



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

President's budget request boosts global health

Implementation of the Global Health Initiative



Consultation Document

President Barack Obama reinforced his commitment to both global health and biomedical research in his 2011 budget proposal. He has also released more details about how he intends to implement his Global Health Initiative, a plan to invest \$63 billion over six years.

For NIH, the budget calls for funding to

increase just over three percent, up \$1 billion, for a total of \$32.1 billion. In the detailed breakdown, Fogarty's allocation would rise to about \$73 million.

The State Department and USAID would see a nearly nine percent spending hike for global health under the president's plan, for a total of \$8.5 billion.

To coincide with the budget announcement, the administration issued an outline of its strategy for implementing the GHI.

"The challenge of the next decade and beyond is to take these impressive accomplishments to the next level by helping countries achieve long-term sustainability

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Three new Recovery Act programs announced

Three new Recovery Act funding opportunities for global health research were recently announced by the NIH. One will enhance Fogarty's existing Framework program, another will support research involving human subjects and the final is an NIH Director's special initiative.

Fogarty intends to award up to \$2.7 million for six to 10 grants under its Framework program, to support U.S. universities and their partners train postdoctoral investigators to carry out innovative, multidisciplinary team research. The proposals should emphasize hands-on problem solving and collaborative approaches. The projects may require development of new training models and/or new partnerships within or outside the university. **Applications are due March 22.**

To support human subjects research, Fogarty is inviting applications from U.S. institutional review boards (IRB) for

one year of funding for resources and activities in this area. The projects must be conducted in full partnership with a counterpart IRB in a low- to middle-income country and are not to exceed \$50,000 in direct costs each. About a dozen grants are expected to be awarded for a total of approximately \$650,000.

Applications are due March 22.

A special NIH Director's initiative will support funding in five thematic research areas—including global health—for a total of about \$80 million. Proposals should have high short-term impact and a great likelihood of enabling growth and investment in biomedical research and development, public health, and health care delivery. Successful applicants will each be awarded \$500,000 per year for three years. **Submissions are due March 15.**

More information is available at www.fic.nih.gov.



The Middle East

- Research findings lead to public smoking ban in Syria
- Reducing traffic deaths and injuries in Egypt
- Israeli-Palestinian genetics collaboration gets major gift

Read more on pages 8-14

Traveling salesman problem applied to Chagas, may also help combat dengue and malaria



Image courtesy CDC/WHO

Triatoma infestans

The classic traveling salesman problem has been successfully applied to address Chagas disease in Peru, increasing the effectiveness of insecticide application and reducing transmission of Chagas, which is spread through bug bites. Researchers believe the strategy may also work for other vector-borne diseases such as dengue and malaria.

Fogarty scientists Drs. Michael Levy and Ellis McKenzie—together with their collaborators—recently published their findings in the *Journal of the Royal Society Interface*.

Levy and his colleagues knew the traditional contiguous approach to insecticide application, spraying one adjoining area after another, does not work well in urban settings such as Arequipa, the study site. They looked for a more effective approach and decided to explore the traveling salesman problem, a standard exercise in operations research and theoretical computer science. Solving the problem requires covering a defined territory without retracing steps, minimizing the total distance traveled. A rich library of traveling salesman algorithms exists but had never been adapted to infectious disease control.

The team tested a multitude of ways to reduce the reach of *Triatoma infestans*, the bug that carries Chagas. They had to diminish re-infestation in areas treated with insecticide, combat waning insecticide effectiveness, maximize limited resources and adjust for delays caused by finances, weather and labor.

The kissing bug, *Triatoma infestans*, got its nickname from biting victims near their mouths. The bite is just the beginning: this insect sucks blood and then defecates on top of the site, causing itching and the infection.

Levy and his colleagues analyzed the conditions under which certain tactics improve control, studying the properties of 1,000 algorithm-generated strategies. They developed a mathematical model that calculates the expected number of instances of re-infestation from active dispersal. They used this model to evaluate control strategies based on the rule of continuity (in time) and contiguity (in space).



Photo courtesy of Dr. Michael Levy

Fogarty scientist Dr. Michael Levy and colleagues used the traveling salesman problem to improve insecticide application strategies to combat Chagas disease in Peru.

With this model they identified a new more strategic insecticide application plan and found it would reduce insect re-infestation 34-fold. This concept may also be effective in combating other vector-borne diseases such as dengue and malaria, the researchers suggest. Their work will help guide an insecticide application campaign by the Peruvian Ministry of Health and the Panamerican Health Organization, with funding from Canada.

Chagas disease, named for Brazilian physician Carlos Chagas who discovered it in 1909, causes untold misery. Difficult to diagnose, it is the leading cause of heart attacks and kills more people in South and Central America than any other parasitic disease. Between 8 and 10 million individuals are estimated to be infected.

The kissing bug, *Triatoma infestans*, got its nickname from biting victims near their mouths. The bite is just the beginning: this insect sucks blood and then defecates on top of the site, causing itching and the infection.

The disease attacks muscle cells, destroying heart tissue and the gastrointestinal tract. Two available drugs come with significant side-effects and a 50/50 cure rate. In January, there was another hopeful development in the fight against Chagas. Researchers at the University of San Francisco announced they are applying for FDA approval to test a protease inhibitor that could be a safe and effective cure.

Haiti quake converts NIH research site into trauma center and refugee camp



Haiti's largest HIV/AIDS organization has become an emergency field hospital and refugee camp, in addition to continuing its clinical services for patients with AIDS and TB. GHESKIO, a longtime NIH partner and Fogarty grantee, resumed operation two days after the devastating earthquake shook Port-au-Prince.

The organization's buildings suffered structural damage at both its locations but no one was seriously injured. However, four staff were killed elsewhere in the city, several others were critically hurt and 90 are homeless.

GHESKIO director Dr. Bill Pape called the situation "apocalyptic" but says he and his team remain committed to their mission to improve the health of Haiti's poorest people.

"We have done it before and we can do it again," he said. "We are the only hope for those who have lost everything."

After establishing a clean water supply and installing a generator, GHESKIO became the site of a field hospital with supplies and personnel brought in by the U.S. Army and HHS. About a thousand refugees are now living in an open space adjacent to GHESKIO's main operation. Pape says he is struggling to provide adequate food and water for them, in addition to medical care and security.

Since the quake, the majority of the clinic's 6,000 patients with AIDS have returned for their medication and follow up. Many of them are participants in NIH-funded studies, according to Dr. Warren Johnson of Weill Cornell Medical College, who has collaborated with Pape for several decades.

GHESKIO has been providing HIV/AIDS treatment, conducting research and training scientists since 1982 at a downtown site and more recently at a second site on the outskirts of the capital. Perimeter walls were badly damaged at both locations and some structures were rendered unsafe, including a training facility. Johnson says plans are underway to convert a remaining building so that research training can continue.



Photo courtesy of GHESKIO

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"We have done it before and we can do it again. We are the only hope for those who have lost everything."

— DR. BILL PAPE, GHESKIO Director



Photo courtesy of GHESKIO

Former U.S. President Bill Clinton visited GHESKIO recently and discussed aid efforts with Dr. Pape.



Image courtesy of Google

About a thousand refugees are living adjacent to the GHESKIO site in downtown Port-au-Prince.

Why circumcision reduces HIV risk

Most of the reduction in HIV acquisition attributed to male circumcision may be explained by the removal of foreskin tissue that contains HIV target cells. The decreased risk of HIV infection in circumcised men cannot be explained by a reduction in sores from conditions such as herpes, according to research published in *PLoS Medicine*.

Two key clinical trials in rural Uganda that led to this finding about HIV target cells were funded by the NIH's National Institute of Allergy and Infectious Diseases, the Gates Foundation, and Fogarty. Ronald Gray, a Fogarty grantee from the Johns Hopkins Bloomberg School of Public Health, and his colleagues' trials helped show that circumcision reduces the risk of male HIV infection by about 60%.

Researchers randomly assigned about 5,500 HIV-uninfected men to circumcision: some immediate and some in 24 months. At enrollment, they asked the men whether they had any symptoms of genital ulcer disease. The men were examined and tested over a course of two years.

Re-examining the data from these clinical trials, Gray and colleagues investigated whether infection with HSV-2, the virus that causes genital herpes, and genital ulcers of any cause, could account for the lower rates of HIV infection in the circumcised participants in the study.

The researchers found that reduction in symptomatic genital ulcer disease accounted for only about 10% of the protective effect associated with circumcision, and did not find any consistent role for HSV-2 in counteracting protection. They also suggest that circumcision reduces



Photo by Yosef Hader/The World Bank

Two clinical trials in Africa led to findings about how circumcision reduces HIV.

genital ulcer disease primarily by reducing the rate of ulceration due to causes other than herpes, including sores caused by mild trauma during intercourse.

The validity of some of the findings could be compromised because the further analysis was not specified in the original trial protocol. Nevertheless, the reduction of genital ulceration following circumcision seems to play only a minor part in the ability of male circumcision to reduce HIV acquisition in men.

The original research findings have had an effect: 90,000 men have been circumcised in Kenya since the government launched a national voluntary male circumcision drive in 2008, according to the AllAfrica news service.

The full article is available at <http://bit.ly/9XEbQL>.

Israeli findings on employment and mood and anxiety disorders

The results of an Israeli survey of employment among people with past or current mood or anxiety disorders found that employment among persons who recover from an episode of a mood or anxiety disorder can return to a rate similar to that of persons who have never had a disorder. Employment was affected only during the acute phase of a disorder, but early onset of a mood or anxiety disorder has lasting effects in terms of job level and salary.

Age at onset of the disorder was related to earning above the average salary for the population of Israel: those with onset before age 25 had lower odds of being in the above-average group. No significant differences in rates of employ-

ment were found between those who had never had a disorder and those who had a lifetime or past-year disorder.

The study also showed that analysis of the reasons for unemployment showed that mental health problems were the cause of unemployment rather than the result and that the stigma related to a past mental disorder is a likely obstacle for reemployment.

A Fogarty International Research Collaboration Award contributed to funding this research.

The full article is available at: <http://bit.ly/d1v1fC>.

Renewed global collaboration on health needed

A renewed commitment to global collaboration on health—with science playing a critical role—is needed to meet the challenges and reap the benefits of an increasingly interdependent world, Mexico's former health minister Dr. Julio Frenk told an NIH audience recently.

Global health is experiencing a moment of unprecedented attention and expansion, Frenk said, but a new conceptual foundation is needed to “guide efforts to generate knowledge and lead its practical applications.” He also made the case for an increased emphasis on implementation science and identified an “urgent need” to upgrade research capacity in low-and middle-income countries.

Frenk, currently dean of public health at Harvard University, recently presented the 2009 David E. Barmes Global Health Lecture. The annual event is co-sponsored by Fogarty and the National Institute of Dental and Craniofacial Research.

New approach to global health needed

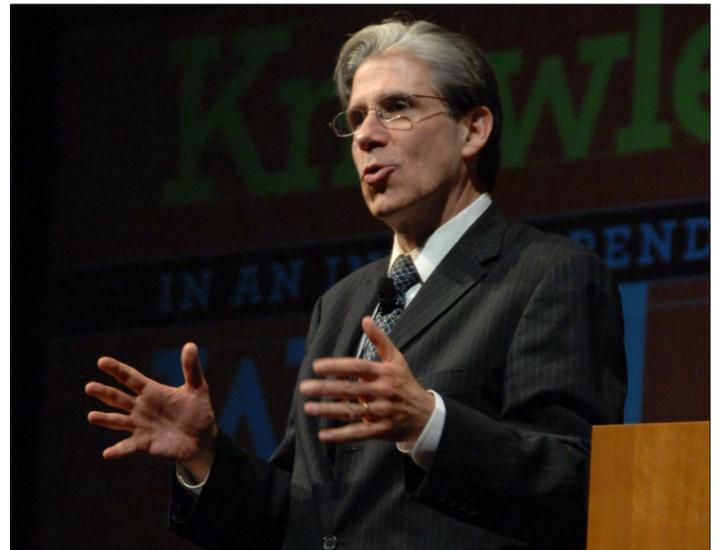
“We need a new way of thinking about global health,” according to Frenk. Global health involves entire populations, he said, and encompasses all the associated cultural identities, political organizations, transnational corporations, civil society movements and academic institutions, which are charged with producing knowledge-related global public goods.

In developing a new definition, ‘global health’ should be distinguished from the term ‘international health,’ which is largely identified with controlling epidemics across borders and dealing with the health needs of poor countries, Frenk suggested.

“Global health, however, is not ‘foreign health.’ Nor is ‘global’ the opposite of ‘domestic,’” he said. “Instead, global health should be centrally concerned with the interdependence among all countries, regardless of their geographical position or stage of development, including the distribution of health challenges around the world, which gives equity a key place in the global health agenda.”

Intense global health transition underway

The world is in the midst of a tense and intense health transition unlike anything seen before, he said. The most fundamental change is the shift in the dominant patterns of disease. “Now, people spend substantial parts of their lives in less than perfect health, coping with a chronic



There is an “urgent need” to strengthen scientific capacity in developing countries, according to Dr. Julio Frenk, who spoke recently at NIH.

condition. Illness may not always kill us, but it always accompanies us.”

Developing countries now face a triple burden of ill health, according to Frenk. They must simultaneously tackle the unfinished agenda of common infections, malnutrition and reproductive issues; emerging challenges of non-communicable diseases; and the health risks associated with globalization.

“The world is in the midst of a tense and intense health transition unlike anything seen before. The most fundamental change is the shift in the dominant patterns of disease.”

— DR. JULIO FRENK, Harvard's Dean of Public Health

“But just like there is a global transfer of risks, there is also a global transfer of opportunities,” Frenk said. He described a cycle of knowledge involving its production through research; its re-production via education and training; and its translation into practice, which is evaluated and feeds back into the production of new knowledge.

Knowledge translation key to health

Frenk suggested the translation of knowledge is important to health by producing new drugs and treatments, informing a population's behavior and providing a scientific

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Renewed global collaborations...

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foundation for both health care and policy formation.

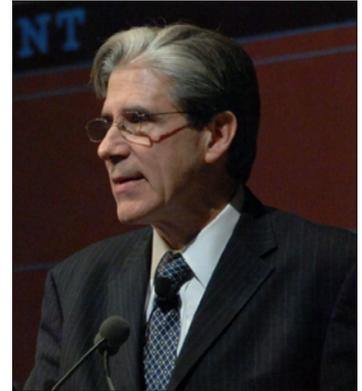
“Every country should have access to global knowledge repositories, along with the capacity not so much to *adopt* evidence as to *adapt* it to local circumstances,” he said.

The rollout and evaluation of Mexico’s Seguro Popular, the successful universal health insurance program, is one such example, he noted. The first follow-up study showed a significant reduction in catastrophic expenditures, especially among poor households. By sharing the rigorous research design, implementation strategy and outcome data, others can benefit.

However, adequate scientific capacity does not exist in many countries and there is an “urgent need” to strengthen it, said Frenk. He proposed a coherent strategy be developed to deploy three levels of intensity:

capacity building to develop human resources where infrastructure is weak; capacity strengthening to expand and diversify existing resources; and performance enhancement to promote catalytic linkages between researchers in developed and developing countries.

“As we enter a new era of global health, knowledge will continue to be the key asset to sharpen our understanding of problems and to create novel solutions,” Frenk concluded. “In our turbulent world, still scarred all too often by intolerance and exclusion, science remains as the most powerful force for enlightened social transformation.”



Dr. Julio Frenk

President’s budget request boosts global health...

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in their health services,” it states. “If we succeed in our efforts, we will help improve the lives of millions, limit the long-term cost to U.S. taxpayers, and contribute to a stronger future for American citizens.”

GHI’s guiding principles were also detailed in the plan and

include, among others, encouraging country ownership and country-led plans; improving metrics, monitoring and evaluation; and promoting research and innovation.

The complete GHI implementation plan is available at: <http://bit.ly/duA9bZ>

Global Health Initiative Goals	
HIV/AIDs	Prevent 12 million new infections; treat 4 million people already infected
Malaria	Reduce disease burden by 50 percent
TB	Save 1.3 million lives by reducing prevalence by 50 percent
Maternal health	Save 360,000 lives by reducing maternal mortality by 30 percent
Child health	Save 3 million lives by reducing under-5 mortality by 35 percent
Nutrition	Reduce undernutrition by 30 percent
Family planning and reproductive health	Prevent 54 million unintended pregnancies
Neglected tropical diseases	Reduce prevalence by 50 percent

NIH addresses climate change and health

By David Taylor

Climate change and its relationship to health research was the topic of a recent NIH meeting that brought together scientists from other federal agencies to share information and better coordinate efforts.

Others at the meeting, convened by Fogarty with the National Institute of Environmental Health Science and nine other institutes and centers, noted how climate change already affects human health. Dr. John Balbus, NIEHS senior advisor for public health, surveyed the pathways for that impact, citing that WHO attributed 160,000 deaths to climate change in the year 2000 alone, including deaths from malaria, malnutrition, diarrhea, flooding and heat waves.

To better understand these mechanisms, Balbus suggested NIH examine direct impacts on health; impacts on physical, chemical and biologic agents; and impacts on fundamental life support systems such as food and water.

Knowledge of mosquito populations and climate factors can help scientists predict disease outbreaks, such as in the case of Rift Valley Fever, according to Dr. Ken Linthicum of the U.S. Department of Agriculture. Climate and weather patterns were among several factors in the disease outbreaks, he said, but lives were saved by early warnings based on predictions made months ahead.

Participants also spoke of the link between environmental stresses and mental health, as in the cases of floods, droughts and other disasters. Dr. Fran Norris of Dartmouth Medical School observed, "Mental health provides a window into community resilience" and can have pervasive effects on physical health and quality of life.

Effects on vulnerable populations, particularly in developing countries, surfaced as a major concern. In looking at the effects of heat waves and their health impact, Dr. Helene Margolis of UC-Davis said that the burden of heat-related mortality and morbidity is huge and largely preventable.

In a comparison of historical patterns of mortality, Dr. Michael Greenstone, an economist at MIT, found a dramatically higher impact in India for each additional day over 90 degrees compared to the U.S. Further research could assess the effectiveness of adaptation and intervention strategies.

NIH Portfolio Analysis on Climate Change and Health

Total studies that in some way relate to climate change.....1,357

- Directly relate to climate change.....7
- Examine the climate variables on health....85
- Climate is likely an important factor but not explicitly addressed.....706

Health impacts: infectious diseases, respiratory diseases and asthma, heat stress, exposure to environmental toxins, trauma/injury and cancers

Exposure pathways: extreme weather; UV radiation; pollution; water-borne, vector-borne and zoonotic diseases

Study types: laboratory experiments, population studies, field ecology and mathematical modeling

21 NIH Institutes and Centers are represented in these activities that were funded in 2008

These and other research gaps were discussed following presentation of the current NIH portfolio on climate change research (see chart) prepared by the Trans-NIH Working Group on Climate Change.

What emerged was awareness that research must address the wide variability of impacts in geographic terms and the chasm between global-scale studies and micro studies. Relationships between temperature and enteric diseases could be explored, for example: as temperatures rise, food-borne disease increases. There is a great need to translate the growing knowledge base about these interactions of climate variability and change and human health into policies, the group agreed. But much more research is needed to be able to do this with confidence.

The NIH team pledged to continue to refine its analysis of the agency's climate change portfolio and to pursue issuing a notice in the *NIH Guide* to encourage researchers to submit climate-related research proposals under existing funding opportunities and to consider creating new ones.

US-Syrian research partnership combats smoking

Smoking has long been a popular pastime throughout the Middle East. Syria is no exception, where more than half the males smoke cigarettes and women are increasingly taking up the habit. Hookahs, or water pipes, are also prevalent partly because of the erroneous perception they are a “cleaner,” safer way of consuming tobacco.

A U.S.-Syrian research partnership to combat the problem has supported the first-ever population surveys to determine smoking prevalence, as well as additional studies on toxicity, dependence, the effectiveness of various cessation approaches and the impact of secondhand smoke. Information generated by the Fogarty-funded project has been used to inform the country’s health policies, including a ban on public smoking.



Photo by Curt Cornemark/The World Bank

In Syria, a public smoking ban that goes into effect in April includes restrictions on water pipes.

Syria bans public smoking; Fogarty-funded research had impact

Starting this spring, it will be illegal to smoke in Syrian restaurants and cafes, campuses and offices, taxis or buses and anywhere else in public. The prohibition was issued by Syrian President Bashar al-Assad, a British-trained ophthalmologist. His father, the previous president, had also tried to restrict smoking but his efforts failed due to weak enforcement. This time, offenders will be fined 2,000 Syrian pounds (about US\$45).

In a bold move, the ban includes limitations on water pipes, which are especially popular among teens, young adults

and women. Landmark Fogarty-funded research exposed the dangers and documented the prevalence of water pipe smoking in Syria.

“The inclusion of water pipe smoking restrictions in the ban is clear evidence of our direct involvement in public policy,” says Fogarty grantee Dr. Wasim Maziak. Many other countries, including the U.S., exempt water pipe smoking venues from clean indoor air policies.

Fogarty director Roger Glass is pleased that research funded by the Center has influenced health policy, “It was gratifying to learn about the public smoking ban, knowing that the studies we funded contributed to tobacco control laws. That was confirmation that collaborative research builds bridges, which is particularly important in the Middle East.”

Fogarty funds the first-ever NIH research project in Syria

Fogarty’s presence in Syria dates back to 2002, when the first-ever NIH research collaboration between the U.S. and Syria was created in Aleppo. Initial funding for the Syrian Center for Tobacco Studies came from a five-year Fogarty International Tobacco and Health Research and Capacity Building Program grant, which has since been renewed.

The Center might never have happened if it weren’t for the vision and creativity of grantees Drs. Kenneth Ward, Thomas Eissenberg and Maziak, who met on the Internet. Ward and Maziak are both based at the University of Memphis, while Eissenberg is at the Virginia Commonwealth University.

“It was an unusual partnership from the beginning,” says Ward, the Center’s intervention director. “When Fogarty announced the tobacco program, each of us had an interest in applying, but none of us could do it on our own. Wasim, a native of Syria, posted a message on the Society for Research on Nicotine and Tobacco listserv, and Tom and I responded.” The three began an e-mail dialogue and clicked.

The Center’s immediate priority was to conduct the country’s first population-based tobacco use assessment. From that point on, Center leadership regularly communicated findings about the spread and potential

Photo by Bruce Norheim



Nearly 57% of Syrian men smoke cigarettes; 17% of women do, and the percentage is increasing.

impact of smoking to the Syrian health authorities.

Early on, Center scientists lobbied vigorously for the ratification of the World Health Organization Framework Convention on Tobacco Control that went into effect in 2005. Their efforts led to Syria being among the first in the region to sign on and are helping Syria meet its obligations.

The Center proves itself

The Center established itself quickly as a leading research institution. After being in operation for less than six years, it received the prestigious 2008 Hamdan Award for the Best Medical Institute in the Arab World. The award—sponsored by Sheikh Hamdan bin Rashid Al Maktoum, the deputy ruler of Dubai—recognizes excellence in research and health education.

Center scientists have published more than 50 papers in top peer-reviewed journals, including pioneering data about surveillance of tobacco use in the Middle East and U.S., trans-disciplinary studies on the emerging epidemic of water pipe smoking, and investigations of secondhand smoke exposure and its health effects.

“We demonstrated the high prevalence of both cigarette and water pipe smoking, the dependence-producing properties of these products, especially water pipe, and the considerable amount of toxins generated by secondhand smoke from these products in Syria,” says Ward.

The Center is currently evaluating cessation programs for both cigarette and water pipe smoking to determine what is most effective in this culture, and they are studying adolescent tobacco use.

The focus becomes regional

It didn’t take long for the Center to extend its focus to the tobacco epidemic in surrounding countries, specifically Lebanon and Jordan. Eissenberg has also gone on to form a research collaboration in Jordan, through another Fogarty grant.

The Center has provided advanced training to more than a hundred Syrian scientists as well as researchers from throughout the region. This summer, regional training in Beirut will focus on research to evaluate policy implementation.

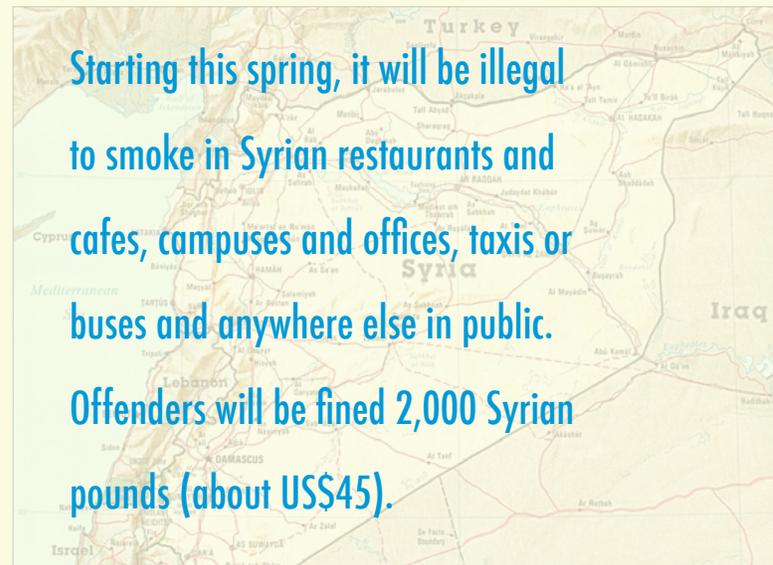


Photo courtesy Syrian Center for Tobacco Studies

The first NIH research collaboration between the U.S. and Syria has informed policy decisions such as a public smoking ban.

“We think this is very timely as many countries in the region are starting to perform their policy obligations under the framework convention,” says Maziak. “Egypt requires warnings on cigarette packs; the United Arab Emirates, Lebanon, Iraq and Turkey have issued smoking bans. It will be very important to know not only what policies have been adopted, but whether they were successfully implemented.”

Israeli-Palestinian genetic research project advanced by US donation

The bitter and protracted conflict between Israelis and Palestinians makes it difficult for any sort of meaningful collaboration to form between the two sides. After any outbreak of violence, it becomes almost impossible, psychologically and logistically, for them to work together. Against all odds, a research collaboration investigating inherited diseases is one area that holds promise.

The fledgling effort is being nurtured by the Israeli-Palestinian Science Organization, a U.S. donation of advanced genetic analysis equipment encouraged by the State Department, and support from Fogarty and other NIH components.

Photo by Lauren Goodsmith, courtesy of PhotoShare



Intermarriage is prevalent among many Arab populations, which results in a high rate of inherited diseases.

Intermarriage is common among Arabs, with about a quarter of all unions occurring between first cousins, according to the Center for Arab Genomic Studies. That practice results in serious inherited diseases such as congenital heart defects and deafness. These medical problems put a particularly heavy burden on families, particularly those with low incomes, as well as the health care system.

But the revolution in the science of genetics offers hope. Identification of the mutations underlying a disease makes it possible to develop a number of new approaches: pre-marital screening could lead to marriage avoidance in couples found to be at risk, and prenatal diagnosis and newborn screening would make earlier interventions possible.

The Israeli-Palestinian Science Organization bridges the divide

“Our mission is to foster and sustain scientific cooperation between Israelis and Palestinians and to promote research partnerships that will improve the health of all people,” according to Nobel laureate and IPSO chair, Dr. Torsten Wiesel. “We believe that science, given its universal character, can be instrumental in stimulating dialogue, openness, and mutual respect, and serve in the cause of peace.”

IPSO, sponsored by UNESCO and created in 2003, seeks out and supports high quality scientific research and facilitates cooperation between Israelis and Palestinians to encourage scholarship and scientific excellence, capacity building and professional development, social and economic welfare, and dialogue across the divide. The organization funds diverse programs that run the gamut from agriculture, education and psychology to medical conditions, genetics research and counseling.

A \$1 million gift of genetic analysis equipment from the California-based company, Affymetrix, will dramatically elevate the genetics research and counseling work IPSO supports. In December, two complete Affymetrix GeneChip® Systems were installed in the labs of university partners Bethlehem University on the West Bank and Hebrew University in Jerusalem. Research teams are now using the equipment for studies of recessive genes in Palestinian and Israeli-Arab populations.



Photo courtesy of Dr. Moien Karoun

With a \$1 million donation of genetic analysis equipment, California-based Affymetrix greatly advanced joint Israeli-Palestinian research efforts.

In 2008, when IPSO was trying to launch its genetics research effort, it sought help from Dr. Elias Zerhouni, who was then NIH director. Zerhouni provided seed money in the form of a \$50,000 Fogarty award to jumpstart the research. In addition, Nina Fedoroff, science and technology adviser to the U.S. Secretary of State and Penn State plant geneticist and molecular biologist, brought the project's needs to the attention of Dr. Stephen Fodor, the founder of Affymetrix, a pioneer in genetic analysis and the leading provider of innovative analysis and testing tools and agents. Fodor agreed to help and Fogarty's Middle East officer, Judy Levin, facilitated the formal arrangement and delivery logistics.

“This important genetic research has the potential to improve many lives and decrease the burden of genetic disease. It's a perfect example of how science can improve health and at the same time stimulate dialogue and foster mutual understanding between peoples.”

— NINA FEDOROFF, Science and Technology Adviser to the U.S. Secretary of State

Affymetrix responds to the need

“Affymetrix is very supportive of the scientific and educational mission of IPSO,” said Fodor. “We hope this donation will help foster new Israeli-Palestinian scientific collaborations and create common ground for scientists to meet and discuss genetics research, counseling and applications in regional health care.”

The Affymetrix donation takes the work of IPSO-supported genetics to another level. The equipment enables scientists to explore the genetic causes behind many diseases using state-of-the-art microarray technology that can test many samples simultaneously, greatly speeding up research.

“The scientific importance of the Affymetrix donation is in creating a unique resource for identifying new disease genes and illuminating gene functions,” says Fogarty grantee Moien Kanaan, head of the Hereditary Research Laboratory at Bethlehem University. “The array technology provides tools for investigation, training, education and genetic services. For systematic clinical and genetic analysis of highly inbred populations, it is extremely valuable.”



The revolution in genetics offers new approaches to prevent or provide earlier diagnoses for inherited diseases common among Arab populations.

Photo by Lauren Goodsmith, courtesy of PhotoShare

Genetics research effort expands

Beginning in 1999, Fogarty grants began collaborations that led to funding from the National Institute on Deafness and Other Communication Disorders for Kanaan, Karen Avraham of Tel Aviv University and Mary Claire King, their U.S. partner at the University of Washington. They launched a gene mapping and cloning project and discovered four genes associated with inherited deafness, which Palestinians suffer at more than double the rate of the average population.

A grant from IPSO expanded the collaborative genetic research to include Doron Lancet of the Weizmann Institute and, thanks to a Fogarty grant, Bat-Sheva Kerem of Hebrew University.

In addition, Kanaan and Avraham have begun a joint graduate program for Palestinian students who have completed an undergraduate degree in science at Bethlehem University, where there is no post-graduate program, so they can pursue an advanced degree at Tel Aviv University.

Such efforts to share technology and to create international partnerships that produce scientific discoveries are vital to global prosperity and security, according to Fedoroff. “This important genetic research has the potential to improve many lives and decrease the burden of genetic disease. It's a perfect example of how science can improve health and at the same time stimulate dialogue and foster mutual understanding between peoples.”

Research aims to reduce Egyptian traffic deaths

Traffic accidents kill more than a million people every year worldwide and injure or permanently disable millions more. The Middle East region ranks second highest in terms of road fatalities, according to the WHO, with Egypt alone suffering more than 7,000 deaths annually.

That's why Fogarty grantee Dr. Jon Mark Hirshon of the University of Maryland, Baltimore, chose to launch a trauma research training effort there.

Hirshon, a leader in public health and emergency medicine, has designed trauma training programs domestically and in the Middle East. He works primarily in Egypt where he's trained nearly 400 health professionals in initial assessment and management of trauma patients, and injury epidemiology. He's extended his research and training team and expertise to Iraqis (see sidebar story), Iranians, Afghans and Sudanese as well.

His current projects in Egypt are supported by a five-year International Collaborative Trauma and Injury Research Training grant from Fogarty. The main thrust of his research involves assessment of injury-related death and disability in Cairo. This information is helping public health officials plan and implement appropriate and cost-effective prevention strategies.

Research collaboration studies trauma issues

Hirshon's team studies practical matters such as how long it takes to get to the hospital by different modes of transportation, the delays in reaching the hospital and factors related to delays for trauma patients admitted to Ain Shams University Hospital in Cairo. In collaboration with the WHO, Ain Shams is a key research partner that serves as a growing regional resource for the study of causes, dynamics, treatments and outcomes of traumatic injury.

Data about the effect of under-triage on trauma patients at this hospital is currently being analyzed. Other studies focus on risk factors for violence among patients admitted to the hospital and how to decrease return emergency department visits. Data collection is ongoing for epidemiology of moderate and severe traumatic brain injury at another facility, Alexandria University Hospital.

Fatalistic beliefs contribute to accident rates

Vehicular collisions account for 45% of injury deaths in Egypt. Research done by Hirshon's team analyzes human factors related to car crashes on the roads that encircle



Photo by Deborah S. Doyle, courtesy of Photoshare

The Middle East region ranks second highest in terms of road fatalities. Egypt alone reports more than 7,000 deaths annually.

Cairo. Attitudes about traffic accidents affect behavior on the street and behind the wheel of a car. In one study, researchers interviewed Egyptian adolescents about their knowledge and attitudes about injuries and fatalism.

Despite a low belief in the preventability of injuries and a high belief in fate, surveys and focus groups revealed that young, educated Egyptians are ready for and would benefit from injury prevention programs.

"As in much of the Middle East," says Hirshon, "there is work underway in Egypt to create a shift in thinking of accidents as random and unavoidable to preventable, predictable and avoidable."

Pedestrians suffer 75% of traffic collision deaths in Egypt. A study of Cairo University students examined the relationship between risk-taking behavior and road traffic collisions. Although the risky behavior was nothing out of

the ordinary, the study concluded that education on safe street crossings would likely decrease the rate of pedestrian injury.

Cultural differences impact research and training

One of Hirshon's areas of interest is providing education in cross-cultural settings and addressing the challenges that come with language barriers, educational customs and evaluations.

As in many countries, substance abuse is a problem in Egypt and a factor in trauma-related injury and death. Because of the stigma associated with drug and alcohol use among Egyptian Muslims, it has been a difficult topic to study. Hirshon is launching an effort to do so, employing the more experienced members of his team.

Trainees become trainers, capacity increases

Hirshon's five-day training course covering initial assessment and management of trauma patients plus injury epidemiology is so successful, it's now included in Alexandria University's master's curriculum and trauma training has been made a requirement for board certification in emergency medicine in Egypt.

Another lasting impact of Hirshon's efforts is the 25 or so Egyptians he's trained in trauma and injury research who are now training others, further expanding Egypt's ability to address this critical health problem.

"With so many Egyptian nationals trained and with valuable information drawn from many research studies," says Hirshon, "the work of this Fogarty grant has increased Egyptian health professionals' knowledge and understanding of human trauma and injury prevention and helped them build up injury prevention and trauma response mechanisms in their country."



Risky behavior among Egyptians causes high numbers of trauma injuries.

Photo by Roy Wilkin/The World Bank



Photo by Dikra Sarsam, courtesy of PhotoShare

Fogarty expanded the scope of a trauma grant to include Iraq.

Project also aids Iraqis

A terrorist explosion ripped through a police office in Erbil, the normally calm capital of Kurdish Iraq, in May of 2005. The suicide bombing killed 60 people and injured several hundred, only the second such attack since the U.S. had invaded Iraq. A well-known terrorist group took responsibility and promised more violence.

After the bomb blast, the Kurdish regional government's health minister, Dr. Jamal Palani, sent out an urgent plea for international help.

"We cannot measure the psychological impact of this on our population," Dr. Palani wrote. "Mass casualties following the suicide bombing were characterized by such a number, severity and diversity of injuries that overwhelmed the ability of local medical resources to deliver comprehensive and definitive care to all victims."

The appeal made its way to Fogarty, which quickly expanded the scope of an existing trauma research and training grant to include Iraq.

The grant's principal investigator—Dr. Jon Mark Hirshon of the University of Maryland, Baltimore—swiftly produced a specially tailored training course and assessment tools and traveled to Jordan to lead a five-day intense course. The team included the usual physicians and emergency preparedness trainers as well as law enforcement officers, epidemiologists, and international experts in health and disaster response.

In addition to 17 NIH-supported trainees from Northern Iraq, five individuals from Baghdad also participated, through sponsorship from the World Bank.

Hirshon's team helped the Kurdish health ministry establish a formal medical emergency plan. Components included rescue, decontamination, triage, stabilization, evacuation and treatment plans. They even addressed communications and post disaster recovery.

A survey, a cave and a discovery

Photo courtesy of Dr. Adnan Hyder



Dr. Adnan Hyder

I trembled as I walked down the mountain—my usual controlled self could not contain the emotions sweeping my body—trembling limbs, breathing heavily, misty eyes all accompanied me for the next mile as I hiked back to our camp. I had just administered a health and demographic survey to a family of eight living in a cave on a mountain in Northern Pakistan.

The year was 1986, not 1786 or 1886, but in the 20th century when people in the same country were living in glorious estates, farmhouses, residences, apartments, and even huts—but not caves. Caves? I would not have believed and could not: a father barely able to feed his children; a mother who had been pregnant 12 times and had already lost six of her children; and six malnourished children who ran around the mountain barely clothed.

Disgust at this lack of responsibility by the state; outrage at the injustice suffered by this family; deep shame at the thought of how my life compared with theirs—all these things raged through my mind.

“Disgust at this lack of responsibility by the state; outrage at the injustice suffered by this family; deep shame at the thought of how my life compared with theirs—all these things raged through my mind.”

— DR. ADNAN HYDER, Associate Professor, Johns Hopkins University

I was a young physician-in-training in Karachi, Pakistan, and this experience has remained with me for the past 23 years, as if I was there yesterday. A defining moment that forever captured me with that eternal question of inquiry—why? Why does the government allow this? Why does society allow fellow human beings to suffer so much? Why does the health sector ignore these people? And thus started the two streams of influence in my professional career: a concern for the health of populations; and a process of inquiry. This truly was the start of my search for a career that builds on my medical knowledge and yet focuses on where diseases originate; that looks at



Photo courtesy of Dr. Adnan Hyder

Dr. Hyder's interest in public health began during a 1986 visit to impoverished people in Northern Pakistan while he was a physician-in-training.

symptoms but seeks the source of ill health; and that considers not only individuals but their relationships and context. Public health answered the call for me—and the path of knowledge and discovery within the reality of human life opens each day as I work.

Most importantly this has made me realize the importance of developing the capacity of those interested in pursuing the same path, of making sure that others who seek their calling in public health get a warm response. That is why education and training are a core aspect of all my projects: helping colleagues do research; assisting them as they write their results; and supporting their careers, especially in the developing world. And yet what some of them do not understand is that I learn more from them; each interaction is a case study—some more technical and others more managerial, but all fascinating.

Adnan Hyder, a current Fogarty grantee, is an international health professor at Johns Hopkins University, as well as director of its International Injury Research Unit. This essay originally appeared in the Johns Hopkins Public Health magazine, online at <http://magazine.jhsph.edu>.

PEOPLE

Robson honored by ASPH, Pfizer

Fogarty grantee Dr. Mark Gregory Robson has been presented the Association of Schools of Public Health (ASPH) Pfizer Teaching Excellence Award. Robson is principal investigator at a Fogarty-funded project in Bangkok, Thailand that studies the consequences of pesticide use. He is dean of agricultural and urban programs and professor of entomology at Rutgers University's School of Environmental and Biological Sciences and a professor of environmental and occupational health at the University of Medicine and Dentistry of New Jersey.

Dr. Cora Lewis receives alumnus award

Fogarty collaborator Dr. Cora Lewis has received the 2010 Alumnus Award for Scientific Excellence from the University of Alabama's School of Public Health. Lewis is a University of Alabama professor whose research focuses on epidemiologic methodology and long-term studies that measure body composition and bone density, lifestyle assessments and other health factors. She serves on the university's International Clinical, Operational and Health Services Research Training Award project in India, which is funded by Fogarty.

Eiss publishes on product development for neglected diseases

Robert Eiss, Fogarty's senior public health advisor, has published an article titled Novel Approaches to Product Development for Neglected Diseases in the January 2010 issue of the Society for Technology Management biannual newsletter. Eiss explores the importance of strategic financial commitments from public agencies, philanthropies and industry in the context of increased public-private partnerships, detailing practical issues in negotiating product development agreements that will determine how rights are shared and exercised, balancing private incentives against access for those in need.

Global health agencies propose increased health data accountability

The WHO, Global Fund, World Bank, and other major global health agencies have issued a call for action to improve health data on developing countries.

With more abundant and reliable data, countries will be better able to monitor and evaluate progress and performance, allowing them to

respond to demands for increased accountability, according to the essay published in *PLOS Medicine*. Accountability is especially important for developing countries that have established international health partnerships but have been constrained by limited data availability, quality, and use. Full article: <http://bit.ly/cWBDVJ>.

Global HEALTH Briefs

Top global health risks

The WHO has released data showing the bulk of the global death and disease burden falls on certain major health risks. High blood pressure is responsible for 13% of deaths worldwide, followed by tobacco use (9%), high blood glucose and physical inactivity (6% each) and being overweight or obese (5%). Disability factors are not evenly spread across the globe or income levels. The leading risk factors are being underweight; unsafe sex and alcohol use; and unsafe water, sanitation and hygiene combined. Full report: <http://bit.ly/2PUaDV>

R&D investments up

Science and Engineering Indicators has released new data showing substantial increases in research and development investments in China, South Korea and Japan. The Japanese and South Korean rates were among the highest in the world in 2007, at 3.4% and 3.5% of gross domestic product, respectively. China's rate has more than doubled, from .6% of GDP in 1996 to 1.5%. Full report: www.nsf.gov/statistics/seind10/

'Chinese NIH' debuts

The National Natural Science Foundation of China has launched a medical department that plans to disburse the equivalent of US\$150 million in government grants in 2010 to improve disease mechanisms, modernize traditional Chinese medicine, and create clinical applications from research study results. According to a report in *Science* magazine, some researchers believe the new organization will open up collaborative opportunities between Chinese and U.S. scientists. Full article: <http://bit.ly/7y5mtA>

Arctic conference proceedings published

The International Journal of Circumpolar Health has published the proceedings of the behavioral and mental health research meeting co-hosted by Fogarty and the U.S. Arctic Research Committee last June in Anchorage. U.S. and foreign researchers, government experts and tribal organizations focused on research addressing the disproportionately high rates of suicide, depression and alcoholism among Arctic residents. Fogarty's Dr. Marya Levintova and Natalie Engmann co-edited this publication with U.S. Arctic Research Commissioner Dr. Warren Zapol. Full meeting report: <http://www.arctic.gov>



Funding Opportunities

Program	Contact	Receipt Date	Eligibility
Recovery Act Limited Competition: NIH Director's Opportunity for Research in Five Thematic Areas: Focusing on Global Health (RC4) RFA-OD-10-005	Kenneth Bridbord, M.D., Ph.D. bridbord@mail.nih.gov	March 15, 2010	To be eligible, the applicant must be from a U.S. institution. Early stage and new investigators are encouraged to apply for this funding opportunity announcement.
Recovery Act Limited Competition: International Human Subjects Research Enhancement Program (S07) RFA-OD-10-006	Barbara Sina, Ph.D. sinab@mail.nih.gov	March 15, 2010	Applicants must be a U.S. institution or organization that has an ethics review committee and documented experience in international research ethics.
Recovery Act Limited Competition: Framework Programs for Global Health Signature Innovations Initiative (R24) RFA-OD-10-007	Flora Katz, Ph.D. katzf@mail.nih.gov	March 22, 2010	To be eligible, applicant institutions (or consorti of institutions including other U.S. or foreign partners) must have at least five active grants or contracts in global health research or research training involving participation by institutions and individuals in low- or middle-income countries.
Brain Disorders in the Developing World (BRAIN - Non AIDS) (R21) PAR-08-113	Kathleen Michels, Ph.D. michelsk@mail.nih.gov	May 14, 2010	Applications must be submitted as collaborations between investigators or institutions from a high-income country and a low- or middle-income country.
Brain Disorders in the Developing World (BRAIN - Non AIDS) (R01) PAR-08-112	Kathleen Michels, Ph.D. michelsk@mail.nih.gov	May 14, 2010	Applications must have had an R21 under the companion Brain Disorders in the Developing World program. Applications must be collaborations between investigators or institutions from a high-income country and a low- or middle-income country.
Fogarty International Research Collaboration - Basic Biomedical Research Award (FIRCA-BB) (R03) PAR-08-222	Kathleen Michels, Ph.D. michelsk@mail.nih.gov	May 14, 2010	Applications must be submitted as collaborations between investigators from a high-income country and a low- or middle-income country. The principal investigator must have an active NIH-funded research grant or must have previously been a FIRCA foreign collaborator. We would especially like to encourage applications for research collaborations with investigators in sub-Saharan African countries.

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

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UPCOMING EVENTS

Interested in learning more about grant funding?

Find out more about NIH grant funding and administration.

Register now to attend a seminar with seasoned NIH and HHS staff.

April 14-16 Philadelphia PA • June 23-25 Portland OR

Register now for these meetings:

[The Third Annual NIH Conference on the Science of Dissemination and Implementation](#)

March 15-16, 2010, Hyatt Regency Bethesda

There is no registration fee. Please note the proceedings will NOT be webcast. For more information, visit: <http://bit.ly/4mNOW7>

[Implementation Science and Global Health](#)

March 17, 2010, Hyatt Regency Bethesda

Fogarty will host a satellite meeting to the larger conference for its grantees and trainees. For more information: <http://bit.ly/599LJ5>

[Oceania Influenza Research Workshop](#)

March 15-19, 2010, Melbourne, Australia

For more information: <http://bit.ly/6P17d6>