How do you celebrate 100 years of lifesaving achievements? What are the priorities for the next 100? Send us your ideas for the Bloomberg School's Centennial in 2016. Complete our survey: jhsph.edu/centennial-survey

Questions? Contact Susan Sperry, Sr. Director of Communications and Marketing, at ssperry@jhsph.edu.

This summer 1,000 American Indian kids will descend on Shiprock, New Mexico, for the annual NativeVision camp. NFL players and Johns Hopkins coaches will lead sports clinics. And Martin Sheen will teach acting. Read our “postcard from camp” in the Fall 2013 issue.

Photo: Ed Cunicelli
A Different Future

Don’t give away the seed corn. It’s your future, as any good farmer will tell you.

Research is our 21st-century seed corn. Research delivers the new discoveries that propel our advances in science, technology and human health. It’s the engine of innovation and economic growth. One nonpartisan study found that government-funded research delivers an annual return of more than 25 percent.

There’s no free lunch, of course. This essential link to a prosperous and healthy future requires investment. Yet suddenly our leaders are not willing to invest in the future. The U.S. government’s budget sequestration (with its requisite 8.2 percent cut to biomedical research) is just the latest example of this perilous trend.

It’s time to ask: Is this the right thing for our country?

In low- and middle-income countries, there’s an incredible investment in research. Last year in China, for example, the research budget for schools of public health increased by more than 30 percent over the previous year. Countries all over the world are leaping into the knowledge-based economy. Whether it’s Singapore, the Gulf states or Brazil, everybody is investing in research. And they are increasing their investment while we are backing away from ours. This is not how we built the world’s largest economy. At a time when people are trying to be more like us, we’re trying to be less like us.

Sequestration, with its automatic, uniformly deployed spending cuts, manifests our government’s growing unwillingness to invest in the future. The problem with sequestration is it’s an across-the-board, dumb cut. It’s a haircut for everybody—even programs with proven effectiveness like Head Start. This kind of cut doesn’t allow you to trim the budget in ways that eliminate inefficiency or least hurt your mission. The result is predictable. Important programs suffer just as much as less important programs.

Here at the Bloomberg School, sequestration is already being felt. Let me rephrase that. “Felt” is not the right word. It’s more like a punch in the gut. The potential hit to our budget in the next federal fiscal year is $27 million.

The lab sciences already have been hit especially hard by the cuts at NIH. Even for our most senior faculty, grant renewals have become nearly impossible or have been delayed for a year. This means downsizing teams and infrastructure. Recovering from a blow like this is not easy. It takes years to build up groups with the knowledge and expertise that can accumulate the insights that result in breakthroughs and new knowledge.

Our Department of Biochemistry and Molecular Biology (BMB), for example, recently lost a basic research training grant that had been funded for 25 years. It was a small grant for reproductive biology but it allowed for training doctoral students and supported a network of researchers throughout Johns Hopkins. Now it’s likely gone permanently.

That department’s remarkable momentum, built up in the last few years under the energetic leadership of Pierre Coulombe, is being jeopardized. As Pierre told me the other day, “We have been progressively switching from a growth, to a maintenance, to now a survival mode. Some of our newly recruited faculty worry about the future—and who could blame them? Despite all this, we continue to put out stellar science.”

This is just one example from one department but it’s happening throughout our School and across the nation. What does this say to a generation of prospective doctoral students who have the knowledge and the drive to contribute to science? It tells them, you need not apply. It says, don’t bank on scientific research as a stable career choice.

I don’t want to think about the future discoveries lost, the new knowledge that will never see the light of day because of the sequestration.

Sadly, this is not just about sequestration in the short term. Here’s what concerns me the most: Is this a paradigm shift? Do we, as a nation, truly want to retreat from investing in research? Do we want to say no to innovation? Do we want to back away from investing in our future?

Such a course will unalterably change the future of the Bloomberg School and our nation. About two-thirds of the School’s funding comes from government research grants, with NIH being the top funder. Significant cuts in the government’s research budget will lead to stagnating knowledge about how to save lives and a diminished selection of future tools to make meaningful differences in the health of millions. Ultimately it means ceding scientific leadership—and thus the future—to other countries.

I am so proud of the vital work this School does, and at the core of what we do is research. It drives our advances in education and in the field. Our School is 98 years old, and during that long history, research has been the foundation of our contributions, whether in making discoveries, producing new leaders or advancing public health practice.

Our long track record of accomplishment is at risk, not so much now but in the years ahead as we lose the leaders of tomorrow. We need to let our elected officials know to be judicious in meeting their fiscal responsibilities. And we need, as never before, philanthropic support for our mission of saving lives, millions at a time.
The Virus That Owns the World

The human papillomavirus infects almost every sexually active person at some point in their lives. All cervical cancers and some cancers in the head and neck are caused by the ubiquitous HPV. A gentle virologist and his legions of protégés aim to stop them.

By Maryalice Yakutchik

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As refugees flee across the borders of war-torn Syria, they leave behind a rapidly crumbling health system with too few physicians, too little medicine and too many hospitals that have been abandoned or destroyed.

But in the camps and cities they’re running to, basic health care and essentials can be equally elusive. Simple necessities—like running water or heating fuel—are scarce as well. Meanwhile, as the conflict intensifies, the number of refugees flocking into the surrounding countries rises, too. Currently estimated by the U.N. to be around 1 million, Syrian refugees are expected to triple by the year’s end.

Because of difficulties entering the country, addressing public health needs within Syrian borders has proved challenging if not impossible for foreign aid workers. Still, the Bloomberg School’s Center for Refugee and Disaster Response (CRDR) researchers are determined to try. With American University in Beirut and University College London, they’re launching injury surveillance at health facilities in Aleppo, in northwestern Syria, and working with NGOs providing humanitarian assistance in Syria to better understand the country’s greatest health needs. To answer that same question about Syria’s refugee community, Bloomberg School researchers and students are actively working in the camps and cities in the nearby countries. “The idea is to look at the current state of refugee populations in the region so that we can better inform donors and providers of humanitarian assistance about what is most needed,” says Shannon Doocy, PhD, an associate professor in International Health. Doocy is launching two studies—one in Syria and one in refugee host countries.

The Syria-based study is still in its infancy and is moving slowly, explains Tom Kirsch, MD, MPH, an associate professor in International Health and Emergency Medicine, and a co-investigator of Doocy’s studies. “The government is at active war with various groups,” he says, “and they don’t want outsiders within their boundaries.”

For now, that leaves researchers focused on refugees in the sur-
rounding countries, where they are witnessing firsthand refugee conditions, whether in tent settlements—where the nights are cold and toilets are sometimes nonexistent—or, as Alicia Hernandez witnessed, camping out in unfinished buildings.

“One place that particularly stayed with me was a construction site,” recalls Hernandez, an MPH student and a registered nurse, who recently returned from Lebanon. “It was extremely remote, a large concrete structure set back about a mile from the road. One lone family with children was staying there. Even in the daytime it felt like being in an ice cube. They had to walk at least 30 minutes to a water source and only had one large, flat mat for the five of them to sleep on.”

The actual camps, she continues, often lacked proper sanitation facilities. “Most camps used one central tap as the water source for camps of up to 150 people,” Hernandez says. “Almost no one was treating the water before consuming it for lack of money, resources or knowledge how. No one had proper latrines.”

Hernandez surveyed the displaced Syrian citizens about their health and medical needs. She is using the information gathered to devise a training manual for community health educators. A majority of those she encountered were children and women—many of them pregnant—who desperately needed basic necessities like blankets.

MPH student Jonathan Strong has a different focus: elderly refugees and their greater burden of chronic diseases such as diabetes or heart failure. Strong surveyed elderly Syrian refugees in Lebanon. Many lack access to affordable, basic health care, making their chronic diseases difficult to manage. “The high cost of health care there poses a huge public health challenge,” Strong says. “Many of the Syrian refugees I spoke to in Lebanon are forgoing necessary medical care due to cost.”

Both Strong and Hernandez visited the region for work supported by Caritas Lebanon Migrant Center.

While their projects are nearing completion—Hernandez’s training manual has been drafted and Strong is analyzing the completed studies and compiling the results—Doocy’s work is just beginning.

Once her studies are complete, she hopes the information she gathered can guide aid groups assisting refugees and those remaining in Syria.

—Lauren Glenn Manfuso

**Closing the Door on 10 Years in Afghanistan**

"We were essentially the eyes and ears [of the government] to tell them how their health system was performing," says Engineer, DrPH ’08, MHS ’03, MHA, the project’s country director since November 2011.

Under contract with the Afghan Ministry of Health, International Health (IH) researchers hired about 500 local people, mainly as data collectors, and evaluated some 750 health facilities annually. They guided officials in shaping effective policies by assessing the performance of primary health care and hospitals.

Data from the project’s household surveys show dramatic gains in key health indicators over the past 10 years, as well as improvements in access to health care and quality of services, says David Peters, MD, DrPH ’93, MPH, who oversaw the Afghanistan work and is now IH chair.

Logistically, researchers on the ground faced daunting challenges. "I'm most proud of my field teams who put their lives at risk to get data," Engineer says, "because they were so passionate and keen to help the Afghan people."

—Jackie Powder
Minimizing Resistance

Researchers found that mass treatment for trachoma in Tanzania increased antibiotic resistance.

“We can’t do away with antibiotics,” says Christian Coles, PhD, MPH. “But is there a better way to use them?”

It’s a common question, with antimicrobial resistance on the rise around the globe. But for Coles, an assistant professor of International Health, it is especially pressing.

Coles recently helped analyze data from a study of the ancillary benefits of distributing the antibiotic azithromycin on a mass basis in Tanzania in order to eliminate trachoma. Funded by the Bill & Melinda Gates Foundation and led by Sheila West, PhD, PharmD, the El-Maghraby Professor of Preventive Ophthalmology at the Johns Hopkins School of Medicine, the study was designed to shed light on the side benefits of treating entire communities with azithromycin in order to stamp out an infectious eye disease that is the leading cause of blindness worldwide.

If left untreated, infection by *Chlamydia trachomatis* causes scarring of the eyelid and rubbing of the eyelashes against the eyeball, scarring the cornea. The disease disproportionately affects women and children in the developing world.

WHO, which aims to eliminate trachoma globally by 2020, recommends that all individuals in a community be given repeated annual doses of oral azithromycin when prevalence among children exceeds 10 percent. When combined with other measures such as face washing, the drug can break the cycle of infection.

Since azithromycin is effective against a wide variety of pathogens, it seemed likely that mass distribution might have other positive effects. Coles did find that mass treatment of young children in rural Tanzania also lowered the risk of diarrhea and acute respiratory infection. But he discovered something else, too: Mass distribution of azithromycin (MDA) also caused a “huge jump” in antibiotic resistance—specifically, in *Streptococcus pneumoniae*, a leading cause of severe childhood infections such as pneumonia and meningitis and a major global public health problem in its own right.

In a paper published online in *Clinical Infectious Diseases* in March, Coles and his colleagues report that the prevalence of azithromycin resistance within treated communities continued to rise at one-, three-, and six-month intervals after mass distribution, peaking at 82 percent, more than double what it had been prior to treatment. At that point, the odds of carrying azithromycin-resistant *S. pneumoniae* were five times higher in treated communities than in untreated ones. While the clinical significance of such a spike has yet to be demonstrated, those numbers only heighten the need to establish whether or not such a rise in resistance reduces the efficacy of antibiotics in treating severe pediatric infections.

Coles suspects that repeated administration of azithromycin in MDA programs may increase the circulation of macrolide- and multidrug-resistant bacteria and therefore have the potential to reduce the efficacy of antibiotics against childhood infectious diseases over time. Moreover, resistance to azithromycin implies resistance to all antibiotics in the same class, known as macrolides; and Coles also found signs of resistance to the common sulfa drug trimethoprim/sulfamethoxazole, raising the troubling possibility that mass treatment with azithromycin might contribute to multidrug resistance as well.

In a commentary on the paper, researchers at the Vaccine & Infectious Disease Institute at the University of Antwerp say that the community-wide rise of resistant *S. pneumoniae* “highlights the need to monitor the long-term impact of MDA on treatment options for pediatric infections.”

Coles will soon participate in a new study to examine the impact of MDA programs on childhood mortality in Tanzania, Malawi and Niger that will investigate the clinical significance of associated antibiotic resistance. And he wants to examine the genetic, social, and environmental factors that influence azithromycin resistance to see if there might be ways of using the drug that will maintain its efficacy but limit its adverse effects.

“I’m not saying don’t use it,” Coles says. “I’m saying, let’s figure out if we can minimize the effects so that we can use it better.”

—Alexander Gelfand
Chicken à la Arsenic?

Nobody puts arsenic on the shopping list. Yet most of us have bought chickens purposely and legally fed it. According to new research, this arsenic lives on not only in chicken waste (a familiar concern) but also in chicken meat.

Keeve Nachman, PhD ’06, MHS ’01, lead author of the study, hopes it will lend scientific muscle to efforts aimed at banning arsenic from poultry production.

Until July 2011, arsenic was a popular additive to chicken diets—enhancing growth, promoting pinker meat and combating parasites.

Today, the chemical’s fate hangs in limbo, says Nachman, who heads the Farming for the Future program at the Johns Hopkins Center for a Livable Future (CLF). After an FDA-conducted study found heightened levels of arsenic in chicken livers, Pfizer voluntarily halted sales of roxarsone (an organic form of arsenic) in the U.S.—though not abroad, Nachman notes. But the FDA didn’t go the further step of banning future use of roxarsone or other arsenic-based drugs.

Hoping to “close this gap,” Nachman and his colleagues set out to answer a simple, yet technically challenging question: Does using roxarsone heighten levels of inorganic arsenic (the form that’s a well-known carcinogen) in chicken meat? It’s a question with implications both for roxarsone and for nitarsone, a similar arsenical drug that Pfizer continues to sell here.

The team’s work began with a nationwide shopping spree when roxarsone was still on the market. Collaborators bought 142 chickens in 10 U.S. cities, shipped them overnight in coolers to Baltimore, carefully prepared samples (testing raw and cooked samples from each chicken), freeze-dried them, and sent them to Austria for analysis by Kevin Francesconi, PhD, of the University of Graz, “one of the top metals chemists in the world,” says Nachman.

The results confirmed the team’s hypothesis: if a chicken ingests roxarsone, you’ll wind up with more carcinogenic arsenic in breast meat. The big surprise came from the cooked samples. “We didn’t think the concentrations would change,” says Nachman. “But it turns out that cooking increases inorganic arsenic, likely by degrading the roxarsone. The mean inorganic arsenic content of cooked conventional chickens was 1.8 micrograms per kilogram—three times that of cooked samples from chickens raised organically, according to the study published in May in Environmental Health Perspectives.

By the team’s calculations, eating chickens raised with arsenic rather than organic ones would result in additional (and unnecessary) exposures to inorganic arsenic. If arsenical drug usage were still a universal practice in domestic poultry production, the researchers estimated that the increase in arsenic exposures from eating chicken would result in approximately 124 lung and/or bladder cases in the U.S. each year.

The key word is “unnecessary.” People are exposed to arsenic through a wide variety of environmental and dietary pathways. Yet “in every other context,” says Nachman, “any residual arsenic that’s found in foods is the result of natural processes, historic pesticide use or unintended contamination.” But in the case of chicken meat, “a very simple decision” to ban arsenic-based drugs would eliminate the risk, Nachman says.

“We have needed this type of data for several years,” says Amy Sapkota, PhD ’05, MPH, an associate professor at the University of Maryland School of Public Health, who has received funding from CLF.

Now that the evidence is in, she adds, banning arsenic in chicken feed “seems like a no-brainer.”

—Rebecca Widiss

No federal laws ban the addition of arsenic-based drugs to chicken feed.
It’s the kind of story you won’t see on The Wire.

A young gang member discovers he’s on another gang’s hit list and confides in a community worker. The worker arranges a meeting. It begins with a roomful of rivals, armed and angry. But it ends with two men, who might have been linked by a bullet, hugging each other with relief.

This mediation was among the first by Safe Streets, a Baltimore City program launched with guidance from Daniel Webster, ScD ’91, MPH, deputy director of the Johns Hopkins Center for the Prevention of Youth Violence (JHCPYV).

During 2007 and 2008, Safe Streets debuted in four of Baltimore’s most violent neighborhoods. Outreach workers, many of them former gang members, began developing relationships with high-risk youth and helping them get job training, build interview skills and—above all else—settle disputes without guns.

Through the first three and a half years of the program, Safe Streets achieved reductions in nonfatal shootings or homicides (or both) at every site. In Cherry Hill, homicides dropped 56 percent and shootings 34 percent.

Attitudes also changed dramatically. McElderry Park youth were four times more likely to express “little or no” support for using violence than those in a comparison neighborhood.

“People understand that violence begets violence,” Webster says. “In essence, these guys [are] looking for someone to come in and change the rules, to give them an excuse to walk away.”

Tard Carter, a veteran mediator who works the streets of East Baltimore, agrees, adding, “Poverty brings forth frustration. Frustration brings forth unwise decision making.”

He’s proud that four recent Safe Street graduates plan to apply to Baltimore’s Police Academy.

“Although I’ve studied gun violence and its prevention for 23 years,” Webster says, “it wasn’t until I started working with this program and … violence interrupters like Tard that I gained a deeper understanding of gun violence and the challenges faced by many urban youth.”

It’s an opportunity Webster tries to share by inviting Carter (among others) to lecture at Hopkins and join in public speaking engagements. The pairing works well, says Webster. His research can help show how Carter’s mediations are correlated with homicide reductions, while Carter’s stories validate Webster’s empirical findings.

Looking ahead, Webster is cautiously optimistic. New research projects include evaluating a similar program in New Orleans and launching a study of Baltimore’s underground gun market—both with Carter acting as a consultant. Safe Streets also recently opened a new site in the Park Heights neighborhood, with funding from a CDC grant. It represents JHCPYV’s first success garnering funds to bring Safe Streets’ skilled mediators into another high-need area.

And that may be the highest priority. The main thing Webster says he’s learned from this effort is “how important it is to get the right people and give all the credit to them.”

—Rebecca Widiss
Hurricanes like Katrina and Sandy can devastate not only communities but science. In addition to the human lives and property destroyed, the storms ruined thousands of irreplaceable frozen research specimens kept in basements that flooded.

Until recently, the Bloomberg School was just one natural disaster away from a similar fate. Established in 1984, the Johns Hopkins Biological Repository had for years consisted of 120 freezers in the School’s basement; there, millions of samples were frozen in time.

The setup, however, was less than ideal. The electricity required to run the freezers drained financial and environmental resources. But the possibility of losing decades’ worth of specimens from high profile projects like the Multicenter AIDS Cohort Study made finding a better situation imperative.

The ideal facility could accommodate cryogenic technology, which preserves specimens in liquid nitrogen, says Homayoon Farzadegan (top left), PhD, director of the biorepository and a professor of Epidemiology. Ultimately, the search led to an industrial park three miles away from the East Baltimore campus, where the new biorepository opened in January. The old freezers have been replaced with 60 cryogenic storage units requiring a fraction of the electricity and space. One of only a few such academic facilities on the East Coast, the biorepository currently houses 2.5 million samples and is available to researchers at Johns Hopkins and outside organizations.

By allowing researchers to store a wide range of specimens—from hair to saliva to cord blood—cryogenics enables scientific research that would otherwise be impossible.

A good example, Farzadegan says, is the use of the viral load marker in studying and treating AIDS patients. By studying the preserved blood of patients from the mid-1980s, scientists learned that viral load could indicate the likelihood of an HIV patient developing AIDS. “The only way to assess this was to use frozen samples from the mid-1980s and follow those individuals whose blood we had collected,” he explains. “Now HIV viral load marker is used around the world to monitor HIV treatment.”

—Lauren Glenn Manfuso
Known for classy repasts at the august Johns Hopkins Club, the Tropical Medicine Dinner Club celebrates nonstandard—even off-putting—dinner conversation. Circumcision, diarrhea, projectile vomiting…

“Nobody seems to mind,” says Yale Kim, an MHS student in Mental Health, at April’s dinner. She sits at a table covered in white linen, a glass of rosé in her hand.

“It’s not that we don’t seem to mind, we don’t notice,” adds Remington Nevin, a DrPH student who’s also in Mental Health. “Everybody here certainly knows how to laugh about it despite how awful these topics actually are.”

Since 1970, relaxed conversations about public health have been the Club’s hallmark, and fried chicken has been a mainstay on the menu. Over the years, speakers at the monthly gathering have talked about malaria vaccines, pre-eclampsia, Alexander the Great’s lethal fever, rickettsial diseases and a host of other topics.

Membership, which is $30 annually plus the cost of dinner, is open to people from local institutions, such as the Uniformed Services University of the Health Sciences, the National Institutes of Health and the University of Maryland. Around 30 to 50 people attend.

“People are really just interested in talking and finding out what’s going on in public health,” says Clive Shiff, PhD, associate professor in Molecular Microbiology and Immunology (MMI), and a Club member since the mid-1980s.

He recalls some passionate discussions—such as one last year about the mental health effects of certain antimalarial medications and whether these side effects should limit their use among the military. More often though, faculty and students chat amiably about their work, as they do on this April evening.

Over cocktails, Shiff tells Nevin, MD, MPH ’04, about his latest discovery: Malaria transmission, which usually declines during hot and dry months, can actually still occur under these conditions in some areas of Africa. Using satellites and climate data in Zambia, Shiff and his teammates found that a source of moisture (most likely from the water table) affords enough humidity for mosquitoes to forage.

Later, while eating fried chicken, coleslaw and biscuits, Douglas Norris, PhD, MS, also an MMI associate professor, and Sarah-Blythe Ballard, MD, MPH ’10, an Epidemiology PhD student, find that they share an interest in aviation. Having recently returned from a conference in Florida, Norris casually tells Ballard about one program’s methods for airborne spraying for mosquitoes.

After-dinner speaker Larry Kincaid, PhD, associate scientist at the School’s Center for Communication Programs, talks about the role of communication programs—animated commercials, television dramas—in preventing HIV in South Africa. The diners listen intently while passing around homemade pralines for dessert.

Afterward, Nevin remembers a dinner in which he sat with Shiff, Epidemiology Professor Kenrad Nelson, MD, and Dean Emeritus D.A. Henderson, MD, MPH ’60. “I just thought, ‘My goodness, the concentration of genius at this table,’” he says. “The Dinner Club is a wonderful opportunity for young students to meet with so many greats in tropical medicine.”

Shiff is happy to hear this. “I like students to feel at home in the tropical disease community,” he says. It’s one reason why the Club awards one or two $500 scholarships annually—named after the late Thomas Simpson, MD, former associate professor and a founding member of the Club—to student members doing field work in developing countries.

—Jennifer Walker
Eliminated… and Staying That Way

Once a country eliminates malaria, the parasitic disease often stays away indefinitely even if the interventions are not continued—a new finding that may hold powerful implications for nations assessing their approach to the disease.

Johns Hopkins Malaria Research Institute faculty recently conducted a review of malaria elimination data. Under the Global Eradication Effort beginning in the late 1940s, some 79 countries had approached or achieved elimination before the international funds supporting the effort dried up in 1969. Contrary to their expectation that the mosquito-borne disease would reappear in countries that discontinued the interventions, the researchers found that those nations that achieved elimination have remained malaria-free, while most of those that came close experienced a resurgence.

“If you think about it, it’s a bit shocking. Why should going all the way to zero be better than going most of the way to zero?” asks David L. Smith, PhD, MA, MS, an Epidemiology professor and one of the study’s authors.

The researchers don’t yet have an answer to that question, but there are several possibilities. During the same period, many economies were developing and health systems improving. So researchers tried to tease apart the role those factors may play, versus the role of elimination itself in causing changes that result in malaria staying away. “The most critical question is, does [elimination] cause its own stability, or is it caused by something else?” Smith asks.

It’s a complicated web, but it does seem likely that economic development has a hand in it, Smith says. People with more resources are more likely to get treatment and less likely to be a significant factor in malaria transmission. At the same time, elimination should lead to greater wealth, as children miss less school and adults are more productive.

Meanwhile, Smith says, if a nation’s health system is good enough to get rid of malaria, it’s probably also good enough to contain transmission: In the process of achieving elimination, health systems become so well developed that it’s difficult for transmission to occur.

(When patients are treated with appropriate drug regimens within the first week after a malaria fever appears, they will not become infectious, Smith says.)

The WHO estimates that 149 million to 274 million cases of malaria occur annually in 99 countries, causing 537,000 to 907,000 deaths, with the majority occurring in young children in Africa. Elimination is both expensive and risky. Expensive because it requires an intensive combination of household insecticide spraying and the distribution of treated bed nets. Risky because if a resurgence occurs, the population—which has lost its immunity—is at greater risk. So while it may be tempting to think every country should jump on the elimination bandwagon, it’s essential for any country to assess feasibility carefully based on its specific conditions, Smith says. For example, Angola has achieved a relatively high level of malaria control, but frequent border crossings with its neighbor the Democratic Republic of Congo create opportunities for transmission that lower its potential for elimination.

The new research is a distinct departure from traditional malaria research, which Smith and his colleagues believe holds unnecessarily low expectations for the possibilities of elimination succeeding in countries that are ready. Clive Shiff, PhD, associate professor in Molecular Microbiology and Immunology, is not optimistic about prospects for elimination in central Africa, India and other parts of Asia. He points out, for example, that malaria is well controlled in much of Zambia, where he is principal investigator on research into malaria epidemiology and control, but in the northern areas, 50 percent of the population is still infected at any given time.

While many unknowns remain, the study does suggest that the value of elimination has been underestimated, indicating the potential for elimination strategies, under the right conditions, to be very successful in the long run. But elimination in any country will not happen without significant increases in international funding.

As economic development continues, some elimination will occur on its own, Smith says, but an infusion of funds could speed up the process and save children’s lives.

—Rachel Wallach

A TALE OF THREE CHAIRS

M. Daniele Fallin, PhD, an internationally known genetic epidemiologist with a focus on understanding the interplay between genes and environmental risk factors for neuropsychiatric disorders, has been appointed Sylvia and Harold Halpert Professor and chair of Mental Health. Her areas of expertise include autism spectrum disorders, Alzheimer’s disease, schizophrenia and bipolar disorder.

David Peters, MD, DrPH ’93, MPH, an expert in the development, monitoring and evaluation of health systems in low-income countries, has been named the Edgar Berman Professor and chair of International Health. As director of the Department’s Health Systems Program since 2009, he led projects aimed at solving policy issues and improving health systems performance worldwide.

Marsha Wills-Karp, PhD, a leader in the study of the molecular mechanisms of asthma, became chair of Environmental Health Sciences in March 2012. Previously, she was a professor and founding director of the Division of Immunobiology in the Department of Pediatrics at Cincinnati Children’s Hospital Medical Center.
For much of the past two decades, Paul Locke has been working at the crossroads of radiation and public health.

He’s chaired an expert panel on uranium mining, consulted on radioactive waste disposal and currently serves on a federal panel studying the catastrophic accident that happened three years ago at Japan’s Fukushima nuclear power plant.

The Environmental Health Sciences associate professor knows there’s no shortage of radiation-exposure issues that need attention, including aging nuclear power plants and the potential risks of medical imaging technologies.

What is in short supply, says Locke, DrPH, ’98, MPH, JD, are public health professionals dedicated to ensuring the safety of workers, communities and the environment from unhealthy radiation exposure.

“These are the people regulating things that we come into contact with every day, the people who make sure that radioactive metals from other countries aren’t in our products,” he says. “As educators we need to do a better job to show our students why this is a vibrant and important field for them.”

Dan Hudson, a risk and reliability engineer at the Nuclear Regulatory Commission (NRC), doesn’t need to be convinced.

“Over the past 20 years, risk assessment for nuclear power plants has focused primarily on engineering issues—what can we do to prevent nuclear power plant accidents?” says Hudson, a second-year PhD student in Health Policy and Management and a student in Locke’s course, Risk Communication During and After Nuclear Reactor and Radiation-Related Accidents and Emergencies. “That’s obviously important, but when I go back [to the NRC] I hope to have some expertise in how to do assessments of the public health consequences so we can better integrate this information into the risk assessments of nuclear power plants.”

The decline of a public health presence in state and federal agencies that regulate radiation exposure is a “national tragedy,” says Locke. “The public health perspective, which is a prevention perspective, brings more of a community-as-a-client approach.”

Locke has worked with the EPA on radiation risk associated with radon exposure in homes and on the cleanup of “legacy sites” in the U.S., many of which are more than 60 years old. At the Hanford Nuclear Reservation in Washington state, for example, new leaks from tanks were discovered in March.

Last year, he visited Japan’s earthquake- and tsunami-damaged Fukushima Daiichi Nuclear Power Plant, as part of a National Academy of Sciences (NAS) committee working on a “lessons learned” report to improve the safety of nuclear power plants in the U.S.

An NAS study that he led concluded “steep hurdles” needed to be overcome before a uranium mining moratorium in the Commonwealth of Virginia should be lifted.

Two significant sources of radiation that Locke says Americans typically don’t take seriously are radon/background radiation (which is responsible for 37 percent of the average American’s radiation exposure and the leading cause of lung cancer among nonsmokers) and computer tomography technology (which accounts for 24 percent of total exposure).

“Without a public health voice in radiation protection, we’re never going to be doing the job we should be doing in making sure the public has needed information to make good decisions and a regulatory system that protects communities,” Locke says, “and we’re not going to be thinking about developing radiation sources in ways that are best for society.”
The genetic factors behind nearsightedness are finally coming into sharper focus, thanks to a recent study by a team of international researchers.

Scientists have long known that genes play a role in refractive errors such as near- and farsightedness, which occur when light is not properly focused on the retina. But relatively few of those genes had been discovered, according to team member Robert Wojciechowski, OD, PhD.

The most common refractive error, nearsightedness (aka myopia), occurs when irregularities in eye development cause the eye to become too long, and images are brought to a focus in front of the retina rather than on it. Worldwide prevalence has risen sharply over the past several decades—it is believed to affect more than 30 percent of Westerners and up to 80 percent of young Asian adults—and the condition can lead to severe complications like glaucoma and macular degeneration. Determining which genes are involved could lead to better intervention and maybe even prevention.

In a paper published online in *Nature Genetics* in February, Wojciechowski and his colleagues in the Consortium for Refraction and Myopia (CREAM) presented a meta-analysis of data culled from 32 different genome-wide association studies (GWAS) with people of either Western or Asian descent. “We tried to include every study we knew of on the planet,” says Wojciechowski, an assistant professor of Epidemiology.

GWAS look for genetic variations across the genomes of many individuals and correlate them with specific traits or conditions. With a complex condition like myopia that involves many genes, the more people involved, the better. By examining data from more than 46,000 individuals and sifting through approximately 2.5 million genetic markers, the CREAM team was able to zoom in on 24 new genes that play a role in refractive errors.

The study provides new targets for experimental research, and could yield better screening tools (individuals with the highest numbers of myopia risk genes were 10 times more likely to develop the condition). It might even lead to methods for preventing nearsightedness—for example, by interfering with the genes that cause it.

“Now, hopefully, the biologists will pick up the ball and try to figure out what exactly these genes do,” says Wojciechowski, who is now examining the complex interactions between genetic and environmental factors.

—Alexander Gelfand

**Focusing on Myopic Risk**

**In Memoriam**

**Henry Wagner Jr., MD**, retired professor emeritus in the School’s former Division of Radiation Health Sciences, died September 25, 2012, at age 85. A nuclear medicine visionary, Wagner pioneered research in imaging brain receptors with positron emission tomography (PET) scanning. At Hopkins, he trained more than 500 radiologists, physicians and scientists.

**Thomas W. Simpson, MD**, a former associate professor in the School, died on December 29, 2012. He was 94. In 1971, with the Johns Hopkins International Center for Medical Research and Training in India, Simpson led oral rehydration therapy (ORT) treatment of cholera patients in refugee camps. His seminal work in ORT helped save millions of lives.

**John L. Pitts Jr., MD, MPH ’59**, a retired pediatrician and expert in maternal and child health, died on March 13, 2013, at age 85. A former director of the Baltimore City Health Department’s Bureau of Child Hygiene, he later became chief of Maternal and Child Health at the Maryland Department of Health and Mental Hygiene.