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

U.S. vows holistic global health approach



Secretary of Health and Human Services Kathleen Sebelius participates in a discussion of A/H1N1 virus at her first World Health Assembly meeting in Geneva.

Fogarty Director Dr. Roger I. Glass accompanied new Health and Human Services Secretary Kathleen Sebelius to Geneva for May's annual World Health Assembly, where she promised a holistic and cooperative U.S. approach to global health.

She told delegates America is committed to partnerships "to advance the cause of social justice, to expand access to health care and reduce health disparities" largely by focusing on disease prevention and maternal and child health.

The WHA is the policy arm of the World Health Organization and meets annually. This year, the four-day session focused on the A/H1N1 pandemic.

The group this year admitted Taiwan as an observer to the meeting, which Sebelius said "helps fill a gap that had existed in the global health network."

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Recovery Act funds four Framework grants

New funding from the American Recovery and Reinvestment Act will enable four more schools to satisfy student demand for global health studies and contribute to their local economies.

Dartmouth College, the University of California, Irvine, the University of New Mexico and Yale University bring to 35 the number of institutions awarded the Fogarty International Center's prestigious Framework grants, which encourage faculties to work across disciplines to bring their expertise to bear on improving global health.

Within these institutions, faculty from more than 17 different disciplines have participated, including those from schools of medicine, public health, anthropology, law, engineering, environmental sciences, journalism, business, and others.

"Framework will make us more competitive in the global health arena," said Fogarty director Dr. Roger I. Glass.

"We consider this program as creating the infrastructure for America's international research and training, which links to the U.S. and foreign scientific community, and ultimately results in better health at home and strong diplomacy abroad."

The new awards, made possible by the Recovery Act, will preserve and create U.S. jobs in the timely and competitive arena of global health research.

At Dartmouth, the Recovery Act support will partially fund three faculty positions dedicated to teaching and expanding the international health curriculum and add a part-time administrative assistant, said principal investigator Dr. C. Fordham von Reyn.

The funds are pivotal in allowing three professors to develop new courses leading to a certificate in international health for undergraduates that will also be available to medical and graduate students, he said.

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Focus:



Prospecting under the sea

Fogarty's biodiversity program funds the search for new lifesaving drugs. See p. 8.

Framework grants help meet student demand

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At UC Irvine, the grant will create one part-time program coordinator position, two summer fellowships for undergraduate students, three summer fellowships for graduate students and one fellowship for junior faculty or a research scientist," said Dr. Guiyun Yan, a public health professor.

The money will go toward developing new courses and to establish a global health concentration in the master of public health program, he said.



Photo by Holly Scheib, Four Leaf Clover Photography

A previous Framework grant to Tulane University allowed it to recently open an Office of Global Health to create new educational and research opportunities as well as to foster interdisciplinary, collaborative research opportunities for faculty. Pictured are Tulane students Carmen Springer (left) and Heather Kindschy, who studied larvae collected in Peruvian homes as part of dengue surveillance.

The University of Pittsburgh, another Framework grantee, also recently opened a Center for Global Health.

The University of New Mexico program, the first of its kind in the Southwest, will support job creation and preservation by hiring one new full-time administrative assistant, providing part-time consulting work in information technology for Web site development and training nine graduate student fellows a year to meet the demand for global health professionals.

It will also support the local economy by bringing in regional speakers and guests to an annual symposium on global health, said Dr. Douglas J. Perkins, the head of the program.

At Yale, Dr. Robert Dubrow, associate dean of public health, said, "The grant will be critical in helping to mobilize the full intellectual resources of Yale to address the world's pressing global health problems."

Noting that the health of the local New Haven economy

is dependent on the economic health of Yale, he said the grant will directly support faculty time and a new project coordinator.

"Just as important is that the Framework program catalyzes new externally funded research projects that will provide even more salary support for faculty and research support personnel," Dubrow said.

In addition to the Framework grants, Fogarty was able to use money from the Recovery Act to support:

- Dr. Regina LaRocque of Massachusetts General Hospital for postdoctoral training in cholera research.
- Dr. Annette Fitzpatrick of the University of Washington for capacity-building in neurologic diseases in DaNang, Vietnam.
- Dr. Bahr Weiss of Vanderbilt University for studying the mental health of children in Hanoi.
- Dr. Jin Shin of Hofstra University to conduct a home-based early intervention project for Vietnamese children with intellectual disabilities.
- Dr. David Pearce of the University of Rochester to improve diagnostic techniques for neurodegenerative diseases among South American children.

For more information, visit www.fic.nih.gov/recovery/main.htm and www.recovery.gov.

ARRA funds create jobs

The new Framework grants under the American Recovery and Reinvestment Act will directly affect employment in 23 academic jobs.

Dartmouth University partial employment of faculty and administrative assistant: 4

UC, Irvine part time coordinator, summer fellowships, faculty fellowship: 7

University of New Mexico administrative assistant, part time Web consultant, graduate fellowships: 11

Yale University partial employment of faculty and partial employment of project coordinator: 1

Past pandemics may offer clue to A/H1N1 response

Using data from three 20th century flu pandemics, Fogarty researchers working closely with Mexican counterparts are suggesting that policy makers target young-to-middle-age adults if there is not enough vaccine to fight the novel A/H1N1 virus in coming months.

In articles appearing in the *New England Journal of Medicine* and *Science*, members of Fogarty's division of international epidemiology and population studies examined the new outbreak of influenza reported in Mexico this spring and compared it to the pandemics of 1889-1892, 1918-1919, 1957-1963 and 1968-1970.

Dr. Mark Miller, the division's director and lead author, said, the 20th century pandemics shared certain features: a shift in virus subtype, successive waves of illness, higher transmission rates than seasonal flu and different geographic impacts. But their most striking characteristic was the shift in mortality toward younger ages.

Different age risks

While older people are more at risk from seasonal flu, "The role of pre-existing antibodies in the elderly, their reduced immune response because of immune senescence and greater influenza transmission among children should prompt the targeting of younger age groups as the soundest policy in a 1918-like scenario," said Miller and coauthors Dr. Cecile Viboud and Dr. Marta Balinska of Fogarty and Dr. Lone Simonsen of The George Washington University.

At a meeting of Fogarty scientists, Miller suggested that exposure to viruses circulating before the 1957 pandemic by people now over 50 years old might account for their relative protection compared to younger populations.

Because of long-standing ties with Mexican health authorities, Miller's group became involved immediately in the effort to track the spring outbreak. "We had already been working with Mexican colleagues for many years and had the privilege of helping them with the analysis of this outbreak."

While not predicting the future severity of A/H1N1, the article did emphasize that advance knowledge of increased risk by age can prepare officials to respond more effectively.

A team led by researchers from the CDC, which included Fogarty research fellows Dr. Colin Russell and Dr. Derek J. Smith, reported in *Science* that the new flu contains genes that have been circulating in swine since 1998.

"The evolutionary distances between the gene segments of this virus and its closest relatives indicate a lack of surveillance in swine populations that may harbor influenza viruses with pandemic potential," they said.

Unlike 1976 flu

An A/H1N1 strain, popularly called "swine flu," caused a pandemic scare in the United States in 1976. But Miller says unlike that outbreak, the 2009 virus is novel because it shows evidence of sustained transmission among humans.



Photo by Sari Dennisse

Mexican churchgoers take precautions during height of A/H1N1 outbreak in April.

"The death toll of a future pandemic depends not only on the virulence of the virus in question but also on the rapidity with which we are able to introduce effective preventive and therapeutic measures," Miller and colleagues said in the June 18 *New England Journal* article.

They called for active real-time surveillance around the world and for international cooperation in developing and best using limited vaccine supplies during periods between waves of any outbreak.

"... An interwave period would provide time to increase the production of biomedical tools and to vaccinate populations, thereby mitigating the morbidity and mortality associated with successive and potentially more lethal waves."

"If an effective vaccine had been available even a year after emergence of the 1968 A/H3N2 virus, most of the deaths in

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Capacity, partnerships cited as key to global health

The Institute of Medicine report on global health, in addition to calling for stronger U.S. leadership and a \$15 billion financial commitment by 2012, recommended that the government and private organizations invest in building research capacity in low- and middle-income countries.

“Neither the U.S. government nor any one U.S. organization can achieve global health by acting alone,” said the panel headed by former NIH Director and Nobelist Dr. Harold Varmus and Thomas R. Pickering, former American ambassador to the United Nations, Russia, India, Israel, El Salvador, Nigeria and Jordan.

“Progress toward this goal requires the collaboration of all countries, donors and recipients of aid to develop, finance and deliver essential and cost-effective health interventions,” it said. “The United States can, however, lead by setting an example of meaningful financial commitments, technical excellence and respectful partnership.”

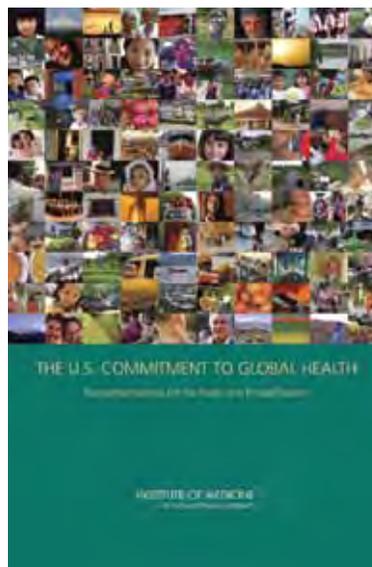
The report, “The U.S. Commitment to Global Health: Recommendations for Public and Private Sectors,” is a follow-up to a similar survey 12 years ago.

The IOM identified five areas for U.S. action:

- Scale up existing interventions to achieve significant health gains.
- Generate and share knowledge to address health problems endemic to the global poor.
- Invest in people, institutions and capacity building with global partners.
- Increase U.S. financial commitments to global health.
- Set the example of engaging in respectful partnerships.

Fogarty was instrumental in providing the impetus for the report, which noted the Center’s role in working toward those goals through its model AIDS International Training

and Research Program and new Millennium Promise Awards to combat chronic disease in developing countries.



“The program uses several scientific, political and economic strategies to encourage scientists to return to their home countries after training,” the document stated. “By focusing on research that is responsive to priorities in the home country—and maximizing the amount of training conducted there—trainees are better equipped to find jobs or funding in their home countries once training is complete.”

Among many of its recommendations, the

report called for strengthening health systems in poor countries and making U.S. government programs “less formulaic and more performance-based” and less focused on single diseases. It also suggested better efforts to control disease “by adapting existing knowledge for resource-limited settings.”

“This report affirms what we have set out in our strategic plan, namely addressing chronic disease burdens through training, fostering implementation research, helping build sustainable research capacity and partnering with foreign institutions and the private sector,” said Fogarty Director Dr. Roger I. Glass.

For more information, visit <http://tinyurl.com/qya5ug>.

Clues from past pandemics aid A/H1N1 response

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most of the deaths in Europe and Asia could probably have been prevented,” he and his colleagues said.

Nonmedical interventions such as “social distancing” could be effective, according to mathematical simulations, they said, but only if the virus has a lower reproduction rate than occurred in the previous pandemics.

Miller and Viboud, along with Fogarty research fellows Dr. Katharine Sturm-Ramirez, Dr. Martha Nelson, Dr. Eddie Holmes and Dr. Colin Russell and Dr. Maria Giovanni from the National Institute of Allergy and Infectious Diseases, led a workshop in Senegal to introduce African researchers to new methods of analyzing influenza patterns the same week

that news of the A/H1N1 outbreak swept the world.

It was the first meeting in Africa of the Multinational Influenza Seasonal Mortality Study Initiative that Fogarty leads. Researchers from 13 countries attended the sessions, cosponsored by the Institut Pasteur de Dakar with participation from its Paris-based scientists as well.

Miller, Mark A., Viboud, Cecile, Balinska, Marta, Simonsen, Lone. “The Signature Features of Influenza Pandemics—Implications for Policy.” *New England Journal of Medicine*, Volume 360:2595-2598 June 18, 2009

Rebecca J. Garten et al. “Antigenic and Genetic Characteristics of Swine-Origin 2009 A(H1N1) Influenza Viruses Circulating in Humans.” *Science*, May 2009, published online May 22, 2009.

Sachs urges systems approach to global health

All the recent progress in taming infectious diseases will mean little without systemic changes in the design, financing, management and delivery of health care around the world, economist Dr. Jeffrey Sachs told an NIH audience recently.

Sachs, a best-selling author, Columbia University professor and Fogarty scholar-in-residence, reviewed elements of epidemiology, politics and economics—all operating against a backdrop of extreme poverty—to explain a grim global health reality.

Citing a \$35 billion “financing gap”—or one-tenth of 1 percent of “rich world wealth”—between current conditions and what is needed to improve health in low-income countries, Sachs said, “We still have the need and we still have the opportunity to create a true global response and a true commitment to health for all ... The question is whether we can get organized.”

“We not only can afford ... to assure health for all, there is no way we can afford not to do it.”

—Dr. Jeffrey Sachs

The lecture, which filled the Masur Auditorium, was part of Fogarty’s year-long 40th anniversary celebration and was cosponsored by the Foundation for the NIH.

Sachs said public health ought to be built from a “global system design” analogous to the world’s air safety practices; based on a set of rigorous and uniform standards applied in all countries—from the airport to the traffic control system, maintenance and insurance.

“We need training programs like Fogarty’s” to create cadres of professional community health workers and public



Health economist and Fogarty Scholar-in-Residence Dr. Jeffrey Sachs, tells an overflow audience at NIH, “We still have the need, we still have the opportunity” to improve global health. “The question is whether we can get organized.”

health managers, he said. “This was once called by the IMF and the World Bank ‘bureaucracy.’ That’s not ‘bureaucracy,’ it’s creating systems.”

“We still haven’t figured out the real proportionality of life on the planet,” he said, noting that while Western institutions have given \$5 trillion in “stimulus and bailouts” in the past year, “We haven’t given a penny to the poorest of the poor. ... We not only can afford, in partnership with others, to assure health for all, there is no way we can afford not to do it” lest developing-world problems “come here with a vengeance.”

“We have a full worldwide pandemic of instability, of poverty, of mass migration, of violent conflict, of hunger and of new and re-emerging pathogens in a tightly connected world,” he warned.

“With all of our knowledge ... and with all our wealth I believe we can do better.”

For the video of the lecture, visit <http://tinyurl.com/dfqeh6>.

Consortium offers definition of global health

A panel of leading figures in the field is offering a new definition of the term “global health.”

Writing in *The Lancet*, the authors, representing the Consortium of Universities for Global Health, offered for universal adoption the following:

“Global health is an area for study, research and practice that places a priority on improving health and achieving equity in health for all people worldwide.

“Global health emphasizes transnational health issues,

determinants and solutions; involves many disciplines within and beyond the health sciences and promotes interdisciplinary collaboration; and is a synthesis of population-based prevention with individual-level clinical care.”

Members of the consortium, most of them Fogarty grantees, will meet at the NIH in September.

Koplan JP, Bond TC, Merson MH, Reddy KS, Rodriguez MH, Sewankambo NK, Wasserheit JN; for the Consortium of Universities for Global Health Executive Board. “Towards a common definition of global health.” *Lancet*. Volume 373, Issue 9679, 6 June 2009-12 June 2009, Pages 1993-1995

Obama pledges \$63 billion in global health funding

The Obama administration's emphasis on global health is reflected in a six-year, \$63 billion strategy that emphasizes holistic approaches.

For a new Global Health Initiative, the president asked Congress for \$51 billion to fight AIDS, tuberculosis and malaria and \$12 billion for other global health priorities.



Cairo University students listen as President Obama pledges U.S. aid to health and technology programs in Islamic countries.

For fiscal 2010, he requested \$7.4 billion for the three diseases, an increase of \$366 million over this year.

"In the 21st century, disease flows freely across borders and oceans, and,

in recent days, the 2009 H1N1 virus has reminded us of the urgent need for action," Obama said in a statement announcing the initiative.

"We cannot wall ourselves off from the world and hope for the best, nor ignore the public health challenges beyond our borders. ... We cannot simply confront individual preventable illnesses in isolation. The world is interconnected, and that demands an integrated approach to global health."

Presidential health adviser Dr. Ezekiel Emanuel, an NIH bioethicist, says the intention is to transition the

President's Emergency Plan for AIDS Relief from an emergency program to a more sustainable effort.

"The idea is not to just attack disease by disease but to now begin to think more holistically across many diseases and across the sort of underlying causes of these diseases and to build infrastructure."

Speaking at a Kaiser Family Foundation discussion about the budget, Emanuel said, "One of the philosophies we'd like to get away from is this idea of the stovepipes. ... We want to build more into the infrastructure, build more on the synergistic places. Because you don't just have a patient with HIV, those patients have HIV, they have TB, they get diarrhea, they get parasites. ... To segregate these diseases out, again, is to be too narrow."

In his June 4 speech in Cairo, Obama announced new partnerships with Islamic countries for economic, scientific and technological development.

He said the United States will collaborate with the Organization of the Islamic Conference, representing 57 countries and describing itself as "the collective voice of the Muslim world," on a polio eradication campaign.

He also promised expanded partnerships with Muslim communities to promote child and maternal health and to open centers of scientific excellence in Africa, the Middle East and Southeast Asia.

The 2010 budget proposal for all of NIH was \$31 billion, a 1.4 percent increase, not counting the \$10.4 billion Congress appropriated for two years under the economic Recovery Act. Fogarty's request was for \$69,227,000, an increase of \$536,000 over fiscal 2009.

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Sebelius pledges to reduce health disparities

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Sebelius said the world "demands a new, integrated approach to public health—one that seeks to understand and target the many factors that can threaten the lives and livelihoods of all our citizens."

To accomplish that, she said, President Obama has requested \$63 billion over six years from Congress to support "a holistic approach." Despite limited resources, "President Obama will not shy away from the opportunity to lead and collaborate as we work together to protect the health and safety of communities across the globe," she said.

"We will not operate in isolation or ignore the good work that so many of your countries have done," she told the assembly, proposing creation of "international partnerships, cooperation and consultation ... to advance the cause of

social justice, to expand access to health care and reduce disparities."

Glass said that while other global health issues got less attention in favor of discussions about the flu, the international transparency and cooperation that resulted from the crisis "has been a positive impact of the outbreak."

Among 16 resolutions the Assembly adopted were those to strengthen access to and treatment with anti-tuberculosis drugs, to improve access to medicines for disease disproportionately affecting the poor and devising a work plan to increase WHO assistance for addressing the implications of climate change on health.

For more information, visit <http://tinyurl.com/qznsu>.

Biodiversity partners boost discovery, development

Fogarty's biodiversity program, a cornerstone of the Center's foreign research efforts, works with U.S. grantees and private partners to find cures in nature's yet unspoiled habitats—from Fiji to Madagascar and Jordan to Panama.

As its very name implies, the International Cooperative Biodiversity Groups join U.S. government agencies with foreign counterparts, academic researchers and private partners to develop new drugs that may one day reduce the world's burden of tropical diseases, HIV, cancer, heart disease and mental illness.

Since the first awards were granted in 1993, the Fogarty-run ICBG program has operated in 22 countries and partnered with five major pharmaceutical companies: Bristol-Myers Squibb, Searle-Monsanto, Wyeth, GlaxoSmithKline and the Japanese Eisai Research Institute (ERI).

"They get access to the best minds in academia and to biological resources they otherwise would not," says Dr. Josh Rosenthal, Fogarty's deputy director of international research and training and head of the biodiversity project.

"At a modest cost, we act as a broker among grantees, federal agencies and the private sector and help researchers leverage our funding into much larger projects."

In the current five-year cycle, ICBG operates seven programs at about \$800,000 each, a majority of the funding coming from a consortium including the National Science Foundation, the U.S. Departments of Agriculture and Energy, the National Institute of Mental Health, the National Cancer Institute, the National Center for Complementary and Alternative Medicine and the NIH Office of Dietary Supplements.

"About 40 percent of new drugs are based on what nature produces," explains Rosenthal. "Our program aims to discover these hidden substances and help in their transformation into potential cures."

The four most recent grants are for research into potential anti-cancer and mental health agents in the tropical forests of Indonesia, the study of shipworms and sea snails in the Philippines, sea- and land-based bacteria in Madagascar and the properties of micro-organisms in Panama. (See p. 6.)

In addition to discovery, ICBG projects in the world's biodiversity hotspots promote research training, conservation and economic development, as in Fiji, where researchers were able to show villagers how to grow coralline red algae



Photo by Kim Diver

Fogarty biodiversity programs collaborate with local scientists and governments to pluck potential cures from nature. Pictured here (from left) are Marcy Balunas, Christina Wong, Jainer Yovanny Ortega and Amanda Fenner, plying the waters off Portobelo, Panama.

on lava stones to sell to aquariums instead of using nonrenewable pieces of living coral.

A Fogarty-supported collaboration between the University of Papua New Guinea and the University of Utah in only five years has yielded 20 diplomas for local undergraduate and graduate students and 13 graduate and postdoctoral trainees from Utah, including two Ph.Ds.

Just as important, says director Dr. Louis Barrows, is the potential for drug discovery and preservation, as well as improved health and higher incomes for local residents.

"The ICBG program is an absolutely inspired, and inspirational, program," says grantee Dr. Willaim Gerwick.

"There is a very keen sense that we are doing something great in science but doing more than just science."

The ties between science and conservation and conservation and economic development are "a natural alliance," Gerwick says. "It's much more than a normal research program hopes to undertake because you have participants who come from very different walks of science and policy."



Fogarty in Fiji

Searching for new drugs under the sea

Fogarty's biodiversity program has encouraged developing countries to preserve abundant native species that may hold the key to new drugs to cure diseases. Seaweed on this beach in Fiji may help treat fungal infections. Other natural products have shown potential to help fight cancer, malaria and HIV.

Cruising in the tropics surrounded by ocean, sunshine and mixed drinks is a daydream perhaps not out of the ordinary. What may be, however, is daydreaming about marine biology while tending bar on cruises to the Great Barrier Reef.

That's the unusual route Fogarty grantee Julia Kubanek took from her B.S. in chemistry from Queen's University at Kingston, Ontario, to academic stardom and recent publication in the prestigious *Proceedings of the National Academy of Sciences*.

She traces her current work as a Georgia Tech biologist and seeker of new life-saving drugs in the island nation of Fiji to family vacations at Cape Cod—taking whale-watching trips and “poking through the seaweed and looking at shells and crabs and stuff.”

Right now, Julia heads a lab that analyzes chemicals produced by seaweed, coral and sponges that defend the organisms from microbial attacks. Funded by the International Cooperative Biodiversity Groups program of Fogarty—in collaboration with eight other NIH components, the National Science Foundation and the U.S. Departments of Agriculture and Energy—the project integrates research, training and economic development in countries with rich and relatively unspoiled ecosystems.

Half of existing drugs come from natural compounds, and the ones Julia's group is studying may hold the key to developing new drugs to fight diseases in the United States and abroad—from new antibiotics to attack newly resistant bacteria at home and anti-malaria therapies abroad. In addition, they have potential for use against cancer and HIV as well.

What made her latest research remarkable came about from a casual lunch with Georgia Tech colleague Dr. Facundo Fernandez, when it dawned on them that his work in mass spectrometry could have applications to her work on seaweed.

Scabs on seaweed

As a result, Julia recounts, “Dr. Fernandez's and my students were the first to locate the chemicals on the surface, and it was an unexpected patchy distribution of the anti-fungal defenses, and it had not been done before. To me it looked like there were scabs on the seaweed.”

The implication, she says, is that an organism wounded by shallow-water agitation might send the army of chemical defenders right to the spot of the abrasion.

Corals, seaweed and sponges don't have a human-type of immunological response to attack. “The chemical defense they appear to have is a more ancestral form of defending oneself against a microorganism, and it seems to work pretty well,” Julia explains.

Her team found the red clumpy seaweed while looking at other marine life on remote Yanuca Island and what turned out to be *Callophycus serratus* had never been chemically studied before.

The desorption electrospray ionization mass spectrometry (DESI-MS) technique Fernandez used is ideal for extracting molecules from a fragile organism at any temperature or pressure without having to prepare the sample.

“The tropical Pacific has probably the highest species

diversity in coral reef systems in the world, and Fiji is in that general area,” Julia says. “It’s accessible and there are a lot of different kinds of habitat for species to look at—shallow reefs, sloping reefs, walls and little atolls.”

Just as important, she says, the political situation has stabilized, and local scientists are ready to start building research infrastructure that can lead to exchanges between the United States and Fiji.

“It’s an ideal place,” she says, noting, “To help countries like Fiji to have people who are trained to do their own research, who are investing in their own natural resources and therefore protecting them for the future because they know now the inherent value of those resources, *that* benefits the United States.”

Building value

Besides the good will such programs engender, Julia says, “There is no longer the biodiversity in the United States that there was a couple of hundred years ago. But in developing countries, biodiversity still exists, and it serves the United States well to protect it and help the people who own that biodiversity build its value and capitalize on it.”

The ICBG program “has been a great education for me—to be able to work with social scientists, political scientists and different kinds of natural scientists to study reef conservation, reef ecology and drug discovery. It’s really a nice integrated program that helps each of those different activities add value to the others.”

Her father worked as a chemical engineer and her mother as a chemistry professor at a two-year college, so it was not surprising Julia majored in chemistry in Canada, where she was raised.



Dr. Julia Kubanek, shown above on a dive in the Bahamas before her current exploration of biodiversity in the Fiji Islands, says support from Fogarty has brought together social, political and natural scientists to help build research infrastructure in developing nations.



Photo by Julia Kubanek

Samples of the red seaweed *Callophycus serratus* were taken from this beach in the Fiji Islands. The seaweed is of interest because it produces a large group of chemicals to protect itself against fungus infection.

After college, “I spent two years out of school and I traveled to New Zealand and learned to scuba dive there. I had always been interested in the ocean as a kid, but as a young adult, I had not gravitated to that in school, and so I had sort of missed the boat, as it were.”

“To help countries like Fiji to have people who are trained to do their own research... *that* benefits the United States.”

She continues: “Then I was working basically as a bartender on these boats that went out to the Great Barrier Reef for diving. I started daydreaming about what I wanted to do. I did want to make a life out of science, but the general lab-based chemistry didn’t really appeal to me. I wanted to do something connected to the environment.”

Not wanting to start from the beginning with a degree in marine biology or oceanography, she found an adviser at the University of British Columbia who helped her apply her chemical background to biology.

Now, once a year, Julia’s field trips—if scuba diving can be considered the “field”—take her to the islands of so many dreams.

Amy L. Lane, Leonard Nyadong, Asiri S. Galhena, Tonya L. Shearer, E. Paige Stout, R. Mitchell Parry, Mark Kwasnik, May D. Wang, Mark E. Hay, Facundo M. Fernandez and Julia Kubanek “Desorption electrospray ionization mass spectrometry reveals surface-mediated antifungal chemical defense of a tropical seaweed.” *PNAS* 2009 106:7314-7319.

Photo by Joe Pawlik, UNC-Wilmington

Panama prospecting—going for the green

This native San Franciscan is a prospector, but don't confuse him with the rapacious plunderers of 1849.

What Dr. William Gerwick has been doing for a decade is "mining" the pristine waters off the coast of Panama for potential cancer drugs. At the same time, he and his team of researchers are helping Panamanians preserve one of the world's last unspoiled refuges for plant and marine life.

The medicinal gold they are seeking is green. Actually blue-green, as in the algae species *Leptolyngbya sp.* that is being analyzed by the Fogarty-run International Cooperative Biodiversity Group (ICBG) working on and near Coiba Island. The island lies off the Pacific Coast of Panama, cut off from the outside world just as was the prison that was its main business for much of the 20th century.

Gerwick, an oceanographer at the University of California, and Kerry McPhail, a former postdoctoral student of his from Oregon State University and now a National Cancer Institute grantee, discovered the potent new cancer toxin last year.

After scooping up the algae and extracting its oil, they were left with what Gerwick calls "green goo" that turned out to contain "phenomenal anticancer activity." In recognition of its origin, they named the compound coibamide. "While we don't have all of the details worked out yet, the pathways involved are becoming clear that coibamide has a novel mechanism of action," Gerwick says.



Photo by Kim Diver

The organism that produces coibamide.

Although the molecule still must be cultured and synthesized in the lab, Fogarty's Dr. Josh Rosenthal, the ICBG progenitor, says, "Coibamide could be the perfect example of how protecting natural resources can lead to discovery, how discovery can lead to economic development and how economic development can be the *raison d'être* for conservation," he says. "They all feed off of one another."

Gerwick, rather than considering himself a bioprospector, says, "We are builders, not destroyers. We are attaching value to these life forms" for the benefit of science as well as the economy and biodiversity of Panama.

The Panama program has helped build the country's research infrastructure and economy by training 90 Panamanian and U.S. scientists, employing local lab technicians and, just as valuable, helping get Coiba added to the roster of UNESCO World Heritage Sites.

Red soils in the sunset can cure skin infections

Researchers working in the ancient fields of what is now Jordan have proven correct the folklore that rubbing the area's "red soils" on the skin can cure diaper rash and other infections.

Investigating the antibiotic properties of the soil, under an ICBG grant, the team led by Dr. Nicholas Oberlies of the Research Triangle Institute found that injecting the bacteria *M. luteus* and *S. aureus* beneath the soil's surface led to creation of antimicrobial compounds.

"These data provide a rationale for the traditional use of Jordan's red soils for the treatment of skin infections, including diaper rash," the group wrote in an article in the May issue of *Applied and Environmental Microbiology*.

Because there was no evidence of environmental activity



Photo by Google Earth

Jordan's red soil has long been thought to contain properties that can cure skin infections. Now, Fogarty's International Cooperative Biodiversity Groups program has published a study verifying age-old anecdotes.

creating antibiotics, and because *S. aureus* is commonly found on human skin, they wrote, "We hypothesize that application of Red Soils to an infected area of skin ... leads to the proliferation of bacteria that produce antibiotic compounds, killing the infecting skin microbiota."

The researchers said the mechanism by which the antibiotics are created remains unknown.

Such studies are important, they said, because of the rapid and deadly emergence of resistant staph infections in hospitals and the need for cheap and effective antibiotics to fight infectious diseases in developing countries.

Malaria solutions are available, Breman declares

Despite malaria's presence in more than 100 countries, there are scientific, logistical, financial and political solutions to its elimination, says Dr. Joel Breman, Fogarty's senior scientific adviser and a key figure in the recent history of infectious disease control.

The effort will take the provision of cheaper diagnostic tests and drugs, dedication of governments and the use of insecticide treated bed nets, Breman said in an online discussion of the disease just before World Malaria Day.

High-income countries have taken more interest in malaria recently, he said, because its control can lead to political stability and new foreign investment in a country.

"Communities at risk must participate in malaria programs—assuring compliance by taking their drugs, using and maintaining their bed nets, participating in spraying of houses and understanding why."

In addition to the necessity for political will in malarial countries and for low-cost diagnostic and therapeutic tools, Breman said it may be most important to train more malariologists and others in clinical, delivery, managerial, laboratory and research fields.

For individual families at risk, he suggested:

- Get, use and maintain long-lasting insecticide treated bed nets.
- Keep the compound and community free of breeding sites.
- Respond to any fever by seeing a health worker right away.

- Find out what the local government and nongovernmental organizations are doing and ask how community members can help them do a better job. If they are not doing anything demand that they do so.

Breman has trained, mentored and collaborated with scientists and public health workers in more than 20 countries in Africa in developing national malaria control policies, programs and guidelines.

To read the transcript, visit <http://tinyurl.com/ojmeto>.



Photo by World Health Organization

Fogarty senior scientist Dr. Joel Breman, a world expert on malaria, says understanding why using bed nets, taking the proper medications and indoor insecticide spraying can help people avoid the disease.

Diaspora scientists can benefit U.S. programs

Harnessing the skills, experience and contacts of foreign health researchers who come to the United States could strengthen American university global health programs and benefit the scientists' home countries, says a recent article by Fogarty Director Dr. Roger I. Glass and two colleagues.

"University leaders should develop strategies to facilitate collaboration between foreign researchers who choose to stay in the United States and local scientists in their home countries," advise Glass and coauthors Nalini P. Anand of Fogarty's policy, planning and evaluation division and division director Dr. Karen Hofman.

"Such strategies can catalyze opportunities for universities to strengthen their global health research activities and make a lasting impact on health worldwide."

The article, in the journal *Academic Medicine*, examines contributions to the U.S. economy and to their own nations of diaspora researchers—those who decide to relocate to America from resource-poor countries and who may return

home periodically.

"The number of foreign-born scientists in the United States has already reached a critical mass," the authors say. Although there is no way of statistically measuring their contribution, "it seems plausible that foreign scientists have not only enriched the scientific workforce but have also bolstered the United States culturally and economically."

Their collaborations with U.S. institutions and those in their home countries can have a payoff for Americans' health as well.

"For example, low-cost diagnostics and more nimble health services strategies used in resource-poor countries can also benefit underserved segments of the U.S. population," the article says.

Anand, Nalini P., Hofman, Karen J., Glass, Roger I. "The Globalization of Health Research: Harnessing the Scientific Diaspora." *Acad Med* Volume 84(4), April 2009, pp 525-534

State Department says it will ease visa delays

The State Department has put new procedures into place to ease what U.S. scientists had called an embarrassing and economically dangerous backlog of visa applications from foreign researchers.

The new policy went into effect at the end of May, and additional consular staff has been assigned to clear the bottleneck. Approval of routine applications is expected to take no more than two weeks.



Dr. Patricia Wrightson directed a National Research Council study on the problem foreign scientists have in getting visas.

After Sept. 11, the flow of foreign scientists began to slow as the Department slowed down the approval process based on concern that visitors might engage in illegal trafficking of high technology products—interpreted in some cases as medical knowledge.

Earlier this year, the National Research Council issued a report urging a change in policy and reform of a hodgepodge of outdated export controls.

Dr. Norman Neureiter, a member of the NRC scientific and national security panel that wrote the report, “Beyond Fortress America: National Security

Controls on Science and Technology in a Globalized World,” and Dr. Patricia Wrightson, who headed the study, told Fogarty and other NIH staff of the problems caused by the backlog.

They recounted stories of prominent scientists blocked from entering the United States to speak at international conferences and of graduate students legally working in America prevented from re-entering after returning home for family emergencies.

Neureiter and Wrightson blamed the anti-terror mood of the Department of Homeland Security for superseding the State Department’s traditional role in approving visas.

“What we’re trying to do is bring some coherence into the internal bureaucracy,” Wrightson said, proposing that export control and visa policies equally involve the Pentagon, State Department, National Security Council and the Commerce Department.

When the report was issued, committee co-chair and former White House national security adviser Gen. Brent Scowcroft said, “[The United States] needs to change to a philosophy

that everything is open and restricted only when it is demonstrated that it needs to be.”

The report said negative “unintended consequences arise from policies that were crafted for an earlier era. In the name of maintaining superiority, the United States now runs the risk of becoming less competitive and less prosperous; we run the risk of actually weakening our national security.”

Neureiter called the delay in allowing top scientists from India and China into the country “another diplomatic disaster for the United States. ... In my opinion, we are paying a terrible price for this. ... What more can you do to alienate a country (China) with whom we must have maximum transparency and the highest degree of cooperation if we are going to avoid an eventual clash with these people?”

Among the report’s recommendations for President Obama to consider in any Executive Order:

- The visa application process should be streamlined, with preference given to the skills of foreign researchers and students.
- Student visas should be extended so that recent graduates have time to find work with U.S.-based employers.
- Qualified American scientists should be allowed to vouch for the legitimacy of visa applicants.
- Lists of exportable technology and knowledge should be frequently reviewed, with the burden of proof on the government.

For a copy of the report, visit <http://tinyurl.com/cg7s6e>.

WHO travel guide

The World Health Organization has published a revised disease protection guide for travelers.

“While there is evidence that more traditional tourist and business travelers take appropriate prevention measures or receive proper treatment, recent immigrants who return to their home countries for the purpose of visiting friends and relatives deserve particular attention because they are at a higher risk of suffering certain health problems,” it says.

The guide has a new chapter on psychological health, updated disease maps and the latest prevention and treatment options.

Visit at <http://www.who.int/ith>.

Fogarty's Johnson goes to Hill to promote research

Fogarty Deputy Director Dr. Michael Johnson says only academic research has the capacity to produce knowledge over time and, thus, universities are the best places for private and public investments in science.



Fogarty Deputy Director Dr. Michael Johnson told a congressional briefing that investments in universities now will pay off for the U.S. economy in 10 or 20 years. Pictured is Rep. Rush Holt, D-N.J.

At a recent congressional briefing on the economic impact of global health research, Johnson said the Institute of Medicine's call for more funding (see p. 4) and President Obama's budget proposal (see p. 6) should provide a bigger pot of research dollars.

He noted that unlike international consulting firms whose global health work ebbs and flows with the availability of money, "University X and University Y will still be there when the funding shifts."

Rep. Rush Holt, D-N.J., co-chair of the congressional-

research and development caucus, said the American Recovery and Reinvestment Act and the budget indicate "a new attitude toward research" but "we still have a lot of work to do on the Hill to make sure that research is not just a sideshow or an afterthought but is central to the work in every area we deal with."

Johnson was part of a panel at the briefing sponsored by the health advocacy groups Research!America and PATH that linked global health research with economic development.

Dr. Jo Ivey Boufford, president of the New York Academy of Medicine explained:

"Healthier workers are more productive. When there is a promise of longer life expectancy there is more of a reason for government to invest in education and training for the population, which in turn raises their economic prospects. This leads to increased investment in infrastructure and raises the level of economic development and purchasing power, so markets are increased. Because longer life expectancy increases the size of the age group 30-to-50, the most productive part of the work force, they can create more wealth for themselves, their families, their communities and their countries."

Using China's 22-year jump in life expectancy over 40 years as an example, Johnson noted the likelihood of a huge increase in chronic diseases due to tobacco, obesity and environmental hazards. "Those are key research opportunities where if we make the investment now, we are going to have the opportunity in 10 or 20 years to see breakthroughs that benefit the U.S. population and benefit our economy."

Karen Goraleski, Research!America's vice president for public health partnerships, said "Global health is America's health. America's health is global health. This is not two separate silos. It is not 'us-them,' it's the big 'us.'"

Obama proposes global health funding increase

...continued from p. 6

Fogarty Director Dr. Roger I. Glass submitted testimony in support of the Center's budget request, noting that in light of the A/H1N1 virus outbreak, "solving health problems in an interconnected world requires greater international collaboration than ever before."

In related actions:

- Obama named Dr. Eric Goosby, a former director of the HHS Office of HIV/AIDS Policy, to run PEPFAR and New York City health commissioner Dr. Thomas Frieden, who once worked for WHO on tuberculosis in India, to head the Centers for Disease Control and Prevention.
- The Senate confirmed Bill Corr, former director of the Campaign for Tobacco-Free Kids as deputy secretary of HHS and Dr. Margaret Hamburg, former New York City

health commissioner and one-time assistant director of the National Institute of Allergy as head of the Food and Drug Administration.

- The Senate Foreign Relations Committee voted to authorize the secretary of state to name science envoys "to represent the U.S. commitment to collaborate with other countries to promote the advancement of science and technology throughout the world."
- Reps. Howard Berman, D-Calif., and Mark Kirk, R-Ill., introduced legislation requiring development of a U.S. strategy to reduce global poverty and promote economic growth in low- and middle-income countries.

To view the Kaiser Family Foundation discussion, visit <http://tinyurl.com/qcnnby>.

Renewed U.S. effort on NTDs a welcome move



Guest Opinion

By Dr. Peter Hotez

President Obama has sent an important message to the world that the United States is committed to strengthening global health initiatives around the world. This is particularly important in the fight against neglected tropical diseases.

For far too long, these devastating, debilitating and deadly diseases have been neglected. The president says that under his watch, they will be neglected no more.

NTDs afflict more than 1.4 billion people living on less than \$1.25 a day. These parasitic and bacterial infections trap their victims in a vicious cycle of poverty and disease.

Yet, successful and cost-effective treatments exist to end the suffering. For approximately 50 cents a person a year we can treat the seven most common NTDs that account for 90 percent of the NTD burden. It's why treating NTDs is often referred to as a best buy in public health.

Treating NTDs also strengthens our global health systems. Research shows that NTD control promotes and improves the efficacy of immunizations, vitamin and bed net distribution and maternal and child health programs.

In fact, a three-year, multi-country study found that integrated interventions delivered through the

community-directed treatment approach doubled the coverage rate for malaria treatment and bed net usage when combined with treatment for just one NTD, onchocerciasis (river blindness).

The president was correct in declaring that "the U.S. global health investment is an important component of the national security 'smart power' strategy, where the power of America's development tool — especially proven, cost-effective health care initiatives — can build the capacity of government institutions and reduce the risk of conflict before it gathers strength."

In January, Global Network Ambassador and former Health and Human Services Secretary Tommy Thompson and I made the case in a scientific journal article for the new administration to engage in medical diplomacy as a critical piece of its foreign policy agenda.

Defining medical diplomacy as "winning the hearts and minds of people in less fortunate areas of the world by exporting medical care, expertise and personnel to those who need it most," we said strengthening U.S. efforts to eliminate NTDs would help end the cycle of poverty in areas of conflict throughout the globe and promote peace and economic prosperity.

Dr. Hotez is a Distinguished Research Professor at The George Washington University and a member of the Fogarty advisory board.

Global Health Briefs

Merck executive to head council



The Global Health Council has named former Jeffrey L. Sturchio as president and CEO. As vice president of Merck for corporate responsibility and as president of the Merck Company Foundation, Sturchio was instrumental in developing programs to treat more than 100,000 AIDS

patients in Botswana and protecting millions of Africans from river blindness. <http://tinyurl.com/qg9ye2>

PEPFAR reduces AIDS deaths

A recent study by International Federation of Red Cross and Red Crescent Societies has found that the President's Emergency Plan for AIDS Relief has succeeded in reducing deaths from the disease in the African nations where it is active but not in slowing its spread. <http://tinyurl.com/poy3mp>

Zimbabwe cholera count rising

Political unrest, the collapse of the country's sanitation, water and health systems and widespread malnutrition have combined to push the number of cholera cases in Zimbabwe to the 100,000 mark since the outbreak began last August. <http://tinyurl.com/pucx3u>

Wide rotavirus vaccination urged

WHO is recommending that all national immunization programs include vaccination against rotavirus, which causes more than 500,000 children to die each year, mostly in developing countries. The recommendation is based on new data from clinical trials in Africa showing the vaccine performed well in areas with high infant and child mortality, poor sanitary conditions, high diarrheal disease mortality and high maternal HIV prevalence. <http://tinyurl.com/qvy5r2>

PEOPLE

Bridbord wins alumni honors

Fogarty's Dr. Ken Bridbord, the director of international training and research, has been recognized this spring by two of his alma maters. In February, he was among the initial inductees into the Alumni Hall of Fame at The Cooper Union in New York. In June, Bridbord received the Medical & Biological Sciences Alumni Association's Distinguished Service Award from the University of Chicago.



Then



Now

Bridbord was recognized by NIH in 2007 with the World AIDS Day Award for building a cadre of international research scientists and clinicians trained to combat the disease over 20 years. Since then, many of the 2,000 program trainees have become senior leaders in academia and foreign governments.

He began his career with the Environmental Protection Agency and was instrumental in the long fight to remove lead from gasoline. Bridbord recounts his role in a recent issue of "Environmental Health Perspectives." <http://tinyurl.com/prkv9w>

New program officer for Africa

Dr. Letitia Robinson has joined Fogarty as the program officer for sub-Saharan Africa in the Division of International Relations. In her previous post with the Health Resources and Services Administration, she provided oversight for federal funding HIV/AIDS care in Haiti, South Africa, Guyana, Uganda, Kenya, Zambia, Rwanda, Botswana, Nigeria and Tanzania. A Ph.D. in international health, she also is a registered nurse.



Dr. Letitia Robinson

Look to African universities, says Whitworth

Dr. Jimmy Whitworth, international director of the Wellcome Trust, Great Britain's largest charity, told Fogarty and other NIH global health advocates that efforts should be made to bolster the capacity of African universities to train researchers.

Whitworth said too many donor institutions avoid dealing with African universities because they feel they are too bureaucratic or otherwise unable to conduct effective research.

"This is where the young researchers of tomorrow are going to come from. ...To divorce teaching and service from research is not going to be successful" in training

'Modest shift' in funding urged

Dr. Robert E. Black, a member of Fogarty's advisory board and a professor at the Johns Hopkins University, co-authored a recent editorial in *The Lancet* commenting on the well publicized study in its pages of the Bill & Melinda Gates Foundation grant processes.



Dr. Robert Black

He and his co-authors said: "A modest shift of the balance of the Foundation's funding from purchase of commodities to research, from discovery and development to delivery research, from heavily funded diseases to truly neglected diseases ... and from the high-income-country institutions to those in settings where the problems exist would make enormous additional contributions to global health." <http://tinyurl.com/omqgow>

Staff visit Zambia, Uganda

Program officer Dr. Kathleen Michels visited four different research projects in Zambia funded under Fogarty's Brain Disorders in the Developing World program and for a conference on epilepsy and stigma. Children and adults with epilepsy are more stigmatized and discriminated against than those with HIV/AIDS, she reports.



Dr. Kathleen Michels

Fogarty Deputy Director Dr. Michael Johnson traveled to Uganda for the Accordia Global Health Foundation's Infectious Diseases Summit and spoke on "successful leadership development programs."

African scientists to excel, he said. "If we want to get a flow of African scientists into research, we have to embrace African universities."

The Wellcome Trust, which spends about \$1 billion a year on global health, has invited African universities to become involved in various consortia, he said.



Dr. Jimmy Whitworth

FUNDING OPPORTUNITIES

Program	Details	Deadline
AIDS International Training and Research Program (D43)	www.fic.nih.gov/aitrp	August 14, 2009
Phase II Comprehensive ICOHRTA AIDS/TB (U2R)	www.fic.nih.gov/icohrta-aidstb	August 18, 2009
Brain Disorders in the Developing World (BRAIN-AIDS) (R01) (R21)	www.fic.nih.gov/brain-r01 www.fic.nih.gov/brain-r21	August 21, 2009
Planning Grants for International Malaria Clinical, Operational and Health Services Research Training Programs (D71)	www.fic.nih.gov/icohrta-aidstb	Sept. 15, 2009
Global Infectious Disease Research Training Program (D43)	www.fic.nih.gov/gid	Sept 16, 2009

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

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Brazilian NIH alumni organize

Scientists who have trained in Brazil under NIH auspices or received grants have formed an alumni association.

Meeting at the Brazilian Academy of Sciences this spring, they agreed to work toward greater collaboration between scientists and institutions of both countries, said Kevin Bialy, Fogarty's acting program officer for the Western Hemisphere.

Goals of the association include helping NIH fellows returning to Brazil to identify research positions, establish exchanges with NIH and organize scientific meetings within Brazil or regionally, including mentorship in grants writing.



Bialy said such an organization has benefits for NIH as a source for peer review or program evaluation panels, for regional expertise, for scientific policy advocacy in the country and as a model for alumni in other countries.