INSIDE STANFORD MEDICINE

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The new issue of *Stanford Medicine* magazine details efforts to improve global health.

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Tracking insect that spreads harmful viruses

By Erin Digitale

In 2016, Stanford infectious disease expert Desiree LaBeaud, MD, sent teams of schoolchildren to hunt for mosquito larvae and pupae around their homes in coastal Kenya. In particular, they were looking for immature Aedes aegypti mosquitoes.

"The kids would say, 'We found tons. They're in all these piles of trash at the end of every block,'" said LaBeaud, associate professor of pediatrics at the School of Medicine.

LaBeaud remembers thinking, "Oh, God, now what are we going to do?"

The black-and-white-striped mosquitoes don't spread malaria, the most famous mosquito-borne disease, but they spread several others, including dengue, chikungunya and Zika, which cause millions of human infections annually throughout the world.

And they adore garbage. Unfortunately, the rural Kenyan communities lacked trash collection and recycling programs. Much of the accumulated litter consisted of discarded, open plastic containers that hold water, where more than 80 percent of the mosquito breeding was taking place, the children and scientists discovered.

For the past several years, LaBeaud's team has been studying diseases spread by Aedes aegypti and working to reduce outbreaks around the world. Dengue kills about 20,000 people every year; Zika can cause pregnancy loss and serious birth defects; and chikungunya produces debilitating, long-term arthritis in many people. Drugs and vaccines against the viruses are lacking, so there is a pressing need to understand how mosquitoes and humans interact in order to predict and prevent outbreaks. This is what LaBeaud has set out to do.

Trained as a pediatric infectious disease specialist, LaBeaud said the work requires her to be "half ecologist, half anthropologist." A variety of factors — such as trash collection practices, household water sources and neighborhood violence levels — can all influence local risk for the viruses in the developing world, her team is learning.

Mosquito-borne illnesses are transmitted by intimate chains of insects and humans: An infected mosquito bites a person, who gets sick and is bitten by other mosquitoes, which get infected and bite more people. Most people recover eventually, but the mosquitoes don't; an infected insect is thought to keep spreading disease until it dies.

Viruses on the move

LaBeaud's interest in mosquito-borne diseases began on a 2002 trip to Laos. She had recently finished medical school and was completing pediatrics training at Rainbow Babies & Children's Hospital in Cleveland, where her residency program included an international health track with rotations in developing countries. Her two-month rotation to Southeast Asia overlapped with monsoon season and a large dengue outbreak.

"I treated a lot of children with dengue and saw a lot of children die from dengue," LaBeaud said. Although many people make a full recovery, dengue hits hard in vulnerable populations, including babies and kids. It can cause life-threatening hemorrhagic fever — with low blood platelet See MOSQUITO, page 3

BRIAN SMALE

Desiree LaBeaud leads a team that studies diseases spread by Aedes aegypti mosquitoes and that works to reduce outbreaks around the world.

Congenital heart defects vastly increase the risk of heart problems later in life

By Mandy Erickson

An infant born with a relatively simple heart defect is far more likely to develop heart problems as an adult, researchers at the School of Medicine have discovered.

The risk is so great that someone born with a heart defect who has a heart-healthy lifestyle is twice as likely to develop heart problems as someone born without a defect who has a heart-averse lifestyle.

"All of us in cardiology recognize that people with complex disease need follow-up care throughout their lives," said James Priest, MD, assistant professor of pediatric cardiology. "But for the simple problems, we've been thinking that once you close the hole or fix the valve, these patients are good to go."

KATERYNA KON/SHUTTERSTOCK.COM

The research findings suggest that the medical community should watch adults who were born with heart defects — even minor ones — more carefully. Medications and lifestyle changes may help prevent or delay major heart conditions, such as heart attacks, stroke, heart failure and atrial fibrillation.

A paper describing the research was published Feb. 28 in *Circulation*. Priest is the senior author; Priyanka Saha, a student at Harvard Medical School who was a research fellow at Stanford from 2017 to 2018, is the lead author.

Most common congenital condition

About 1 percent of infants are born with heart defects, the most common congenital condition. Those with less-complex defects, such as a hole in the heart or a faulty valve, nearly always survive into adulthood, sometimes unaware of the defect until later in life.

To conduct their research, Priest, Saha and their colleagues mined data from the U.K. See HEART, page 2

Brain response to voice of mom different in kids with autism, study finds

By Erin Digitale

For most children, the sound of their mother's voice triggers brain activity patterns distinct from those triggered by an unfamiliar voice. But the unique brain response to mom's voice is greatly diminished in children with autism, according to a new study from the School of Medicine.

The diminished response was seen on fMRI brain scans in face-processing regions and learning and memory centers, as well as in brain networks that process rewards and prioritize different stimuli as important.

The findings were published Feb. 26 in *eLife*.

"Kids with autism often tune out from the voices around them, and we haven't known why," said the study's lead author, Dan Abrams, PhD, clinical assistant professor of psychiatry and behavioral sciences at Stanford. "It's still an open question how this contributes to their overall difficulties with social communication."

The results suggest that the brains of children with autism are not wired to easily tune into mom's voice, Abrams said. The study also found that the degree of social communication impairment in individual children with autism was correlated with See AUTISM, page 2

Heart

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Biobank, which includes health data on 500,000 British residents aged 37 to 73 during the biobank's recruitment period from 2006 to 2010. They found 2,006 people who had mild congenital heart defects.

For reasons the researchers don't understand, the members of this group were slightly more likely to be obese, to smoke, to have high blood pressure and to have diabetes — all factors that increase the risk for cardiovascular problems.

It's unclear why adults who were born with heart defects suffer more heart disease.

However, even after adjusting for those risk factors, they found that those born with mild heart defects were 13 times as likely to develop heart failure or atrial fibrillation, five times as likely to have a stroke, and twice as likely to suffer a heart attack than those born without heart defects.

Adult survivors of congenital heart defects with fewer risk factors for heart disease — such as smoking, having high blood pressure and being obese — fared better than those who had more risk factors. Those with a heart-healthy lifestyle were about a third less likely to develop heart conditions than those with five or more heart disease risk factors.

A mystery

It's unclear why adults who were born with heart defects suffer more heart disease, the study said. The researchers propose several possibilities, including the stress of surgery, genetic predisposition and cellular dysfunction.

"Is it the surgery? Could it be the medications? Or is it something intrinsic to having congenital heart disease? We don't know," Priest said, adding, "We don't know why infants have congenital heart disease to begin with."

Saha said further research into why congenital heart disease leads to adult heart problems could help shape follow-up care. But physicians can begin helping these patients right away by providing more surveillance.

NORBERT VON DER GROEBEN

James Priest is the senior author of a study that reports even a relatively simple heart defect makes a patient much more likely to develop cardiovascular disease as an adult.

"That's something that can change right now," she said. "We can start connecting them with cardiology specialists."

Other Stanford co-authors of the study are Praneetha Potiny, life sciences research assistant; Joseph Rigdon, PhD, research engineer; Melissa Morello, MD, fellow in adult congenital heart disease; Catherine Tcheandjieu, PhD, DVM, postdoctoral scholar; Anitra Romfh, MD, clinical assistant professor of pediatric cardiology; Susan Fernandes, LPD, PA-C, clinical professor of pediatric cardiology; Doff McElhinney, MD, professor of cardiothoracic surgery; Daniel Bernstein, MD, professor of pediatric cardiology; George Lui, MD, clinical associate professor of cardiovascular medicine; Gary Shaw, DrPH, professor of pediatrics; and Erik Ingelsson, MD, PhD, professor of cardiovascular medicine.

Priest is a member of the Stanford Cardiovascular Institute, the Stanford Maternal & Child Health Research Institute and the Wu Tsai Neurosciences Institute at Stanford.

The work was funded by the National Institutes of Health and the Sarnoff Cardiovascular Research Foundation.

Stanford's departments of Pediatrics and of Cardiothoracic Surgery also supported the work. **ISM**

Autism

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the degree of abnormality in their brain responses to their mother's voice.

"This study is giving us a handle on vocal stimuli that we have to make more engaging for a child with autism," said the study's senior author, Vinod Menon, PhD, the Rachael L. and Walter F. Nichols, MD, Professor and professor of psychiatry and behavioral sciences. "We now have a template for targeting specific neural circuits with cognitive therapies."

MONKEY BUSINESS IMAGES/SHUTTERSTOCK.COM

For most children, their mother's voice is an important social cue.

An important social cue

Mom's voice is an important social cue for most children. For instance, tiny babies recognize and are soothed by their mother's voice, while young teenagers are more comforted by words of reassurance spoken by their mothers than the same words sent by their mothers via text message, prior research has shown. The response to mom's voice has a distinct brain-activation signature in children without autism, a 2016 paper co-authored by Abrams and Menon demonstrated.

Autism is a developmental disorder that affects 1 in 59 children. It is characterized by social and communication difficulties, restricted interests and repetitive behaviors. The disorder exists on a spectrum, with some children more impaired than others.

The new study included 42 children ages 7 to 12. Half had autism, and the other half didn't. The children had their brains scanned using functional magnetic resonance imaging while listening to three different recorded sounds: their mother's voice; the voices of unfamiliar women; and nonvocal environmental sounds. In the voice recordings, the women said nonsense words to avoid activating language comprehension regions in the brain.

The researchers compared patterns of brain activation and brain network connectivity between the two groups of children. They also asked the children to identify whether each brief (956-millisecond) voice recording they heard came from their mother or an unfamiliar woman. Children without autism correctly identified their mothers' voices 97.5 percent of the time; those with autism identified their mothers' voices 87.8 percent of the time, a statistically significant difference.

Vinod Menon

The brain response to unfamiliar voices, when compared with the response to environmental sounds, was fairly similar in children with and without autism, although those with autism had less activity in one area of the auditory association cortex.

When comparing the brain response to mom's voice versus unfamiliar voices, children without autism had many more brain areas activated: Mom's voice preferentially lit up part of the hippocampus, a learning and memory region, as well as face-processing regions. Brain-connectivity patterns measured in a network that included auditory-processing regions, reward-processing regions and regions that determine the importance, or salience, of incoming information also distinguished children with autism from children without autism. The network impairments in individual children with autism were also linked to their individual level of social communication impairment.

"Kids with autism often tune out from the voices around them."

'Really striking relationship'

"There is this really striking relationship between the strength of activity and connectivity in reward and salience regions during voice processing and children's social communication activity," Abrams said. This suggests that brain responses to mom's voice are a key element for building social communication ability, he added.

The findings support the social motivation theory of autism, which suggests that social interaction is intrinsically less engaging for children with the disorder than those without it.

Many current autism therapies involve motivating children to engage in specific types of social interaction. It would be interesting to conduct future studies to see whether these therapies change the brain characteristics uncovered in this study, the researchers said.

"Mom's voice is the primal cue for social and language communication and learning," Menon said. "There is an underlying biological difference in the brain circuitry in autism, and this is a precision-learning signal we can target."

Other Stanford authors of the paper are Aarthi Padmanabhan, PhD, scientific research director in the Menon lab; former postdoctoral scholar Tianwen Chen, PhD; former research assistants Paola Odriozola and Amanda Baker; graduate student John Kochalka; and Jennifer Phillips, PhD, clinical associate professor of psychiatry and behavioral sciences.

Menon is a member of Stanford Bio-X, the Stanford Maternal & Child Health Research Institute and the Wu Tsai Neurosciences Institute at Stanford.

The research was supported by National Institutes of Health, the Singer Foundation and the Simons Foundation/SFARI.

Stanford's Department of Psychiatry and Behavioral Sciences also supported the work. **ISM**

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STANFORD MEDICINE

Mosquito

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levels and bleeding — as well as dangerous drops in blood pressure. "It's terrible to have to say, 'I'm sorry, I can't help,' especially being a pediatrician," she said.

The suffering of her young Laotian patients motivated LaBeaud to study outbreaks of neglected tropical diseases. After her residency, her pediatric infectious disease fellowship took her to Kenya, where she fell in love with the complexity of figuring out how mosquitoes, people and insect-borne viruses interact. "These viruses have both sneaky, insidious transmission and large, overwhelming outbreaks," she said.

LaBeaud soon learned that insect-borne viruses were on the move. Before 1970, severe dengue had been documented in nine countries. Today it's in more than 100 countries, putting more than 40 percent of the world's population at risk. Chikungunya used to be found only in Africa, Asia and India, but is now being reported in Europe and throughout the Americas. Zika has also become more widespread in recent years, causing a health emergency upon its 2015 arrival in Brazil, for example, where nearly 3,000 infants whose mothers were infected during pregnancy were born with microcephaly and other severe birth defects.

Vaccines for dengue, chikungunya and Zika are in development, but complexities of the viral biology and limited financial support for the research have slowed the work. LaBeaud realized that helping to illustrate the scope of the diseases might improve funding and could assist public health officials in targeting mosquito control efforts.

Hidden outbreaks

In their early stages, both dengue and chikungunya resemble malaria, a parasitic mosquito-borne disease that is widespread in many developing countries. Like malaria, dengue and chikungunya cause high fevers, headaches, chills and muscle aches — and because there are no cheap, accurate, rapid diagnostic tests, in some regions anyone who shows up at a health clinic with these symptoms is automatically diagnosed with malaria.

Since 2014, LaBeaud's team has been using polymerase chain reaction blood tests to look for genetic material from the dengue and chikungunya viruses and the malaria parasite in blood samples from children treated for fever at Kenyan health clinics. The scientists' early data confirm their suspicions that dengue and chikungunya have been hiding in plain sight.

"In some of our communities, 98 percent of the children have a bit of malaria DNA running through their veins," LaBeaud said, noting that up to 40 percent of the children with a fever-related illness have dengue or chikungunya viruses in their blood. Around a third of Kenyan kids who are sick with fevers actually have viral infections, she estimates. "That's huge news," she said. "Before this research, the Kenyan ministry of health didn't recognize that dengue and chikungunya were endemic in the country."

Identifying why children get sick is essential to effectively preventing outbreaks. In the past, mosquito-control efforts in Kenya were targeted only at malaria-carrying Anopheles mosquitoes, which bite at night and breed in vegetated areas such as rice fields and swamps. But Anopheles-specific prevention measures, such as sleeping under insecticide-treated bed nets, don't offer protection from dengue and chikungunya, which are transmitted by mosquitoes that bite during the day. Instead, it's important to target Aedes' favorite habitat, water containers.

"People don't recognize that there are lots of different mosquito species, and all the different mosquitoes have their own little mosquito behaviors," LaBeaud said.

Purpose matters

Even when mosquitoes' behaviors are thought to be well-understood, close examination of their interactions with people can yield surprises.

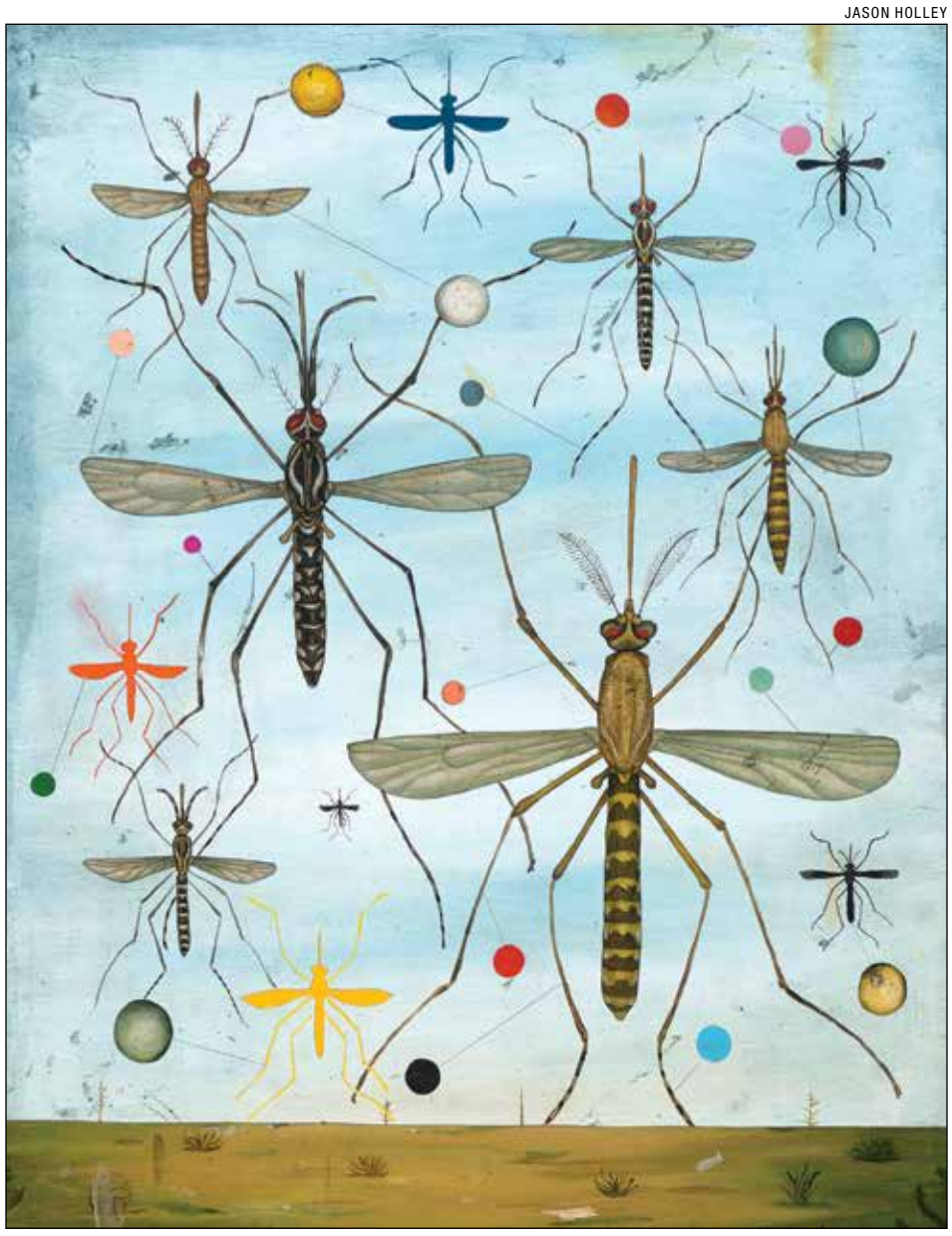
When LaBeaud and graduate student Jenna Forsyth decided to involve Kenyan school children in mapping where Aedes mosquitoes were breeding, they thought they knew what they'd find. They knew that Aedes mosquitoes like to breed in containers. In the rural region where the study was conducted, near Kenya's Indian Ocean coastline, people keep large household water containers on hand to protect themselves from the unreliability of local taps and wells. Because the mosquitoes don't fly very far — traveling within a radius of perhaps a few hundred yards over the course of their lives — the researchers figured that tracking their breeding sites with a house-to-house survey made sense.

"We went in thinking, 'It's going to be the prominent containers we know about, the big jerrycans that are 10 or 20 liters,'" Forsyth said. Instead, they discovered that 80 percent of mosquito breeding was happening in "containers of no purpose," many of which were trash. Other such containers were being kept in a family's yard "just in case they were needed."

"It turns out that a lot of the containers used for drinking and cooking don't sit around long enough for mosquitoes to breed," Forsyth said. When designing the next steps of the project, they realized they had to target those irregularly used containers. "It's meaningless if we just say, 'Dump out your buckets.'"

The researchers worked with local residents on taking actions that could reduce mosquito breeding, such as storing unused containers upside down. And they challenged 250 children involved in the study to see who could collect the most no-purpose containers. The kids collected 1,000 kilograms of plastic waste, consisting of more than 17,000 containers. They used 4,000 of the containers to sprout native tree seedlings, which were planted around their communities.

JASON HOLLEY



"We pivoted our study; the message really became about reducing and reusing plastics," Forsyth said. The team is repeating the study in an urban region of Kenya and has obtained funding to collaborate with faculty at the Technical University of Mombasa to study how local entrepreneurs can simultaneously reuse plastic waste and alleviate poverty.

"The project goal is to engage entrepreneurs to collect trash for profit, to set up something that will continue without us," said Amy Krystosik, PhD, a postdoctoral scholar with the LaBeaud lab who has been collaborating on the project. "We want to use innovation to get the community excited, to incentivize them to clean up the environment and protect their own health."

Feeding on violence

But sometimes the barriers to lowering disease risk have a completely different shape. Krystosik was a graduate student working in Cali, Colombia, when community members told her that local violence might be increasing the spread of mosquito-borne disease.

Cali, a city of 2.4 million, is among the most violent in the world, with homicide regularly ranking as one of its top two causes of death. And Cali's slums are full of mosquito habitat: Located near lagoons and rivers, they lack basic infrastructure and flood during the rainy season.

When Krystosik, then a PhD student at Kent State University, proposed surveying the slums for mosquitoes in 2014, Colombian public health experts told her it would be tricky. She'd have to get help from locals to navigate "invisible borders" between territories controlled by competing gangs.

Her interest piqued, she began a project that continued when she moved to LaBeaud's lab as a postdoctoral scholar in 2017. Using 2014-2016 data on homicides and cases of dengue, chikungunya and Zika, she mapped the overlap between community violence and illness in space and time.

The findings, published in 2018 in the *International Journal of Environmental Research and Public Health*, showed a statistically significant overlap between dengue infections and homicide risk. Homicides clustered in the central-eastern portion of the city, where dengue risk was also highest.

Using climate data

On-the-ground mosquito hunts, as informative as they can be, are challenging to carry out on a large scale. So the research team recently took another approach for predicting where disease outbreaks could occur: building mathematical models that depend on climate data.

Ultimately, the team would like to be able to use remotely sensed data — from weather satellites, for instance — to determine when and where mosquito-control strategies, such as pesticides, would be most effective.

"People don't want to spray all the time; it's expensive and labor-intensive," said postdoctoral scholar Jamie Caldwell, PhD, who is leading the work in collaboration with LaBeaud; Erin Mordecai, PhD, assistant professor of biology at Stanford; and Eric Lambin, PhD, professor of earth system science and a senior fellow at the Stanford Woods Institute for the Environment. Targeting mosquito control to exactly when and where it's needed could also reduce the chance that mosquitoes will become resistant to pesticides, as occurred with DDT. Such targeting strategies, Caldwell said, would mean the pesticides' effects are more likely to last longer. "We'll get more bang for our buck in lots of ways," she said.

In addition to improving the effectiveness of pesticide use, the models could help spur community education at the right time. There could be TV and radio ads, signs at doctors' offices or health clinics, and other outreach about what the mosquitoes look like and how to clean up possible habitats, LaBeaud said. Hospitals could also use climate prediction data to prepare for extra cases of illness, making sure they have supplies on hand to provide fluids to patients who become dehydrated, for instance.

"These diseases have really exponential spread, so anything you can do to prevent cases a few weeks before an outbreak can save a lot in terms of human health costs," LaBeaud said.

Caldwell is building models that incorporate data on ambient temperature, humidity and rainfall, as well as nonclimate factors such as degree of urbanization, land use and level of infrastructure. She's validating the models with data from Kenya and Ecuador, and testing to see whether remote data alone will be enough to drive accurate outbreak prediction there.

The models could also help predict where the diseases will go next.

"In many places, the climate is getting less suitable for malaria, but may be getting more suitable for dengue and chikungunya," Caldwell said.

That includes the United States. In 2017, the U.S. Centers for Disease Control and Prevention reported 156 cases of chikungunya, including 32 in California, and 437 cases of dengue, with 130 in California. Those illnesses were confined to international travelers and don't seem to have spread to U.S. mosquitoes — yet. But Aedes mosquitoes are here; their presence has been recorded in 220 counties in 28 states, and the CDC estimates that their potential range very likely covers all the Southern states, much of the Midwest and Southwest, and nearly all of California. Local transmission of Zika was reported in parts of Florida and Texas in 2016 and 2017, and although no transmission was documented in the continental United States during 2018, Zika could return.

"Humans can get anywhere in the world in 24 hours, and so can these infections," LaBeaud said. "They come in us. We go on vacation, the virus gets in our blood, we come home and, if the vectors are there, it's a perfect storm waiting to happen." ISM

Stanford Medicine magazine details efforts to improve health worldwide

By Patricia Hannon

Whether enlisting children in Kenya to scour neighborhoods for mosquito larvae or helping Zimbabwean children get treatment for chronic conditions, Stanford Medicine researchers and physicians who are taking on some of the world's most pressing health issues know they can't do it alone.

"We share this planet with billions of people, a rich panoply of cultures, languages, beliefs and interests. Yet amid this diversity, we also share a universal yearning: to enjoy healthy lives," Lloyd Minor, MD, dean of the School of Medicine, wrote in his letter introducing the new issue of *Stanford Medicine* magazine.

The issue explores Stanford's Medicine's collaborative efforts at home and abroad to battle conditions that are central to some of the world's overarching health concerns — poverty, pollution, mosquito-borne disease, a dearth of trained clinicians and limited access to care.

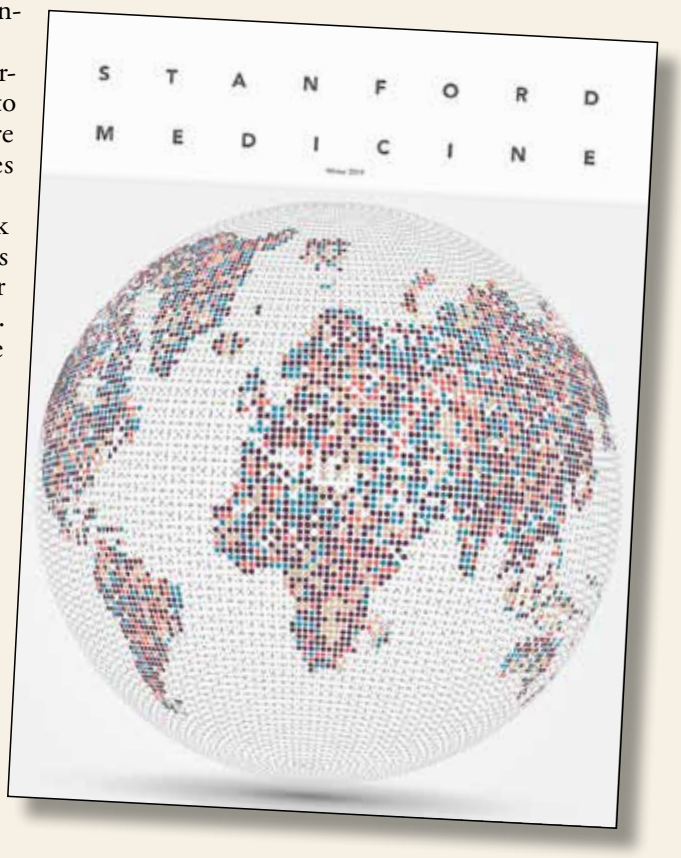
Many of the stories in the issue examine partnerships between clinicians, universities, businesses and government agencies to improve health internationally:

- While serving as an adviser in establishing the first pediatric ear, nose and throat clinic in Zimbabwe, a pediatric otolaryngologist witnesses the incredible demands that clinicians there face in treating children with conditions that have historically been neglected. Also, longtime partnerships are helping clinicians and educators at Stanford and in Zimbabwe learn from each other and improve health care in the process.
- An epidemiologist who has spent eight years in Bangladesh describes the challenge of reducing deadly air pollution in the country by convincing brick kiln operators to convert to cleaner brick-making technology.
- Working in Kenya, Colombia and the United States, an infectious disease expert and her colleagues aim to predict and prevent deadly outbreaks of diseases that insects spread by better understanding how mosquitoes and humans interact.
- A call to cultivate more women in leadership positions at medical institutions has led to a global movement among women in health care to take charge of improving health outcomes around the world.
- The first physician to lead the World Bank — Jim Yong Kim, MD — talks about initiatives to end poverty that call for investing in better education and health care for the poorest people.
- A program for medical residents who are interested in global health is designed to give them the skills and understanding they need to help develop solutions.
- A doctor and an engineer participating in a Stanford-India Biodesign Fellowship team up to invent a resuscitation device that improves on the cumbersome technique used to help newborns breathe on their own.

Also in this issue, read about researchers who are on a quest to learn why some pain becomes frustratingly chronic and agonizing, and how research they're doing on mice might provide answers that help patients.

And read about how the chemical interactions that lead to cell death could inspire therapies for such diseases as cancer, rheumatoid arthritis and multiple sclerosis.

Print copies of the magazine are being sent to subscribers. Others can request a copy at (650) 723-6911 or by sending an email to medmag@stanford.edu. ISM



OF NOTE

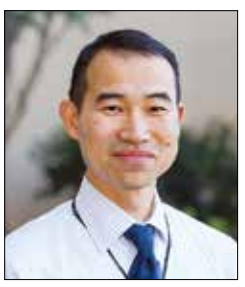
reports on significant honors and awards for faculty, staff and students


Leah Backhus


Robert Castro


Dylan Griswold


Timothy Keyes


Henry Lee


Eleni Linos


Mitchell Lunn


Ruth O'Hara


Zara Patel


Jochen Profit

LEAH BACKHUS, MD, MPH, associate professor of cardiothoracic surgery, was awarded $5,000 for the Levi Watkins Innovation and Leadership Development Scholarship from The Thoracic Surgery Foundation. She also won the Thoracic Surgery Residents' Association's 2019 McGoon Teaching Award, which is given annually to an outstanding young faculty member in cardiothoracic surgery in recognition of a commitment to resident education and mentorship.

ROBERT CASTRO, MD, clinical professor of pediatrics, has accepted an appointment to serve on the American Board of Pediatrics Sub-Board of Neonatal-Perinatal Medicine. His term ends Dec. 31, 2024.

DYLAN GRISWOLD, a third-year medical student, has been awarded a 2019 Gates Cambridge Scholarship from the Bill & Melinda Gates Foundation to pursue graduate studies at the University of Cambridge in England. He plans to spend three years at Cambridge pursuing a doctorate in clinical neurosciences with a focus on neurosurgery, then return to Stanford to complete his medical degree.

TIMOTHY KEYES, an MD-PhD student, will receive the national Building the Next Generation of Academic Physicians Junior Leadership Award for his work promoting the advancement of LGBTQ+ health-related issues and the LGBTQ+ community.

HENRY LEE, MD, associate professor of pediatrics, was elected to the membership of the American Pediatric Society. He focuses on improving the safety and quality of care for mothers and newborns by studying childbirth-related health care provisions at the population level and using simulation methodology to evaluate new protocols and products.

ELENI LINOS, MD, DrPH, was appointed professor of dermatology, effective Feb. 1. Her research aims to better understand the causes of skin cancer and apply the knowledge to cancer prevention using social media and smartphone technology. She also works to help cancer patients make informed treatment decisions that are tailored to individual preferences and personal characteristics.

MITCHELL LUNN, MD, was appointed assistant professor of medicine, effective Feb. 1. His research focuses on improving the understanding of factors that influence the health of sexual and gender minority people, including health disparities, societal experiences, provider education and institutional climate. He co-directs the PRIDE Study, a national longitudinal study of sexual and gender minority adults.

RUTH O'HARA, PhD, was promoted to professor of psychiatry and behavioral sciences, effective Dec. 1. Her research investigates the relationship between neurocognitive and neuropsychiatric symptoms across the lifespan, with emphasis on the identification of biological and sleep biomarkers of neurodevelopmental and neurodegenerative disorders.

ZARA PATEL, MD, was promoted to associate professor of otolaryngology-head and neck surgery, effective Jan. 1. She specializes in advanced endoscopic sinus and skull base surgery, and her research interests include studying ways to avoid complications in sinus surgery, developing new devices and techniques for sinus and skull base surgery, and improving treatment for olfactory loss.


Melinda Telli


Nolan Williams

JOCHEN PROFIT, MD, MPH, associate professor of pediatrics, was appointed to the Committee on Assessing Health Outcomes by Birth Settings, a project within the National Academies of Sciences, Engineering and Medicine. The project aims to provide an evidence-based analysis of research findings about different birth environments, such as hospital versus home, focusing on the health outcomes of sub-populations of women. His term ends on March 31, 2020.

MELINDA TELLI, MD, was promoted to associate professor of medicine, effective Jan. 1. She leads the breast oncology clinical research group at the Stanford Cancer Institute, and her research focuses on developing new therapies to treat triple-negative and hereditary breast cancers, including targeting tumors with DNA-repair defects.

NOLAN WILLIAMS, MD, was appointed assistant professor of psychiatry and behavioral sciences, effective Feb. 1. He specializes in developing brain stimulation methodologies, and his research interests include understanding rapid-acting antidepressants and identifying biomarkers that predict responses to treatments such as brain stimulation for neuropsychiatric conditions. ISM