

# Yale Public Health



## PARTNERSHIPS WITH AFRICA

Fall 2018

Disrupting disease  
Project Last Mile  
A life dedicated to TB  
Tanzania's health  
PEPFAR's success





Yale School of Public Health Professor Serap Aksoy (right) and Research Scientist Brian Weiss (green shirt), work with Dr. Richard Echodu (second from left), Dr. Robert Opiro (fifth from left) and other researchers from Gulu University in Uganda. They are monitoring the trypanosome infection status of tsetse flies collected at field sites along Uganda's Kafu River.



# Yale Public Health

## PARTNERSHIPS WITH AFRICA

Fall 2018

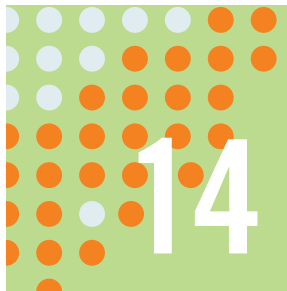
### PARTNERS IN HEALTH

Alumni, faculty and students at work in Africa.



### PROJECT LAST MILE

Finding creative ways to get essential medicines to the most remote regions.



### THE FUTURE OF TANZANIA

Azan Virji wants to use his Yale training to help his fellow Tanzanians.



### THE FUTURE OF HIV IN AFRICA

Dean Sten Vermund and others are working with African colleagues to address the future of HIV/AIDS.



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### DISRUPTING DISEASE

African scientists work with YSPH colleagues to stop deadly diseases.



### UNTANGLING TUBERCULOSIS

A career dedicated to tuberculosis.

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ABIGAIL FRIEDMAN

# DEAN'S MESSAGE



During my many trips to Africa over the years, I have always been impressed with its beauty and enormous potential. Health outcomes are vital to fulfilling this promise and there have been tremendous gains. Many other health initiatives are underway, spearheaded by dedicated professionals from Morocco to South Africa who are committed to building a better future for some 1.3 billion people.

In this issue of *Yale Public Health* magazine, we are pleased to highlight some of our longstanding and newer partnerships in this effort. You will find stories of public health experts who are deeply engaged on the continent. Their work inspires me! Africa has been a focus for much of my own work in HIV prevention and care, particularly in Zambia, Mozambique, Nigeria and South Africa. Yale President Peter Salovey traveled to Africa in March to further expand Yale's many collaborations. He said that by combining our strengths and insights, we can create a shared future. I couldn't agree more. It is only through partnerships with our colleagues – African scientists and dedicated health professionals – that success is possible.

We are also inspired by Assistant Professor Gregg Gonsalves – recipient of a 2018 MacArthur Fellowship (commonly called a “Genius” award). I cannot think of anyone more worthy of this stellar recognition. Gregg is

an alumnus of both Yale College and YSPH (Ph.D.) and joined our faculty in 2017. His professional accomplishments have been amazing, and his future potential to improve public health is boundless.

Recent events in New Haven are also engaging us. On August 15, 2018, there was a mass poisoning on the New Haven Green that affected scores of people who had used synthetic cannabinoids. To highlight addiction issues, we hosted a panel discussion on drug overdose and a naloxone training program, organized by YSPH students belonging to the Addiction Medicine Collaborative. We had more than 250 people participate in these events, including community, city, state and academic leaders and activists.

We are also working with the Yale School of Medicine to jointly hire a new faculty expert in addiction in early 2019. And I am proud of our ongoing engagement with the Connecticut Opioid Response Initiative task force that seeks more effective solutions to our serious prescription opioid and injection heroin/fentanyl epidemic. Much more needs to be done, and this will continue to be a top academic, training and community priority for all of us at YSPH.

*Sten H. Vermund, M.D., Ph.D.*  
Dean, Yale School of Public Health  
Twitter: @SVermund

## Yale Public Health

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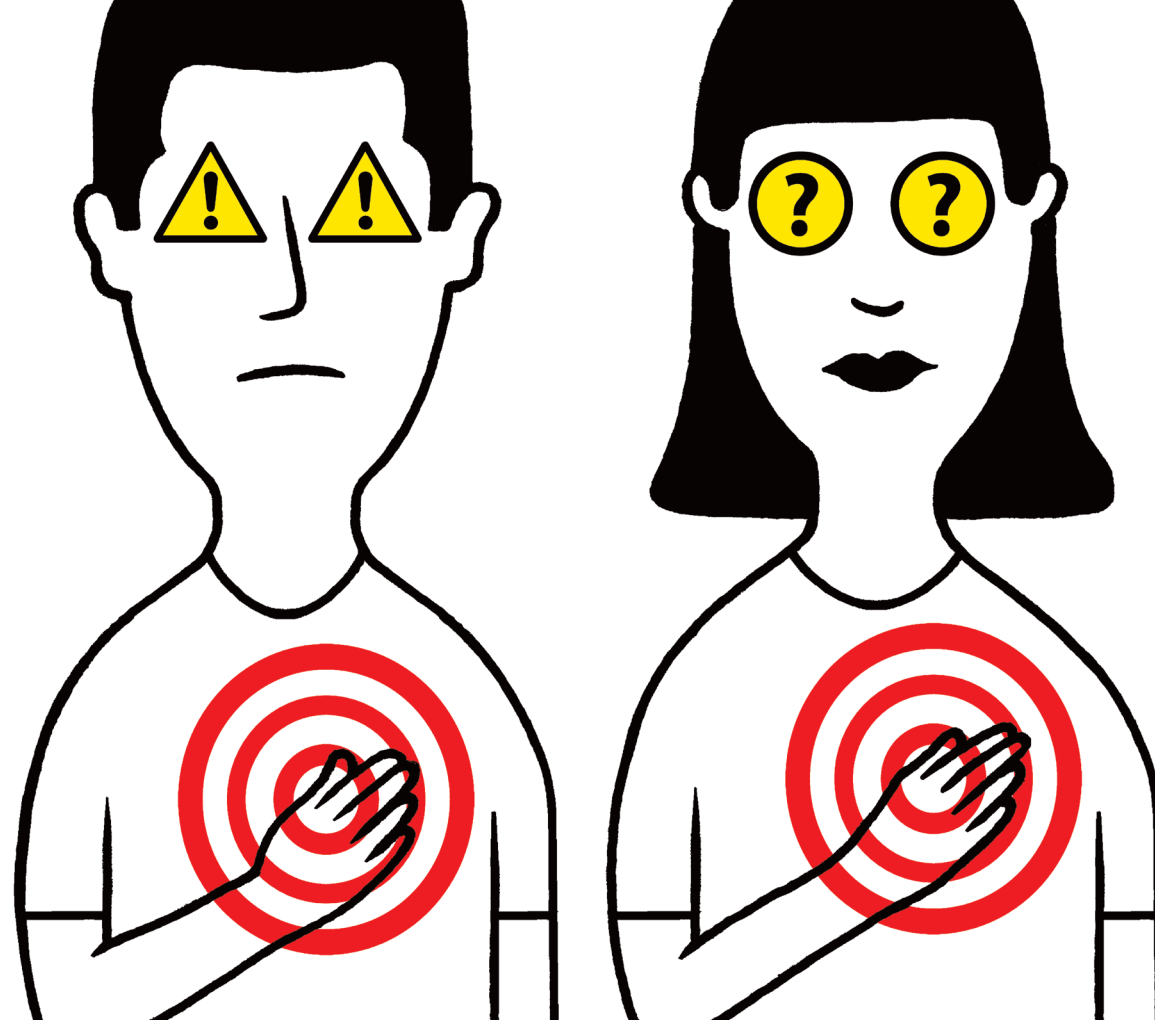


A digital archive of *Yale Public Health* is available at [publichealth.yale.edu/communications/archive/magazine/](http://publichealth.yale.edu/communications/archive/magazine/).

Acronyms frequently used in *Yale Public Health* include YSPH for Yale School of Public Health and LEPH for Laboratory of Epidemiology and Public Health (the school's main building).

*Correction:* Pilar Vargas is a child psychiatrist. Her profession was listed incorrectly on page 30 in the Fall 2017 print issue.





TOMASZ WALENTA

## YOUNGER WOMEN OFTENTIMES MISINTERPRET DEADLY HEART ATTACK SYMPTOMS

Young women who report heart attack symptoms are more likely to have them dismissed by their providers as not being heart-related, a study led by the Yale School of Public Health has found.

The study examined the relationship between gender, self-reported symptoms, perception of symptoms and self-reported care-seeking among patients 55 years and younger who were hospitalized for acute myocardial infarction (AMI). The differences in AMI symptom presentation by gender have been studied in older populations, but less is known about younger patients.

Analysis of data from 2,009 women and 976 men collected from more than 100 hospitals showed that the majority of both men and women reported chest pain, pressure, tightness or discomfort as their main AMI symptom. Yet women were more likely than men to report other associated symptoms of heart attack, such as indigestion; shortness of breath; palpitations; or pain in the jaw, neck or arms. Women were also more likely to perceive their

symptoms as arising from stress or anxiety and were more likely than men to report that their health care providers did not think that their symptoms were heart-related.

“Although chest pain was the most common symptom for young women and men, the presentation of chest pain within the context of multiple symptoms may influence the prompt recognition of heart disease for these young patients,” said lead author Judith H. Lichtman, M.P.H. ’88, Ph.D. ’96, associate professor and chair of YSPH’s Department of Chronic Disease Epidemiology.

The study results, as well as the increased mortality associated with AMI in younger women, indicate the need to both further investigate the variety of acute symptoms of heart disease in younger patients and explore how symptom recognition influences patients’ care-seeking behaviors and early interactions with health care providers.

The study was funded by the National Heart, Lung, and Blood Institute of the National Institutes of Health and published in the journal *Circulation*.

# ALUMNA LINKS PROXIMITY TO SOME WATERSHEDS WITH LEGIONNAIRES' DISEASE

Seeking to pinpoint the cause of a rise in Legionnaires' disease over the past decade in Connecticut, researchers at the Yale School of Public Health discovered a link between the disease and those living near some of the state's rivers and within specific watersheds.

An analysis of 17 years of data by lead author Kelsie Cassell, M.P.H. '17, and now a Ph.D. student in the Department of Epidemiology of Microbial Diseases, found that elevated rainfall and greater stream flow were associated with an increased incidence of the respiratory disease caused by *Legionella* bacteria.

"Our findings demonstrate that the natural environment could have a greater role in influencing the risk of disease than previously thought," Cassell said.

Specifically, people living near two regional watersheds, the Naugatuck and Quinebaug, showed a higher incidence of disease than the statewide average. An increased rate of the disease was found among those living near four rivers.

Those living within 10 miles of the Quinebaug River and the Hockanum Brook had the highest increased risk of contracting the disease.

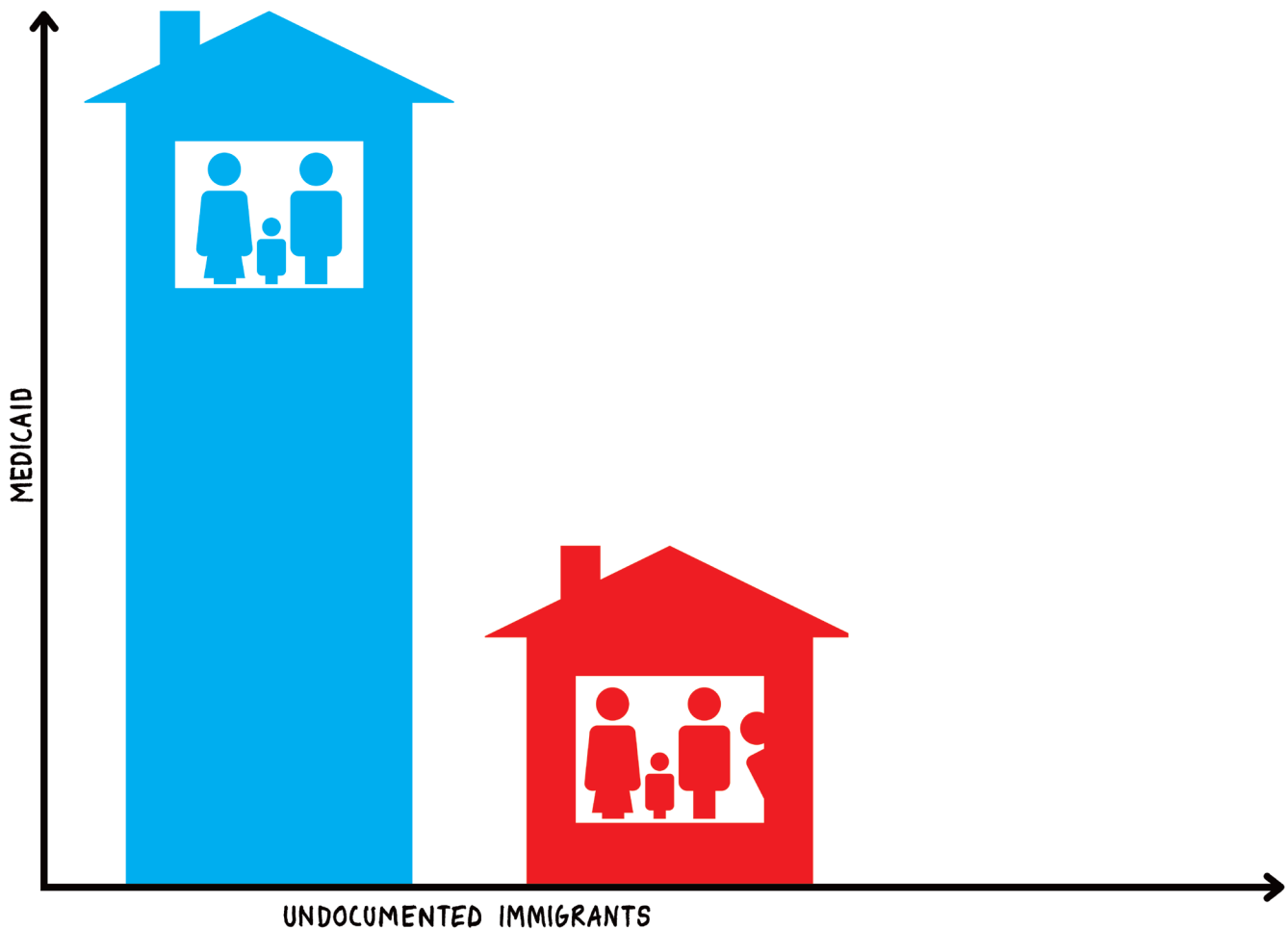
Meanwhile, people living near the Saugatuck River in Western Connecticut and the Shetucket River in Eastern Connecticut were at lower-than-average risk of getting the disease. Researchers found no relationship between the health of the river and the number of cases of the disease within the surrounding ZIP codes.

Two plausible explanations for the link between river proximity and higher disease incidence include exposure to river water that has become aerosolized and contamination of residential water supplies in an area. The case fatality rate of Legionnaires' disease ranges from 10 percent to 25 percent, depending on the outbreak setting and the immune status of those exposed.

The study was published in *The Journal of Infectious Diseases*.







TOMASZ WALENTA (2)

## HOUSEHOLD IMMIGRATION STATUS MAY IMPACT MEDICAID ENROLLMENT

Individuals eligible for Medicaid who live in households with undocumented immigrants appear less likely to enroll in the public health insurance program in some states.

The Yale School of Public Health study shines light on why approximately 1 in 4 of the uninsured in the United States was eligible for, but not enrolled in, the Medicaid program in 2016 – two years after the expansion of Medicaid eligibility under the Affordable Care Act (ACA). The researchers used U.S. Census Bureau data from 2009 to 2015 to identify Medicaid-eligible individuals in mixed-status households – those that likely included at least one undocumented immigrant – and examined trends in their Medicaid coverage over time.

The researchers found that in states that expanded Medicaid eligibility, the rate of Medicaid enrollment was statistically indistinguishable between Medicaid-eligible individuals living in households with mixed immigration status and those in households without mixed immigration

status. In states that did not expand Medicaid, however, the rate of enrollment was significantly lower for eligible individuals living in mixed-status households. While Medicaid enrollment increased in these states for individuals in households with non-mixed immigration status, similar increases in enrollment were not evident among individuals in households with mixed immigration status.

“Our findings suggest that living in a mixed-status household may have dampened the so-called ‘woodwork effect’ after the ACA improved knowledge about Medicaid availability and increased enrollment in the program, even in non-expansion states,” said Michael Cohen, a Ph.D. candidate in the Department of Health Policy and Management and a study co-author. The study was co-authored by William Schpero, a Ph.D. candidate in the same department.

The research was supported by funding from the Agency for Healthcare Research and Quality and the National Institute on Aging and published in the journal *Health Affairs*.



# PARTNERS IN HEALTH

BY DENISE MEYER

Yale School of Public Health alumni, faculty and students, in conjunction with their African partners, work throughout the continent to improve health outcomes for millions of people. Here is a sampling of their work.





## EAST AFRICA

**Yasmin Chandani, M.P.H. '98**, director, John Snow Research and Training Institute



Chandani supports and advises governments in the design, implementation and measurement of sustainable health supply chains. She is

leading the transition of the inSupply Project to an independent, regional supply chain advisory firm based in East Africa. The inSupply team seeks to improve the lives of people and communities by pioneering solutions—including mHealth, autonomous aerial vehicles and data-driven quality improvement approaches—to create optimized, resilient supply chains.

## BURKINA FASO, NIGER, UGANDA, SOUTH AFRICA

**Reza Yaesoubi, Ph.D.**, assistant professor, Department of Health Policy and Management



Yaesoubi's work focuses on medical decision-making and model-based evaluations of health policies in Africa. Recent studies evaluate the

cost-effectiveness of the alternative uses of polyvalent meningococcal vaccines in Burkina Faso and Niger; the cost-effectiveness of furnishing a pediatric operating room in Uganda; and the effectiveness and cost-effectiveness of tuberculosis control interventions targeted to previously treated people.

## CAMEROON

**Martial Ndeffo Mbah, Ph.D.**, research scientist, Department of Epidemiology of Microbial Diseases



In collaboration with epidemiologists at the Ministry of Health, Ndeffo Mbah is developing data-driven spatiotemporal models for optimiz-

ing surveillance and early response for endemic infectious diseases such as measles. The project aims to improve understanding of the spread of disease outbreaks, develop a framework for efficient, early and accurate detection and develop optimal and cost-effective response strategies.

## KENYA

**Esther Lwanga Walgwe, M.P.H. '03**, deputy director, STEP-UP



As the deputy director of the STEP-UP research consortium in Population Council's Nairobi office, Walgwe manages planning and operations on a

multi-country research program for the prevention and management of early and unintended pregnancy among adolescents and women in sub-Saharan Africa.

## MALAWI, GHANA

**Virginia Pitzer, Ph.D.**, associate professor, Department of Epidemiology of Microbial Diseases



Pitzer and colleagues are using a combination of statistical and mathematical modeling to predict the impact

of rotavirus vaccination in developing countries, then validating their predictions against the observed impact of vaccinations in Malawi and Ghana. In Malawi, she and colleagues are also studying the transmission of typhoid fever, as well as the efficacy, potential impact and cost-effectiveness of typhoid conjugate vaccines.

## RWANDA

**Magdalena Wilson, M.P.H. '14**, research associate, Laterite



Wilson's work focuses on a portfolio of developmental research projects in public health and education in Kigali. Her firm

provides data collection services, advises clients on design and implementation of research projects and supports them through the life-cycle of the research.







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# DISRUPTING DISEASE

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## Partnering to render the deadly tsetse fly harmless.

As predators go, the tsetse fly is small and its deadly microscopic trypanosome parasites even smaller.

African sleeping sickness, or trypanosomiasis, is spread by the painful bite of this stocky fly, which inhabits large swaths of rural Africa. Hundreds of East African and thousands of West African trypanosomiasis cases are reported each year. Closely related parasites also ravage herds of domestic cattle.

Serap Aksoy, Ph.D., a professor of epidemiology, is among a small band of global researchers who are unlocking surprising secrets of this neglected disease – and spotting new ways to interrupt it. Together with colleagues in Uganda and Kenya, Aksoy’s team at the Yale School of Public Health has made seminal discoveries about the fly, its bacterial microbiota and trypanosomes, yielding a clever vector control strategy called paratransgenesis that could halt the parasite in its tracks.

The goal, she said, is to “make a fly that is very resistant to the trypanosome’s transmission.” If paratransgenesis works, a tsetse fly bite could one day be more nuisance than death sentence.

The stakes are high, and so is the need for creative new approaches. Though public health officials have long actively tracked down and treated infected people, reducing the number of cases in recent years, sleeping sickness remains a serious threat. Diagnosis can be difficult, with early symptoms as vague as headache and malaise, and the later stage – with its trademark daytime drowsiness – hard to treat. Chemotherapeutic treatments are decades old and dangerous in their own right, but the risk is necessary, as the disease otherwise kills most people within a few months to years.

Although a successfully treated human can no longer transmit the parasite to a fly, the trypanosome can still hide out in wild and domestic animal reservoirs. Killing the fly with traps and pesticides is largely impractical; it ranges over 10 million square kilometers of the African continent. Yet sleeping sickness has a nasty habit of springing back if expensive control efforts are relaxed.

When Aksoy arrived at Yale in the 1980s after earning her Ph.D. at Columbia University, a sleeping sickness epidemic had raged in Africa for over a decade. Eager to study

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Dr. Paul Mireji of the Biotechnology Research Institute holds a cage of tsetse flies collected at the Shimba Hills National Reserve in southern Kenya.



# If paratransgenesis works, a tsetse fly bite could one day be more nuisance than death sentence.

the trypanosome parasite's ever-shifting, vaccine-resistant surface coat, she joined the molecular biology laboratory of Dr. Frank Richards. Over time, she grew interested in how the parasite and fly interacted, eventually setting up a tsetse colony and spending over two decades studying it.

"The fly was such a black box it took us a long time to build the molecular foundation, then discover the genes and the biological nuts and bolts of the fly to be able to understand the interactions (with the trypanosome that infects it)," Aksoy recalled.

But the groundwork paid off. In 2014, she co-authored a landmark paper in *Science* reporting tsetse's genome sequence, reported by the consortium she initiated and led comprised of small labs around the world, including Yale-affiliated bioinformaticians in Kenya and South Africa. The paper yielded clues about the fly's sense of smell, how it recognizes pathogens and its ability to lactate.

You read that correctly: almost uniquely among insects, the tsetse fly undergoes a pregnancy during which it nurtures a single intrauterine larva with milk. Through this milk, the mother fly passes to its offspring two bacterial species that have coevolved with the fly. One, *Wigglesworthia*, makes B vitamins that are absent from the fly's vertebrate blood-specific diet. Eliminating *Wigglesworthia* with antibiotics stops the fly's ability to lactate, halting reproduction.

Tsetse flies also need these bacteria to develop a functioning immune system. If the researchers eliminate them and then supplement the diet with yeast extract to replace missing bacterial nutrients, the fly can once again reproduce. But the offspring—called aposymbiotic, or lacking in symbiotic bacteria—aren't the same. Their immune systems don't develop properly, rendering them susceptible to trypanosome infection.

Normally, after ingesting trypanosomes with a blood meal, most flies can eliminate the parasites. But among

adults lacking their maternal microbiota, over half wind up contracting trypanosome infections. The presence of the bacteria during pregnancy is somehow key to helping flies clear the infections when they emerge as adults. These aposymbiotic adults also wind up having their energy sapped; their fecundity also drops.

"If you look at the gut of an infected tsetse fly, it's unbelievable. I've been doing this for a long time and it fascinates me every time—the gut is just packed with these parasites," said Brian L. Weiss, Ph.D., a research scientist who has worked with Aksoy for 15 years. "And they're competing for nutrients with the fly."

Healthy flies fight off trypanosomes in part via a sleeve-like structure called the peritrophic matrix. The matrix lines the gut, forming a barrier that trypanosomes have to muscle through twice during their life cycle. Healthy flies produce a thicker matrix and are likelier to resist such manipulation. By contrast, the matrix of aposymbiotic flies is thinner, porous, even nonexistent. That could explain their susceptibility to trypanosome infection. Trypanosomes also facilitate their own journey through the tsetse vector by shedding surface proteins that trick the fly into temporarily producing a less robust matrix, the Aksoy lab discovered.

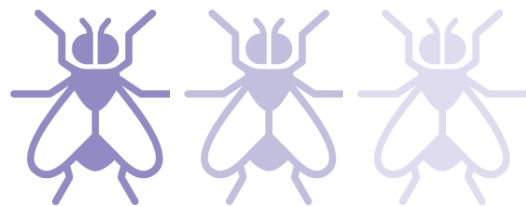
But it is the fly's other commensal bacterial species, *Sodalis*, that might offer the most practical key to disease control. *Sodalis* lives in the gut, where it comes into contact with trypanosomes. Unlike *Wigglesworthia*, *Sodalis* can be cultured in the lab. Weiss is exploring the possibility of adding new genes to *Sodalis* that give it anti-trypanosome powers.

"You could get them to produce molecules that are directly toxic to the trypanosomes. Or maybe you could get them to produce proteins that would bind to the peritrophic matrix and make it stronger, and thus the trypanosomes would be less able to penetrate it," Weiss said.

*Continued on page 13*

# 10,000

APPROXIMATE NUMBER OF NEW CASES OF  
TRYPANOSOMIASIS REPORTED TO THE WORLD  
HEALTH ORGANIZATION ANNUALLY





# RESEARCHING MALARIA, ACROSS SPACE AND TIME

BY SUNIL PARIKH

Malaria continues to exact a tremendous toll on resource-limited regions. In 2016 alone, there were an estimated 216 million cases worldwide, resulting in 445,000 deaths.

While promising efforts are under way to eliminate malaria from low-endemic regions, Africa, which bears 90 percent of malaria's burden, so far has seen mixed results. In both Uganda and Burkina Faso, mortality attributable to the primary pathogen, *Plasmodium falciparum*, has decreased, yet the overall incidence actually increased between 2015 and 2016.

My lab has been conducting research in Uganda since the early 2000s, about the same time that a treatment paradigm shift occurred—from monotherapies to the artemisinin-based combination therapies. In Uganda, we work with longstanding and committed collaborators at Makerere University and our shared goal is to optimize treatment among those most vulnerable to malaria's effects—young children, pregnant women and people living with HIV. We focus on understanding how to best treat these populations efficaciously while also preserving the effectiveness of these new drugs as long as possible, given the rapid spread of resistance.

More precisely, through careful pharmacologic and molecular genetic studies, we are trying to define the optimal treatment doses and regimens for these drugs while also limiting the likelihood that drug resistance will both emerge and be transmitted in these individuals and communities. Coupled with these efforts, our lab has recently begun to implement and develop more sensitive methods of parasite detection, with the hope of better defining the true reservoir of parasites in individuals and populations over time.

Far to the west in Burkina Faso, my lab works closely with investigators at the Institut de Recherche en Sciences de la Santé and colleagues from Colorado

# 216 MILLION

CASES OF MALARIA WORLDWIDE IN 2016



“Sustainable gains against this ancient blight will come only from multidisciplinary and multipronged approaches with our colleagues in the region.”

~Sunil Parikh

State University. We are combining studies of the target parasite, of humans infected with the disease and of the mosquito vector to better characterize the transmission dynamics of malaria. We have ongoing studies that focus on individuals, households and communities, with the goal of understanding how drug resistance varies across space and time. Additionally, our team is embarking on a multiyear cluster randomized trial to assess the novel use of an old drug used for neglected tropical diseases, ivermectin, for reducing malaria incidence at the community level. This trial will be conducted in the context of ongoing interventions, including the use of insecticide-treated bed nets, artemisinin-based combination therapy and seasonal monthly chemoprevention for children.

After years of working on the scourge of malaria, my lab more fully realizes that sustainable gains against this ancient blight will come only from multidisciplinary and multipronged approaches with our colleagues in the region. **YPH**

*Sunil Parikh, M.D., M.P.H., is an associate professor at the Yale School of Public Health.*



GEOFFREY ATTARDO

The tsetse fly inhabits large swaths of rural Africa and its painful bite transmits African sleeping sickness, or trypanosomiasis. Hundreds of East African and thousands of West African trypanosomiasis cases are reported each year. Closely related parasites also devastate domestic cattle.

## FOCUS

# THE ACQUISITION OF INFECTIVITY



BY CHRISTIAN TSCHUDI

Parasitic protozoa are a major cause of global infectious diseases and represent a serious threat to public health. Among these are African trypanosomes, the agents of African trypanosomiasis, or sleeping sickness, in humans and a fatal disease – nagana – in domestic animals. The effect on human health and sub-Saharan Africa’s economy is profound.

There are no vaccines, and therapeutic drugs have serious side effects and decreasing efficacy. There is a pressing need to better understand the biology of these pathogens and the mechanisms they use to survive once inside their hosts.

Research in my laboratory at the Yale School of Public Health focuses on a fundamental step in the life of this pathogen – the acquisition of infectivity. In the case of



*Continued from page 10*

Reintroducing genetically modified *Sodalis* into the fly creates a so-called paratransgenic system, one in which the trypanosome can't gain a foothold.

"Our goal is to use these paratransgenic systems to strengthen the gut barriers," Aksoy said. Trypanosome-resistant paratransgenic female flies could be released into the wild, where they would presumably mate with their wild male counterparts. Thanks to lactation, the protective bacteria would pass from mother flies to new generations.

But the technique's safety and efficacy have yet to be demonstrated. Fortunately, Aksoy's lab has long collaborated with researchers in Kenya and Uganda, who are in an excellent position to carry out the fieldwork. A grant from the NIH's Fogarty International Center allowed the lab to build tsetse research capacity with the Kenyan Agricultural & Livestock Research Institute. More recently, Aksoy secured an NIH International Centers for Excellence in Research grant to study fly population genetics and natural microbiota associated with flies also in collaboration with

Kenyan researchers, a crucial step in predicting where paratransgenic flies could most effectively be released. In addition to university partnerships, the lab has ties to Kenya's International Centre of Insect Physiology and Ecology and Uganda's National Livestock Resources Research Institute.

Along the way, Aksoy and her colleagues, including Dr. Adalgisa Caccone at Yale, have led workshops on research techniques and academic leadership skills for African Ph.D. students, postdocs and early-career researchers. Many African scientists have worked in Aksoy's New Haven lab and are now junior faculty at institutions in their home countries.

"The big vision that we had in the field [is] to move these technologies into Africa, [where] they would be utilized by the African scientists who are more versatile with their own communities," Aksoy said. "They will be the next-generation researchers in the tsetse field." **YPH**

African trypanosomes, this occurs in the tsetse fly – the insect vector of the disease. Trypanosomes undergo a complex life cycle, alternating between a mammalian host and the blood-feeding tsetse fly vector. Once in the fly midgut, the parasites become noninfectious and then migrate to the anterior part of the digestive tract and finally to the salivary glands, where they re-acquire infectivity to the mammalian host and the cycle continues. Although the intricate nature of trypanosome development in the fly has been recognized for more than a century, the molecular mechanisms remain mysterious, due in part to the experimental challenges of studying parasites in the fly.

A few years ago, in collaboration with Professor Serap Aksoy, Ph.D., and then-graduate student Amy Savage, Ph.D. '10, my lab worked to define the transcriptome (the complete set of RNA transcripts that are produced by the genome) of trypanosomes isolated from different tissues of infected tsetse flies, with the goal of discovering genes that were differentially expressed during the development from noninfective to infective trypanosome forms.

One of the intriguing results was that the transcript for the RNA-binding protein RBP6 was highly upregulated in the early stages of development. Since RNA-binding proteins play a pivotal role in controlling developmental programs in trypanosomes, we postulated that this protein might be involved at some step in the differentiation process occurring in the insect. By overexpressing this single RNA-binding protein in noninfectious trypanosomes, the

events leading to acquisition of infectivity in the insect vector were recapitulated in the laboratory. What is still surprising is that so far there are no obvious differences between the infective forms generated in the laboratory and what has been described to take place in the insect vector.

It is now possible for the first time to perform detailed mechanistic studies on the different life cycle stages occurring in the tsetse fly. More importantly, researchers will be able to get a handle on the developmental program that leads to infectious trypanosomes. The overarching goal of my laboratory is to create a roadmap of the developmental program leading to infectivity. In future experiments the results obtained in the in vitro culture system will be validated in infected tsetse flies, and it also remains to be determined what triggers induction of RBP6 in trypanosomes in their natural environment in the tsetse fly.

Identifying such a signal will be challenging, since it is not known in what tissue this happens. Nevertheless, the identification of stage-specific genes and proteins has the potential to contribute toward developing new intervention strategies, among which are transmission-blocking vaccines, which are currently being sought in other arthropod-transmitted diseases as alternatives to conventional vaccines against pathogens. **YPH**

*Christian Tschudi, Ph.D., is the John Rodman Paul Professor of Epidemiology and the director of graduate studies at the Yale School of Public Health.*

# PROJECT LAST MILE

BY ELISABETH REITMAN

Leveraging the business acumen of a soft drink giant to improve access to medical supplies and health services across Africa.



## SUPPLY AND DEMAND

Critical supply chain gaps cause medicine stock-outs in more than 40 percent of health facilities in sub-Saharan Africa. PLM uses Coca-Cola's planning and forecasting tools to manage logistics, warehouse inventory and distribution procedures.



## NETWORK OPTIMIZATION

In Mozambique, PLM mapped over 1,500 health facilities and used data on road conditions and load requirements to design optimal routes.



## STORAGE UNITS

Vaccines must be stored and transported at specific temperatures, and refrigerator malfunctions can render vaccines ineffective. In Nigeria, PLM works with the company's refrigeration partners to ensure effective preventative maintenance and timely repairs to health facility refrigerators.



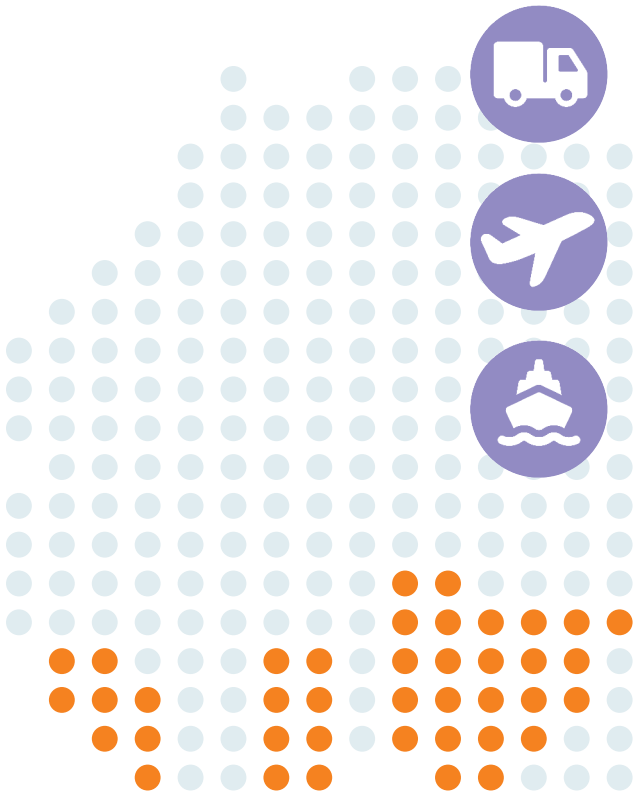
## CONVENIENT DISTRIBUTION

For patients living with stable chronic illnesses, traveling to a crowded health center and waiting in a long line is an enormous burden. In South Africa, PLM has supported a national program that allow patients to pick up their medicines at commercial pharmacies and other convenient locations.



### PROJECT LAST MILE

Project Last Mile (PLM) uses the logistics and marketing expertise fine-tuned by The Coca-Cola system to strengthen health systems across Africa. Bringing together the company, the Coca-Cola Foundation, USAID, the Global Fund and the Bill & Melinda Gates Foundation, PLM seeks to reach 10 countries by 2020, establishing a new model for effective private-sector partnership. The Global Health Leadership Initiative (GHLI) at Yale serves as the monitoring and evaluation partner for PLM, using a longitudinal, mixed-methods design to measure program impact over time and capture lessons learned along the way. “We hope this work can inspire other visionary partnerships for global good,” said Erika Linnander, M.P.H., M.B.A., GHLI’s director and a lecturer at the Yale School of Public Health.



### DEMAND GENERATION

In eSwatini, PLM is utilizing the company’s marketing strategies to improve patient demand for HIV services among girls and young women, in alignment with national health plan targets.



Project Last Mile has reached eight countries so far: eSwatini, Ghana, Liberia, Mozambique, Nigeria, South Africa, Sierra Leone and Tanzania.





# A CAREER DEDICATED TO TB RESEARCH

An indelible experience in Kenya influences a life's work.

For many physicians and researchers, an indelible experience in the early days of training can shape an entire career. For Associate Professor Lucian “Luke” Davis, it was working at a hospital in Kenya that lacked basic resources.

“It was devastating,” Davis, M.D., M.S., recalled. As a pulmonologist, one of the main challenges he faced was diagnosing tuberculosis (TB). “We wondered, do these patients have TB, or do they have one of the many opportunistic infections that we always struggle to diagnose?” Davis has dedicated his career to changing what he saw during his first experience in Kenya, researching solutions for diagnosing TB in a timely, sustainable way.

“Half of all patients cannot be diagnosed with the most widely available test (sputum smear microscopy),” he said. The test still used widely in Africa has not changed significantly since its invention in the 1880s. While new and better tests exist, Davis said, most are not widely available in Africa and, as a result, many people die needlessly.

In 2016, 2.5 million people fell ill with TB in Africa, accounting for a quarter of new cases worldwide, according to the World Health Organization. The disease spreads quickly and those infected are often symptom-free initially, which delays treatment. “Up to 60 percent of people with tuberculosis don’t show any symptoms at all,” said Davis. In densely populated areas, people with active TB can infect multiple other people over the course of a year.

Davis helped organize the Uganda TB Implementation Research Consortium (U-TIRC), which is committed to improving the diagnosis and treatment of TB and other infectious diseases in Uganda. There, he works with collaborators at Makerere University, in Kampala, where U-TIRC is based, as well as with Ugandan public health officials and researchers from a variety of disciplines from Uganda, the United States and the United Kingdom. He also co-founded Walimu, a nonprofit organization in Uganda that works to eliminate preventable deaths in hospitals.

“Tuberculosis has evolved to take advantage of poverty,” said Davis, and at U-TIRC and back at Yale, Davis is focusing his work on how to overcome this and other barriers to care. Through the field of implementation science, he is applying knowledge gained in Uganda to finding sustainable, cost-effective and patient-centered public health interventions.

While evidence-based practice has become the standard in medicine and public health, Davis said, that evidence, while crucial to understanding disease, is generated through research in tightly controlled environments. There is often a disconnect between findings and the unpredictable nature of the world into which these findings must be translated. “Implementation science is about how we overcome some of those challenges in moving from evidence to practice,” he said.

Davis has become involved in the newly launched Yale Center for Implementation Science, teaching a course and mentoring scholars using the example of his own ongoing research in TB diagnostics. “If we had better diagnostics, it would spark a revolution in our understanding of local epidemics and in how to provide services to people,” he said. “And whatever we learn from how we deliver services for TB could benefit other diseases as well.” YPH





Brittany Stollar (left), M.P.H. '18, and Dr. Patricia Turimumahoro, study coordinator of the mHealth Contact Investigation Trial, review data from the National TB Treatment Register at one of the Kampala Capital City Authority Clinics in Uganda.

Health Fa  
TB C



FEATURE



UNAIDS  
ONUSIDA  
ONUSIDA  
ЮНЭЙДС

联合国艾滋病规划署  
برنامج الأمم المتحدة  
المشترك لمكافحة الأيدز



World Health  
Organization

منظمة الصحة العالمية

世界卫生组织

World Health Organization

Organisation mondiale de la Santé

Всемирная организация здравоохранения

Organización Mundial de la Salud



“FOR POOR TANZANIANS, THEIR INABILITY TO AFFORD MEDICAL CARE IS COUPLED WITH A LACK OF ACCESS TO HOSPITALS, EDUCATION AND CLEAN WATER. I AM DETERMINED TO HELP BREAK THE POVERTY CYCLE AND TO HELP THE MANY PEOPLE I GREW UP WITH.”

~Azan Virji

# FOR THE HEALTH OF TANZANIA

BY AZAN VIRJI

I am an African-born, first-generation student who came to the United States four years ago to pursue what once seemed unimaginable: A higher education at Yale.

Growing up in Tanzania, I noticed patients would repeatedly contract the same diseases. While shadowing doctors at a rural clinic, I watched physicians simply prescribe drugs without addressing any of the larger systemic issues surrounding the individual's health. These experiences taught me my most valuable lesson — one that still guides me today — physicians working in global health needed to possess the knowledge and skills to not only diagnose and treat patients but also provide them with preventive public health information to thwart the spread of the disease.

After graduating from Yale College with a degree in molecular, cellular and developmental biology and with a certificate in global health, I applied to the Yale School of Public Health to strengthen my knowledge of infectious agents, specifically malaria and neglected tropical diseases, that have plagued my country for centuries. Over the last year, I have learned how to conduct research on parasites and gained an understanding of how pathogens spread and infect. I am currently working on a study that assesses the sensitivity of new rapid malaria diagnostic tests.

But my journey at Yale has also been challenging. From the initial culture shock to the constant conflict between my multiple identities, getting to where I am today and to where I want to go remains an uphill battle. With limited

financial assistance, I'm working almost 20 hours a week as a teaching fellow to help cover tuition while also balancing research, academics and a social life. Oftentimes, this is mentally and physically draining. Despite this, I draw strength and courage from my background and upbringing that keeps me focused. For poor Tanzanians, their inability to afford medical care is coupled with a lack of access to hospitals, education and clean water. I am determined to help break the poverty cycle and to help the many people I grew up with.

As I look to the future and apply to medical schools, I remain keen on returning to Tanzania as a physician to make a difference in the community that nurtured me and made me who I am today. I know that working as a physician in global health is a multidisciplinary endeavor and requires a wide set of skills that blend medicine with public health. My trajectory is focused on attaining the tools that I will need, both on the micro and macro levels, to make a measurable difference in Tanzania's health. [YPH](#)

*Azan Virji is an M.P.H. student in the Department of Epidemiology of Microbial Diseases at the Yale School of Public Health. He expects to complete his degree in 2019.*



COURTESY OF STEN VERMUND

# THE FUTURE OF HIV RESEARCH

## 7.1+ MILLION

HIV INFECTED INDIVIDUALS IN SOUTH AFRICA

Dean Sten H. Vermund (center) is hosted at a rural KwaZulu-Natal field site in South Africa for tuberculosis and HIV screening, diagnosis and linkage to treatment by staff members of the Africa Health Research Institute. The organization was created in 2016 by KwaZulu-Natal Research Institute for TB-HIV, merging with the Africa Centre for Population Health.

Vermund traveled to South Africa from June 26 to July 5 to launch a National Institutes of Health-supported partnership with The Aurum Institute and the University of the Witwatersrand School of Public Health to accelerate the pipeline of HIV/AIDS and TB researchers by developing mentorship and leadership capacity among mid-career scientists. YSPH's Erika Linnander, M.P.H., M.B.A.,

lecturer and director of the Global Health Leadership Initiative, and Mayur Desai, M.P.H., '94, Ph.D. '97, associate professor, were co-instructors in the mentoring and training program.

South Africa has the largest HIV epidemic in the world, with an estimated 7.1 million infected individuals. National and global commitment to a “surge” – rapid expansion of HIV/AIDS and TB treatment and prevention throughout the country – will significantly increase the demand for researchers with expertise in areas such as implementation science who can define best practices and influence effective policy, Vermund said. [YPH](#)



# PEPFAR REDUCED INFANT MORTALITY, SAVED LIVES



Through the President's Emergency Plan for AIDS Relief (PEPFAR), the United States contributed more than \$248 million to programs in Kenya between 2004 and 2014, and the incidence of child mortality dropped sharply.

But childhood mortality rates also dropped during the same period in other sub-Saharan countries that did not receive any PEPFAR funding.

So, did the huge public health investment make a difference? Until now, it had been unknown whether—or by how much—PEPFAR actually improved health outcomes and survival rates.

New research by a team of scientists at Yale and Harvard evaluated PEPFAR's spending on a Kenyan program that trains expectant mothers in HIV prevention in more than 10,000 clinics nationwide. They determined that the funding was a significant factor in improving health outcomes.

"The United States has spent over \$70 billion on PEPFAR programs around the world since 2004. Our research adds considerable weight to the evidence that this money has been effectively spent to save millions of babies, children and mothers," said Donna Spiegelman, Sc.D., the study's senior author and the recently appointed Susan Dwight Bliss Professor of Biostatistics at the Yale School of Public Health. Spiegelman did the research while at the Harvard T.H. Chan School of Public Health, where she is now professor emerita, with her doctoral student there, Dale Barnhart.

The researchers used advanced statistical causal inference methods to assess whether the amount of PEPFAR funding provided to different provinces in Kenya was associated with increased HIV testing among pregnant women, which is a critical first step in identifying which women need HIV prevention training in a program known as Prevention of Mother-to-Child Transmission of HIV.

Ultimately, Spiegelman and her colleagues found that PEPFAR funding for the program was associated with both increased HIV testing at the Kenyan prenatal clinics and reduced infant mortality. As a result of increased testing and counseling, fewer and fewer mothers were passing the

“PEPFAR SAVED LIVES. THIS IS A PUBLIC HEALTH SUCCESS STORY.”

~Donna Spiegelman

virus to their babies. In Kenya alone, Spiegelman and her group estimated that hundreds of thousands of new HIV/AIDS infections were prevented and nearly 200,000 children lived who might otherwise have died.

"The results are dramatic," she said. "PEPFAR saved lives. This is a public health success story."

Knowing that PEPFAR funding for the health programs has had a decisive impact on population health provides valuable information to current U.S. policymakers who must allocate funds to PEPFAR each year. In addition, the study also illustrates how regional data on programmatic activities—such as regional funding levels—can be linked to other publicly available data sources in order to conduct rapid, robust program evaluations.

Without access for HIV-positive women to a package of health services, such as antiretroviral medicines and counseling on optimal breastfeeding practices, it is estimated that over 30 percent of children born to HIV-positive mothers will become infected. In low-resource settings, more than 80 percent of these children die before their second birthday.

Kenya experienced a 32 percent increase in mortality in children under 5 between 1988 and 2003, and the Kenyan government's and PEPFAR's investments in Prevention of Mother-to-Child Transmission of HIV programs were made to help reverse that trend. PEPFAR was launched by President George W. Bush and has been continued by his successors. Dean Sten H. Vermund, meanwhile, also has worked intensively with PEPFAR in Zambia, Nigeria and Mozambique over the past 15 years. [YPH](#)

# OVERCOMING STIGMA THROUGH SPORTS

As a Yale student-athlete, Yetsa Tuakli-Wosornu excelled. After graduating (Timothy Dwight, 2001), she continued training and eventually became a finalist for the 2016 Ghanaian Olympic team in the women's long jump.

But at international sports festivals, it was her Paralympic teammates — not her Olympic counterparts — that caught her attention. She marveled at the tenacity of wheelchair racers like Maclean Dzidzienyo (pictured here), one of Ghana's most decorated Para athletes.

Now an assistant clinical professor at the Yale School of Public Health, Tuakli-Wosornu, M.D., M.P.H., uses sports to reduce stigma for people with disabilities in resource-limited settings. With her team at the Yale Para and Adapted Sports Lab, she organized Africa's first continental Paralympic exchange and developed a sustainable and affordable bamboo wheelchair for people with disabilities in Ghana. Dzidzienyo used this wheelchair during the 2018 International Society of Physical and Rehabilitation Medicine World Congress in Paris, where he spoke about how he overcame cultural stigma and personal tragedy to become an elite athlete.

Tuakli-Wosornu can attest to the fact that sports helped her find her voice in the world, and she can see its transformative power helping others, including Dzidzienyo.

“Not every disability is visible,” she said. “Things like a mental health disorder or chronic pain can make getting out of bed just as difficult as an amputation can. Either way, you have to mentally overcome so much.” [YPH](#)

*Elisabeth Reitman*

*Above:* Yetsa Tuakli-Wosornu and wheelchair racer Maclean Dzidzienyo at the 2018 International Society of Physical and Rehabilitation Medicine World Congress in Paris.

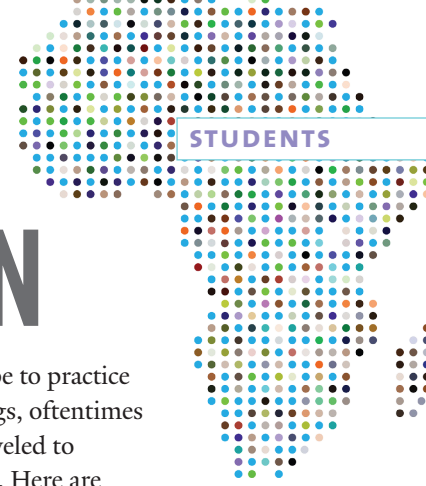
*Below:* Dzidzienyo with a sustainable and affordable wheelchair partially constructed from bamboo.



COURTESY OF YETSA TUAKLI-WOSORNU







# AN AFRICA EDUCATION

Each summer, Yale School of Public Health M.P.H. students travel to destinations around the globe to practice what they have learned in the classroom and address public health issues in urban and rural settings, oftentimes with scarce resources and limited connections to the outside world. This year, several students traveled to different destinations in Africa to experience firsthand the challenges and rewards of public health. Here are the stories of three interns.

## JESSICA HE, M.P.H., M.S.N. CANDIDATE

DEPARTMENT OF SOCIAL AND BEHAVIORAL SCIENCES

### THE GAMBIA



After earning her Peace Corps “stripes” in The Gambia (2013–2015), returning as a mobile health intern this summer was a special homecoming. Working under Dimagi (a social enterprise that develops digital tools for lay health workers to use in underserved communities) and Catholic Relief Services’ Cross-Border Malaria Initiative between The Gambia and Senegal, Jessica helped strengthen a geospatial data visualization prototype that streamlines malaria surveillance at the borders of both countries. This included developing a mobile application to identify the villages on the fringes of The Gambia and

training 67 government and nongovernmental personnel to deploy it nationwide. This app collated the geocoordinates of 345 border villages—many of which were missing from official maps.

“This is a powerful example of how digital tools can unearth service gaps, as Catholic Relief Services has since pledged to allocate resources to the once undetected and underserved areas,” said Jessica, who amidst all the exciting work made time to visit new friends in a village that she now considers her second home.

## JUSTIN JONES, M.P.H. CANDIDATE

### DEPARTMENT OF EPIDEMIOLOGY OF MICROBIAL DISEASES SOUTH AFRICA

Justin (left) spent the summer working as the research coordinator for the Church of Scotland Hospital in Tugela Ferry, South Africa, on an Intensive Case Finding project in partnership with the local nongovernmental organization Philanjalo. He oversaw four field health workers who traveled to local *shebeens* (taverns), where they screened participants for tuberculosis, HIV, hypertension and diabetes. This study will continue over 10 months and will include screenings of more than 300 participants. Justin focused on getting the project started: training the field health workers, ordering supplies, overseeing the screening tools and doing some introductory data analysis.

“I really enjoyed being able to accompany the team to some of the *shebeens* to interact with the community,” said Justin. “On the weekends I tried to see as much of South Africa as possible, including hiking in the Drakensberg Mountains – which was fun, but so challenging.”







# MADELYNN TICE, M.P.H. CANDIDATE

DEPARTMENT OF SOCIAL AND BEHAVIORAL SCIENCES

GHANA

Madelynn spent the summer working in Ghana on a project that tested the feasibility and cultural appropriateness of an educational guide that could be used to teach mothers and fathers about responsive feeding (a method of paying attention to what children are conveying through their actions and responding in caring and nurturing ways that help children learn how to feed themselves properly and eat healthy foods). Madelynn is passionate about making sure young children can live healthy and

successful lives. Yet, it was not just the importance of the work that she was doing that kept her inspired, it was how generous and willing the teams at Point Hope Ghana and University of Ghana were as project partners.

“I learned so much from my Ghanaian colleagues about traditional parenting practices,” said Madelynn, “including the tactic some parents use – feeding their young children only food that grows on trees so that they will learn to stand up and walk!”



# HARNESSING TECHNOLOGY IMPROVING HEALTH

Two alumni are using experiences with health care in East Africa to expand into the United States.

*access.mobile* is a mobile engagement platform designed to improve patient care with a focus on underserved and diverse populations. Utilizing mobile technology, it applies behavioral science, multicultural communications and public health expertise to optimize and automate patient engagement flows that reduce costs for health providers while driving improved health outcomes. Its technology platform, amHealth, analyzes determinants of health and tailors outreach based on individual needs and preferences. It also provides recommendations to optimize outreach success and insights into the patient population, barriers to care and communications efforts. *access.mobile* was founded in 2011 by Kaakpema “KP” Yelapaala, M.P.H. ’06. His wife, Sara Yelapaala, M.P.H. ’07, is the company’s director of marketing and strategy. *access.mobile* now has customers throughout East Africa and, more recently, portions of the United States.

**What have been your biggest accomplishments since *access.mobile* was launched?**

**KY, SY:** We have worked with over 150 health facilities and supported 2.5 million patients. We were the first and remain the leading mobile patient engagement solution in East Africa, an innovative market that has great mobile infrastructure but also has great health needs. Through our solution, amHealth, we have increased the use of clinical and specialty services among sick patients, improved medication and appointment adherence, fostered health education, and advanced the patient experience. We have also recently launched our solution with leading hospitals in the United States based on our global experiences.

**What are some of the challenges that remain?**

**KY, SY:** The biggest challenge is getting the right data organized and understood to personalize health communications. In East Africa, the challenge is getting more reliable electronic data in order to better optimize communications and care. We spend a great deal of time cleaning, organizing and understanding data. Without accurate information on medical conditions, last medical visit, date of birth, address and other determinants, the ability to segment and tailor communications is limited.

In the United States, the data challenge is slightly different. There is a great deal of data available but it is highly fragmented and creates a challenge to organize and use it in meaningful ways. There is a wealth of information, but it is about finding the relevancies and insights. For example, using clinical records to see where your diabetic patients live and publically available data to overlay information on food deserts, can trigger communications about nearby food resources. Similarly, if you have chronic care needs and your address is not near public transport, there may be communications about available transportation options.



*Left:* A patient visiting the dental clinic at The Nairobi Hospital.  
*Opposite page:* A new mother receives a health communication on her cell phone via amHealth.







**More recently, you began implementing your approach into regions of the United States. How has your work in Africa prepared the company for this?**

**KY, SY:** We have found the underserved and multicultural populations in the United States share similar barriers to health care access and comparable mobile communication behaviors to our customers throughout East Africa. In both of these markets, individuals often have a high health burden, low health literacy and delay seeking medical attention. Also these populations are often multicultural, un- or under-insured and non-English speaking. Phone

ownership is also comparable between Kenya and those earning less than \$30,000 annually in the United States, both in terms of percent owning a mobile phone, percent owning a smartphone and preference for texting. Based on our experience in East Africa and our expertise in public health and behavioral science, we have been able to work in both markets and apply a reverse innovation model.

Kaakpema and Sara Yelapaala.



PHOTOS COURTESY OF SARA YELAPAALA



## ALUMNI NEWS

**MARIA ROSARIO “HAPPY” ARANETA**, M.P.H. '86, Ph.D. '94, professor of epidemiology in the Department of Family Medicine and Public Health at the University of California, San Diego, was appointed to a six-year term on the NIH Council of Councils. The Council advises the NIH director on matters related to the policies and activities of the Division of Program Coordination, Planning and Strategic Initiatives.

**KERIN TORPEY BASHAW**, M.P.H. '90, R.N., has been hired as senior vice president of patient safety and risk management for The Doctors Company in Napa, Calif. The Doctors Company is a physician-owned medical malpractice insurer with 79,000 members.

**THEODORE BERNSTEIN**, J.D., M.B.A., M.P.H. '85, joined Chapman Associates as managing director of Healthcare Mergers and Acquisitions. Chapman Associates is one of the oldest middle-market mergers and acquisitions firms in the United States. Since 1954, Chapman Associates has sold over 2,300 companies.



**MARNA P. BORGSTROM**, M.P.H. '79, was named among the Top 100 Most Influential People in Healthcare for 2017. Borgstrom is CEO of Yale-New Haven Health System and Yale-New Haven Hospital. She also received an honorary Doctor of Humane Letters, *honoris causa*, degree in 2018 from Sacred Heart University in Fairfield, Conn.



**DAVID J. DAUSEY**, Ph.D. '03, was named provost and vice president for academic affairs at Duquesne University. A seasoned administrator, he started working at

Mercyhurst, a Catholic university, as director of the Institute for Public Health in 2011. He became dean of the School of Health Professions and Public Health in 2013, before taking on the provost's role at Mercyhurst in 2015.

**KATHY C. DOAN**, M.P.H. '16, is leaving her clinical research position at Boston Children's Hospital to pursue the Family

Nurse Practitioner degree at Yale School of Nursing. The research she conducted with YSPH Associate Professor Shi-Yi Wang, M.D., Ph.D., was recently published in the journal *Health Services Research*—"Regional Practice Patterns and Racial/Ethnic Differences in Intensity of End-of-Life Care."

**MEAGAN C. FITZPATRICK**, Ph.D. '14, is a research associate at the Center for Vaccine Development and Global Health at the University of Maryland School of Medicine.

**HEATHER FOWLER**, V.M.D., M.P.H. '11, Ph.D., has been named Director, Producer and Public Health at the National Pork Board, where she oversees research, policy and outreach activities related to worker safety and health, as well as other veterinary public health issues including food safety, zoonotic disease and environmental health.

**TRACY GEORGE**, M.P.H. '16, has accepted the position of director of the Being Well at Yale initiative, the University's overarching student wellness program. Working under the vice president for student affairs, the initiative will be housed in the new Good Life Center started by Laurie Santos based on her popular class "Psychology and the Good Life."

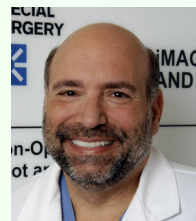
**KRISTIAN HENDERSON**, M.P.H. '10, Ph.D., a teaching assistant professor at the Milken Institute School of Public Health, launched BLK + GRN, an online store that promotes small businesses with products made by and for black women. Its products range from self care and beauty to home goods and jewelry.

**ERICA M. JACKSON**, M.P.H. '06, J.D., has joined K&L Gates as a partner and attorney based in the firm's Charleston and Research Triangle Park offices. Previously, she was corporate regulatory counsel for Genentech Inc. She focuses her practice on U.S. Food and Drug Administration regulatory matters.

**JOSEPH A. LEWNARD**, Ph.D. '17, was appointed assistant professor of epidemiology at the University of California, Berkeley.

**ANGELA NI**, M.P.H. '03, J.D., was named director of underwriting for Parabellum Capital, a leader in litigation finance based in Manhattan. Prior to joining Parabellum, she was a senior intellectual property litigator at Paul Hastings LLP, where she represented major pharmaceutical and technology companies in complex patent litigation. She has been named a Rising Star in IP Litigation

by *Super Lawyers* and listed among the Top Women Attorneys in the New York Metro Area for the last four years. She currently serves on the Board of Directors of the Association of Yale Alumni in Public Health.



**ROCK G. POSITANO**, D.P.M., M.Sc., M.P.H. '89, in a joint project with Hospital for Special Surgery, Harvard/MGH and Weill Cornell/New York-Presbyterian

Hospital, has published *Pocket Foot and Ankle Medicine and Surgery*. It is part of a national and international book series published by Wolters Kluwer and was released in July.



**LINDA SPOONSTER SCHWARTZ**, M.S.N. '84, M.P.H. '84, received the Yale-Jefferson Public Service Award from the Association

of Yale Alumni. A Vietnam Era veteran, she served in the United States Air Force Nurse Corps from 1968 to 1986 until she was medically retired after sustaining spinal cord and brain injuries when the door of her C-140 USAF aircraft was blown off at 30,000 feet.

**STEPHANIE C.F. TOISE**, M.P.H. '91, is the recipient of the United States Small Business Administration's 2018 Connecticut Micro-enterprise of the Year Award. She is a pioneer in integrative behavioral medicine, specializing in yoga therapy, and is leading research in the interface between patients and medical devices.

**TRAVIS WHITFILL**, M.P.H. '14, founder and chief science officer of Azitra, was named one of 30 Under 30 in Healthcare for 2018 by *Forbes* magazine. Azitra is harnessing bacteria of the microbiome to treat skin diseases.

**HAVE AN UPDATE?** Your classmates want to hear about you! Send your news (and photos) to [ysph.alumni@yale.edu](mailto:ysph.alumni@yale.edu).

# STAY INVOLVED & CONNECTED



## ENJOY ALUMNI SERVICES

**Lifelong e-mail:** A permanent Yale e-mail alias is available for free to all alumni.

**Career assistance:** Resources are available to assist with networking and job searches throughout your career.

**Distance learning:** The University offers free online educational opportunities through Open Yale Courses.

**Podcasts:** Thousands of lectures, events and scholarly presentations are available on iTunesU.

**AYA benefits:** These include access to JSTOR, a digital archive with more than 1,000 academic journals, library borrowing privileges and alumni rates at Payne Whitney Gymnasium.



## STAY INFORMED ABOUT YOUR SCHOOL

**Join the YSPH LinkedIn group:** With nearly 1,200 members, our LinkedIn group is fast becoming the preferred way to network with friends and colleagues.

**Like us on Facebook:** With daily updates on research, faculty, students and alumni, it is the place to go for the latest YSPH and public health news.

**View us on Instagram:** A picture is worth a thousand words and we have lots of great images to share.

**Follow us on Twitter:** Join more than 5,000 followers and get YSPH news in real time!

**Watch us on YouTube:** Engaging, informative stories and lectures—learn something new today.

**Visit our website:** The entryway for all things Yale School of Public Health. Read the digital edition of *Yale Public Health* and help to save trees.

**Receive @YSPH, your alumni e-newsletter:** For news, happenings, social events and more.



## PARTICIPATE IN THE YSPH COMMUNITY

**Post a job or internship online:** Our students and your fellow alumni would make great colleagues.

**Update your contact information:** In order to keep you abreast of exciting additions and changes to our services we need to know how to reach you.

**E-mail items for *Yale Public Health* magazine:** Promotions, awards, marriages and new additions—we love to brag about our alumni.

**Interview prospective students:** Help us find the best and brightest both for YSPH and the future of public health.

**Make a gift:** Supporting scholarships, programs and activities is a concrete way of furthering YSPH's mission.

**Participate in speaker series:** Your careers span the breadth of public health disciplines—students love to hear about your experiences.

**Attend events and reunions:** Come socialize, network and have fun! We love to catch up.

**Wear YSPH logo merchandise:** You earned it—wear it with pride.

For additional information on any of these opportunities and others, visit [publichealth.yale.edu/alumni/benefits/index.aspx](http://publichealth.yale.edu/alumni/benefits/index.aspx) or contact [ysph.alumni@yale.edu](mailto:ysph.alumni@yale.edu).





“ YOU HAVE EXTRAORDINARY POWER TO CHANGE ANYTHING. BELIEVE THAT.”

~Arsema Thomas, M.P.H. '18, class speaker

## 2018 COMMENCEMENT

Graduates urged to stand up, take action to protect public health.

The Yale School of Public Health’s 2018 Commencement drew people from around the world to watch nearly 170 students – earning M.P.H., Ph.D. and M.S. degrees – receive their diplomas after years of challenging preparation.

Soon, they will be involved in the day-to-day struggles for better health outcomes domestically and globally, said commencement speaker Gina McCarthy, former administrator of the U.S. Environmental Protection Agency and currently a professor at the Harvard T.H. Chan School of Public Health.

Science is under attack and fields such as public health need those who are willing to take a stand for what is in the public’s interest. “It’s time for action,” McCarthy said. “Standing up matters in times like these. It is tough out there. We need you!”



HAROLD SHAPIRO (3)

“ SCIENCE NEEDS A HERO. BE THAT HERO!”

~Gina McCarthy, 2018 commencement speaker



“ I HAVE A TREMENDOUS SENSE OF OPTIMISM.”

~Sten Vermund, dean, Yale School of Public Health



## GIVING BACK

**Annual Day of Service draws faculty, alumni, students and staff.**

Yale School of Public Health faculty, staff, students and alumni fanned out at sites across New Haven – and into neighboring Woodbridge and nearby Wallingford – on May 10 for the school’s fourth annual Day of Service.

Scores of volunteers in commemorative T-shirts pushed wheelbarrows laden with dirt, painted, planted flowers, stocked food and spent time with residents at a home for people with HIV/AIDS. All the volunteers shared a similar motivation: to help the community.

“This is what public health is all about and I couldn’t be prouder of our school,” said Dean Sten H. Vermund.

This year’s Day of Service included eight sites: Columbus House, Inc.; Common Ground High School, Urban Farm and Environmental Education Center; Leeway; New Haven Farms; Stepping Stone Transitional Housing; and New Haven Land Trust, all in New Haven, the Connecticut Food Bank in Wallingford; and Massaro Community Farm in Woodbridge.







## NEW CENTER TO TRANSLATE RESEARCH INTO PRACTICE

A new center at the Yale School of Public Health will promote the adoption of research findings into clinical practice and develop and assess sustainable, cost-effective interventions to improve health domestically and globally.

The Center for Methods of Implementation and Prevention Science (CMIPS) is led by Donna Spiegelman, Sc.D., the Susan Dwight Bliss Professor of Biostatistics, who also holds an appointment in the Department of Statistics and Data Science, will work to translate research findings into practice.

At the Yale School of Public Health, Spiegelman and her CMIPS colleagues will lead the development of quantitative and qualitative methods for implementation and prevention science in global public health and provide quantitative and qualitative support for the design and planning of global health projects in areas such as HIV/AIDS, cancer, diabetes, cardiovascular disease prevention and substance abuse. The new center will also promote collaboration between biostatisticians, epidemiologists, social scientists and health economists from schools across the university.

“We are fortunate to have Dr. Spiegelman joining the Yale School of Public Health to lead this important center that will be integral in both the development of new

“WE PLAN TO BE THE GO-TO DESTINATION FOR METHODS IN IMPLEMENTATION AND PREVENTION SCIENCE WORLDWIDE IN A SHORT PERIOD OF TIME.”

~Donna Spiegelman

methods for research, as well as serving as a platform for original projects addressing some of the world’s most urgent public health issues,” said Sten H. Vermund, dean of the School of Public Health.

Dr. Spiegelman brings two investigator-initiated grants (NIAID and NIEHS) along with her NIH Director’s Pioneer Award with her from the Harvard School of Public Health. Spiegelman is the first biostatistician to receive the prestigious NIH Director’s Pioneer Award, a \$5 million award given to scientists who propose pioneering approaches to major challenges in biomedical and behavioral research.

Spiegelman most recently served as professor of epidemiologic methods at the Harvard T.H. Chan School of Public Health and is now professor emerita there. She began her appointment at Yale on July 1.

Spiegelman is one of the few people in the world with a joint doctorate in biostatistics and epidemiology. In her research, she has focused on methods for study design and data analysis that reduce bias in estimation and inference due to measurement error or misclassification in the exposure variable. She is experienced in troubleshooting and solving methodological issues that arise in longitudinal investigations, in clinical trials and in large-scale public health effectiveness evaluations.

“I am excited to recruit new talent to Yale to work with me on CMIPS’ innovative and impactful agenda. Already, we have projects in Nepal, Mexico, Tanzania and India, and we are addressing important environmental health problems, and advancing statistical methodology for study design and data analysis through rigorous mathematical methods. We plan to be the go-to destination for methods in implementation and prevention science worldwide in a short period of time,” said Spiegelman.

*Above:* Donna Spiegelman, the Susan Dwight Bliss Professor of Biostatistics.

## ALUMNI DAY 2018

**Social entrepreneurship, professional awards, Thai waterbugs.**

Yale School of Public Health alumni returned to New Haven in June to reconnect with classmates and friends and learn about a growing campus network of social entrepreneurship designed to promote change locally and globally.

Dean Sten H. Vermund welcomed the large alumni gathering to the New Haven Lawn Club on Whitney Avenue, thanking them for all that they do for the school in the way of mentorships for existing students, recruitment of graduates and donations to scholarship funds and other programs.

He described the network of more than 6,100 alumni as “vital” to the school and its future success.

This year’s Alumni Day focused on the power of social entrepreneurship to effect social change and how Yale and the Yale School of Public Health are incubators for this student-driven approach.

Martin Klein, M.P.H. ’86, Ph.D., senior advisor to the dean, told the gathering that social entrepreneurship needs to be purposeful, innovative, sustainable, scalable and impactful if it is going to succeed in reducing health or other disparities.

Klein founded InnovateHealth Yale (IHY), a program at the Yale School of Public Health that promotes student ventures addressing health and educational problems. Created five years ago, IHY sponsors the Thorne Prize, which awards \$25,000 to the best student-led project each year, as well as the two-year-old Aetna Prize, which also awards \$25,000 to a student team.

A panel discussion on Yale as a laboratory for social change drilled deeper, exploring some of the challenges faced by start-ups, as well as how to maneuver in diverse and resource-poor settings.

The four-member panel featured Duncan Maru,



Ph.D. ’08, M.D. ’09, co-founder of Possible, a non-profit health care provider in Nepal; Aly Moore, BA ’14, founder of Eat Bugs Events; Cass Walker-Harvey, program director for Yale TSAI CITY and Center for Business and the Environment; and Preethi Venkat, M.P.H. ’16, chief research officer for Khushi Baby.

Moore’s start-up promotes the human consumption of insects to lessen environmental impact and improve sustainability.

Moore told the gathering that she was exposed to ideas of unity and collaboration during her time at Yale, a mindset that prepared her for life as a social entrepreneur. She now uses advertising, marketing and the power of narrative to introduce new ideas to people at large. She compared the reaction that people have today to eating insects to the way sushi was viewed decades ago.

Attitudes have shifted and today, sushi is trendy. Many people have a negative response to the idea of eating scorpions, but Moore describes them as “little lobsters,” delicious with a dash of salt and olive oil.

“It’s about getting people comfortable with change,” Moore said.

Venkat described the lengths to which Khushi Baby has gone to ensure that their device, a necklace with a digital chip that is worn by expectant mothers and newborns to store their vaccination and health records, was well received. They test marketed bracelets, anklets and necklaces and considered the color scheme and other factors. They also interviewed potential users and received their direct feedback. Cultural sensitivity is essential in the process.

As to what advice they would give to a new start-up, Moore said she would urge people to look at things from





“THE YALE SCHOOL OF PUBLIC HEALTH IS A CONSTANT PRESENCE IN MY CAREER.”

~Marna Borgstrom

multiple perspectives, to travel and to talk with people with varying viewpoints and backgrounds.

During lunch, attention turned to three alumni who were recognized for outstanding professional achievements and contributions to public health. They include:

- Duncan Maru, recipient of the Award for Excellence for his ongoing work to improve health outcomes in some of the most remote areas of Nepal.
- Khadija Gurnah, M.P.H. '09, recipient of the EMAC Special Award in Health Disparities for her work to improve health outcomes among immigrant and underserved communities.
- Marna Borgstrom, M.P.H. '79, recipient of the Distinguished Alumni Award for her 37-year career at Yale-New Haven Hospital. Borgstrom is now CEO of both the hospital and Yale-New Haven Health.

Borgstrom said great mentors at the School of Public Health, along with numerous opportunities at the school and a network of peers that she met as a student and who continue to be an important resource, have helped make her career possible.

“The Yale School of Public Health is a constant presence in my career,” she said. “I got here with a public health background.”

Borgstrom said that while there have been many successes in improving health outcomes, Connecticut continues to struggle with poverty and the health care needs in the state’s bigger cities are particularly acute.

“The communities that we serve are also the communities that we live in,” she said.



Vermund briefly updated alumni on some of the initiatives underway at the school, including a curriculum rebuild, the first in 22 years; the creation of a research committee to help the best projects get funding; and new partnerships that are being forged between the School of Public Health and Yale’s other professional schools.

Efforts to further increase diversity are also underway, and there has been a surge in the number of students entering the school, setting new enrollment records for the 103-year-old institution. Additionally, the school is moving into online education with an 18-week certificate program in climate change and health that debuts this fall.

The day closed with a bug tasting hosted by Moore, complete with locusts, ants, grubs, grasshoppers and Thai waterbugs. Vermund was among those who sampled the bug buffet. And at least several who indulged described the fare as “tasty.”

*Opposite page:* Chelsea Doub, M.P.H. '14, poses a question during a panel discussion on social entrepreneurship.

*Top left:* Marna Borgstrom, M.P.H. '79, receives the Distinguished Alumni Award for her 37-year career at Yale-New Haven Hospital.

*Above:* James Hadler, M.P.H. '82, M.D., senior epidemiologist at the CT Emerging Infections Program at Yale, samples a Thai waterbug. An assortment of insects were available for tasting as part of a presentation on food sustainability.

“NO ONE DISCIPLINE CAN SOLVE GLOBAL HEALTH PROBLEMS. YIGH WILL PROVIDE A CATALYZING CENTER FOR THESE COLLABORATIONS.”

~Ann Kurth



## GLOBAL HEALTH INSTITUTE LAUNCHED

Led by the Yale schools of public health, medicine and nursing, a new institute that addresses pressing global health problems and which will serve as the focal point for research, education and engagement with internal and external partners has been founded at Yale.

The Yale Institute for Global Health (YIGH) encourages collaborations across schools to better address broad health issues, including infectious diseases, non-communicable diseases, health systems and research capacity. YIGH works closely with a wide range of programs throughout Yale to promote partnerships.

“These programs are led by talented faculty, but we have learned that health initiatives are not as well connected across the university as they could be,” said Sten H. Vermund, M.D., Ph.D., dean of the School of Public Health. “Yale has examples of amazing work being done in multiple schools from which the experience, expertise and findings can be harnessed and further developed within larger-scale, higher-impact and sustainable global partnerships.”

The institute will harness efforts among the health sciences and other parts of the university to address

specific global challenges such as maternal and child health, urbanization, and climate change and health. The health sciences schools will reach out to recruit experts from other schools, including forestry, law and management, for further collaborations.

“It is critical for Yale to have a substantial role in addressing health problems that face populations around the globe, including in the United States,” said Ann Kurth, Ph.D., dean of the Yale School of Nursing. “We want to harvest all the talent and the distinct assets we have across the university, so we no longer work in a distributed way but with a more cohesive, interdisciplinary approach to make a deeper impact with our global initiatives. No one discipline can solve global health problems. YIGH will provide a catalyzing center for these collaborations.”

In collaboration with the MacMillan Center for International and Area Studies, this spring YIGH launched the Hecht Global Health Faculty Network Award, designed to promote research and program development in global health. Two \$40,000 awards were provided to programs in Uganda focused on self-care of chronic diseases and pediatric surgery. Two smaller awards of \$10,000 were provided for work on early childhood development in Colombia and the health of indigenous populations in Argentina.

“With our wealth of expertise, matched with intense interest from our faculty to become more involved in global health programs, this is the moment to build an organizing entity like YIGH,” said Pericles Lewis, Ph.D., Yale’s vice president for global strategy and deputy provost for international affairs.

Partners in the Yale Institute for Global Health include (*from left to right*) Robert Alpern, dean, Yale School of Medicine; Sten Vermund, dean, Yale School of Public Health; Ann Kurth, dean, Yale School of Nursing; and Robert Rohrbaugh, director of the Office of International Medical Student Education, Yale School of Medicine.



“ THE KNOWLEDGE GENERATED BY CIRA SCIENTISTS AND OTHERS IN THE HIV RESEARCH FIELD HAVE BROUGHT THE GOAL OF ENDING THE EPIDEMIC WITHIN REACH.”

~Paul Cleary



## AIDS CENTER TURNS 20, AWARDED \$7.8 MILLION TO CONTINUE RESEARCH ON PANDEMIC

The Center for Interdisciplinary Research on AIDS (CIRA) at Yale University received a \$7.8 million grant in April from the National Institute of Mental Health to continue its research for the next five years.

CIRA was established in 1997 at the Yale School of Public Health by former Dean Michael Merson, M.D., when effective treatment options were limited and the disease was usually fatal. In the interim, both prevention and treatment strategies have evolved and HIV is now a manageable chronic condition and researchers at CIRA and elsewhere are working to eliminate new infections. Over its 20-year history, CIRA-affiliated scientists have done cutting-edge research to develop and evaluate effective approaches to prevent and treat HIV disease throughout the United States and worldwide.

“The knowledge generated by CIRA scientists and others has brought the goal of ending the epidemic within reach. The next hurdle is to implement all that we have learned about HIV into routine HIV prevention and clinical practice. This implementation challenge will remain CIRA’s primary focus in the next five years,” said former Dean Paul D. Cleary, Ph.D., CIRA’s director and the Anna M.R. Lauder Professor of Public Health.

New HIV diagnoses have steadily declined in recent years and the overall number of people with HIV who are receiving treatment has increased dramatically. However, the epidemic continues to affect millions of people, disproportionately impacting communities

of color, low income/impoverished parts of the world, women and men who have sex with men.

CIRA is committed to continuing its work to address such issues. The new grant will fund its many research activities and programs through 2022.

Elaine O’Keefe, CIRA’s executive director, began working on the epidemic in New Haven in 1986. She agrees that tremendous progress has been made, but the epidemic is not over and serious challenges remain.

“We need to apply the scientific knowledge that has evolved over the years to the contextual reality of the places where HIV prevention and care services are actually delivered, and do this in sustainable ways. CIRA will focus on these research implementation and adaptation issues to have a greater impact,” O’Keefe said.

Since its inception, CIRA has supported interdisciplinary research in diverse settings, contributing significantly to scientific knowledge of HIV risk and transmission and the cost-effectiveness and efficacy of HIV interventions. This research has resulted in numerous publications that have been widely disseminated and frequently cited. Over the past five years, CIRA-affiliated scientists have published over 800 papers on HIV/AIDS care and prevention.

The center currently has 177 research scientists and research partners who represent multiple disciplines including public health, medicine, psychology, law, nursing and the social sciences, and various AIDS service and health care provider organizations. It also provides support to 67 active HIV research and training projects funded by external grants from the National Institutes of Health and other sponsors.

“THE VIRUSES ARE FIVE STEPS AHEAD OF US.”

~Anne Schuchat

## SMALL AND DEADLY, VIRUSES CONTINUE TO BESET HUMANS

The longstanding struggle between humans and an array of microscopic, disease-bearing viruses intent on killing remains a pitched battle. There have been many victims and no end is in sight.

Humans have achieved a few decisive victories, the eradication of smallpox most notably, but a host of other viruses – Zika, SARS and Ebola among them – remain relentless and resourceful. They mutate, strike quickly and exploit any weaknesses in the lines of human defense. Despite the efforts of dedicated public health professionals, people continue to die, often thousands at a time during a single outbreak.

The stakes in this internecine standoff were outlined in February by the then acting director of the Centers for Disease Control and Prevention to a near capacity audience at the Yale School of Public Health that drew students, faculty, practicing health professionals and alumni.

“There are some really daunting forces,” Anne Schuchat, M.D., told approximately 150 people attending the annual



Frank Black Memorial Lecture. “The viruses are five steps ahead of us.”

Schuchat said it remains unclear which side will eventually win. It was just 100 years ago that an influenza pandemic killed nearly 50 million people worldwide and reversed life expectancy by 12 years.

More recently, viruses continue to surprise public health professionals with their strength, speed, versatility and ability to launch surprise attacks – leaving humans baffled and terrified. Just a few years ago, Ebola ravaged part of Africa where poverty and other factors had weakened the public health infrastructure. The results were devastating, claiming some 11,000 lives. The virus threatened the region’s major cities and if not for a robust public health intervention, it might have succeeded.

“It was bad, but it could have been so much worse,” she said.

Schuchat’s lecture was in honor of the late Frank Black, Ph.D., a member of the Yale School of Public Health faculty from 1955 until his retirement in 1996. He was the third scientist to use the measles vaccine in humans and pioneered the in vitro cultivation of the virus and tested the efficacy of measles vaccines in susceptible populations in both the United States and abroad.





“CLIMATE CHANGE IS A LOOMING THREAT TO HUMAN HEALTH AND THE YALE SCHOOL OF PUBLIC HEALTH IS COMMITTED TO PROVIDING THE TRAINING NEEDED TO ADDRESS IT.”

~Robert Dubrow

## ONLINE CLIMATE CHANGE AND HEALTH CERTIFICATE LAUNCHES AT YSPH

A new 18-week, online certificate program on climate change and health launched in September—the first program on the topic offered online by a U.S. school of public health.

The Centers for Disease Control and Prevention, the American Public Health Association and the World Health Organization have identified the need to train professionals working in public health and related areas to better address the negative consequences of climate change on human health. The Climate Change and Health Certificate provides participants with a toolkit to understand the impacts of climate change on human health and practical strategies to enable them to use this knowledge to effect change.

The online certificate program is organized into three six-week courses:

- Introduction to Climate Change and Health
- Climate Adaptation for Human Health
- Communicating Climate Change and Health

It is designed to allow working professionals to balance Yale coursework with their careers. Each week students spend approximately five hours working on the course and enjoy a rich learning experience that includes video-based lectures; live, online check-ins with faculty; and opportunities to engage with peers in

small-group discussions. Led by the Yale Climate Change and Health Initiative, each course in the certificate is taught by a climate change and health expert from the Yale School of Public Health or a partner institution.

“We are excited to launch this online program and train the first cohort of professionals. Climate change is a looming threat to human health and our school is committed to providing the training needed to address it,” said Professor Robert Dubrow, M.D., Ph.D., faculty director of the Yale Climate Change and Health Initiative.

Yale’s certificate is designed for a range of professionals, including state and local public health workers, clinicians and other health care professionals, policymakers, environmental health professionals, advocates and government officials. Some participants hold graduate or undergraduate degrees in public health or a related field, while others do not—the commonality among all is their commitment to protecting the health of populations by using the knowledge and skills they gain in the program.

The first course started on September 4 and will conclude on January 25, 2019. This cohort of engaged and supportive learners studying together further enhances the educational experience and creates a lasting network of professional peers. To ensure maximal student and faculty engagement, enrollment in the program is limited to 100 students during each biannual offering of the certificate, and each small discussion group has no more than 15 participants.

“Global warming and climate change are among our most profound threats to human health. We at the Yale School of Public Health are committed to discovering and implementing solutions to address this 21st century emergency,” said Dean Sten H. Vermund.

For further information on the certificate or to apply, visit [chcert.yale.edu](http://chcert.yale.edu).

“TEACHING THIS CLASS IS ONE OF THE BEST PARTS OF MY JOB.”

~Melinda Pettigrew

## TOP YALE SCHOOL OF PUBLIC HEALTH EDUCATORS NAMED

Three members of the Yale School of Public Health's academic community, two faculty and a student, were honored by the graduating class of 2018 for their commitment to advancing the student experience and promoting achievement.

Professor Melinda Pettigrew (second from right) received the Distinguished Teaching Award, the school's highest honor. The Distinguished Student Mentor award was given to Shelley D. Geballe (right), assistant clinical professor of public health. The Teaching Fellow Award was presented to Kayoko Shioda (left), a Ph.D. student.

“These immensely talented educators and scientists are preparing our future generation of public health professionals. Their commitment is remarkable and they are inspiring all of us,” said Dean Sten H. Vermund (second from left). “We are so fortunate to have these dedicated and successful teachers and mentors at the Yale School of Public Health.”



## FESTSCHRIFT HONORS HALF CENTURY OF RESEARCH BY LAWRENCE MARKS



Prestigious scholars and friends gathered at the Yale School of Public Health in April to honor the decades-long career of Lawrence Marks, professor emeritus and senior research scientist in Environmental Health Sciences.

After more than five decades, Marks, Ph.D., retired from the Yale School of Public Health and the John B. Pierce Laboratory, where he is both director and fellow emeritus.

Marks came to New Haven in 1966 as a founding member of the Pierce Lab's psychophysics group. In his 51-year career, he authored two influential books, 30 book chapters and 150 peer-reviewed papers. His first book, *Sensory Processes* (1974) was a scholarly primer on what was then known as the New Psychophysics and the significant contributions it was making to understanding how human senses and perception influence decision-making. His second book, *The Unity of the Senses* (1978), was an intellectual and scientific tour de force, which delved into the theory and principles of multisensory interactions, their role in human perception and their influence on philosophy, cognition and language.

Marks held dual appointments at the Yale School of Public Health and the Pierce Lab where he became a fellow and served as director from 1999 to 2009. Originally trained as a cognitive psychologist specializing in language, Marks has devoted most of his career to elucidating human sensory and perceptual processes, including mechanisms of multisensory integration and interactions of sensory with cognitive processes in the coding and representation of perceptual information.

His work has influenced research in many areas relating to health, including post-traumatic stress disorders, and how people respond to their physical environments, such as office buildings, diet and pain.

“My definition of a scholar is Larry Marks,” Dean Sten H. Vermund told the gathering in Winslow Auditorium.

Denise Meyer





## PATHS TO PUBLIC HEALTH

### AN EARLY DIAGNOSIS INFLUENCES CAREER

Samantha Willner is committed to helping others living with diabetes.



Samantha Willner was diagnosed with type 1 diabetes (T1D) when she was just one year old. Like many kids with this life-threatening and stigmatizing disease, she struggled to be like everyone else and often hid her blood sugar testing and insulin pumping equipment from friends. As a result, through

adolescence, she did not always take care of herself, and by her early twenties she was suffering from serious complications.

That wake-up call was a turning point for Willner, who had originally embarked on a career in publishing. Desperate for resources and support, she found help from JDRF (formerly the Juvenile Diabetes Research Foundation) and was soon volunteering for the organization before being hired to work in its donor relations department full-time.

Through that work, Willner built relationships with people with T1D from all walks of life and learned about the many struggles that people have in maintaining their blood sugar levels, including the rising cost of insulin. Because type 1 diabetes cannot be altered by eating better and exercising, as is true for type 2 diabetes, Willner said that patients faced with cost-related access barriers are sometimes forced to make dangerous and even illegal choices to get the medicine they need to survive.

Willner felt that a public health education would allow her to make an even better impact. Now a second-year M.P.H. student in the Department of Social and Behavioral Sciences, she is researching the circumstances that lead to insulin inaccessibility and the coping mechanisms patients employ when placed in such situations. Notably, Willner's work highlights that it is not just patients without health insurance who find themselves unable to access insulin.

"Life happens," she said. "People who switch jobs may find that their employer-sponsored insurance won't cover the cost of their insulin. Bottles of insulin can break or spoil in the sun, and insurance often won't cover an advance refill. Some people simply can't afford \$300 for one vial, and the choice can sometimes come down to paying for rent or buying insulin for the month."

So, what do people do? They stretch their doses out or starve themselves – they intentionally get sick enough to go to the hospital to get free insulin samples from the ER. They rack up credit card debt. Some people switch to the earlier generation of insulins, which are available over the counter but do not work the same way – a potentially dangerous option without physician oversight. Others rely on the burgeoning online black market for diabetes supplies, exchanging their unused test strips and insulin pump supplies for more essential vials of insulin.

"Yale has been amazing," said Willner. "It opened my eyes and has given me tools to advocate for members of my community in a way that I will be heard."

*Denise Meyer*

Samantha Willner, M.P.H. '18, writes a personal blog, HackDiabetes, to raise awareness about type 1 diabetes and inspire other young women with T1D to feel comfortable wearing their medical devices publicly. The patch on her arm is a continuous glucose monitor which is capable of measuring and predicting trends in her glucose levels.



## AWARDS & HONORS FALL 2018

**THE YALE SCHOOL OF PUBLIC HEALTH'S ADMISSIONS OFFICE** won the Enrollment Marketing Platform Most Innovative Graduate Campaign Award by Liaison for its Nurture Campaign, which was implemented during the 2017 admissions cycle.

**NICOLE COLLINS**, M.P.H. '17, in the Department of Social and Behavioral Sciences, was named a Peter and Patricia Gruber Fellow in Women's Rights by the Yale Law School for 2017–2018. Collins partnered with the Rosebud Sioux Tribe's Tribal Health Administration to help restructure its maternal and child health program.

**NICOLE C. DEZIEL**, M.H.S., Ph.D., assistant professor in the Department of Environmental Health Sciences, won the International Society for Exposure Science 2017 Joan M. Daisey Outstanding Young Scientist Award.

**ROBERT DUBROW**, M.D., Ph.D., professor in the Department of Environmental Health Sciences, and Heidi M. Richard, the dean's chief of staff, were awarded a Certificate of Outstanding Recognition by the Yale Office of Sustainability for their work to connect sustainability to the operations and scholarship of the Yale School of Public Health.

**ALISON GALVANI**, Ph.D., the Burnett and Stender Families Professor of Epidemiology in the Department of Epidemiology of Microbial Diseases; Ann Kurth, M.P.H., M.S.N. '90, Ph.D., dean of the School of Nursing and secondary professor in the Department of

Epidemiology of Microbial Diseases; and Sten H. Vermund, M.D., Ph.D., dean and Anna M.R. Lauder Professor of Public Health, were elected to the CT Academy of Science and Engineering.

**NICOLA HAWLEY**, Ph.D., assistant professor in the Department of Chronic Disease Epidemiology, and Amber J. Hromi-Fiedler, M.P.H., Ph.D., associate research scientist in the Department of Social and Behavioral Sciences, each received a Yale Global Health Leadership Institute's Hecht-Albert Pilot Innovation Award for Junior Faculty.

**MELINDA L. IRWIN**, Ph.D., M.P.H., professor in the Department of Chronic Disease Epidemiology, has been named a fellow in the 2017–2018 Class of the *Hedwig van Ameringen* Executive Leadership in Academic Medicine Program for Women. The program offers an intensive one-year fellowship of leadership training with extensive coaching, networking and mentoring opportunities aimed at expanding the national pool of qualified women candidates for leadership in academic medicine, dentistry and public health. Irwin was also appointed co-chair of the SWOG Survivorship Program.

**TRACE KERSHAW**, Ph.D., professor and chair of the Department of Social and Behavioral Sciences, has been named to the Behavioral and Social Science Approaches to Preventing HIV/AIDS Study Section of the Center for Scientific Review at the National Institutes of Health.

**JOAN K. MONIN**, Ph.D., associate professor in the Department of Social and Behavioral Sciences, has been selected as a Fellow of the Gerontological Society of America.

**LINDA M. NICCOLAI**, M.Sc., Ph.D., professor in the Department of Epidemiology of Microbial Diseases, was honored as Connecticut's 2017 CDC Childhood Immunization Champion by the New Haven Health Department. This award is given annually by the CDC Foundation and the CDC to recognize individuals in each state and the U.S. territories who make a significant contribution toward improving public health through their work in childhood immunization.

**JOHN E. PACHANKIS**, Ph.D., associate professor in the Department of Social and Behavioral Sciences, received the APA Division 44 Distinguished Scientific Contribution Award for 2017 for his work in LGBT psychology and the 2018 APA Award for Distinguished Contributions to Psychology in the Public Interest (Early Career). The Association for Yale Alumni also recognized Pachankis' groundbreaking work in a presentation at the Yale Club of New York City titled "Advances in the Science of LGBTQ Mental Health: From Policy Impact to Clinical Practice."

**RAFAEL PÉREZ-ESCAMILLA**, Ph.D., professor in the Department of Social and Behavioral Sciences, has been appointed senior advisor to the Maternal and Infant Nutrition and Nurture Unit and invited professor at the University of Central Lancashire School of



Community Health and Midwifery in the United Kingdom. He was recognized by the Connecticut Immigrant & Refugee Coalition for his contributions to the state on CT Immigration Day 2017, and he was named the Pearl Memorial Lecturer by the Human Biology Association for his lifetime of work integrating biology, social and behavioral sciences and public health in the field of human nutrition.

**MELINDA M. PETTIGREW**, Ph.D. '99, senior associate dean of academic affairs and professor in the Department of Epidemiology of Microbial Diseases, received the 2018 Inspiring Yale award for the Yale School of Public Health.

**KAYOKO SHIODA**, D.V.M., M.P.H., doctoral candidate in the Department of Epidemiology of Microbial Diseases, was selected to participate in the 68th Lindau Nobel Laureate Meeting, which took place in June in Lindau, Germany.

**JEFFREY TOWNSEND**, Ph.D., Elihu Professor of Biostatistics and Ecology & Evolutionary Biology, was awarded the Yale Cancer Center Translational Research Prize for his paper, "Early and Multiple Origins of Metastatic Lineages Within Primary Tumors," published in the journal *PNAS*.

**VASILIS VASILIOU**, Ph.D., Susan Dwight Bliss Professor of Epidemiology and chair of the Department of Environmental Health Sciences, has been named a member of the National Academies of Sciences,

Engineering, and Medicine's committee to review and report on long-term health effects on Army test subjects.

**STEN H. VERMUND**, M.D., Ph.D., dean and Anna M.R. Lauder Professor of Public Health, received the 2017 Ward Cates Spirit Award from the HIV Prevention Trials Network.

**SHI-YI WANG**, M.D., Ph.D., associate professor in the Department of Chronic Disease Epidemiology, was awarded the Yale Cancer Population Science Research Prize for his paper, "Preoperative Breast Magnetic Resonance Imaging and Contralateral Breast Cancer Occurrence Among Older Women with Breast Cancer," published in the *Journal of Clinical Oncology*.

**TIARA C. WILLIE**, doctoral candidate in the Department of Social and Behavioral Sciences, was accepted into the Edward A. Bouchet Graduate Honor Society. The society recognizes outstanding scholarly achievement and promotes diversity and excellence in doctoral education.

## IN MEMORIAM

**ELISABETH APPELQUIST COLOGNE**, M.P.H. '64, of Matamoras, Penn., died on June 18, 2018, at age 78. She served as director of the Jersey City Department of Health and Welfare, becoming the director of Epidemiology and Public Health in 1970.

**GEORGE B. "ROBIN" ROWLAND**, M.D. '65, M.P.H. '79, died on January 2, 2018, at his home in Escondido, Calif., at age 79. He worked as a clinician for the federal Indian Health Service and went on to manage large county health systems and hospitals as director of the Maricopa County (Ariz.) and San Luis Obispo County (Calif.) health departments during the 1970s and 1980s. He later worked as a self-employed health care consultant and also as an executive at Cape Cod Healthcare in Massachusetts.

**ELSE NIEBUHR SCHULZE**, M.P.H. '60, ARNP, died of cardiac arrest on March 2, 2018, at age 85. She worked as a hospice home care nurse in Branford, Conn., and after retiring to Florida continued working as a nurse practitioner until she was 80 years old.

**MARY SPRINGER**, M.S. '49, P.B.H. '49, a chemist and public health educator, formerly of Maplewood, N.J., died on April 29, 2018, at her son's home in Point Pleasant, N.J. She was 94. She graduated from Emmanuel College in Massachusetts with a B.S. in chemistry and worked as a chemist for Standard Oil.

Send obituary notices to  
[ysph.alumni@yale.edu](mailto:ysph.alumni@yale.edu).

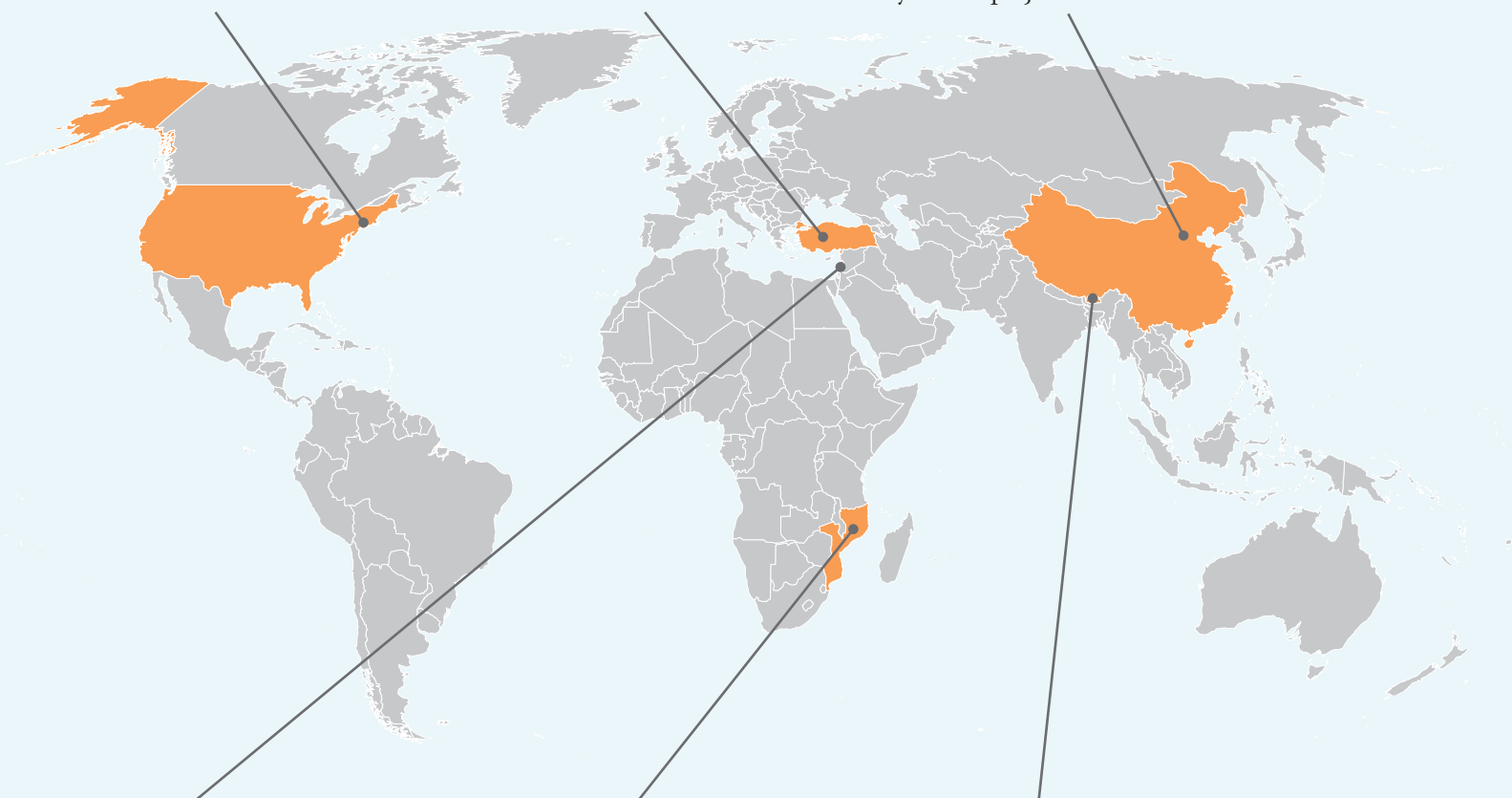


# YSPH AROUND THE WORLD

**NEW HAVEN** The Department of Biostatistics sponsors the R/Medicine conference to promote the use of R programming in medical research and clinical practice.

**TURKEY** Scientists help demonstrate the presence of *Wolbachia* and *Spiroplasma* infections in the natural sand fly populations in Turkey. It is the first report on *Spiroplasma* infection in sand flies from Turkey.

**CHINA** The Yale School of Public Health signs a memorandum of understanding with Capital Medical University School of Public Health in Beijing, China, to collaborate on projects of mutual interest.



**LEBANON** A student performs a summer internship at the World Bank to address the health needs of displaced Syrians.

**MOZAMBIQUE** Researchers meet with local public health colleagues to discuss ways to strengthen health care systems in order to improve breastfeeding counseling services.

**BHUTAN** An ethics review board at a medical school receives specialized training in protecting the rights and welfare of people involved in scientific studies from a YSPH expert.



# ON THE ISSUES

WITH ABIGAIL FRIEDMAN

## Are e-cigarettes a safer alternative to conventional cigarettes?

For the average adult, the answer is yes: current research, including a number of systematic reviews, indicates that electronic cigarettes are much safer than conventional cigarettes. But don't get too excited—being safer than a product that is responsible for about 1 in 5 U.S. deaths each year is not a particularly high bar. Let's dig a little deeper.

Smoking—inhaling on a combustible cigarette—is the leading cause of preventable mortality worldwide, and accounts for around 480,000 deaths each year in the United States alone. About a third of these are due to cancers, another third from cardiovascular and metabolic diseases, and just under a quarter from pulmonary diseases, with the remainder attributable to secondhand or perinatal exposure.

Smoking's carcinogenic effects stem primarily from chemicals produced through combustion; that is, from burning. Electronic cigarettes do not involve combustion; and, the evidence strongly indicates that switching from combustible to electronic cigarettes reduces exposure to these carcinogens. Thus, smokers could reduce their cancer risk by giving up combustible cigarettes in favor of exclusive e-cigarette use.

In terms of cardiovascular and pulmonary disease, however, the impact is less clear. Lungs do not respond well to fine particles, and there is evidence for an inflammatory response to e-cigarette aerosols. However, longer-term effects on COPD and cardiovascular disease are difficult to assess with such a young product (e-cigarettes first entered the U.S. market in late-2006/early-2007). Some have hypothesized that these effects will be similar to those from smoking, while others believe e-cigarettes will prove much less harmful. The evidence is mixed, and more research is needed.

Behavioral elements of vaping may also matter here: particularly, the specific flavorings one chooses (some have demonstrated toxicity to cells), the temperature one vapes at (hotter tends to be worse for health), and frequency of use.

While nicotine is the chemically addictive component of tobacco products, it is not directly responsible for smoking's primary health effects. Nicotine does, however, pose a risk to developing brains. Thus, pregnant women should avoid both electronic and combustible cigarettes, and care should be taken to protect infants and children from exposure.

What it comes down to is this: if you are not using tobacco products, don't start. If you are using combustible products and are not willing to quit tobacco altogether, exclusive e-cigarette use is safer than continuing to smoke.

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