

nih record



ABOVE • NCMHD director Dr. John Ruffin impressed COPR members at a recent meeting. See story on p. 5.

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'Do Tread on Me'

Unique Floor Aids Mobility Research, Rehab

By Carla Garnett

The same technology that lets you wield Tiger Woods's golf swing in a video game is what researchers are using to address mobility problems at the Clinical Center. Take homegrown software, several infrared cameras and a one-of-a-kind floor, and suddenly an individual's strides come alive on computer screen.



Physical therapist Karen Siegel shows lab components.

"We can measure how much joints can move and how strong muscles are," said Karen Siegel, a physical therapist in the Physical Disabilities Branch, a collaboration between the CC and the National Institute of Child Health and Human Development. "The forces we can measure tell how a person controls his or her movements. We can sometimes give patients—and their doctors and physical therapists—additional information to help with decisions about treatments."

Consider a woman in her 50s who underwent partial

SEE **UNIQUE FLOOR**, PAGE 6



Teacher Elena Recio is glad to work near NIH.

Visiting Teacher Values Nearness to NIH

By Rich McManus

When Elena Recio was still back in her native Madrid, Spain, applying for jobs teaching elementary school in the United States, she could have been assigned anywhere, from Alaska to Florida. When she learned of an opening to teach first grade in Chevy Chase, she was ecstatic.

That's because Recio, 27, has received life-saving therapy since December 2002 at the Clinical Center, in a protocol overseen by former NIDDK director Dr. Phillip Gorden.

SEE **RECIO**, PAGE 4

Students Dance for National DNA Day

By Cynthia Delgado

It coils, unwinds, replicates and sometimes gets mutated and deleted. I'm not referring to DNA, but to a group of 75 high school students that, in a creative sense, became DNA for a day. The National Human Genome Research Institute, the NIH Office of Science Education and a world-renowned dance company in Takoma Park, the Liz Lerman Dance Exchange, partnered to give area students a chance to dance their way to a better understanding of science and the creative process.

The diverse group of students and their teachers came to the Atlas Performing Arts Center in Washington, D.C., from schools in D.C., Maryland and Virginia. Their challenge was to translate a science topic—mitosis, bioinformatics, induced mutation or natural mutation—into artistic movements. The local event, dubbed "Genes in Motion," was just one of a variety of activities held across the country in celebration of National DNA Day on Apr. 25.

NHGRI staff came up with the idea for the program last fall when they saw *Ferocious Beauty: Genome*, a multimedia performance by

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briefs

IntraMall Summer Showcase, June 21-22

The 9th annual NIH IntraMall Summer Showcase will be held in the Clinical Research Center on the 3rd and 7th floor pedestrian bridges on Wednesday, June 20 and Thursday, June 21 from 9:30 a.m. to 3 p.m. The event will display the IntraMall electronic purchasing system designed exclusively for NIH to simplify purchasing and now also available to speed monthly credit card reconciliation in the new NBS.

Since opening in June 1998, the IntraMall has become a leading NIH web site for using government purchase cards to locate, buy and track purchases from 240 of its most frequently used vendors. It offers more than 10 million laboratory, office and computer items.

New online inventory and IntraMalls Express delivery options will also be demonstrated at the showcase. Learn how purchases through the IntraMall can simplify your work in NBS.

Register for the event and the free lunch at <http://intramall.nih.gov/showcase>. View a list of all the IntraMall vendors at <http://intramall.nih.gov/livevendors.html>. If you need reasonable accommodation to participate, call (888) 644-6255.

June Is National Safety Month

June is National Safety Month. This year, the National Safety Council's theme is "Celebrating Safe Communities." A safe community is one that promotes safe and healthy behaviors that help protect people from injury and harm in all aspects of their lives.

Join the Division of Occupational Health and Safety (DOHS), ORS, in celebrating safe communities on Thursday, June 21 from 9 a.m. to 3 p.m. outside the Bldg. 10 B1 cafeteria. Stop by and check out posters, talk with a safety specialist, get injury prevention information and a safety tip sheet. Don't forget to pick up a free goodie bag, too.

Visit the DOHS web site at <http://dohs.ors.od.nih.gov/index.htm> under the "What's New" section for home and community safety tips. Other sections of the site feature workplace safety information, including NIH safety programs and policies, relevant publications, NIH safety training dates and locations and more.



NIDDK Honored for Outstanding Science

The National Disease Research Interchange (NDRI) presented NIDDK with the 2007 Outstanding Science Award for "Special Research Initiatives and New Discoveries" on May 15 in Philadelphia. NDRI is a non-profit organization that provides investigators with the donated human tissue they need to develop new therapies and cures for human disease. NIDDK director Dr. Griffin Rodgers (r) accepted the award on behalf of the institute. Pictured with Rodgers is NDRI founder and president, Lee Ducat.

NIST Director Honors Jett

Betsy Jett, chief operations officer in the Clinical Center's department of transfusion medicine, has been named to the 2007 board of examiners for the Malcolm Baldrige National Quality Award.

Appointed by the director of the National Institute of Standards and Technology, she will review and evaluate applications for the Baldrige award, along with 500 other leading experts selected from industry, professional and trade organizations, education and health care organizations and government. Jett also served as an examiner for the Maryland Performance Excellence Awards Program—which is based on the Baldrige award—for 3 years: 2001, 2002 and 2006. She joined NIH in 1986 and holds a B.A. in biology from the University of Pennsylvania and a B.S. in medical technology from Temple University.



Zerhouni Visits National Center for X-Ray Tomography

By Laura Bonetta

NIH director Dr. Elias Zerhouni had a chance to return to his professional roots during a recent visit to the Lawrence Berkeley National Laboratory—home to a one-of-a-kind microscope that uses X-rays to peer inside cells.

Dr. Graham Fleming, Berkeley lab deputy director, took Zerhouni on a tour of the advanced light source facility, a national resource that generates extremely bright light for use in scientific and technological research. Zerhouni stopped at two places during the tour: the Berkeley Center for Structural Biology, a facility dedicated to determining the crystal structures of proteins, and the National Center for X-ray Tomography.

The latter facility, developed with support from NIH's National Center for Research Resources as well as the Department of Energy, houses the first microscope able to image molecules inside cells using X-rays. Just as CAT (computerized axial tomography) scans provide three-dimensional images of structures inside the human body, this new microscope can generate high-fidelity images of structures inside cells. The microscope uses powerful X-rays created by the Berkeley lab's synchrotron—an instrument that produces beams much brighter than those from laboratory X-ray generators.

Zerhouni, a radiologist with considerable experience in full-body CAT scanning, was enthusiastic about the potential of the new technique. "He instantly understood what we were doing, why we were doing it and why it was important," said Dr. Carolyn Larabell, principal investigator at the center. Although other powerful microscopes can generate images of cells, the new microscope, which Larabell helped design, is ideal for determining the position of proteins and other molecules inside cells.

In addition, the microscope does its job extremely quickly and with greater precision than other high-power microscopes. For example, the cell nucleus, the part of the cell that holds its genetic material, has been very difficult to study with traditional methods. "The nucleus is a black box in many ways," explained Larabell. "Many sub-compartments have been identified inside the nucleus, but now we can begin to look precisely at how they are organized."

NCCR started funding the National Center for X-ray Tomography 3 years ago when scientists there began designing and constructing the new



microscope. The facility officially opened in January 2007 as one of 51 NCCR-funded Biomedical Technology Research Resources around the nation that develop a broad spectrum of new technologies and methodologies and provide scientists with training in and access to these technologies. Researchers may use the new X-ray microscope and other resources at the center by submitting a proposal at <http://ncxt.lbl.gov>. Several companies have also started designing table-top versions of the microscope, which should be available to researchers in the next 3 to 5 years. ●

Dr. Carolyn Larabell of Lawrence Berkeley National Laboratory shows Dr. Elias Zerhouni one of the features of the new X-ray microscope.



Officials Renew Indo-U.S. Vaccine Action Program

NIH director Dr. Elias Zerhouni and Dr. Maharaj K. Bhan, secretary of the department of biotechnology in India, signed a joint statement on May 3 to renew the Indo-U.S. Vaccine Action Program. The Indo-U.S. Vaccine Action Program has funded 35 collaborative research projects over the last two decades, trained many talented young scientists and addressed many health problems, including hepatitis C, rotavirus diarrhea, HIV/AIDS, rabies and malaria. On hand at the signing ceremony were (from l) Dr. S. Natesh, adviser scientist, Indian department of biotechnology; Zerhouni; NIAID director Dr. Anthony Fauci; Fogarty International Center director Dr. Roger Glass; Bhan; and science and technology counselor from the Embassy of India, Dr. Kamal Kant Dwivedi.

RECIO

CONTINUED FROM PAGE 1

"I said to myself, 'Chevy Chase! That's near Bethesda, and NIH,'" said Recio, who has taught first grade in Rock Creek Forest Elementary School's Spanish immersion program since fall 2004. The school is located about 3 miles from NIH, just off East-West Hwy. "I deliberately

picked Maryland, because of NIH, but I could have been assigned anywhere from Ocean City to Baltimore. I was very lucky."

She was born with lipodystrophy, a rare, heritable disorder. "The worldwide prevalence of genetic forms of generalized lipodystrophy is estimated to be 1 in 10,000,000," said Gorden. "Our patients come from many different countries."

Recio explains the disorder this way: "With this

disease, you don't have the fat layer lying just below the skin that covers the entire body. Any lipids (fats) or grease that you eat goes straight to the bloodstream, dramatically elevating your cholesterol."

Her cholesterol level was so high prior to treatment (800 mg/dL, when normal is below 200) that her doctor told her he had never seen anyone alive with that number. "He told me I had the lipid profile of a corpse."

Recio was not diagnosed correctly until she was an adult, and then only because the physician who was treating her in Spain had trained at Johns Hopkins, and was familiar with hyperlipidemia and other rare disorders. He was also familiar with NIH, to which he referred her in December 2002.

By then, Recio had staggered along with a number of diagnoses, including diabetes, which was caught at age 12. She began insulin injections then, and learned 3 years later that she had insulin-resistant diabetes. She was still taking 850 units of insulin a day when she was first evaluated at NIDDK, but within 4 months had responded so well to a new therapy—leptin—that she was able to stop insulin altogether.

"The leptin made my body recognize my own insulin," Recio explains. "Prior to leptin, my body rejected it."

During her first 4 months at NIH, Recio was taking seven injections a day of leptin and insulin. "It was crazy," she remembers. Since April 2003, she has taken leptin shots at first twice daily, then tapering to once a day.

She was an inpatient on first arrival, staying in the CC for 9 days. "That was really hard," she said. She then switched to quarterly visits and now comes just twice a year for checkups, usually lasting 2 days.

"I will be taking leptin for the rest of my life," she said, "and I will be seen indefinitely at NIH. Some of the other people on my protocol have been coming to NIH for 7-8 years."

"NIH is the best thing in the world. There should be a bunch of them all over the world. All of my life, the doctors said no one else has my disease and they cannot help me."

Recio said leptin makes it very difficult to gain weight and has made her borderline anemic, but her cholesterol level is down to about 97. "My triglyceride level fell from around 2,500 to about 110 within 4 months." She also lost 40 pounds in half a year; the insulin therapy had left her bloated and had enlarged her liver and pancreas. "Some people thought I was pregnant," she laughs.

Now that she is on leptin, Recio can eat anything she wants and drink moderately, a practice that had been forbidden prior to the medication.

"All systems are normal," she says, adding that the leptin had even ridded her of acanthosis, a side effect of lipodystrophy that leaves the skin of the neck and joints roughened and darkly discolored. "It has been like a miracle for me."

Leptin was discovered through an NIDDK extramural initiative on the genetics of obesity, Gorden explained, and was found to be the defective protein from a gene isolated in an obese mouse model. "Thus, this created a whole new field of endocrinology—i.e. the recognition that the fat cell is an endocrine organ—and that it secretes hormones, one of them being leptin. Leptin was given to obese patients and was ineffective, except in a rare group of obese patients that suffer the same genetic abnormality as the obese mouse



Srta. Recio has been a popular first grade teacher in Rock Creek Forest Elementary School's Spanish immersion program for the past 3 years.

(Ob/Ob mouse). Because Ms. Recio has lipodystrophy, and very few fat cells, her serum leptin concentrations are very low. When given leptin replacement therapy, she and other patients like her have had a remarkable correction of their metabolic disorders, such as diabetes, and the serum lipid derangement seen in these patients. Thus, we do not replace her fat cells, but we do replace a hormone that fat cells secrete and that has a remarkable effect on her metabolic function and her sense of well-being. It is very important that this is an effective therapy for a rare disease, but we are only beginning to understand how leptin might be used in a broader context to treat a variety of other more common disorders.”

Recio’s J-1 visa expires in July, so this month she expects to return home to Madrid and seek a job teaching English to elementary school students. But she will return to NIH every 6 months.

“NIH is the best thing in the world,” she says, singling out Gorden and nurse Elaine Cochran, who has managed her care. “There should be a bunch of them all over the world. All of my life, the doctors said no one else has my disease and they cannot help me. And you never think that you can recover from diabetes. This has been a huge experience for me.”

Her health restored, Recio can now indulge her passions for travel, live music, teaching and meeting new people. “About the only limitation I have is that my medication has to be kept refrigerated, so when I traveled to Central America recently, I had to keep a cooler of ice with me.”

Recio notes that, in Spain, if people hear you are receiving medical treatment in the U.S., they automatically assume you have cancer. The NIH experience has given her “wonderful things to say about Americans. For me, life has changed in all senses. I feel better. I’m becoming normal again.” ❶



NCMHD director Dr. John Ruffin (second from r) confers with members of the NIH director’s Council of Public Representatives at its spring meeting.

NCMHD Impresses Public Advisory Council

The National Center on Minority Health and Health Disparities recently had its first encounter with COPR—the NIH director’s council of public representatives. Dr. John Ruffin, director of NCMHD, led a team of center officials and grantees as they reported on research the center has fostered to improve the health of minority populations and eliminate health disparities.

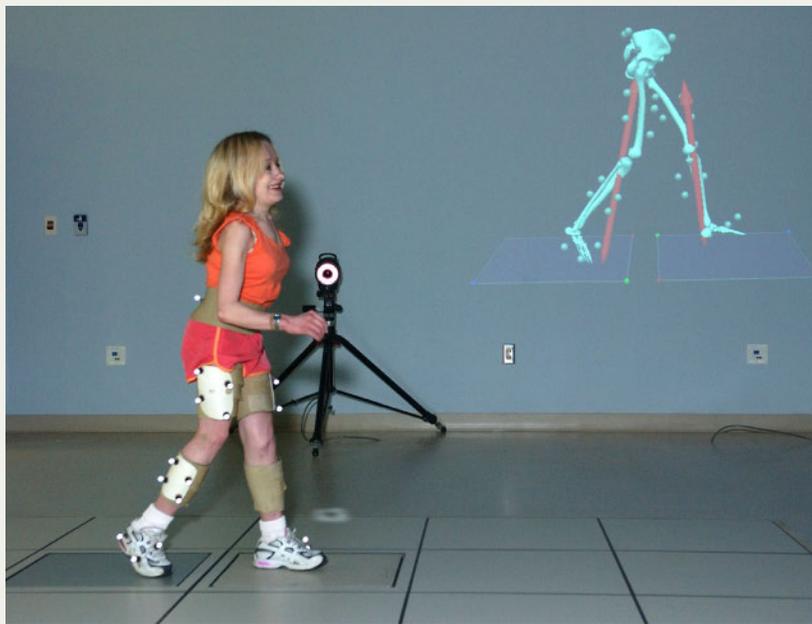
COPR member James Wendorf, executive director of the National Center for Learning Disabilities, said, “You’ve addressed issues that are central concerns to COPR. Your issues are in many respects our issues, not just now but going forward.”

“In one sense, the meeting was like talking with family,” said Ruffin. Breaking from traditional practice at COPR meetings, he had investigators themselves describe their research programs instead of the NCMHD officials who oversee them.

The center brought in scientists from Pennsylvania, Montana, Iowa and Texas to report on projects that varied from the efficacy of delivering health care to men at barber shops to a multi-state intervention program that addresses the number one health burden among American Indian children—tooth decay.

Dr. Joe Coulter of the University of Iowa shocked COPR members when he reported, “While more than half of the children in the U.S. have no tooth decay in their early years, by contrast, in many Indian communities, including communities that have water system fluoridation, between one-fourth and one-half of all children have decay and must have their teeth pulled or repaired in an operating room under general anesthesia.”

Ruffin told the group that the battle to close the health disparity gap has not been won, “but I tell you today that there is hope.”—George Strait ❷



UNIQUE FLOOR

CONTINUED FROM PAGE 1

Above:

At left, Karen Siegel applies reflective targets to a research volunteer. At right, cameras track motion of the targets in 3-dimensional space. The projected image on the wall shows what Siegel sees on her desktop monitor. Custom software measures movement of the targets.

Below:

Siegel shows how easy it is to move the force platforms to accommodate different patients. She uses suction-equipped handles to grip the panels.



amputation of her foot due to cancer. “Doctors had amputated the three toes on the outside of her foot, and the long bones in her foot that the toes are attached to,” Siegel recalled. “The part of her foot that remained was her heel and a very narrow forefoot that was only a few inches wide. She tended to roll off the outside of her residual foot and it was very difficult for her to transfer weight to the front part of her foot for push-off when she walked.”

The woman was fitted with a foot orthotic/ insole, a filler for the inside of her shoe to compensate for the missing foot and some modifications to the outside of her shoe to improve her gait, but “still walked with a noticeable limp. The limp was giving her hip and back pain,” Siegel said.

‘May the Force[s] Be With You’

Several years after the initial surgery, the woman returned to NIH for a follow-up visit. Her physical therapist referred her to PDB for a gait study. “I traced the outline of her bare foot, her foot in the orthotic and her shoe onto a piece of paper and then marked where we put the targets on her foot for the study,” Siegel explained. “We used the force platforms [three-dimensional scales that are part of the floor] with information from the cameras to track how she transferred her weight through her foot while she walked. We discovered that she kept her weight on her heel the whole time. She never transferred her weight forward and never used the modifications the orthotist had made to her insole or her shoe to assist her.”

Siegel and the woman’s physical therapist used the information from the study to design a new sole for the patient’s shoe with a spe-

cial curve on the bottom. Siegel said when the woman put the shoe on for the first time and walked down the hall, “she said ‘This is the most natural my walking has felt in 5 years!’ When she came back for her next follow-up visit several months later, she reported that her hip and back pain also had decreased because her walking was more symmetrical. This is a case of where the forces were the most important part of the story. [They] also had a big clinical impact on the patient.”

Walking problems are common in people with such disorders as dystonia, which causes involuntary muscle contractions; osteogenesis imperfecta, in which bones break easily for no apparent reason; and myositis, which causes muscle weakness. Other people, as in the case Siegel described, need rehabilitation from amputation or recommendations for prostheses. With its high-tech Clinical Movement Analysis Laboratory, PDB helps with all of these.

Don’t Try This at Home

“The floor is state-of-the-art,” Siegel said. “There’s no other floor like this one.” If you put the same equipment in an average room with regular flooring and tried similar gait tests, she explained, “it would be like putting your bathroom scale on a trampoline and trying to measure your body weight.”

Although you don’t notice, regular floors have too much vibration to get accurate measurements. Before constructing the new lab, “CRC architects talked to vibrational engineers,” Siegel said. The floor was built on footings separate from the rest of the building. Its foundation was poured 6 feet thick, using special concrete that dampens vibrations. Resin was used to lev-



Early stages of CRC construction. *The large hole with the railing around it eventually became the floor of the laboratory. Separate footings and floor were built so vibrations in the rest of the building could not be transmitted to the lab floor and create errors in the force measurements. What is now known as the "pit" shown in the photo below is located within the center of this hole.*

el the floor completely flat, followed by installation of stainless steel sheets. "The combination of construction and our ability to move the floor plates in different configurations as needed make this pretty unique," she said.

Besides the custom-built hardware, specialized software called Visual3d—designed by veteran NIH computer engineer Tom Kepple of PDB—helps capture movement data that are translated into the videos researchers use to analyze and diagnose gait problems.

"The software originally started as a program that I wrote for the [NIH] biomechanics lab called Move3d," Kepple said. "Move3d was used to compute the kinematics—positions, velocities, acceleration—of anatomical segments and joints as well as compute the net muscular forces and torques that produce the motions."

Move3d was first distributed around the world as freeware, he continued, and "at the height of its popularity it was the second-most-used movement analysis software."

In 1997, amid constant demand to support and upgrade the software, a technology transfer grant was arranged with Rockville-based C-Motion, Inc. For 4 years, Kepple worked with C-Motion to turn Move3d commercial. In mid-2001, the resulting product—Visual3d—was released. Since then Visual3d has generated between \$2 million and \$3 million in revenue worldwide.

Putting 'Fun' in Functional

These were extremely rewarding results, considering Kepple virtually taught himself software design and was really just dabbling when he wrote the original program. "Fortuitous avocation is a good description of my time spent designing software," he admitted. "Although I enjoy programming, I enjoy the

engineering and computer modeling aspects of my job more."

Kepple, Siegel and their branch chief Dr. Steven Stanhope all have published papers about their work.

"I have used Visual3d to look at foot and ankle motion in normal subjects, analyze the contribution of various muscle groups to support forward progression in gait, test a variety of musculoskeletal models and generate computer simulations of walking," Kepple said, describing the lab studies that not only help put the spring back in many patients' step, but also provide extra enjoyment for researchers.

Recent example: One of the lab's projects involves not golf, but another athletic pursuit. Although NIH does not usually study sports movement, PDB is examining one aspect of America's favorite pastime—the baseball pitch. "We saw it as a chance to further refine our analysis technique," Siegel said. "We looked at how each muscle in the body—not just arm, hand and shoulder muscles, but also leg and torso muscles—contributes to the ball's velocity."

Explaining that the project moves their research beyond the lower body, Kepple concluded, "The baseball pitch study is designed to expand and test our models on upper extremity tasks, but is turning out to be a fun little bit of work."

At right, Siegel chats with patient testing the floor. Below is a lab view of all of the tiles that now fill in the pit.





DNA DANCE

CONTINUED FROM PAGE 1

Above, left:

NHGRI's Pnina Laric (foreground, l) and Carla Easter enjoy a performance of *Ferocious Beauty: Genome*.

Above, right:

Dancer Elizabeth Johnson as Ms. Tata in *Ferocious Beauty: Genome*, captures a human version of an adenine and thymine rich region of DNA (known as the TATA box) responsible for turning genes on.

PHOTO: MAGGIE BARTLETT

Below:

Martine Behra, NHGRI post-doctoral fellow, led a *Genes in Motion* workshop to help high school students explore how and why scientists use induced mutations in the laboratory.

PHOTO: MAGGIE BARTLETT



the Lerman Company dancers that epitomizes the successful blending of art and science. The unique work explores the evolution of genetic research and its impact on society. "DNA Day was a perfect time for the program to occur, because the *Ferocious Beauty* performances were scheduled in D.C. at the same time," said Sarah Harding, principal coordinator of the event for NHGRI. The goal of the program was to teach scientific concepts using a process established by the Dance Exchange. The process engages members of the community such as scientists, clergy and artists in the choreography of a dance.

In the morning, *Genes in Motion* participants assembled to watch excerpts from *Ferocious Beauty: Genome*. After each piece, Liz Lerman (founding artistic director of the dance company) explained the creative processes that were used to discover and interpret the science concepts. Students then asked questions and commented on the performance. Lerman eased performance anxiety by reminding students that "mistakes happen in dance and in science,"

a sentiment echoed by others throughout the day. "The genome is in our bodies. What better way to explore it than through our bodies? The body will remember sometimes before our intellect," said Elizabeth Johnson, an Exchange dancer.

After the morning session, students joined one of the four workshops, each led by a team that included a dancer, an educator and a scientist. The groups were challenged to choreograph a dance for their topic. At the end of the day, students reconvened, performed their creations and answered questions from their peers.

Students in several groups became a strand of DNA, expressing their roles through movement. In the natural mutation group, students fell in line, calling out their nucleotide base pairs: A, C, T or G (adenine, cytosine, thymine, guanine respectively). The "student-base pairs" then demonstrated insertions, deletions and substitutions.

"I enjoyed watching the students, who at first were self-conscious or harder to engage, lose themselves in the creative process," said Pnina Laric, NHGRI scientist for the group. "The science suddenly became more accessible to them." During group discussion, one student said, "After watching the dance, I can now visualize how genetic mutations occur."

The mitosis (or cell division) group was subdivided into two smaller groups. One danced the normal process of mitosis and the other danced the process gone awry. "It was clear by the students' interpretation that they really got it," said Carla Easter, NHGRI science education specialist, who worked with both groups. "The movement helped to reinforce the steps in the process. I imagine they will never be able to forget them."

Students were not the only ones to learn something new. Teachers were active participants, too. One said, "I learned how important it is to allow students to create expressions that reinforce basic science concepts."

"I learned so much about dance, movement and video production," says Vivien Bonazzi, NHGRI scientist who worked with the bioinformatics group. Students in her group depicted "the balance" required to make sense of large volumes of data, as needed in the merging fields of computational biology and bioinformatics.

"I was pleased to see that the dancers approach their work very much like bench scientists," said Martine Behra, the NHGRI scientist who worked with the induced mutation group. "They have an idea. We call it a hypothesis. They go out and test it. We do experiments," she added. Other participating scientists and dancers agreed. "It was a true joy to think and create with the scientists. I felt our roles became permeable," said Johnson.

NHGRI staff are now working on evaluating the program. "We hope the novel approach to science instruction can be used by other groups seeking to teach science in creative ways," said Harding. 🗨️

milestones

NCCAM's Founding Director Straus Mourned

Dr. Stephen E. Straus, 60, first director of the National Center for Complementary and Alternative Medicine, died of brain cancer May 14 at his home in Potomac.

“As NCCAM’s first director, Dr. Straus articulated an uncompromising and compelling agenda for scientific research and research training that engendered broad interest and collaboration,” said NIH director Dr. Elias Zerhouni. “His success stemmed from the fact that he understood that the commitment to help patients had to be constantly evolving in order to meet their needs. The NIH has lost a great leader and an outstanding scientist. Most of all, we have lost a dear friend.”

“As the founding director of NCCAM from 1999 to 2006, Dr. Straus built a comprehensive research enterprise, championing the efforts to establish the efficacy and safety of complementary and alternative medicine (CAM) practices while upholding the rigorous standards of science for which the NIH is known,” said Dr. Ruth Kirschstein, who has been acting NCCAM director in recent months. “Under his leadership, CAM research at NIH grew threefold, facilitating his vision of an evidence-based integrative approach to health care for the benefit of the public. As a friend and fellow virologist, I will sorely miss him.”

An internationally recognized scientist, Straus was also senior investigator in the Laboratory of Clinical Investigation, NIAID. His research yielded original insights into the pathogenesis and management of several viral and immunological diseases.

“Dr. Straus was a superb physician-scientist who constantly sought new answers to improve the health of patients,” said NIAID director Dr. Anthony Fauci; Straus had a long and successful career at NIAID, notably as chief of the Laboratory of Clinical Investigation. “Steve also was one of the kindest and most compassionate clinicians I have known, and served as a mentor for many young investigators who have become extraordinary physician-scientists in their own right.”



Under Straus’s leadership, CAM science began to evolve beyond the skepticism and polarization it once engendered to earn legitimacy as a research area encompassing mind-body medicine, biologically based and manipulative practices and energy medicine.

“The center has done much to assure CAM critics and cheerleaders alike that our interests are their interests—and the public’s interests—to establish the evidence that a CAM practice works for the purposes that it was designed for and is safe to use, and if not, why not,” wrote Straus in the foreword of NCCAM’s strategic plan for 2005-2009.

A native of New York, he had extensive basic and clinical research experience related to many conditions including chronic fatigue syndrome, Lyme disease, HIV/AIDS, chronic hepatitis B virus and genital herpes infections and chronic post-herpetic pain. Under his leadership, scientists demonstrated that acyclovir suppresses recurrent genital and oral herpes. Recently, he was part of the nationwide research team that showed that a vaccine was effective in preventing shingles (herpes zoster virus) in older adults.

His studies of patients who failed to recover from infectious mononucleosis led Straus to characterize rare, fatal chronic Epstein-Barr virus infections. These studies also led to his recognition of the autoimmune lymphoproliferative syndrome, the first disorder of lymphocyte apoptosis. His investigations of over 200 such patients form the basis of most of what is known today of this disorder’s clinical and biological features, including its pronounced risk of lymphoma.

Straus earned his bachelor of science degree in life sciences in 1968 from Massachusetts Institute of Technology. In 1972, he received his medical degree from Columbia University College of Physicians and Surgeons. Four years later, he became a fellow of infectious diseases at Washington University in St. Louis.

His NIH career began in 1979, when he joined NIAID and where he continued his research while also heading NCCAM. He was board-certified in internal medicine and infectious diseases.

Straus’s achievements were recognized by election to many professional societies including the Association of American Physicians and the American Society for Clinical Investigation and by appointment to the editorial boards of several journals. He received five medals and other commendations from the Public Health Service, including the Distinguished Service Medal for innovative clinical research and the HHS Secretary’s Distinguished Service Award. In 2007, he received the gold medal in academic medicine from his alma mater, Columbia’s College of Physicians and Surgeons. He was a member of the Clinical Research Roundtable of the National Academies’ Institute of Medicine and served on the NIH steering committee.

Straus published more than 400 original research articles and edited several books.

Survivors include his wife Barbara Straus; daughters Kate Straus and Julie Straus; son, Benjamin Straus; mother Dora Straus; sister, Miriam Wallach; and brother, Dr. Marc J. Straus. 🕯

Past Saves Present

An international team of scientists, including NIAID researchers, has successfully used human antibodies to protect mice from the avian flu. In the research, published May 29 in *PLoS Medicine*, the group reported using antibodies derived from immune cells of four Vietnamese adult survivors of H5N1 avian influenza to treat H5N1-infected mice, while they also protected the mice from an otherwise lethal dose of the virus. It's a finding that, if confirmed through further trials, could lead to valuable public health interventions for an influenza pandemic. The scientists noted that the idea of using blood products from flu survivors for treatment



Infection with the H5N1 strain of bird flu seems to be affecting fewer wild birds such as these.

isn't new: research shows that using serum from recovered flu patients for victims of the 1918-19 flu pandemic sometimes saved recipients' lives. The World Organisation for Animal Health announced in May that the H5N1 strain of bird flu is infecting fewer wild birds (like those in photo), however, a form of the bird flu virus that can be transmitted between domestic flocks remains unchanged.

Live Action Enzyme Tracking

NIAMS-supported scientists have developed a method that allows researchers to track an immune system enzyme in live animals. The enzyme, known as activation-induced cytidine deaminase, is believed to play a crucial role in normal immune response, as well as in autoimmunity and B-cell tumor development. Being able to trace the enzyme's activity—which scientists did by creating two mouse strains with a green fluorescent protein and a yellow fluorescent protein, respectively—in live animals has the potential to help solve some mysteries of the immune system, leading to possible treatments and even methods of prevention, researchers said. The report, also supported by NCI, was published in the May 14 issue of the *Journal of Experimental Medicine*.

Enzymes and Resistance

At the same time, a study conducted in part by NCI researchers revealed that low levels of another enzyme can be key to resistance in Ewing's sarcoma, a type of bone cancer. The findings, published in the June issue of the *American Journal of Pathology*, focus on a protein called TRAIL that binds to receptors on the surface of cancer cells and sets off a series of signals that cause the cells to kill themselves. Researchers found that Ewing's sarcoma cells that express low levels of an enzyme, caspase-8, are resistant to TRAIL-induced killing. However, adding a protein produced by cells of the immune system to treatment with TRAIL caused the resistant cells to produce more caspase-8, making them once again sensitive to TRAIL-induced death. This research could eventually lead to better forms of treatment for Ewing's sarcoma, the second most common bone tumor in children and adolescents.

High Volume, High Quality

Finally, according to recent NICHD-supported research, very low birth weight infants are significantly more likely to survive when delivered in hospitals with high-level neonatal intensive care units (NICUs) that care for more than 100 such newborns each year, over comparable facilities that provide care to fewer than 100 such children annually. The findings, published in the May 24 issue of the *New England Journal of Medicine*, provide further evidence of the link between high volume and high quality in NICUs that previous studies have established and point to the need for better care of very low birth weight infants, who weigh less than 1,500 grams, or about 3.3 pounds. High-level NICUs offer mechanical ventilation and sometimes provide major surgery.—compiled by Sarah Schmelling



NIH Marks Asian/Pacific Islander American Heritage Month

NIH's Asian and Pacific Islander American Organization presented cultural exhibits and Asian food vendors on May 11 on the Bldg. 31A patio.

Top:
A number of local restaurants specializing in Asian cuisine

prepare samples for sale during the lunchtime hours.

Above:
Members of the Asian Pacific American Officers committee offer brochures, flyers and other information on fitness and health awareness topics.

Below:
APAO president Prahlad Mathur (l) and Chinese Dragon dancers gather for a photo during the annual event.



NIAID Hosts First Annual Retreat for Postdoctoral Fellows

To enhance training for its postdoctoral fellows, NIAID recently hosted its first annual fellows retreat. The day-long event brought together fellows to share experiences, explore career paths and create collaborations. Sponsored by the Office of Training and Special Emphasis Programs, it signals a new effort to foster career growth and development.

The retreat “marks the beginning of an expansion of services for our postdocs,” said Dr. Wendy Fibison, OTSEP associate director. “We are mapping out a strategic plan based on feedback from the postdocs that ensures a more fully focused program that looks beyond just their scientific needs. The annual retreat is a first step in the plan to provide our fellows with the tools and skills necessary to help them transition from training to a long-term career and ensure their success as biomedical research leaders.”

Topics included career planning and grants information. The morning panel, Making Career Choices, featured former NIAID trainees now leading successful careers in academia, patents and law, industry and government. Attendees also learned strategies and tips on how to compete successfully for extramural fellowships and educational grants from a variety of institute experts during the Grants: Funding During and After Training panel.

Dr. Kathryn Zoon, director of the Division of Intramural Research, told the fellows, “We are here to help you as you move forward in your career path.” Dr. Steven Holland, chief of the Laboratory of Clinical Infectious Diseases, and Dr. Hugh Auchincloss, principal deputy NIAID director, gave an update on the clinical, translational and basic research agenda and trends in job opportunities.

In addition to the retreat, OTSEP plans to unveil a new orientation program for fellows entering the intramural program.

According to Zoon, the first retreat was “a good first step in creating a more broadly focused training program for the postdoctoral fellows.” Said one postdoc, “There was a very positive message about career prospects and choices available to NIH postdocs—very uplifting.”



Dr. Kathryn Zoon (c), director of the Division of Intramural Research, NIAID, talks with fellows during a reception at the retreat.

New Blood Pressure Monitoring Stations In Place

As part of the ongoing wellness program for employees, NIH has acquired 15 new blood pressure monitoring stations for use at various locations, both on and off campus. The devices will replace the old units previously in use on the main campus. Several new health station sites have been added.

The new units feature touch-screen operation and can store an individual's health statistics on the station for 30 days. They are designed to measure the user's blood pressure, weight and calculate percent body fat. The weight scale is incorporated in the seat for people interested in using this feature. Body fat calculations will require the user to input information into the appropriate screen.

The new machines have been placed in the following locations:

- Bldg. 1 - Basement Level 1 by the loading dock entrance
- Bldg. 10 - 1st floor South lobby across from NIH Police desk
- Bldg. 10 - 2nd floor waiting area outside the cafeteria
- Bldg. 13 - Ground floor, outside the OMS satellite clinic (Rm. G-904)
- Bldg. 31 - 1st floor outside the cafeteria
- Bldg. 35 - Ground floor of the C-Pod next to the security desk
- Bldg. 38A - Main lobby
- Bldg. 45 - 1st floor alcove around the corner from the elevators
- EPN - Suite 103
- 6001 Executive Plaza - 1st floor, Rm. 110
- 5625 Fishers Lane - 1st floor, rear lobby inside the mailbox area
- 6705 Rockledge Dr. - 5th floor inside the OMS satellite unit
- Poolesville NIHAC - T-8
- 5500 Nathan Shock Dr. (NIDA) Baltimore - Bldg. C, 2nd floor elevator lobby
- Rocky Mountain Laboratories, Hamilton, MT (NIAID) - Bldg. 1, 1st floor near ATM



Above, Maureen McNear, a safety and occupational health specialist from DOHS, operates one of the new blood pressure monitoring stations. At left is one of the new stations, which are much more sophisticated than the old ones.



The touch screens on the devices are sensitive, so use care when operating the stations. Contact the Community Health Branch, Division of Occupational Health and Safety, Office of Research Services at (301) 496-2960 for more information or to report any problems with the stations. 📞