

nih record



ABOVE • NLM experts offered advice on storing keepsakes during Preservation Week. See story on p. 12.

features

	1
How Much Disease Risk Comes From Forebears?	
	3
NIH's Clearest Communicators Honored	
	5
Mobile Exhibit Teaches About COPD	
	12
NLM Offers Practical Hints on Preservation	

departments

Briefs	2
Digest	10
Milestones	11
Seen	12

Sins of the Grandfather?

STEP Forum Explores Disease Potential Handed Down From Ancestors

By Carla Garnett

Did your ancestors make you sick? Or, more specifically, did something happen to Grammy before she was born that scarred you—health wise—for life? That's what the science of epigenetics aims to explain. A recent Staff Training in Extramural Programs (STEP) forum, "Blast from the Past: Early Influences on Long-Term Health," aimed to shed more light on the emerging field and its possible implications in health and society.

So we know certain characteristics—eye color, for instance—are passed down to us through our genes. "She gets that from my dad," a proud mom might suggest of her daughter's red hair. Epigenetics, however, seeks to find out what else besides your DNA may cause you to end up with some



Dr. Trevor Archer

SEE EPIGENETICS, PAGE 6

Racial Disparities in Suicide Rates May Be Due to Culture Rather Than Genes

By Julnar Issa

Historically, African Americans have dealt with many social stressors such as poverty, discrimination and high unemployment rates. So why do African Americans have lower suicide rates than whites, Asian Americans and Native Americans?

Dr. Sean Joe, a University of Michigan School of Social Work researcher of suicidal behavior among African Americans, addressed this question on May 4 at the NIMH lecture "Suicide Research Among Black Americans: Uncovering the Secrets of this Racial Advantage." He pointed out that risk factors for suicide are not simply tied to money and success as many people might think. Football player Deion Sanders, for example, attempted suicide while at the height of success in his career.

Many clues from research on suicide risk factors instead point to social factors as being more important than wealth, success or psy-

SEE SUICIDE AND RACE, PAGE 4

NHLBI Staffer Puts Best Foot Forward

By Jan Ehrman



"You give but little when you give of your possessions," said the poet Kahlil Gibran. "It is when you give of yourself that you truly give."

Dr. Chitra Krishnamurti refuses to dance around that concept—rather, she embraces it by reaching out to others. On a typical work day, she fulfills her role as deputy director of the National Heart, Lung, and Blood Institute's Office of Research Training and Minority Health. But she also pursues a beloved pastime—teaching classical Indian dance to an extraordinary group of barefoot (with bells on their ankles), colorfully adorned children and adults. Through both enterprises, Krishnamurti bares her heart and soul.

"Personally, I achieve an incredible sense of

SEE INDIAN DANCE, PAGE 8



The NIH Record is published biweekly at Bethesda, MD by the Editorial Operations Branch, Office of Communications and Public Liaison, for the information of employees of the National Institutes of Health, Department of Health and Human Services. The content is reprintable without permission. Pictures may be available upon request. Use of funds for printing this periodical has been approved by the director of the Office of Management and Budget through September 30, 2010.

To receive alerts to our latest issue, send an email to listserv@list.nih.gov with the words "Subscribe NIHRECORD" in the message body.

NIH Record Office Bldg. 31, Rm. 5B41
Phone (301) 496-2125 Fax (301) 402-1485

Web address <http://nihrecord.od.nih.gov>

Editor

Richard McManus
Rich.McManus@nih.gov

Assistant Editor

Carla Garnett
Carla.Garnett@nih.gov

Staff Writers

Jan Ehrman
Jan.Ehrman@nih.gov

Valerie Lambros
Valerie.Lambros@nih.gov

The NIH Record reserves the right to make corrections, changes or deletions in submitted copy in conformity with the policies of the paper and HHS.

briefs

FAES Announces Fall Courses

The FAES Graduate School at NIH announces the schedule of courses for the fall 2010 semester. The majority of the evening classes sponsored by the Foundation for Advanced Education in the Sciences will be given on the NIH campus.

Courses are offered in biochemistry, biology, biotechnology (daytime courses), chemistry, immunology, languages, medicine, microbiology, pharmacology, statistics, technology transfer, alternative medicine, MCAT, GRE and courses of general interest. A technology transfer certificate program is also being offered.

It is possible to transfer credits earned to other institutions for degree work, with their approval.

Classes will begin the week of Sept. 13; mail registration ends Aug. 20. An open house will be held Aug. 23 from 4 to 7 p.m. at the FAES Social and Academic Center, 9101 Old Georgetown Rd.; walk-in registration will be accepted then and also Aug. 25-Sept. 3. Tuition is \$145 per credit hour and courses may be taken for credit or audit. Courses that qualify for institute support as training should be cleared with supervisors and administrative officers as soon as possible. Both the vendor's copy of the training form (SF-182) and the FAES registration form must be submitted at the time of registration.

Catalogs are available in the graduate school office in Bldg. 60, Suite 230; the Foundation Bookstore in Bldg. 10, Rm. B1L101; and the business office in Bldg. 10, Rm. B1C18. To have a catalog sent, call (301) 496-7976 or visit www.faes.org.

NIH Graduate & Professional School Fair, July 8

The Office of Intramural Training & Education invites summer interns and postdocs to participate in the NIH Graduate & Professional School Fair on Thursday, July 8 at the Natcher Conference Center and Lister Hill Auditorium from 8 a.m. to 3:30 p.m.

The fair will provide an opportunity for NIH summer interns (especially those in college), NIH postdocs and college and university students from the Washington, D.C. area to prepare for the next step in their careers by exploring educational programs leading to the Ph.D., M.D., D.D.S., M.D./Ph.D. and other graduate and professional degrees.

A list of institutions planning to attend and registration information can be found at www.training.nih.gov.

OBSSR Hosts 'Controversies in Clinical Trials'

To celebrate the 10th anniversary of the Office of Behavioral and Social Science Research's summer institute on randomized clinical trials involving behavioral interventions, OBSSR is hosting Controversies in Clinical Trials, a satellite symposium of the 11th International Congress of Behavioral Medicine Aug. 2-3 at the Grand Hyatt in Washington, D.C. The event will cover several issues of importance for behavioral clinical trials. For more information, including registration, visit www.sbm.org/isbm/symposium_form.asp.

Organ Donation Support Group Forming

Betty Garrison, staff assistant in the Office of the Director at the National Institute on Deafness and Other Communication Disorders, found out more than 30 years ago that she had a genetic form of chronic kidney disease. She knew she would need a kidney transplant in the next 25-30 years, but that seemed like a long way off.

Today, she is not only taking steps to prepare herself for dialysis and a possible transplant, but also wants to help other NIH employees who may be in a similar situation.

"I've seen that I am not the only employee here at the NIH who is waiting for a transplant," Garrison said. "There are a number of employees who are on dialysis. I would like to see more information distributed to employees regarding organ donation and thought that it might be helpful to have a support group set up."

If you or someone you know is interested in joining the organ donor support group, contact Garrison at garrisob@nidcd.nih.gov or (301) 402-0496.

Chemical Bottles Can Be Recycled

Did you know that almost all empty glass and plastic chemical bottles in the lab can be recycled? This includes all containers that previously contained chemicals (liquid or solid), buffer and saline solutions and other miscellaneous products. These bottles can be collected for recycling by contacting the NIH Chemical Waste Services (CWS) contractor at (301) 496-4710. The contractor can also deliver small plastic totes that may be used to accumulate numerous empties to minimize the number of collection requests. All empty bottles and totes are to be stored in the labs, not in the aisles or in hallways. Empty containers that previously contained infectious or radioactive material will not be accepted and should be disposed of according to the *NIH Waste Disposal Guide*.

Empty chemical containers can only be recycled through the CWS contractor. Do not place empty chemical containers in commingled recycling bins or trash cans labeled "Disposable Labware & Broken Glass Containers."

Contact the Division of Environmental Protection at (301) 496-7990 if you have any questions about the recycling program.

Plain Language Event Pays Tribute to Communicators

Jeff Howe, contributing editor of *Wired* magazine and author of the book *Crowdsourcing: Why the Power of the Crowd Is Driving the Future of Business*, gave the keynote address at the recent Plain Language and Clear Communication award ceremony.

Howe echoed the advice of his father, a scientist who believed that the key to communicating effectively was to “write it simply, but get it right.” He said it is crucial for a writer to appeal to a range of audiences including experts and lay people.

“Plain language really is a sign of respect,” he said. “It means you respect the intelligence of your audience.”

NIH’ers won 83 Plain Language Awards—given for communication products that use clear and concise language—at the ceremony held in Masur Auditorium. One winner, or group, will earn an NIH Director’s Award, to be presented in July.

Clear and to the Point

Do you want to communicate more clearly? The following guidelines can tell you how.

- Answer your reader’s questions.
- Use language appropriate for your reader.
- Include only necessary details.
- Use the active voice.
- Use personal pronouns such as “we” and “you.”
- Use short sentences and paragraphs.
- Use tables, lists and other easy-to-understand features.

NCI and NIDDK each received 5 gold awards at the affair, the most by any IC, followed by NIA and NIDA, which earned 4 and 3 golds, respectively. Overall, the NIH Office of the Director earned 9 awards (gold, silver, bronze).

Some of the gold award recipients and their products included NIDDK for its National Diabetes Education Program web site, NLM for *MedlinePlus Salud* magazine, NIA for its brochure *Caring for a Person with Alzheimer’s Disease: Your Easy-to-Use Guide* and NCI for *Understanding Breast Changes: A Health Guide for Women*.

The Office of Communications and Public Liaison, OD, is the NIH lead in a government-wide

Clear Communication Initiative. Part of this initiative is the award ceremony, an annual event that acknowledges superlative employee efforts in producing a range of products including fact sheets, newsletters, periodicals, radio features, videos, web site materials and other items.

Delivering an upbeat message via videotape, NIH director Dr. Francis Collins addressed the awardees. “Thanks to all of you for serving as translators of medical research,” he said. “Since the start of his campaign, President Barack Obama has underscored the importance of transparency and clear communications. I support that also.”

John Burklow, NIH associate director for communications and public liaison, moderated this year’s event. He noted that 57 peer reviewers, most of them from the NIH communications arena, evaluated 320 entries.

NIH deputy director Dr. Raynard Kington provided a welcome. He emphasized the value of presenting straightforward, concise information, especially at an agency such as NIH, where communicating scientific findings to the public has always been key to the agency’s mission.

Next year’s ceremony will broaden to include categories for photography, graphic images and animation, all of which offer the possibility of communicating clearly.—Jan Ehrman



Above:

Jeff Howe, contributing editor of *Wired* magazine and author of the book *Crowdsourcing: Why the Power of the Crowd Is Driving the Future of Business*, gave the keynote address at the Plain Language Award ceremony.

PHOTO: ERNIE BRANSON

NIHES Hosts Collins During N.C. Visit

NIHES staff extended a warm welcome to NIH director Dr. Francis Collins during a recent 2-day visit. He toured labs and the Clinical Research Unit at NIHES and gave presentations to an all-hands meeting of employees and to members of the National Advisory Environmental Health Sciences Council. “You are a very important part of the National Institutes of Health,” he told employees, “and I hope you know just how much the work you do, the science you’re invested in, is a central part of our vision.” Collins also visited Clinical and Translational Science Awards programs at Duke University and the University of North Carolina at Chapel Hill, where he received his medical degree.

PHOTO: STEVE MCCAWE





University of Michigan researcher Dr. Sean Joe thinks race is a protective factor in risk of suicide.

PHOTO: ERNIE BRANSON

SUICIDE AND RACE

CONTINUED FROM PAGE 1

chiatric illness in explaining this racial disparity. The fact that African Americans in the Midwest have significantly higher suicide risk than those in the South hints at the importance of social factors. Further supporting this view are statistics on the lifetime risk of suicide among African Americans of various age groups. The risk for attempting suicide among African Americans born after 1975 is 9 times higher than that for older African Americans.

has a more accepting attitude towards suicide. They may also have a greater tendency to attribute both positive and negative life outcomes to their own actions rather than to events outside of their control. This attributional orientation allows them to take credit for their successes, but it can also be harmful because it may cause them to take too much responsibility for their failures and negative outcomes.

Furthermore, the younger generation of African American males also has different pressures and social stressors. They may have the notion that they should “act tough and look cool.” In other words, they may have a conceptualization of masculinity that may both put pressure on them and prevent them from seeking help. They may feel that help-seeking is seen as a weakness. Females, on the other hand, are not afraid to talk to others if they are feeling down and also tend to be more religious than men.

Joe explained that there are really two traditions of race theory. One is biologically based and the other is socially based. The biologically based theory defines race by genetic factors. The socially based definition of race, however, includes factors such as how people view themselves in relation to others, how they interact with others and how they feel about themselves. Understanding these social factors is essential to understanding the rise in suicide rates among African American males and the high rates of suicide in the United States in general. ●

The fact that African Americans in the Midwest have significantly higher suicide risk than those in the South hints at the importance of social factors.

What social differences may account for the differing rate of suicide between African Americans in the South and in the Midwest? One difference is that African Americans in the South are more orthodox in their religious views. Religion, particularly one’s subjective experience of religion and one’s level of service attendance, has been found to be associated with a lower risk for suicide. The reason for this is not clear, however; it may partly be due to religion’s impact on social connectedness and attitudes towards suicidal behavior.

The increase in lifetime suicide rates among younger African Americans similarly seems to be tied to social factors. An interesting fact that may help in explaining this increase is that, while the rate among males has increased, the rate among females has remained relatively constant.

Joe explained that the younger generation of African American males has a different social experience than its older counterpart that is responsible for differences in attitudes between the two generations. The younger generation



Inside the “COPD Shuttle,” passengers were jolted briefly as they learned about lung obstructions.

A Lunge Inside a Lung
‘COPD Shuttle’ Offers Virtual Tour

“Fasten your seatbelts. It’s going to be a bumpy night.” Well, there were no seatbelts and it was day instead of night. Otherwise, Bette Davis’s famous forecast was right on target for the trip inside a lung offered at NIH May 27. The National Heart, Lung, and Blood Institute invited NIH staff to take a “virtual journey inside the human body” to learn more about chronic obstructive pulmonary disease (COPD). NHLBI’s partner in the “Learn More Breathe Better” campaign, the COPD Foundation, brought its COPD Shuttle ride to campus for a “multi-sensory demonstration of the health risks of smoking and air pollution on the lungs.”

Set up for the day on parking lot 10H, just south of the Clinical Center, the lung-shaped shuttle is a 20-seat state-of-the-art mobile motion simulator that immerses riders in a 5-minute microscopic journey to the “center of the lung.”

Throughout the ride, lung explorers are gently pitched from side to side, forward and back as a movie theater screen shows the winding tunnel-like interior of an at-first healthy lung. A voiceover explains how COPD can develop, as viewers watch pollutants in the form of dust particles and smoke bits jump onto the tunnel’s walls and narrow passages. As the narrator mentions a cough, shuttle passengers abruptly hear a loud rumble and are jerked briefly. Gripping the safety bar is suddenly a good idea. Viewers can also see green goo ooze gradually over the tunnel walls—unhealthy mucous is invading the lung lining.

“Well, there go my cigarettes,” quipped one passenger, exiting the shuttle. Lesson learned, perhaps.

COPD, which is almost completely preventable, affects 24 million people in the U.S. Over time, the disorder—also called emphysema or chronic bronchitis—makes it hard to breathe. It’s most common in people who have smoked cigarettes, but can occur in non-smokers. Environmental exposures—to coal dust or chemical fumes, for example—and genetics may also play a role in how COPD develops.—Carla Garnett



NHLBI’s partner in the “Learn More Breathe Better” campaign, the COPD Foundation, brought its COPD Shuttle ride to campus on May 27 for a “multi-sensory demonstration of the health risks of smoking and air pollution on the lungs.” The tents and exhibits alongside the shuttle offered more information about lung health and tests that can calculate a visitor’s risk factors for disease.



Above, the COPD Shuttle is shaped like a lung. The ride it provides simulates a microscopic journey to the center of the lung. At left, passengers exit the vehicle after their adventure, which is similar to taking an amusement park ride with a twist: Instead of blaring a rock music soundtrack, the COPD Shuttle offers a health-friendly lecture.

PHOTOS: CARLA GARNETT



EPIGENETICS

CONTINUED FROM PAGE 1

Above:

Epigenetics STEP forum presenters included (from l) Dr. Andrew Feinberg of Johns Hopkins School of Medicine, Dr. Kjersti Aagaard-Tillery of Baylor College of Medicine, Dr. Nancy Press of Oregon Health & Science University and NIEHS's Archer.

PHOTOS: BILL BRANSON

traits, particularly those abnormalities that can lead to disease.

Call it your “transgenerational inheritance,” said Dr. Trevor Archer, chief of NIEHS’s Laboratory of Molecular Carcinogenesis. Epigenetics, he explained, looks beyond your genes. It’s what your grandparents may have picked up when they were little more than embryos themselves, and then passed to you through your parents.

“Epigenetics is distinct from, but also dependent on, genetics,” he said.

The field’s extra-genomic influences “are often exposure-induced,” continued Archer, whose own research focuses on chromatin (the combination DNA-protein substance in chromosomes that tells cells how to function) and breast cancer.

British biologist C.H. Waddington coined the term epigenetics in 1942, Archer said, describing what has become a trendy topic in both scientific and popular culture media.

In January, for instance, *Time* magazine’s cover story featured research done in the 1980s by Stockholm-based preventive health specialist Dr. Lars Byren. He was curious about possible long-term health effects the grandchildren of famine victims might have suffered. That led him to studies documenting conditions in the womb that could affect the health of an infant’s grandkids.

“An exposure that appears to be directed at one generation can in fact directly influence subsequent generations,” Archer explained. For example, “exposure to one pregnant female actually involves not just one but three generations, not only the embryo inside but also the germ cells that are in it. When we try to understand what’s happening in this very complicated area, we need to remember the initial

appearance of the exposure may in fact be a bit more complex.”

The next two panelists built on Archer’s foundation. Dr. Andrew Feinberg of Johns Hopkins School of Medicine talked about “epigenetic epidemiology,” a new field of medicine his group is trying to create. He noted several disorders that may have an epigenetic component, including cancer, diabetes and schizophrenia.

“A lot of common disease has an epigenetic twist to it,” he said. “Much of the fabric of common disease involves some disruption of either development leading to the disease in the first place or of the appropriate response to environmental signals that should take place in that tissue.”

Discussing fetal epigenetic changes, obstetrician-gynecologist Kjersti Aagaard-Tillery of Baylor College of Medicine said there’s one big issue researchers in the field are all grappling with now.

“Where do our genome science and our epigenome science ultimately converge, and what do our understandings in both of those fields mean for very great ethical questions?” she asked, sharing her research on *in utero* tobacco and maternal high-fat dietary exposures in primates.

“When we put our [pregnant primates] on a high-fat diet there is a rather profound effect on fetal livers,” she noted. In fact, the fetuses develop non-alcoholic fatty liver disease, which, Aagaard-Tillery pointed out, is often a precursor to childhood obesity in humans.

Those results seemed to set up perfectly for the final speaker, Dr. Nancy Press of Oregon Health & Science University, who discussed the ethical, legal and societal implications of epigenetics. She argued that the field uniquely cries out for the concept of team science.

Interdisciplinary collaboration for this particular field, Press explained, should not be a volume of great but individual short stories. Instead, researchers teaming up should produce an individual, unified book composed of great chapters.

“Epigenetics is the point where the myriad facets of the environment and the DNA sequence—nature and nurture—intersect in the organism,” she said. “Not only can no single discipline encompass all these influences and effects, but also I think the disciplines truly have to be talking to each other and listening to each other’s basic assumptions and basic ways of looking at the world to get what is going to be a satisfying picture.”



Feinberg and colleagues are creating a new field of medicine called epigenetic epidemiology.

As an example, she referred back to the studies looking at descendents of malnourished or starving families. Results revealed the children gaining excessive weight, which probably had some kind of a protective effect during their first year of life. Later in the kids' lives, the state of overweight could end up being deemed unhealthy.

Today's culture, Press said, seems ready to make us—scientists included—jump immediately to accuse “mothers eating cheeseburgers,” instead of getting, say, the anthropological perspective and determining what is actually occurring long-term with these families.

It's important that epigenetics not steer society more toward a “blame-the-victim” mentality, she stressed. “Let researchers know how what they're saying may sound to affected communities.”

Of course, progress in human genome science and stem cell research has only amplified excitement in epigenetics, forum presenters agreed. Mapping an individual's epigenome, Archer said, could “offer more opportunities for personalized medicine, ways to target drug therapies that are more effective if individuals have different epigenetic types. Then we can easily envision why they would have different responses.”

The challenge of epigenetics, then, is similar to other fields at their outset: Harness the power of the science to improve health without harming in even subtle ways those it's meant to help.

“An epigenome can potentially provide a readout of an individual's recent and ancestral environmental history,” Archer concluded. “It provides a way of thinking about the past and present.”

Attendees at ORWH's breast cancer seminar included (from l) Dr. Ngina Lythcott, Black Women's Health Imperative; Dr. Rowan Chlebowski, UCLA Medical Center; and Dr. Robert Smith, American Cancer Society.



ORWH Focuses on Breast Cancer

In celebration of National Women's Health Week, the Office of Research on Women's Health hosted a seminar titled “A Focus on Breast Cancer” on May 11 at Lipssett Amphitheater. The seminar featured three national experts who discussed topics ranging from breast cancer screening and incidence to representation of minorities in breast cancer research.

Dr. Rowan Chlebowski of UCLA Medical Center shared findings suggesting that the incidence of breast cancer has decreased substantially since results from hormone therapy trials were released in 2002. Conducted under the Women's Health Initiative, these trials showed that postmenopausal women receiving estrogen plus progestin were at increased risk for invasive breast cancers. In the year following this startling research, there was a 58 percent decline in prescriptions for menopausal hormone therapy. And in 2006, there were 20,000 fewer invasive breast cancers than in 2002. “Discontinuation of hormone therapy,” said Chlebowski, “likely represents a therapeutic effect of estrogen decrease on already present preclinical breast cancers.”

Dr. Robert Smith of the American Cancer Society identified current challenges in breast cancer screening in the United States. While the quality of screening has improved measurably since the Mammography Accreditation Program was established in the late 1980s, many hurdles remain. These include improving the accuracy of mammography interpretation, imaging dense breasts, identifying women at high risk and communicating the limitations and potential risks of mammography.

Citing research studies from Sweden and Canada, Smith emphasized that, despite challenges in breast cancer screening, “The efficacy of mammography is well established in women ages 40 to 69. Randomized trials provide convincing evidence that an invitation to screening is associated with a reduced risk of dying from breast cancer.”

Dr. Ngina Lythcott of the Black Women's Health Imperative, proposed that the November 2009 U.S. preventive services task force (USPSTF) report on mammography relied on research that was not representative of the diversity of the U.S. population. “Large, systematic reviews that neglect to include parts of the population can lead to outcomes that can be wrong—even dangerous—for those populations,” said Lythcott.

The 2009 report recommended mammography for women every other year beginning at age 50, rather than annually beginning at age 40. But Lythcott, a 21-year breast cancer survivor, pointed out that black women are generally diagnosed with breast cancer at a younger age and the disease is generally more virulent among blacks. “At the moment, mammograms are the best detection tool we have,” she said. “The earlier the diagnosis and treatment, the better the cancer survival rates.” She emphasized that the USPSTF findings should not be used to limit access to mammograms for younger women at increased risk.

INDIAN DANCE

CONTINUED FROM PAGE 1

fulfillment watching my students perform,” said Krishnamurti, a former bench scientist at Walter Reed Army Institute of Research. A professional dancer who began training in New Delhi at age 5 and later specialized in the Odissi style of Indian classical dance, she strives not only to be a teacher, but also to be the students’ confidante, friend, philosopher and mentor—in other words, a kind of mother. While instructing in the nuances of Indian culture through dance, she also imparts her knowledge of Hindu precepts.

For the past two decades, Krishnamurti has been director of Nrityalaya, an Odissi-style dance school that she operates out of her Potomac home. Translated, Nrityalaya means “Temple of Dance.” Odissi began in the temples of eastern India centuries ago. The spiritual dance form uses stylized hand gestures, intricate footwork and flexible body and torso movements.

Krishnamurti says that while Odissi is similar to ballet in some respects, it is more disciplined and encompasses themes of love, devotion and victory of good over evil. The performer aims to obtain salvation through dance.

Currently, the school has 50 to 60 students of all ages, from 5 to over 40. Most have had little or no previous training in dance. Krishnamurti marvels at their determination. “These are brilliant individuals who learn lessons for life—about discipline, time management, self-confidence and how to project themselves. I am honored to be a part of these achievements in their lives, while helping them get back to their roots.”

Krishnamurti’s school is the first in the U.S. to graduate students in Odissi. Since the music for this dance form is unique, she sponsors musicians from India for her school shows. She choreographs and directs graduations that involve

2-hour solos. Several students have taken the experience one step further and are increasing their knowledge in the field. One plans to open a dance school and another studied in India on a Fulbright scholarship.

The school knows no geographical boundaries and, at times, travels overseas. In 2007, the performers showcased the dance drama “Mahatma Gandhi” at three cities in India, including the site where Gandhi was assassinated in 1948. The tour received rave reviews in the Indian press. The troupe has been invited to present this dance in August in South Africa, where Gandhi initiated the non-cooperation movement. Current plans include an upcoming trip to perform a multicultural dance depicting the story of Helen Keller in as many as seven cities in India. The same show will premiere on July 17 at Montgomery College in Rockville and on July 18 at Johns Hopkins University. Through the presentations, Krishnamurti hopes to create an awareness of the trials and tribulations facing blind and deaf individuals.

All proceeds obtained from the events are turned over to charities benefiting the differently abled.

Interestingly, Krishnamurti’s philanthropic quest somewhat mirrors her accomplishments on the job—both ultimately benefit the less fortunate.

The focus of her administrative work is to inform applicants in underserved populations about biomedical research opportunities at NIH and NHLBI. Creating awareness about health and well-being is also part of the formula. In that context, for some time she and her colleagues have worked with Native American (Cherokee) elementary school students in Cherokee, N.C., disseminating information on key health issues and offering them “goodies from all of the institutes.”

Mixing the arts and science through the concept of giving seems to define Krishnamurti. In her efforts to be a role model, “I always say that science is my life, while dance is my passion,” she concluded. 🎭



Members of Krishnamurti’s dance academy strike a pose characteristic of the Odissi style of Indian classical dance.

NIAID Invention Gaining Acceptance in Malaria-Endemic Countries

The World Health Organization recently announced that it had approved 15 additional rapid diagnostic tests (RDTs) for malaria, bringing the total number that meet its performance criteria to 37. WHO called rapid tests a major breakthrough in malaria control, as they enable health workers to diagnose malaria accurately in people living in remote rural areas, where most malaria cases occur.

Twenty-five years ago, the concept of a malaria RDT was considered scientifically questionable. Many experts doubted that RDTs could be as effective as using a microscope to visualize malaria parasites in blood smears. However, a discovery made in NIAID laboratories helped change this perception.

During the mid-1980s, NIAID scientists Dr. Russell Howard and Dr. Thomas Wellems identified and characterized a unique protein called Pf HRP-2, found in abundance in the deadliest malaria parasite, *Plasmodium falciparum*. They cloned and sequenced the gene that encodes Pf HRP-2 and confirmed that the gene was present in *P. falciparum* samples from around the world. The researchers then proposed a diagnostic test based on the Pf HRP-2 protein.

“Skepticism about the costs and practicality of RDTs was widespread,” says Wellems, who leads the NIAID Laboratory of Malaria and Vector Research, “but to us it didn’t seem far-fetched to think that new detection technologies could support tests that were cheap, gave immediate results and provided sensitivities as good as standard microscopy.”

In 1986, Howard and Wellems filed a U.S. patent claiming uses of cloned DNA from *P. falciparum* that encodes an antigenic, or immune-stimulating, portion of the Pf HRP-2 protein; the patent was approved in 1992. Joseph Perrone of medical technology firm Becton, Dickinson and Co. initiated discussions with Wellems in 1989 about collaborating on the development of a rapid malaria test. BD ultimately licensed NIAID’s invention and a team of BD scientists, including S. Melissa Maret and Hans Feindt, used Pf HRP-2 to create *ParaSight F*, the world’s first malaria RDT.

ParaSight F hit the market in 1995 after successful clinical testing in several malaria-endemic countries. The test was conducted by placing a strip of paper containing Pf HRP-2 antibody in a drop of blood, then applying to the reaction site a detection reagent containing red dye, followed by a wash reagent to remove

any unbound reagents from the paper. The dye left a visible red band if the sample was positive for *P. falciparum* infection.

ParaSight F proved that it was possible to make a simple and accurate malaria diagnostic that didn’t require a microscope, electricity or lengthy training to perform. It seemed like the ideal tool for rural, malaria-endemic settings, where a lack of infrastructure forced health workers to treat patients based on presumptive malaria diagnoses.

However, the high cost of *ParaSight F* compared with the low cost of first-line malaria drugs like chloroquine hampered widespread adoption of the test. For cash-strapped malaria control programs, it was cheaper to treat suspected malaria cases than to obtain an accurate diagnosis. *ParaSight F* was not a commercial success and BD took it off the market in 2000.

Today, more than a decade after *ParaSight F* provided the prototype, malaria treatment requires new and more expensive drugs because, in most settings, *P. falciparum* has become chloroquine-resistant. Because these new drugs must be used only when needed, it is more important than ever to make accurate field diagnoses of the illness. WHO estimates that less than one-third of fevers in malaria-endemic areas are actually caused by malaria.

“Artemisin-based combination therapies are now used against chloroquine-resistant malaria, but they are much more expensive than chloroquine, so subsidies to support their availability and diagnostic tests to assure their appropriate use are vital,” adds Wellems.

Today, companies from around the world use Pf HRP-2 detection to make malaria diagnostics similar to *ParaSight F*. Competition among these manufacturers has led to tests with longer shelf lives, better temperature tolerance and lower costs.

WHO estimates that 45 million malaria RDTs will be purchased worldwide this year. While *ParaSight F* was just a few years ahead of its time, the discoveries of NIAID researchers live on in many of today’s malaria RDTs, helping to accurately diagnose a disease that afflicts millions of people each year. ●



Dr. Thomas Wellems leads NIAID’s Laboratory of Malaria and Vector Research. He and colleagues created the first rapid diagnostic test for malaria.

Deep Brain Stimulation at Two Different Targets Produces Similar Motor Improvements in Parkinson's Disease

In a major study, investigators have compared how individuals with Parkinson's disease respond to deep brain stimulation (DBS) at two different sites in the brain. Contrary to current belief, patients who received DBS at either site in the brain experienced comparable benefits for the motor symptoms of Parkinson's.

The results appeared in the June 3 issue of the *New England Journal of Medicine*.

This is the latest report from a study that has followed nearly 300 patients at 13 clinical sites for 2 years. The study was funded by the Department of Veterans Affairs and the National Institute of Neurological Disorders and Stroke. Additional support was provided by Medtronic, Inc., makers of the DBS systems used in the study.

"These results establish that DBS delivered to these two brain areas linked to key motor control pathways can have equivalent effects on tremor, stiffness and other motor symptoms of Parkinson's disease," said Dr. Walter Koroshetz, NINDS deputy director. "The important question now becomes how stimulation at each site affects some of the other important, non-motor symptoms and how to best individualize DBS therapy."

Novel Therapeutic Approach Shows Promise Against Multiple Bacterial Pathogens

A team of scientists from government, academia and private industry has developed a novel treatment that protects mice from infection with the bacterium that causes tularemia, a highly infectious disease of rodents, sometimes transmitted to people, and also known as rabbit fever. In additional experiments with human immune cells, the treatment also demonstrated protection against three other types of disease-causing bacteria that, like the tularemia bacteria, occur naturally, can be highly virulent and are considered possible agents of bioterrorism. The experimental therapeutic works by stimulating the host immune system to destroy invading microbes. In contrast, antibiotics work by directly attacking invading bacteria, which often develop resistance to these medications.

The therapeutic has the potential to enhance the action of antibiotics and provide an alternative to them.

"A therapeutic that protects against a wide array of bacterial pathogens would have enormous medical and public health implications for naturally occurring infections and potential agents of bioterrorism," said NIAID director Dr. Anthony Fauci. "This creative approach is a prime example of public-private partnerships that can facilitate progress from a basic research finding to new, desperately needed novel therapeutics."

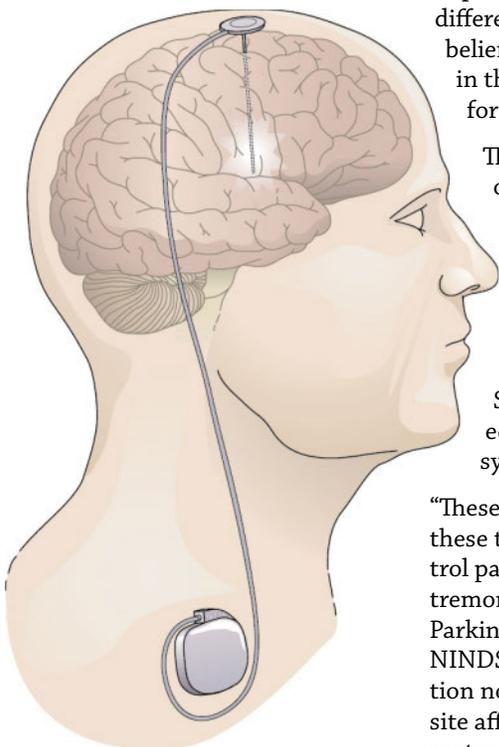
Dr. Catharine Bosio and her colleagues at NIAID's Rocky Mountain Laboratories in Hamilton, Mont., led the study, which was published online in the open-access journal *PLoS Pathogens*.

Drug Substitutes for Training in Rats, Inducing a Memory of Safety

Researchers have found a way to pharmacologically induce a memory of safety in the brain of rats, mimicking the effect of training. The finding suggests possibilities for new treatments for individuals suffering from anxiety disorders.

Rats normally freeze when they hear a tone they have been conditioned to associate with an electric shock. The reaction can be extinguished by repeatedly exposing the rats to the tone with no shock. In this work, administering a protein directly into the brain of rats achieved the same effect as extinction training. The protein, brain-derived neurotrophic factor or BDNF, is one of a class of proteins that support the growth and survival of neurons.

Prior work has shown that extinction training does not erase a previously conditioned fear memory, but creates a new memory associating the tone with safety. "The surprising finding here is that the drug substituted for extinction training, suggesting that it induced such a memory," said Dr. Gregory Quirk at the University of Puerto Rico School of Medicine, who led the investigation with support from the National Institute of Mental Health. The work was reported in the June 4 issue of *Science*.



An illustration of DBS for Parkinson's disease. Fine wires are implanted within brain regions involved in motor control and stimulation is controlled by a pacemaker-like device under the skin.

milestones

NIAID Lab Chief Murphy Retires After 40 Years at NIH

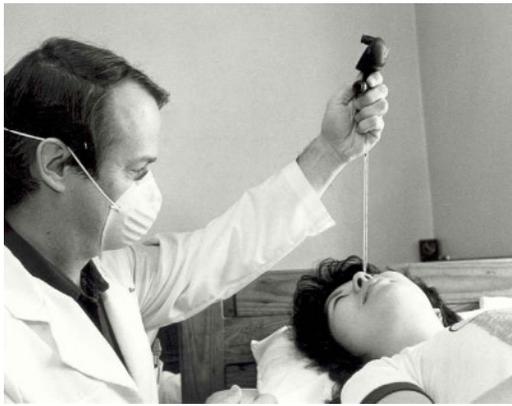
Dr. Brian R. Murphy, co-chief of NIAID's Laboratory of Infectious Diseases, has retired his microscope after 40 years at NIH. He is renowned for his expertise in the fields of virology, vaccine research and respiratory diseases. His long-term research on the attenuation of flu viruses was instrumental to the development of FluMist, the first nasal spray influenza vaccine. His discoveries also have led to the development of Synagis, the only preventive medicine currently available for respiratory syncytial virus (RSV), a major cause of lower respiratory infections in infants and young children.

"Brian Murphy is the quintessential NIH scientist, that is, one who has taken research findings from the bench to the bedside," said NIAID director Dr. Anthony Fauci. "NIH will miss him, but his outstanding contributions will have a lasting impact on human health and the continuing pursuit of effective viral vaccines."

Murphy's laboratory conducts basic, translational and clinical research on a broad spectrum of diseases caused by major viruses such as RSV, parainfluenza, influenza, dengue, bunyaviruses and West Nile. Under his leadership, the lab has established cooperative research and development agreements with the biopharmaceutical company MedImmune to develop live, attenuated intranasal vaccines against pandemic influenza viruses, RSV, parainfluenza viruses and human metapneumovirus.

"Brian possesses the unique ability to integrate the medical, molecular biologic, epidemiologic, vaccinologic, translational and administrative aspects of his profession," noted Dr. Albert Z. Kapikian, his long-time colleague in the Laboratory of Infectious Diseases. "In sports terms, he is like the 'triple-threat' quarterback, who can not only do it all but does it all successfully."

Murphy's research productivity is reflected in more than 490 published papers encompassing both important basic scientific insights and their practical application to vaccine development. He has served as chairperson for the World Health Organization steering committee on respiratory viruses and measles and as a medical councilor for the American Society of Virology. He serves on the editorial boards of *Virology* and the *Jour-*



In this 1984 photo, Dr. Brian Murphy of the NIAID Laboratory of Infectious Diseases administers an experimental intranasal flu vaccine to a clinical trial volunteer.

nal of Virology and in 2003 was the first recipient of the Robert M. Chanock Award for Lifetime Achievement in RSV Research for his long-term efforts in RSV research, therapeutics and vaccine development.

"Brian leaves behind a distinguished legacy of scientific innovation and accomplishment," said Dr. Kathryn Zoon, director of the NIAID Division of Intramural Research. "His long-term dedication to vaccine development, particularly vaccines for pediatric respiratory diseases, is exemplary of the NIH mission to improve public health."

Murphy earned his B.A. in biological sciences from Wesleyan University in 1964 and his M.D. from the University of Rochester School of Medicine in 1969. He came to NIH in 1970 following an internship at Stanford University Hospital. He has headed the respiratory viruses section of LID since 1983 and been co-chief of LID since 2001. His plans after retirement include spending more time with his wife and family, completing papers he currently is working on as a special volunteer, playing tennis, kayaking, bike riding, traveling, photographing wildlife, reading novels and consulting for companies developing viral vaccines.

NICHD's Lawrence Honored for Health Advocacy

Capt. Lawrence M. Nelson, head of NICHD's integrative reproductive medicine unit, received the American Occupational Therapy Association's Health Advocate Award at the association's annual conference in Orlando. The association honored him for his integrative research approach to infertility's effects on women's health and participation in society. Nelson's research results have helped shape medical and occupational therapy for women with primary ovarian insufficiency, a premature, menopause-like condition. He has also lectured regularly to promote integration of women's health with policy and research.





NLM Hosts 'Preservation Week'

The National Library of Medicine celebrated the first annual Preservation Week recently, sharing examples of its collection and inviting visitors to bring their own family treasures.

NLM was one of dozens of libraries all over the country whose librarians offered conservation and archiving advice and marveled at items brought out of closets and attics. Kristi Wright Davenport, Atalanta Grant-Suttie, Holly Herro, Walter Cybulski and several other members of NLM's staff demonstrated the proper techniques for storing and displaying photographs and manuscripts, displayed a book-binding tool, offered instructions for how to properly preserve videos and other recordings and warned against storing irreplaceable items inside papers and plastics containing acids or chemicals. Wooden boxes, such as cedar chests, are also a no-no.

"That's bad," Herro said, in response to one visitor who asked about an afghan from his grandmother that he kept in a hope chest. "The wood off-gases [emits] formaldehyde."

Herro and her colleagues urged those with valuable items to invest in acid-free storage boxes, inert plastic sleeves and pH-neutral paper as ways to keep their keepsakes safe for years to come. Many of these preservation items can be found in neighborhood craft stores.

Among the spectacular items brought in by visitors was an old American flag bearing only 35 stars and an ornate outfit worn by the 1935 Miss Universe, who went on to become the mother of NICHD's Dr. Michèle Hindi-Alexander. —
Valerie Lambros



Above: Dr. Michèle Hindi-Alexander (r) brought in an ornate outfit worn by her mother, who won the 1935 Miss Universe contest. Holding the dress is Atalanta Grant-Suttie (l), a librarian in NLM's History of Medicine Division; handling the scarf is Holly Herro of the library's collection management unit. "The items people were bringing in were just amazing," said NLM's Walter Cybulski. "To see these kinds of treasures is really exciting." Planning has already begun for next year's May event.

Below: Herro (l), reviews old photographs brought to Preservation Week by NCBI's Jane Davenport. At right, Grant-Suttie demonstrates the workings of a book binding tool.

PHOTOS: VALERIE LAMBROS

