analysis and interpretation of data. Scientists work to validate tools for diagnosing and screening schizophrenia and psychosis, characterize the clinical phenomenology

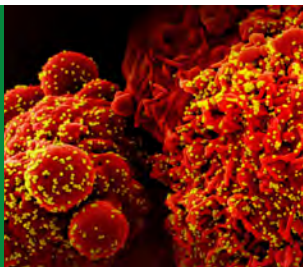
of 13,000 patients with schizophrenia and psychotic disorders, and perform the largest gene-discovery study of schizophrenia in Africa to date.

Other notable projects include a planning grant to reduce the burden of chronic psychotic disorders in Tanzania; a psychological study of early psychosis in China; an exploration of the family consequences of Zika in Brazil; an investigation of maternal traumatic stress and child development in South Africa; a study of internet-based treatment for common mental disorders in Latin America; an exploration of the genetics of psychosis in Africa; a study on dementia and related health and social challenges in Lebanon; and schizophrenia research capacity building in Macedonia.



A functional MRI (fMRI) image of preteen brain while child performs a working memory task. The regions in yellow and red are the most active.

FOCUS



Research roundup

- Examining impact of COVID-19 on mortality in the U.S.
- Studying COVID-19 in South Africa
- COVID-19 modelling and phylogenetic studies
- Notable studies on flu, clean cooking, and other topics

Read more on pages 6 – 9

NIMH marks 75 years of mental health research

By Judy Coan-Stevens

Since its founding in 1949, the National Institute of Mental Health (NIMH) has transformed the understanding and treatment of mental illnesses through basic and clinical research, bringing hope to millions of people. In recent decades, global health researchers have placed new emphasis on mental health against the backdrop of natural disasters, armed conflict, forced displacement, and major disease outbreaks. Mental disorders and diseases are an enormous burden in low- and middle-income countries (LMICs) which lack the financial and human resources to deal with them. According to the WHO *World mental health report* published in June 2022, mental disorders are the leading cause of years lived with disability (YLDs), accounting for one in every six YLDs globally. This report also indicates that worldwide one in eight individuals live with a mental health condition. However, these mental health conditions remain undertreated and health services continue to be underfunded.

NIMH's vision statement envisions a world in which mental illnesses are prevented and cured. Global mental health research is one of the institute's priority research areas. As Leonardo Cubillos and Collene Lawhorn of the Center for Global Mental Health Research within NIMH wrote in a recent blog post, "Mental illnesses are not confined by geography; our research should not be either." The center coordinates efforts to generate knowledge that will improve the lives of people living with or at risk for mental illnesses in LMICs. Two of its flagship initiatives are the biannual Global Mental Health Conference, which gathered for its 12th meeting earlier this year, and the Global Mental Health Research Webinar Series. The center

currently prioritizes supporting implementation science and health services research applied to key global mental health challenges, such as integration of mental health care in primary care, suicide prevention, mobile populations, and social determinants of mental health.

For several decades, NIMH has been an important partner to Fogarty International Center on programs such as Emerging Global Leader, International Research Scientist Development Award (IRSDA), Global Brain Disorders Research, Global Health Fellows and Scholars/LAUNCH, and Chronic, Noncommunicable Diseases and Disorders Research Training (NCD-Lifespan). NIMH also provides support to Fogarty trainees as they progress in their careers. With this support, Fogarty trainees and grant recipients have measured the prevalence of mental disorders in western Kenya, where no baseline for these conditions had been established; studied the benefits of including fathers when providing mental health services to displaced Syrian families living in Turkey; researched how mental health care can be normalized in wartime Ukraine; and measured the impact of apartheid-based prenatal stress and COVID-19 in South Africa. Including diverse populations, communities, contexts, geographical regions, researchers, and technologies across the globe can accelerate and enrich scientific advancements while helping to address challenges both globally and domestically.

NIMH is celebrating 75 years of research, discovery, and hope with special events, videos, podcasts, and feature stories that highlight the Institute's research and its impact on mental health. Check out their website: nimh.nih.gov.



Map of countries participating in the NIMH-supported Research Partnerships for Scaling Up Mental Health Interventions in Low- and Middle-Income Countries (Scale-Up Hubs).

Two APTI fellows focus on neglected tropical diseases

The African Postdoctoral Training Initiative (APTI), established in 2019, prepares future generations of African researchers through four-year fellowships—two years spent in an NIH lab and an additional two years at their home institutions in Africa. Fogarty caught up with two fellows from APTI's second cohort, now in their second year, to learn how the program has impacted their careers and research, and to find out their goals for the future.

Fogarty International Center



Dr. Chinwe Chukwudi is currently studying protozoan parasites at the National Institute of Allergy and Infectious Diseases.

Dr. Chinwe Chukwudi

Originally from the south-eastern region of Nigeria, Dr. Chinwe Chukwudi began her research journey at the Royal Veterinary College, University of London, where she obtained her PhD in molecular biology and microbial genetics and completed postdoctoral studies under the sponsorship of the Commonwealth Scholarship Commission in the UK.

Now, with support from the University of Nigeria Nsukka, Chukwudi is working on two research projects at NIH as part of her APTI fellowship. Both focus on neglected tropical diseases (NTDs). The first aims to develop a broad-spectrum topical treatment for cutaneous leishmaniasis by repurposing two existing antimicrobial agents. Leishmaniasis is a parasitic disease found in parts of the tropics, subtropics, and southern Europe. It is caused by infection with *Leishmania* parasites, which are spread by the bite of phlebotomine sand flies.

In her second APTI project, she is investigating the population genomics of African trypanosomes, parasites that infest the blood of various vertebrates, circulating in humans and animals in Nigeria. This project has uncovered new, previously overlooked areas where infections are occurring in Nigeria.

Through the APTI fellowship she has, “learned that a successful science or research career requires more than laboratory or research skills. Soft skills such as grantsmanship, research management, and knowing how to present and publish your research are equally, if not more, important.” With these skills and the laboratory training she has received during her fellowship, Chukwudi feels better prepared for success.

Her career goal moving forward is to help train the next generation of African scientists and build a team of

researchers in molecular biology and genetics that will develop effective interventions for the infectious diseases endemic to Nigeria and Africa.



Photo courtesy Ajakaye Oluwaremilekun Grace

Dr. Ajakaye Oluwaremilekun Grace is currently studying protozoan parasites at the National Institute of Allergy and Infectious Diseases.

Dr. Ajakaye Oluwaremilekun Grace

Dr. Ajakaye Oluwaremilekun Grace, another member of the second APTI cohort originally from Nigeria, has focused her research on neglected parasites, particularly those prevalent in Africa. Her research aims to uncover the genetic diversity of these parasites, as variations within parasite populations can influence virulence, transmission, and drug resistance. Genotyping these neglected parasites is the key

to understanding their complex biology. The challenge, however, lies in resource-constrained environments where conventional genotyping methods are often impractical.

Because of this, Grace's primary goal for her APTI fellowship has been to develop cost-effective and adaptable genotyping technologies specifically designed for these settings, which she has already accomplished. With a year still left in her fellowship, she's created a low-cost, versatile, technique for genotyping these parasites. With this method, she has successfully characterized parasite samples (i.e., compared different types of parasites to determine how they are related and how they have evolved) from Nigeria and the Democratic Republic of the Congo. As a result, she discovered a hybrid schistosome species in both countries, thus shedding light on the intricate interactions and genetic diversity within these parasites.

“I believe that training African scientists to lead research and break new ground will have a ripple effect across Africa in the coming years.”

– AJAKAYE OLUWAREMILEKUN GRACE

Grace says that her APTI fellowship has been “the springboard for her career” and believes its impact will extend well beyond these short four years. She hopes ultimately that this experience will allow her to influence the trajectory of parasitology research in Nigeria, the continent of Africa, and the world.

PROFILE

Expanding medical literature access in Peru

Dr. Roxanna Garcia didn't have in her mind a clear path into neurosurgery. As a first-generation medical school applicant, she says, "I was skeptical that I would even be accepted into medical school, let alone become a surgeon, and especially a neurosurgeon."

For those unfamiliar with how long it takes to become a neurosurgeon in the United States, it is a 15-year track at a minimum. This is likely the reason why there are only 4,000 or so practicing neurosurgeons in the country today. Garcia was entering her sixth year of training when she applied to the Fogarty Fellows and Scholars program, now known as LAUNCH.

Her love for public health drove her initial interest in medical school and she originally planned to work in infectious disease or as an epidemiologist. Her ideas changed after her undergraduate and preclinical years and after she obtained degrees in public health and medicine through the University of California, Berkeley—University of California, San Francisco Medical Program. Along the way, she'd also spent some time in Mexico doing infectious disease work related to Chagas disease. "It hit me while I was performing my clinical duties that the day-to-day infectious disease work was not for me. While it was interesting intellectually, I was also drawn toward a different medical discipline—neurosurgery: there was something very intense and unique about it." Understanding this, she transitioned to a career that merges her interests in public health and surgery. "I feel incredibly fortunate to have found this path."

Garcia's Fogarty project aimed to describe the current health care system in Peru and its level of preparedness to provide essential and primary neurosurgical care. She and her team also identified target areas for further research projects and interventions that would strengthen the surgical ecosystem within Peru.

Her research team found that there were often delays in accessing the country's basic and essential primary care, let alone higher-level services and surgical care. Everyone in the Peruvian system receives an identification number, similar to a Social Security number in the United States. However, not all the hospitals are connected digitally which causes discrepancies in tracking and follow-up with



Roxanna Garcia, MD, MPH

Fogarty Fellow:	2019-2020
U.S. institution:	Northwestern University
Foreign institution:	Universidad Peruana Cayetano Heredia
Research topic:	Neurosurgery
Current affiliation:	Feinberg School of Medicine, Northwestern University

patients. Many hospitals her team studied, even in very populated cities, lacked the tools, workforce, and institutional support needed to perform a basic craniotomy, a potentially life-saving procedure for patients suffering from subdural hematomas. This condition, when blood collects between the covering of the brain (dura) and the surface of the brain, occurs in up to 25% of patients suffering a brain injury, and can be deadly if not treated quickly.

Ultimately, her team recommended expanding access to the literature on neurosurgery. This would help to explain the disparities in access to neurosurgical care in lower resource settings and to prevent publication bias—selective publication of research studies based on results, where studies with positive outcomes are favored over those with negative outcomes.

Today, Garcia serves as an assistant professor of neurological surgery at Northwestern University's Feinberg School of Medicine with about six more years before officially becoming a board-certified neurosurgeon. She sits on several international neurosurgical committees, including the World Federation for Neurosurgical Societies. Founded in 1955, it is one of the oldest and largest international neurosurgery organizations. As a part of this global group, she is one of 10 neurosurgeons who work to strategize targets for improving neurosurgical care in collaboration with WHO partners.

She advises future trainees, especially those interested in neurosurgery, to "embrace the challenges in your personal and academic life. No one is immune, but if you stay positive and continue to network and connect with mentors, it can change your life."

PURNIMA MADHIVANAN, MBBS, PHD, MPH

Dr. Purnima Madhivanan, associate professor at the Mel & Enid College of Public Health at University of Arizona, trained as a physician at Government Medical College in Mysore, India. Afterwards, she earned an MPH and a PhD in epidemiology from the University of California, Berkeley. While writing her dissertation, she established the Public Health Research Institute of India (PHRII); PHRII's Mysore-based reproductive health clinic has delivered services to more than 24,000 low-income women living in the district since 2005. She is principal investigator on the Global Health Equity Scholars Training Program, a collaboration of Yale, Stanford, University of Arizona, and University of California, Berkeley. Her research includes working with Hispanic populations in Arizona.



What is community-based participatory research (CBPR)?

The most important feature of CBPR is its fundamental focus on creating health equity in communities that may be affected by social, structural and environmental racism. There is a tendency for people to define CBPR as just another research method to be used in every situation, but I disagree. In my way of interpreting CBPR, it is a community-building approach, a methodology that recognizes community as a unit with its own identity, strengths and resources already in place. CBPR is asset-focused. It begins with an idea that is positive, instead of “Oh, this community does not have this, so let’s bring that to them.” CBPR identifies a community’s strengths and then builds on those strengths.

You see the individuality of communities, do you also see commonalities?

There are many commonalities! For instance, there are people here in Arizona who are exposed to high rates of pesticides in their drinking water. All the mining here means we have a lot of toxic metals in our soil and in our environment. They also have a higher risk of developing Alzheimer’s, Parkinson’s, and multiple sclerosis. This community is distinct, yet it shares some basic characteristics with other communities with similar problems, like poverty, low levels of health literacy, discrimination, systemic racism, and a lack of medical care.

Such commonalities are important but each time we approach a new community, we must prioritize the things that are important to that community. They might share similar issues as others, but how they prioritize them might be different. So even if you think you know what should be done and the order of steps to be taken, it’s more about empowering an individual community to voice and solve its own problems.

You work at the intersection of infectious and chronic diseases: please explain.

Cervical cancer is the fourth most common cancer among women globally with about 600,000 new cases and about 300,000 deaths each year. In India alone, we have about 100,000 new cervical cancer cases and 72,000 deaths annually. It is a persistent infection with a virus called human papillomavirus (HPV)—the high-risk HPV strain—that leads to cancer. HPV is an infection, cervical cancer is a chronic disease, so the intersection between the two is significant. We’re seeing more and more examples of viruses causing cancer, including Epstein-Barr, hepatitis B, hepatitis C and human herpes virus 8 (also known as Kaposi’s sarcoma herpesvirus).

A lot of my work has been about identifying infection so that we can prevent cancer by vaccinations (primary prevention) or screening (secondary prevention). Now that we have a vaccine for hepatitis B, let’s make sure everybody’s vaccinated; there’s a vaccine for HPV, let’s get that into every 9-year-old—that’s my focus.

How has implementation science influenced you?

The field of implementation research understands that use of research knowledge, not just production of knowledge, is a primary concern and so implementation scientists ask a unique set of questions: Are we working with the communities to formally define an implementation process? Who is the primary audience? How do we plan to reach them? Over time, practices in the field have become more formalized with researchers using evidence-based interventions to change health behaviors across communities. In many ways, I’ve been doing implementation science all along. Now, though, I plan to formalize implementation research methodology in my work and I’m going to be more intentional about these methods as I move forward with my research.

Division of International Epidemiology and Population Studies Research Roundup

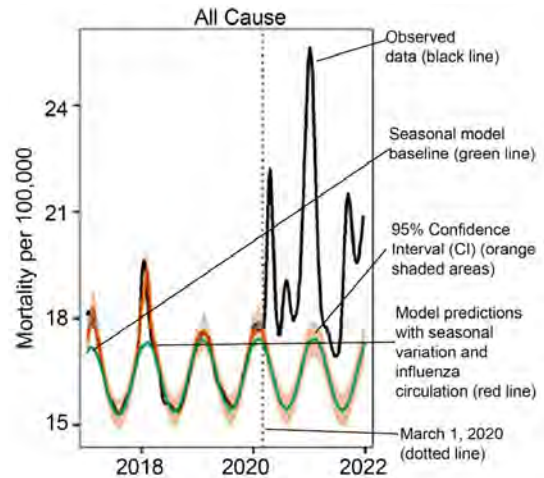
Between January and November 2023, Fogarty's Division of International Epidemiology and Population Studies (DEIPS) has published 25 studies in peer-reviewed journals. The following pages summarize the team's significant contribution to scientific research on a range of topics related to both domestic and global health.

Examining impact of COVID-19 on mortality in the U.S.

Senior author Cécile Viboud and her colleagues examined the impacts of the COVID-19 pandemic on U.S. mortality in this *eLife* study. At the end of January 2023, Johns Hopkins University reported 1,056,000 total U.S. deaths due to COVID-19, yet some scientists suggest this figure is not high enough. Excess mortality methodologies, which measure increases in mortality over a historical baseline, have been used for more than a century to capture the full scope of infectious disease events as well as of heatwaves and earthquakes. Here, Viboud and her co-authors aimed to disentangle direct and indirect mortality impacts of the pandemic in the U.S. by using regression models and synchronicity analyses.

“Direct effects” of COVID-19, the authors explain, are those deaths that result from SARS-CoV-2 infection and its complications as well as those deaths sparked by viral infection. For instance, a rise in diabetes mortality would be expected to coincide with a rise in COVID-19 cases because some diabetic patients would have died due to an undetected SARS-CoV-2 infection triggering their condition—just as every year deaths from chronic conditions rise alongside seasonal flu deaths. “Indirect effects,” on the other hand, are both the positive and negative changes in mortality that are not linked to an actual SARS-CoV-2 infection during the pandemic period. Possible reasons for these changes include avoidance of health care systems, stressed health care systems, mental health issues in families of severely affected COVID-19 patients, societal disruptions, decreased social interaction that suppresses circulation of endemic pathogens, and decreased air

The authors estimate there were 102,800 excess deaths from external causes from March 1, 2020, to January 1, 2022



pollution. Indirect pandemic impacts on mental health, violence, and addiction remain debated, especially since these potentially large effects on mortality may or may not coincide (timewise) with COVID-19 waves.

In the U.S., the trajectory and experience of the COVID-19 pandemic varied greatly depending on the region and time period. There were also inconsistencies in the interventions implemented in each region. These differences provide an opportunity to separate the contributions of viral infection from other drivers of mortality. To separate direct consequences of SARS-CoV-2 infection on age-specific, state-specific and cause-specific mortality from indirect consequences associated with hospital strain and interventions, the authors applied time series analytic approaches to four large waves of COVID-19 from March 1, 2020, to January 1, 2022.

The pandemic's direct and indirect effects varied substantially by chronic condition and age group, the authors estimated. Somewhere in the range of 65% to 94% of the rise in all-cause mortality could be statistically linked to SARS-CoV-2 activity. Mortality in children and young adults and mortality from accidents, injuries, drug overdoses, assaults, and homicides, showed a marked relationship with COVID-19 interventions, supporting the idea that indirect pandemic effects (unrelated to an actual SARS-CoV-2 infection) increased death rates. The authors' most striking finding is an estimated 112,200 excess deaths in individuals 25 to 44 years old by January 1, 2022—of these not even a third are ascribed to COVID-19 in the official statistics.

Article title: Direct and indirect mortality impacts of the COVID-19 pandemic in the United States, March 1, 2020 to January 1, 2022

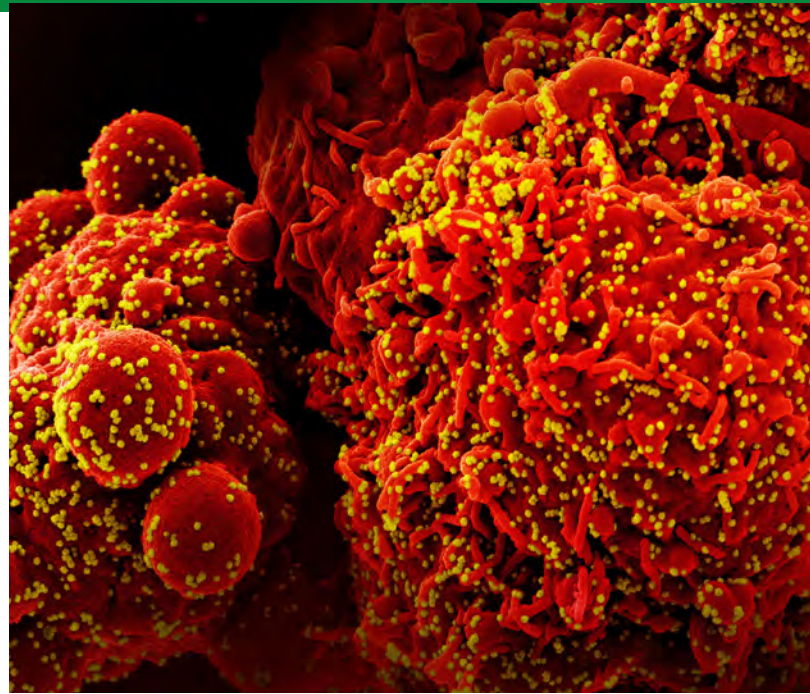
Studying COVID-19 in South Africa sheds light on how immunity contributes to variant success

First author Dr. Kaiyuan Sun was joined by Dr. Cécile Viboud and colleagues from the CDC, Johns Hopkins University, and South African academics and institutions for this *Nature Communications* study.

SARS-CoV-2's rapid evolution throughout the pandemic has been one of the virus's most prominent features. Every few months new variants have emerged to become dominant globally. To date, the World Health Organization has classified five SARS-CoV-2 lineages as variants of concern (VOCs), including Alpha, Beta, Gamma, Delta and Omicron. The selective advantage of each new variant (and its subvariants) is shaped in part by host population immunity. As of August 1, 2022, South Africa had experienced five SARS-CoV-2 epidemic waves. Scientists suggest the Beta VOC and Omicron subvariants BA.1, BA.4 and BA.5 are likely to have emerged in the region. For this reason, detailed studies of South Africa's immunologic landscape could provide a unique perspective on how immunity contributes to variant success.

For data, the authors turned to a prospective study of roughly 200 randomly selected South African households, half of which live in a rural community in Mpumalanga Province, the other half in an urban community in North West Province. Participants in the PHIRST-C study—the Prospective Household study of SARS-CoV-2, Influenza, and Respiratory Syncytial virus community burden, Transmission dynamics and viral interaction in South Africa study—were visited twice-weekly for collection of nasal swabs and information on symptoms, and every two months for blood draws. PHIRST-C seeks to answer various questions, including: Who is most at risk for severe illness? Can asymptomatic individuals transmit the virus? How is SARS-CoV-2 influenced by other respiratory viruses, including flu? How do age and HIV-infection affect transmission and symptoms?

Sun and his co-authors quantified changes in immunologic exposure to SARS-CoV-2 across the population and over time and compared Omicron's epidemiology to that of prior variants. The team found the Omicron wave infected 58% and 65% of the population in the study's urban and rural cohorts, respectively. Re-infections and vaccine breakthrough infections accounted for more than half of the Omicron infections, the researchers noted. After adjusting for prior immunity and other factors, they estimated that people were more than twice as likely to get infected during Omicron than Delta; and relaxing



Colorized scanning electron micrograph of a cell (red) infected with the Omicron strain of SARS-CoV-2 virus particles (yellow), isolated from a patient sample.

Image courtesy of NIAID

nonpharmaceutical interventions likely contributed to this higher risk. Overall, the Omicron wave had a significantly higher attack rate in South Africa compared to previously circulating strains. Dr. David Spiro, director of Fogarty's Division of International Epidemiology and Population Studies, commented: "This study showcases some of the cutting-edge research recognized as typical of our team by others in the field."

Article title: Rapidly shifting immunologic landscape and severity of SARS-CoV-2 in the Omicron era in South Africa

Other articles of note

Understanding the diversity and relatedness of early Omicron strains in Pakistan

Drs. David Spiro, Nidia Trovão and Zeba Rasmussen contributed to this BMC Genomics study that sought to understand the diversity and phylogenetic relatedness of SARS-CoV-2 strains in various regions of Pakistan. The team analyzed data on 276,525 COVID-19 cases and 1,031 genomes sequenced from December 2021 to August 2022. They found the highest case numbers and deaths recorded in Sindh and Punjab, Pakistan's most populous provinces. Omicron variants comprised 93% of all genomes, with subvariants BA.2 (32.6%) and BA.5 (38.4%) predominating. Analysis identified Sindh as a hotspot for viral dissemination.

Article title: Sequential viral introductions and spread of BA.1 across Pakistan provinces during the Omicron wave

Exploring intercontinental movement of influenza among migrating aquatic birds

Dr. Nídia Trovão co-authored this paper exploring intercontinental movement and reassortment of influenza A viruses (IAV) circulating among aquatic birds that migrate to breeding zones in the Arctic and sub-Arctic. Between May 2010 and February 2018, the team obtained isolates from various species of seabirds, shorebirds and waterfowl plus samplings of avian fecal material from locations throughout Iceland, which connects the east and north Atlantic flyways. Trovão and her co-authors stated in *Molecular Ecology*, “Gulls play an outsized role as sinks of influenza A viruses from other avian hosts prior to onward migration.”

Article title: *Global dissemination of influenza A virus is driven by wild bird migration through arctic and subarctic zones*

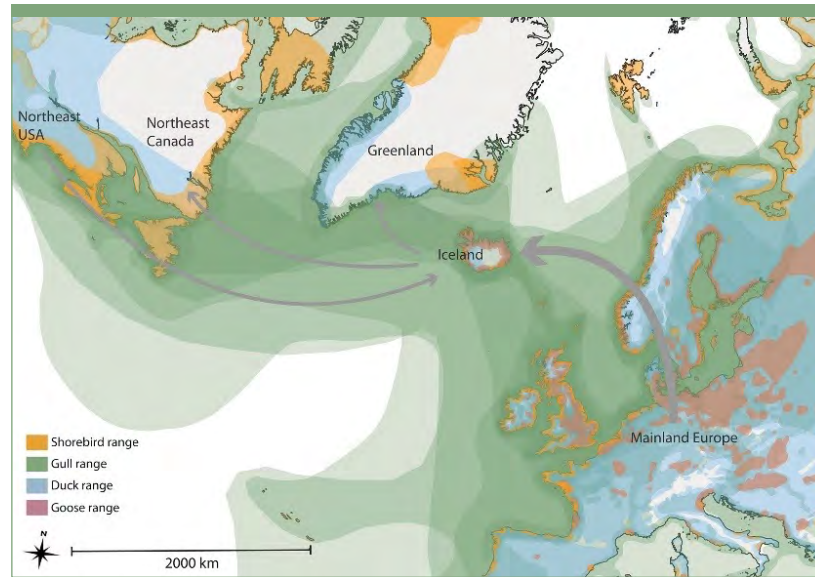
Exploring hotspots of mutation in bacterial genomes

Dr. Joshua Cherry published this exploration of bacterial mutation in *Genome Biology and Evolution*. The rate of mutation is known to vary across genome position, yet local sequence context can affect this rate, he notes. Preceding runs of three or more G residues greatly increase the rate of T to G mutation. The strength of this effect increases with the length of the run, a phenomenon observed in all bacteria analyzed yet strongest in *Salmonella* (and nearly as strong in *E. coli*).

Three studies from the Household Air Pollution Intervention Network (HAPIN) trial

Reducing household air pollution requires nearly exclusive use of clean cooking fuels. HAPIN trial participants—pregnant women in Guatemala, India, Peru, and Rwanda—either received a liquefied petroleum gas (LPG) stove intervention (1,590 women) or continued cooking with traditional stoves (1,605). The intervention included a free stove, unlimited supply of LPG delivered to the home, repairs, and behavioral messaging. In interven-

Two large black pots used for cooking over a wood fire in Eswatini.



A map showing migratory ranges for types of birds that are hosts for various influenza A viruses.

In *Salmonella*, a G run of length three increases the mutation rate by a factor of (approximately) 26, a run of length four increases it by a factor of (approximately) 100, while runs of five or more increase it by a factor of more than 400 (on average). This effect is much stronger when the T is on the leading rather than the lagging strand of DNA replication.

Article title: *T Residues Preceded by Runs of G Are Hotspots of T to G Mutation in Bacteria*

tion households, traditional stoves were used a median of 0.4% of all monitored days; pre- and post-birth data showed no significant differences in adherence. Fogarty’s Dr. Joshua Rosenthal co-authored this study published in *Environment International*.

Article title: *Fidelity and adherence to a liquefied petroleum gas stove and fuel intervention: The multi-country Household*

Dr. Rosenthal also co-authored two additional HAPIN study articles.

Article title: *Effects of a LPG stove and fuel intervention on adverse maternal outcomes: A multi-country randomized controlled trial conducted by the Household Air Pollution Intervention Network (HAPIN)*
Publication: *Environment International*

Article title: *Exposure-response relationships for personal exposure to fine particulate matter (PM2.5), carbon monoxide, and black carbon and birthweight: an observational analysis of the multicountry Household Air Pollution Intervention Network (HAPIN) trial.*
Publication: *The Lancet—Planetary Health*

Additional Publications

Transmission Dynamics and Epidemiological Characteristics of the SARS-CoV-2 Delta Variant – Hunan Province, China, 2021

- Fogarty author: Kaiyuan Sun
- Publication: China CDC Weekly

Accelerating Bayesian inference of dependency between mixed-type biological traits

- Fogarty authors: Nídia Trovão, Joshua Cherry
- Publication: PLoS Computational Biology

Restriction Endonuclease-Based Modification-Dependent Enrichment (REMoDE) of DNA for Metagenomic Sequencing

- Fogarty author: Joshua Cherry
- Publication: Applied and Environmental Microbiology

Context-dependent representation of within- and between-model uncertainty: aggregating probabilistic predictions in infectious disease epidemiology

- Fogarty author: Cécile Viboud
- Publication: The Journal of the Royal Society Interface

Estimating the time-varying reproduction number for COVID-19 in South Africa during the first four waves using multiple measures of incidence for public and private sectors across four waves

- Fogarty author: Cécile Viboud
- Publication: PLoS One

Application of Phylodynamic Tools to Inform the Public Health Response to COVID-19: Qualitative Analysis of Expert Opinions

- Fogarty author: Nídia Trovão
- Publication: MIR Formative Research

Core mitochondrial genes are down-regulated during SARS-CoV-2 infection of rodent and human hosts

- Fogarty author: Nídia Trovão
- Publication: Science

*Translational Medicine
Host heterogeneity and epistasis explain punctuated evolution of SARS-CoV-2*

- Fogarty author: Cécile Viboud
- Publication: PLoS

*Computational Biology
Multiple models for outbreak decision support in the face of uncertainty*

- Fogarty author: Cécile Viboud
- Publication: PNAS

Leveraging Serosurveillance and Postmortem Surveillance to Quantify the Impact of Coronavirus Disease 2019 in Africa

- Fogarty authors: Cécile Viboud
- Publication: Clinical Infectious Diseases

Impact of SARS-CoV-2 vaccination of children ages 5–11 years on COVID-19 disease burden and resilience to new variants in the United States, November 2021–March 2022: a multi-model study

- Fogarty author: Cécile Viboud
- Publication: The Lancet Regional Health—Americas

Behavioral factors and SARS-CoV-2 transmission heterogeneity within a household cohort in Costa Rica

- Fogarty authors: Kaiyuan Sun, Cécile Viboud
- Publication: Communications Medicine

Inferring the differences in incubation-period and generation-interval distributions of the Delta and Omicron variants of SARS-CoV-2

- Fogarty authors: Kaiyuan Sun, Cécile Viboud
- Publication: PNAS

A Retrospective Modeling Study of the Targeted Non-Pharmaceutical Interventions During the Xinfadi Outbreak in the Early Stage of the COVID-19 Pandemic – Beijing, China, 2020

- Fogarty author: Kaiyuan Sun
- Publication: China CDC Weekly study

Evolutionary and spatiotemporal analyses reveal multiple introductions and cryptic transmission of SARS-CoV-2 VOC/VOI in Malta

- Fogarty author: Nídia Trovão
- Publication: Microbiology Spectrum

Predictors of severity of influenza-related hospitalizations: Results from the Global Influenza Hospital Surveillance Network (GIHSN)

- Fogarty author: Cécile Viboud
- Publication: The Journal of Infectious Diseases

Global and national influenza-associated hospitalization rates: Estimates for 40 countries and administrative regions

- Fogarty author: Cécile Viboud
- Publication: Journal of Global Health

DIRECTOR'S COLUMN

By Dr. Peter Kilmarx, Acting Director, Fogarty International Center

In Memoriam: Robert B. Eiss –1954-2023



Rob Eiss, a long-term member of the Fogarty team, passed away in late October.

It is with a heavy heart that I remember and celebrate our dear colleague and friend, Rob Eiss, who passed away in late October. Rob was a dedicated, long-time member of our team and a quietly wise, remarkably knowledgeable, and profoundly effective advocate for global health research partnerships.

Rob served Fogarty in a variety of capacities beginning in 1993, starting as a program officer in the Division of International Relations, then serving as director of the Office of International Science Policy and Analysis. From 2000 to 2003 he took on the role of associate director for planning and budget at the White House Office of National Drug Control Policy, and from 2005 to 2007 he served as the CEO of the Center for Management of Intellectual Property in Health Research, a non-profit based in Oxford, UK, that partnered with the Medical Research Council of South Africa. Rob returned to Fogarty in 2007, serving as senior advisor to Fogarty Director Dr. Roger Glass and, following Roger's retirement in January, Rob became my advisor.

Rob was a leader, a negotiator, an organizer, a representative, and a visionary, who understood Fogarty and recognized the vital potential for global health research partnerships. His early, significant contribution was leading the creation of Fogarty's first strategic plan for 2000-2003, which reoriented our programs and our focus toward the persistent burdens of communicable and emerging chronic diseases in low- and middle-income countries. This plan provided the analytic framework for NIH investments in Africa that ultimately led to the Multilateral Initiative on Malaria. Rob had a rare ability to quickly synthesize information, apply his unique perspective, and then discover fresh opportunities for the advancement of NIH's global mission.

Before the COVID-19 pandemic, Rob and I shared adjacent offices in the Fogarty Director's office suite.

Whenever I felt stymied with some seemingly intractable problem of global health science, diplomacy, or advocacy, I would walk up to Rob's door. He always made time for me, and always had clear insights on the central issues, the historical context, the multiple viewpoints to be considered, and the best way forward.

Rob's contributions were not limited to Fogarty. He also served as a member of the NIH global health research team and as an advisor to former NIH Director Dr. Francis Collins. As a representative at the National Science and Technology Council Subcommittee on International Science & Technology Coordination, he ensured that global health was prominently featured in the biennial report on international cooperation. As a lead writer for the National Science and Technology Council, he authored reports on U.S. government science and technology relations with Russia as well as on European economic integration and science

and technology cooperation. Rob also advised the WHO Science Council and worked on an initiative to engage the public and private sector in strengthening the genomic research workforce in Africa, which has since expanded significantly. He also was the NIH lead on issues related to the EU General Data Protection Regulation, a long-term challenge for international research collaboration requiring very high-level diplomacy that Rob handled with remarkable skill and persistence.



Rob Eiss (left) and Peter Kilmarx (right) in an undated photo.

Throughout his admirable career, Rob demonstrated an unwavering commitment to advancing collaborations in pursuit of global health equity. His contributions were not only significant in their impact but also characterized by a humility and quiet determination that left a lasting impression on all who had the privilege of working with him. In the last month I have heard from colleagues from all over NIH, other U.S. agencies, academia, and around the world about Rob's important contributions, his admirable qualities, and their sadness at his loss.



Monica Bertagnolli confirmed as NIH Director

Dr. Monica Bertagnolli has been confirmed as the 17th director of NIH. Bertagnolli is the first surgeon and the second woman to hold this prestigious position. A physician-scientist, Bertagnolli was most recently director of the National Cancer Institute. She was chief of surgical oncology at the Dana-Farber Brigham Cancer Center before joining NIH.



Fogarty mentor Rose Leke receives Virchow Prize

Dr. Rose Leke, who has served as a mentor for Fogarty trainees for many years, has been awarded the 2023 Virchow Prize for Global Health. She was awarded for her exceptional lifetime achievements in strengthening global health and pioneering infectious disease research towards a malaria-free world and for her relentless dedication to advancing gender equality.



Wright named NIH Climate Scholar for Fogarty

Caradee Wright, a chief specialist scientist at the South African Medical Research Council and adjunct professor at the University of Pretoria and the University of Johannesburg, has been named an NIH Climate Scholar for Fogarty. Her research focuses on environmental health epidemiology, with an emphasis on climate change and air pollution risk factors in Africa.



Alfred Mteta, AFREHealth vice president, passes away

AFREHealth vice president and Fogarty grant recipient, Alfred Mteta, has passed away. An accomplished consultant surgeon with over 30 years of experience in health care and medical education, Mteta was a principal investigator on Fogarty's MEPI program and served as the CEO of Bugando Medical Centre.



Global Virus Network names new president

Dr. Sten Vermund, longtime Fogarty grantee and former dean of the Yale School of Public Health, has been named president of the Global Virus Network (GVN). Vermund brings years of experience in researching health care access, adolescent sexual and reproductive health, HIV transmission prevention, and health policy.

GPMB reports on pandemic preparedness

The Global Preparedness Monitoring Board's report, "A Fragile State of Preparedness," reveals global pandemic preparedness inadequacies despite post-COVID progress. The report emphasizes the need for political commitment and increased resources to bolster global readiness. The board recommends improvements in monitoring, financing, and supply chains.

Lancet calls for health-centered climate action

The 2023 *Lancet Countdown* report underscores the escalating health risks of climate change, revealing the impacts of global temperature increases on rising health inequities and economic losses, and projects dire consequences of further inaction. The report urges policymakers to take a health-focused approach to climate action for the future.

Clean cooking alliance launches digital magazine

The Clean Cooking Alliance (CCA) launched a new digital magazine, *Vantage Point: Perspectives on Clean Cooking*. This interactive publication aims to shed light on women's crucial role in shaping the clean cooking landscape and explore financial and policy solutions needed to increase access to clean cooking around the world.

TDR unveils 2024-2029 strategy

The WHO's Special Programme for Research and Training in Tropical Diseases (TDR) released its 2024-2029 strategy emphasizing the role of implementation research in public health emergencies and overall system resilience. TDR will also focus on supporting country-led research, improving access to health interventions, and strengthening health systems.

USAID expands Feed the Future program

USAID is investing \$79 million to expand the Feed the Future Innovation Labs network. These efforts aim to empower small-scale farmers, foster resilience to climate change, and enhance agricultural productivity in vulnerable regions promoting One Health strategies for livestock and human well-being.

Funding Opportunity Announcement	Deadline	Details
Reducing Stigma to Improve HIV/AIDS Prevention, Treatment and Care in LMICs	Dec 20, 2023	go.nih.gov/HIVStigmaReduction
Japanese Research Fellowships (JSPS)	Feb 16, 2024	go.nih.gov/JapanFellowships
International Bioethics Training	Jun 6, 2024	go.nih.gov/BioethicsTraining

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

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NIH revises grant review process to reduce bias

The National Institutes of Health (NIH) has revamped its grant review process to create an environment where the most promising and innovative research projects receive the support they deserve. The new process focuses on scientific merit and reflects NIH's commitment to reducing reputational bias in its evaluation of grant proposals. The new framework will be implemented for grant applications received on or after Jan. 25, 2025.

In the current system, five criteria are scored individually using a common scale. The new, simplified review framework reorganizes these criteria into three factors. The first two factors—the importance of research and rigor and feasibility—are scored using a common scale. The third and final factor—expertise and resources—is evaluated for sufficiency only and not given a numeric score.

The intent is to reduce the weight of an institution's or investigator's reputation and elevate the merit of the proposed research, ideally creating a fair and equitable system that provides equal opportunities for all researchers.

Learn more about the upcoming changes to the NIH grant review process on grants.nih.gov.

