



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

NIH commits \$36M to train junior faculty in Africa

To encourage junior faculty at African academic institutions to pursue research careers, NIH is awarding up to \$36.5 million over five years in the next phase of the Medical Education Partnership Initiative (MEPI). Sub-Saharan Africa bears almost a quarter of the global disease burden, yet has only 3 percent of the world's health workforce, according to the WHO. Since 2010, MEPI awards have been transforming medical education across the region by strengthening curricula, upgrading community-based training sites, and expanding communications technology and e-learning resources. Some funding has also been devoted to providing faculty with dedicated research time and incentives designed to promote retention, but many junior level staff lack the resources to incorporate research into their careers.

"Research must play an integral part in generating sustainable, quality health care in sub-Saharan Africa, which is the ultimate goal," said NIH Director, Dr. Francis S. Collins. "It is critical that we increase research capacity so Africans can carry out locally relevant investigations

Photo by Richard Lord for Fogarty/NIH



NIH is investing \$36.5 million for junior faculty career development in the next phase of the Medical Education Partnership Initiative (MEPI).

themselves, and develop the necessary expertise in areas such as bioethics, informatics, environmental science, and genomics. That will empower their participation in international collaborations." . . . continued on p. 2

Rwandan Minister discusses country's health advances

Rwandan Minister of Health, Dr. Agnes Binagwaho, recently visited the NIH and shared the lessons learned during her country's dramatic recovery from the 1994 genocide. She said health has improved significantly, largely because of policy decisions based on scientific evidence, and such information should flow more freely so low-income countries can access it.

Noting that some people wanted to write off Rwanda after the genocide, the Minister described how her country emerged from the ruins a healthier nation. During the past two decades, life expectancy has more than doubled and child mortality has dropped by two-thirds. The vast majority of Rwandans—about 90 percent—have

health insurance. Most children receive the recommended vaccines. The percentage of girls vaccinated against the human papillomavirus to prevent cervical cancer is higher in Rwanda than in the U.S. and so, too, is the percentage of HIV-positive people on antiretroviral treatment for prevention.

Binagwaho delivered the 2015 David E. Barmes Global Health Lecture, which honors Dr. Barmes, a dentist and epidemiologist who devoted his career to conducting research to improve health in developing countries. The Minister's talk, "Medical Research and Capacity Building for Development: The Experience of Rwanda," touched on equity, ethics and evidence. . . . continued on p. 2

FOCUS



Research in China has global impact

- Asian diet examined for disease prevention clues
- Benzene studies in China contribute to policy changes in U.S.
- Chinese herbal remedy transformed into potent malaria-fighting drug

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NIH commits \$36M . . . continued from p. 1

MEPI was designed to increase the number of skilled health care workers and strengthen the scientific base in countries supported by the U.S. President's Emergency Plan for AIDS Relief (PEPFAR), which provided significant funding in MEPI's initial phase. In addition to developing much-needed human resources to diagnose and treat patients, the program helped enable evidence-based decision making to improve the effectiveness and impact of the U.S. investment. It is also intended to cultivate scientists who can determine the most efficient ways to expand the treatment platform built for HIV/AIDS to address other illnesses, including the chronic diseases that are a growing cause of disability and death in the region.

"Many junior faculty in African institutions struggle to incorporate research into their careers. These new awards will support advanced training and provide dedicated time so they can conduct investigations that will lay the groundwork for fundable proposals," said Fogarty Director Dr. Roger I. Glass. "Through these training opportunities, African physicians and investigators can prepare themselves to become the next generation of African research leaders."

Sub-Saharan Africa has 12.5 percent of the world's population but produces less than 1 percent of the global research output, according to the World Bank. MEPI is designed to foster the level of science, analytical ability and writing skills that will increase the quantity and quality of published journal articles with African authorship.

In 11 awards to grantees in 8 countries, this new MEPI funding round will support junior faculty training in research management, methodology, ethics, mentorship, preparation of scientific publications and grant writing. This program will strengthen the research culture of grantee institutions and facilitate broader support for junior faculty collaborations that will help sustain and expand progress made in the initial term of the MEPI program. Faculty trainees will develop new skills in the research fields most relevant to their communities and

Rwandan Minister . . . continued from p. 1

In rebuilding after genocide, she said the government created a health system that reaches out to the poor and vulnerable because "when we have them in the loop, we have everybody."

Capacity building is the most important factor in making a health system resilient, she observed, and research should be done in a participatory manner. "We have so much to tell the world, and so much to learn from the world that

bring cutting-edge expertise to their institutions, allowing their scientists to increase their participation in global and regional research collaborations.

The funded projects all incorporate research on HIV/AIDS linked with other noncommunicable diseases or risk factors. For instance, the University of Zimbabwe is targeting cardiovascular disease, mental health and women's health, while the University of Jos in Nigeria plans to tackle two cancers with a high national burden—breast and prostate cancers—as well as reproductive health and genomics. The University of Nairobi in Kenya is targeting mental conditions and maternal, newborn and child health, while Uganda's Makerere University plans to examine HIV/AIDS-associated co-infections, other infectious diseases including malaria, and noncommunicable diseases.

Training approaches vary among the grantee institutions. Mozambique's Universidade Eduardo Mondlane, for instance, will develop and strengthen its master's- and doctoral-level curricula, including a new Ph.D. in biomedical sciences research, while the University of Lagos will establish master's programs in neuroscience, community medicine, genomics and bioinformatics. The University of KwaZulu-Natal in South Africa plans to create an accelerated leadership track for 20 faculty, including those from rural areas, while Ethiopia's Addis Ababa University will train 24 faculty members and simultaneously develop the institution's research infrastructure. Tanzania's Kilimanjaro's Christian Medical Center's grant aims to develop 18 independent scientists and make their training program an institution staple.

Joining Fogarty as funding partners are the NIH Common Fund; Eunice Kennedy Shriver National Institute of Child Health and Human Development; National Heart, Lung and Blood Institute; National Institute of Dental and Craniofacial Research; National Institute of Mental Health; National Institute of Neurological Disorders and Stroke; National Institute of Nursing Research; National Institute on Minority Health and Health Disparities; Office of AIDS Research; and Office of Research on Women's Health.

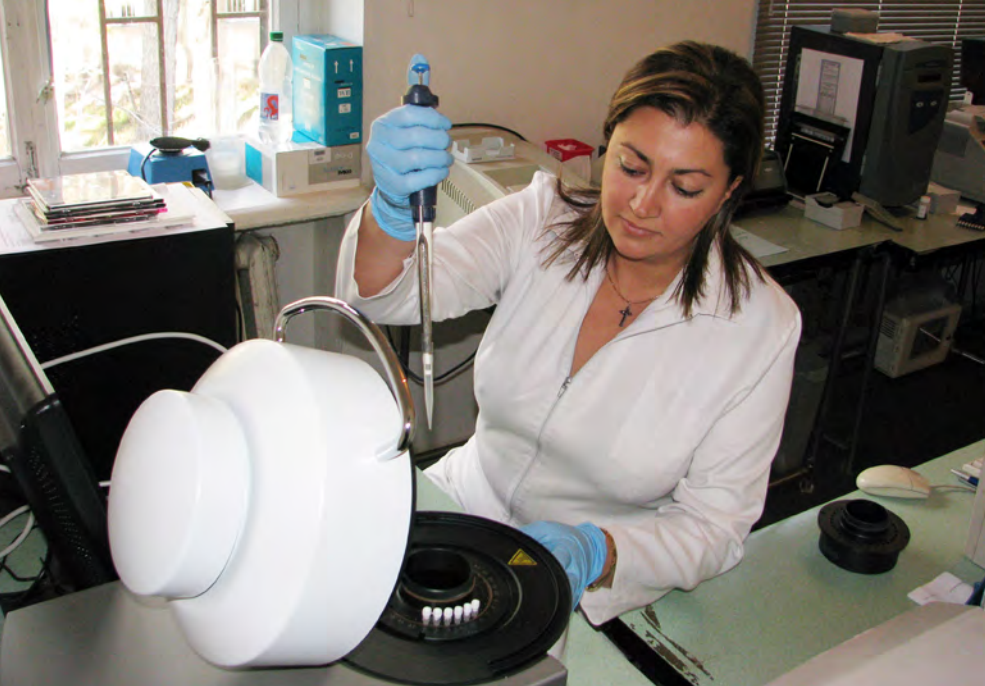
Full list of awards: www.bit.ly/JrFacAwards

we need to create that partnership," she urged. "We can't let global health research momentum decrease."

To view the full report, see <http://bit.ly/BarmesRwanda>.



Binagwaho discussed how her country has improved health outcomes.



Former Fogarty trainees are working to eliminate hepatitis C in Georgia.

Former Fogarty trainees help eliminate hep C in Georgia

Georgia has launched a groundbreaking program to rid its population of hepatitis C—the first lower-middle-income country to tackle this challenge since a cure was discovered for the devastating disease. Leading the effort are a number of former Fogarty trainees, who are collaborating with the U.S. CDC and a pharmaceutical company that is donating its new drug.

As many as 150 million people globally are infected with the hepatitis C virus (HCV), resulting in about 500,000 deaths annually from cirrhosis or cancer of the liver, according to the WHO. Georgia reports one of the world's highest estimated HCV prevalence rates, reaching as much as 80 percent among its HIV-positive population, injection drug users and prisoners. The scientific team believes the country is an ideal candidate for HCV elimination with its small size and high prevalence of disease; strong governmental commitment; availability of modern diagnostic and treatment methods; and a cadre of well-trained personnel who are capable of planning and implementing such a complex initiative.

"It's a strikingly innovative program," said longtime Fogarty grantee, Dr. Jack A. DeHovitz, of SUNY Downstate Medical Center, who has trained Georgian scientists with Fogarty funding since 1996. "It's fair to say that without the Fogarty investment, this would not be happening."

Georgia's research strength to tackle this disease, HIV and other health burdens is founded on the steady build-up of capacity over the past 20 years. Key Fogarty support was orchestrated by four grantees—DeHovitz, Drs. Carlos del Rio and Henry M. Blumberg of Emory University, and Dr. Dale L. Morse, now at the CDC.

The group has together trained about 100 Georgian scientists, which was critical to developing the human resources required to eliminate HCV, del Rio noted. "Fogarty was the gel that allowed us to collaborate and help build a strong public health sector when it wasn't really in vogue." Georgia's research infrastructure had been devastated by a civil war that ended in 1993 and the first Fogarty support came only a few years later.

In 2014, a new medicine became available that, in combination with other drugs, cures nearly all HCV patients in 12 weeks. Georgian scientists saw this as an opportunity to eliminate the virus in their country. They partnered with the

U.S. CDC to prepare the groundwork, such as conducting epidemiological studies, priming laboratory and health care capacity, and setting up an evaluation framework. Gilead Sciences, Inc. offered free supplies of its drugs Sovaldi and Harvoni, which would normally cost about \$84,000 per patient.

"The knowledge and skills we gained during Fogarty-funded training are a very important contribution to the preparation of this intervention," said Dr. Maia Butsashvili, a hepatitis C project scientist, who obtained her doctoral degree in epidemiology with Fogarty support.

So far, the team has selected seven clinical sites and associated labs to pilot the program. They also developed a data management system to track patients and collect demographic, diagnostic, clinical and pharmacy information. By September, more than 10,000 patients with HCV had registered and about 3,000 had begun treatment.

Georgia faces many challenges in reaching the point of hepatitis C elimination, mainly due to the difficulty in identifying the virus before it causes symptoms and its rapid spread through injection drug use, noted the authors of a CDC report on the project. However, the government is addressing these through advocacy, communication, surveillance and prevention strategies, they added.

One of Georgia's first Fogarty trainees, Dr. Tengiz Tsertsvadze, is helping to guide the HCV effort. Tsertsvadze, now director of the infectious disease research center in Tbilisi and professor of medicine at Tbilisi State University, hopes his country's example will be a guide to others battling HCV. "Through best practices and lessons learned," he said, "the international community can follow Georgia's successful experience to significantly reduce the devastating burden of hepatitis C."

RESOURCE

Links: <http://bit.ly/Georgia-hepC>

PROFILE

Fogarty Scholar studies cancer threats in China

By Cathy Kristiansen

For an epidemiologist and cancer researcher like Dr. Emily Vogtmann, having access to two large datasets on Chinese men and women was like opening a treasure chest. She could mine the data to discover whether diverse exposures such as a troublesome gallbladder or a diet high in cabbage might influence the risk of various cancers.

Vogtmann was able to make productive use of these databases during her fellowship in Shanghai. She was there as part of Fogarty's Global Health Program for Fellows and Scholars, which provides yearlong mentored clinical research experiences overseas for postdoctoral fellows and pre-doctoral scholars. Support was also provided by NIH's National Cancer Institute (NCI).

Because the datasets were already established and translated into English, Vogtmann could start doing research from the get-go. "It was perfect to have these really large cohorts to work on right away," she said. "I was able to do so much while I was there." She completed three research projects, advanced her doctoral dissertation and published five first-author papers. She is now a Cancer Prevention Fellow in NCI's Nutritional Epidemiology Branch, investigating potential links between upper gastrointestinal cancer and the microbiome—an interest that developed during her fellowship.

One of her projects in China aimed to clarify previous contradictory evidence about whether having a history of gallstones or having a gallbladder removed raised the risk of liver cancer. By analyzing outcomes over time for both men and women, Vogtmann and her team showed that gallstones did appear to increase the risk of liver cancer, although findings were less convincing for gallbladder removal.

In another study, Vogtmann examined the relationship between eating cruciferous vegetables, such as broccoli, cabbage and kale, and developing colorectal cancer. She first assessed how accurately people recalled their food consumption by measuring urine levels of the compound isothiocyanate, which is produced by eating these vegetables. She also studied whether cruciferous



Fogarty Scholar:	2011 – 2012
Fellowship at:	Shanghai Cancer Institute and Shanghai Municipal Center for Disease Control and Prevention, China
U.S. partner:	Vanderbilt University Medical Center
Research topic:	Cruciferous vegetable intake and colorectal cancer risk in men

vegetables or isothiocyanate fueled the risk of colorectal cancer in people with mutations in a particular gene, and found they did not.

Among the new skills Vogtmann learned in China was how to appropriately handle diet data—knowledge now pertinent in her NCI research. This includes accounting for different components in what is consumed, such as someone eating 1,000 calories in fruits and vegetables and nothing else, versus someone with the same vegetable tally plus 2,000 calories in rice. "When you analyze a dietary factor, you typically have to adjust to total energy intake and there are different methods for doing that," she explained. "I worked with statisticians to learn how to calculate these in the standard way."

Along with her research in China, Vogtmann presented her work to physicians and mentored some colleagues. "It was very collaborative there," she said. "I was able to critically review their manuscripts and help them edit in a format that would be easy to understand. And they would go over my manuscripts to make sure I was describing the cohort correctly."

Her nutritional research in China heightened her curiosity about diet's variable influence on the risk of cancer and other health conditions, and how it might be tied to microbial differences in the gut. Networking with her scholarship mentors and research partners led to her current NCI position, she noted.

Vogtmann said her Fogarty fellowship played a "huge role" in developing her career. "It prepared me to be an independent scientist. I was able to propose ideas, work at my pace, work on multiple projects—it was really a great opportunity."

ROGER DETELS, M.D., M.S.

Dr. Roger Detels is distinguished professor of epidemiology and infectious diseases at the University of California, Los Angeles School of Public Health. He has been active in HIV/AIDS and public health research for nearly 35 years. He directs the Los Angeles Center for the Multicenter AIDS Cohort Study (MACS), one of the largest natural history studies of HIV/AIDS in the world. Since 1988, he has headed Fogarty's HIV/AIDS research and training grants at UCLA, which train health professionals in several Asian countries, including China. In 2011, Detels received an award for Outstanding Achievement in International Cooperation Programs on HIV/AIDS from the Chinese Ministry of Health.



How has research in China evolved since your Fogarty grant began?

Their research capacity was pretty rudimentary before the Fogarty Program was initiated. The government was shifting from what it had been under Mao Zedong to more of a capitalist society and I think that stimulated a renewed interest in science. About that time they realized they needed to improve the quality of their research and, typically for China, committed themselves to improving their research capacity and training.

I work primarily with the National Center for AIDS and STIs, which is part of the China Centers for Disease Control. The quality and capacity of the program has developed tremendously under the director, who is in fact a graduate of our program. They were the group that first identified the outbreak of HIV in plasma donors in several of the provinces in eastern and central China. Then they did some studies looking at the safety of the blood supply in rural areas in China and set up a real-time HIV/AIDS case reporting system that's probably one of the best in the world. They've also implemented both needle exchange and methadone programs and have done quite a bit of work on evaluation of those programs in China. These are only a small sample of the many studies they have conducted, which have contributed to HIV control in China.

What skills have trainees gained?

We made the decision very early that we were going to concentrate our efforts not on short-term courses or short-term training but on Ph.D. training. We thought that would have the greatest impact on building their research capacity. The graduates would then be able to go back to China and actually begin to develop their own research programs, which would meet international standards. One of the important components of our training program is to instill into our trainees the importance of international standards and ethical conduct of research. I think we've been reasonably successful at doing that. Many of the graduates have gone back to the China CDC and have implemented public health intervention programs.

What is the long-term impact on research and policy?

These graduates return to good positions. The vast majority of them are in their early-to-mid-30s when they return to China. So, they've got a 25- to 30-year career ahead of them to conduct research and lead research and academic programs.

Many of our graduates have become directors of provincial and metropolitan CDC programs, and many of them have joined the universities as professors. One, Dr. He Na, has already become the dean of the school of public health at Fudan University. And, of course, the director of the AIDS control program for China's CDC, Dr. Zunyou Wu, has an international reputation and has obtained funding for research and training from the NIH, from the Global Fund and from the Gates Foundation.

One aspect of our program is that when the trainees develop a dissertation topic, that project has to be conducted in China and has to have a policy implication. China is a particularly rewarding country in which to work because much of what we and our graduates have done has been converted into policy within a matter of months. For example, when we found the outbreak of HIV in plasma donors and identified the majority of this was being done by donor centers that were not licensed, China immediately closed down all of the illegal plasma donation centers. And, when one of our graduates evaluated methadone maintenance and showed that it reduced the crime rate in areas where it was implemented, the government made a policy to support methadone maintenance programs throughout the country. So the idea to require the students to do dissertation research that's going to have policy implications and assist the government in developing effective policies has contributed to building China's research capacity and the control of HIV.

RESOURCE

www.bit.ly/Detels

Research advances in China improve health globally

With its ancient tradition of herbal remedies, combined with its cutting-edge biomedical research enterprise, China offers unique opportunities to advance scientific discoveries and improve health across the globe. China has been a valuable partner with the U.S. in medical research for more than 30 years.

NIH-funded scientists and colleagues at universities and health agencies in China continue to work together to better understand the cause of illnesses; find ways to improve treatments; and prevent and control the spread of infectious diseases. By studying traditional Chinese medicine, scientists have rediscovered valuable therapies, including a botanical that is the best weapon against malaria.

China is the world's most populous country, with 1.4 billion diverse residents spread across a vast and varied terrain. It has more elderly than any other country; different disease patterns, diet and lifestyle; and has experienced rapid economic growth that's impacted health.

Life expectancy in China today is about 75 years, nearly twice what it was only a half century ago. As China's population ages, noncommunicable diseases are becoming more of a concern. And, while the country has experienced economic gains, Chinese people are aging at income levels that are still lower than many industrialized countries. NIH is supporting a large-scale health and retirement survey in China to contribute to the understanding of global aging issues.

Cancer has been the focus of much of NIH's collaboration in China. NIH scientists are studying cancers that are more common there than in the U.S., such as those of the liver, biliary tract, stomach and esophagus. Many of the research endeavors began decades ago with the release of the Atlas of Cancer Mortality in the People's Republic of China, which



Two elderly women in China.

revealed geographical patterns of cancer. Published in both Chinese and English, the findings were used in China for cancer control and research, and by scientists elsewhere who were studying, for example, how diet and the environment influence health.

More recently, NIH scientists have worked with their Chinese counterparts to recruit participants in large-scale population studies that provide a wealth of health data to interpret. The ongoing Shanghai Women's and Men's Studies have yielded valuable insights into the increased risk some genetic and lifestyle factors pose for causing cancer and other chronic diseases.

China offers unique opportunities to advance scientific discoveries and improve health across the globe. China has been a valuable partner with the U.S. in medical research for more than 30 years.

Stroke, the leading cause of death in China, is another significant research area. Also, infectious diseases including HIV/AIDS, influenza and malaria are the subject of NIH-supported research and training projects to build capacity, which helps prevent the spread of disease within the country and beyond its borders.

Articles in this section were written by Shana Potash
Resources: <http://bit.ly/China-Research>

Artemisinin: a treasure from China's medicine chest

Today's best treatments for severe malaria are based on the potent drug, artemisinin. A treasure from China's medicine chest, it was rediscovered by Chinese scientists who transformed a centuries-old herbal remedy into a new class of drugs that have helped hundreds of millions of malaria sufferers around the world.

The story begins in the 1960s, during the Vietnam War and China's Cultural Revolution. Malaria was rebounding in Asia as parasites that cause the mosquito-borne disease were becoming resistant to the available medicines. North Vietnam, in jungle warfare with the U.S., asked China for help developing new antimalarials for its troops. China launched a secret program investigating both known chemicals and traditional Chinese medicines. The chemical route quickly delivered new treatments to the battlefield. But scientists studying traditional medicines ultimately produced the powerful botanical artemisinin, several derivatives, and other drugs that can be combined with them.

Artemisinin is derived from the common plant, *Qinghao*, the Chinese name for *Artemisia annua L.*, also known as sweet wormwood. It had been used in China for more than 2,000 years. A fourth century manuscript noted it as a malaria treatment and advised readers to take a handful of *Qinghao*, soak in 2 liters of water, strain the liquid and drink.

Throughout the 1970s, teams of Chinese scientists moved *Qinghao* from plant to drug. Early work produced a crude extract that was 100 percent effective against malaria in mice. Later, scientists isolated the extract's active component, and named it *Qinghaosu*, known in the West as artemisinin. They determined it had a chemical structure that was different from the existing anti-malarials—which was important in solving the problem of resistance—and then tested it in clinical trials. China first used artemisinin-based drugs on the battlefield in 1979.

China did not disseminate information about artemisinin to the



Artemisia annua L.

Photo by Jorge Ferreira, via Wikimedia Commons

West during the Cultural Revolution. But when that period ended, news began to emerge and scientists in other countries, including the U.S., undertook their own studies. Research inside and outside of China demonstrated that fast-acting artemisinin, combined with a longer-lasting partner drug, delivers the necessary one-two punch to clear parasites from the body. Today, artemisinin-based combination therapies are the WHO-recommended best available treatments for most patients with malaria.

Arsenic added to cancer therapy after studies in China

When some people hear the word “arsenic,” they immediately think of poison. But the chemical also helps save the lives of people with a rare type of leukemia. Chinese scientists were first to identify arsenic as a treatment for acute promyelocytic leukemia (APL). APL, which can cause life-threatening bleeding, used to be one of the most fatal forms of acute myeloid leukemia. Now, it's one of the most treatable types in adults, with about an 80 percent cure rate.

“The treatment of acute promyelocytic leukemia is a success story of modern hematology,” noted Drs. Eytan Stein and Martin Tallman, of New York's Memorial Sloan Kettering, in an article

Photo by Martin Walker via Wikimedia



published in the journal *Oncology*.

Arsenic has been known as a poison and medicine

for more than 2,000 years. In the 1970s, scientists in China discovered that the compound arsenic trioxide worked for people with APL, including those whose leukemia returned after standard therapy. Clinical trials in the U.S. confirmed the findings and the FDA approved the treatment in 2000.

When it comes to APL, arsenic

trioxide is “definitely not a poison; the data suggest that it is more of a magic potion,” wrote Dr. Bayard Powell, in an article in *Expert Review of Anticancer Therapy*. Powell, of North Carolina's Wake Forest University, led some of the NIH-funded arsenic trioxide studies.

Before arsenic trioxide, there was another medical advance in the treatment of APL. In 1995, the FDA approved a drug that comes from vitamin A, all-trans retinoic acid (ATRA), based on clinical trials in the U.S., China and France.

Researchers say, together, ATRA and arsenic trioxide have transformed the APL treatment landscape.

Benzene research in China informs EPA regulation

Studies in China have advanced the understanding of benzene's relationship to cancer and other effects on the body. The research contributed to the U.S. decision limiting benzene in gasoline and Chinese regulations reducing workplace exposure to the cancer-causing chemical.

Benzene is used in the production of shoes, leather, rubber goods, paint and pesticides, for example, and in the shipping and refinement of crude oil. It's estimated that more than two million workers worldwide are exposed to the chemical every year. Benzene also is contained in gasoline, so vehicle exhaust and fumes at gas pumps can reach anyone, although the amounts are substantially lower than in occupational exposure.

Scientists with NIH's National Cancer Institute (NCI) and China's Center for Disease Control have been studying benzene's effects on Chinese factory workers for nearly 30 years. The toxin already had been linked to leukemia when the research project started. Over the years, their studies found that workers exposed to benzene had a greater risk of most blood malignancies; that the risk of non-Hodgkin lymphoma and lung cancer rose as exposure increased; and that benzene can have a toxic effect on blood even at or below levels generally considered acceptable in workplaces in Western countries.

The findings played a role in China's decision in 2002 to lower the permitted occupational exposure level for benzene. The studies also influenced the U.S. Environmental Protection Agency's (EPA) regulations that reduced the permitted benzene in gasoline and tailpipe emissions to improve outdoor air quality. When the EPA issued the rule in 2007, it estimated the health benefits would total \$6 billion by 2030.

"This has been extremely important for both countries, the net effect in terms of benefiting public health by reducing levels of exposure to this known carcinogen," says Dr. Martha Linet. She is co-principal investigator of the benzene collaboration, which has followed more than 110,000 Chinese workers in hundreds of factories in a dozen cities.

Linet says the benzene research conducted in China

Photo by NCI/DCFC



Studies of Chinese factory workers contributed to action in the U.S. and China to reduce exposure to benzene, a known carcinogen used in manufacturing and contained in gasoline.

produced findings that couldn't have been achieved in the West because of the uniqueness and size of the population, and the access to information the government provided. While China's occupational benzene levels have decreased in recent years, the environment was quite different in the 1980s. "When we first began the study, the factories used older processes and had higher levels of exposures," Linet explains. Also, because China has so many factories, the workforce was large enough to provide the statistical power to show whether benzene increased the risk of cancer overall and for specific malignancies.

Another benefit was that the Chinese scientists identified government-run factories that had been measuring benzene for a long time, which allowed the researchers to study dose-response. Epidemiologists assigned an estimated exposure risk to each worker for each year they were on the job, and then calculated cancer risk based on level of exposure. Finally, Linet notes, China was eager to learn state-of-the-art epidemiological methods to measure worker health, so scientists were given access to factory information and to worker medical records kept at the factories.

"We have shown a number of different cancers appear to be related to benzene exposure," Linet says. "Our ongoing work will try to uncover in more depth what that relationship is all about."

Other studies of Chinese factory workers by different research teams have shown a link between occupational exposure to benzene and abnormalities in sperm, even at levels near what's allowed in the U.S. And small studies have found links between benzene exposure and sperm with abnormal chromosomes and genetic mutations that can cause intellectual disability. That research was funded by NIH's National Institute of Environmental Health Sciences.

Asian diet examined for clues to improve health

Cruciferous vegetables and green tea are big parts of the Asian diet. That makes Chinese men and women useful populations for research to determine if those staples might help prevent disease. The NIH is funding two large, ongoing epidemiological studies in Shanghai to better understand the causes of disease and to explore how diet and lifestyle affect health.

To assess the potential health effects of cruciferous vegetables, which include broccoli, cabbage and bok choy, scientists analyzed data on more than 134,000 men and women in the Shanghai programs. The researchers concluded that eating a lot of fruits and vegetables did not significantly reduce the risk of cancer but had other benefits. “Our findings support recommendations to increase consumption of vegetables, particularly cruciferous vegetables, and fruit to promote cardiovascular health and overall longevity,” the scientists noted in their study, published in 2011 in the *American Journal of Clinical Nutrition*.

In later work, the researchers tested the hypothesis that cruciferous vegetables lower inflammation, which is associated with heart disease. Investigators surveyed the diets and analyzed the blood of more than 1,000 middle-aged women in the Shanghai study and found those who ate more of these vegetables had fewer signs of inflammation.

Chinese study shows folic acid helps reduce stroke risk

Two decades ago, research in China demonstrated that folate supplementation in pregnant women could reduce incidence of birth defects. Research conducted in China recently found that it can also reduce the risk of stroke in people with high blood pressure. Hypertension is a major risk factor for stroke, which is the leading cause of death in China and the second leading cause of death worldwide.

Scientists studied more than 20,000 men and women with high blood pressure who had never had a stroke or heart attack. Participants who took folic acid along with a blood pressure drug were less likely to have a stroke than people who took the drug alone. The combination reduced the risk of having a first stroke by 21 percent. The folic acid therapy provided the most benefit for people who had the lowest levels of folate in their blood at the start of the trial.

Folic acid is the synthetic form of the B vitamin folate, which is found in green leafy vegetables and in many fruits, beans



Photo by Andrea Fisch, courtesy of PhotoShare

Woman eating at a table outside.

and nuts. Some countries, including the U.S., require that grains be fortified with folic acid. Past studies have found folic acid supplements had little effect on cardiovascular disease but the China trial was conducted in a part of the world where folate levels are low.

Green tea is the most popular type consumed in China. An analysis of data on more than 70,000 women found it reduced the risk of digestive system cancers, especially colorectal, stomach and esophageal. The reduction was greatest for women who drank tea for at least 20 years, which suggests the benefit may be cumulative. While this investigation showed a positive effect of tea, other studies have been inconclusive.

The Shanghai Cancer Center, Vanderbilt University, and NIH's National Cancer Institute established the two large cohort studies. In addition to providing new insight into disease, the research projects incorporate training opportunities. For example, the lead author on a paper about the relationship between cruciferous vegetables and inflammation, Dr. Yu Jiang, was supported by a Fogarty chronic disease research training grant.

The findings were published recently in the *Journal of the American Medical Association* and could have “important implications for stroke prevention worldwide,” according to Drs. Meir Stampfer and Walter Willett of Harvard University, in an accompanying editorial. They noted large segments of the world's population, including people in northern China, Bangladesh and Scandinavia, have low levels of folate. Some U.S. residents also fall into that category.

Previously, Chinese scientists collaborated with the U.S. CDC to examine the benefits of folic acid consumption before and during pregnancy, concluding that the supplement significantly reduced the risk for neural tube defects in infants.



Pioneer AIDS researcher, NIH grantee, dies

Dr. Suniti Solomon, who documented the first evidence of HIV infection in India, has died. She pioneered HIV/AIDS research and treatment in her country and established the YRGCARE organization. She led many NIH-funded HIV studies and was a Fogarty grantee and mentor in the Center's research training programs.



NIH collaborator is new head of key Indian agencies

Global tuberculosis and HIV/AIDS researcher, Dr. Soumya Swaminathan, has been named Director General of the Indian Council of Medical Research and Secretary of India's Department of Health Research. She has led NIH-funded studies and received research training through Fogarty programs.



Guttmacher to retire from NIH

After more than five years leading NIH's Eunice Kennedy Shriver National Institute of Child Health and Human Development, Dr. Alan E. Guttmacher will retire in October. A pediatrician and medical geneticist, he joined the National Human Genome Research Institute in 1999 and ascended to Deputy Director.



NIH names Riley to head behavioral sciences office

Dr. William T. Riley has been named Director of the NIH's Office of Behavioral and Social Sciences Research. He has served as Acting Director since May 2014, after holding posts in three other Institutes. He is a clinical psychologist by training and taught prior to joining NIH in 2005.



American Cancer Society honors Fogarty grantee

Dr. Jonathan M. Samet, of the University of Southern California, has been awarded the American Cancer Society's 2015 Luther L. Terry Distinguished Career Award, in recognition of his achievements in tobacco control. He has received numerous NIH grants, including from Fogarty's tobacco cessation research program.



Fogarty grantee is chosen for epidemiology award

Dr. Linda B. Cottler, of the University of Florida, has been selected for the American College of Epidemiology's 2015 Special Award for Outstanding Contributions through Systemic Epidemiologic Approaches to Improving Health. She is a longtime NIH grantee, and has received Fogarty awards for research training in India.

NIH launches tool to share data

The NIH's Eunice Kennedy Shriver National Institute of Child Health and Human Development has launched a resource for researchers to store and access data from studies funded by the Institute. The site, NICHD DASH, includes information on research topics ranging from HIV/AIDS and pregnancy, to child health. Website: <https://dash.nichd.nih.gov>

Dementia rises in developing countries

Of the nearly 47 million people in the world with dementia, more than half live in low- and middle-income countries, according to the latest population trends published by Alzheimer's Disease International. Website: <http://bit.ly/worldAlz>

Africa will see rapid population growth

Africa will account for more than half of the 2.4 billion global population increase expected between now and 2050, according to a recent UN report. Populations are forecast to more than double in 28 African countries. By 2022, India may overtake China to become the world's most populous country. Website: <http://esa.un.org/unpd/wpp>

30 top innovations benefit global health

Long-acting injectable antiretroviral drugs, a polypill for heart disease, mobile health approaches and an annual contraceptive ring are four of the 30 top innovations with game-changing promise for improving global health, according to a report from the nonprofit PATH and partners. Full report: <http://bit.ly/invent30>

Guide lists ways to curb traffic accidents

A guide for urban planners aiming to reduce traffic accidents, which kill more than 1.2 million people annually, has been issued by the nonprofit World Resources Institute. "Cities Safer by Design" describes steps that improve safety, such as consistent sidewalks, traffic calming measures and bicycling networks. Website: <http://bit.ly/SaferTraffic>

US-Mexico border health plan released

The U.S.-Mexico Border Health Commission has developed a plan to tackle shared health problems among border populations, including chronic and infectious diseases, maternal and child health, substance abuse and mental health conditions. Full report: <http://bit.ly/US-Mex-health>

Funding Opportunity Announcement	Details	Deadline
Fulbright-Fogarty Public Health Fellowships	http://bit.ly/FogFulPH	Oct 13, 2015
Ecology and Evolution of Infectious Diseases (EEID)	http://bit.ly/EEID2015	Nov 18, 2015
Emerging Global Leader Award (K43)	http://bit.ly/leaderK43	Dec 16, 2015
Global Brain and Nervous System Disorders Research (R21) (R01)	http://bit.ly/BrainR21 http://bit.ly/BrainR01	Jan 5, 2016 Jan 5, 2016
International Research Scientist Development Award (IRSDA) (K01)	http://bit.ly/IRSDA2016	Mar 2, 2016
Global Infectious Disease Research Training Program (GID) (D71) (D43)	http://bit.ly/GID-D71 http://bit.ly/GID-D43	July 29, 2016 July 29, 2016

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

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HHS announces proposed changes to Common Rule

The U.S. Department of Health and Human Services has announced proposed revisions to the regulations that protect individuals who participate in research, known as the Common Rule. They are followed by 18 federal agencies, including NIH, and have been in place since 1991.



The expansion of research into new scientific disciplines, such as genomics, along with an increase in multisite studies and significant advances in technology, have highlighted the need to update the regulatory framework.

Proposed changes include:

- Strengthened informed consent provisions to ensure that individuals have a clearer understanding of the study's scope, including its risks and benefits.
- Requirement, in most cases, to use a single institutional review board (IRB) for multisite research studies.
- Requirements for administrative or IRB review that would align better with the risks of the proposed research, thus increasing efficiency.
- New data security and information protection standards that would reduce the potential for violations of privacy and confidentiality.
- Requirements for written consent for use of an individual's biological samples for research, with the option to consent to their future use for unspecified studies.
- The proposed rule would apply to all clinical trials, regardless of funding source, if they are conducted by a U.S. institution that receives funding for research involving human participants from a Common Rule agency. This includes research at foreign sites.

Photo by Richard Lord for Fogarty/NIH