

Still The Second Best Thing About Payday

## Young Scientist Collects Multiple Awards for NIH Project

By Shannon E. Garnett

Award-winning scientists are generally not hard to find on the NIH campus, however, MeiTung Lynn Yu—an 18-year-old Rockville High School senior who recently won top prizes and honors in 3 different science fairs for a project she developed at NIH—is unique.

Last spring, Yu entered her project, titled "Novel Method of Gene Transfer Using the Recombinant Viral Protein 1 of the Human Polymavirus BKV," in the Rockville High

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MeiTung Lynn Yu and her NINDS poster

## Organ, Tissue Transplant Research Center Opens at CC

By Sue Kendall

Close to 100 people gathered recently to celebrate the opening of the new Organ and Tissue Transplant Research Center in the freshly remodeled 11-East patient care unit.

In opening remarks, Dr. Allen Spiegel, director of intramural research for NIDDK, called the new unit "a venue to test the newest, most innovative ways of overcoming transplant rejection for patients with type 1 diabetes and end-stage renal failure, and ultimately other diseases."

Patients on this new unit will receive transplants of either insulin-producing islet

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## HIGHLIGHTS

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Nobel Laureate Gives Cultural Lecture

## Sen's 'Relational Reach' Links Health, Economy

By Rich McManus

Dr. Amartya Sen, the 1998 winner of the Nobel prize in economics and a master at Trinity College, Cambridge, U.K., proved as charming and self-effacing as advertised in introductory remarks by NIH director Dr. Harold Varmus, who invited Sen to give the annual director's cultural lecture June 2. Speaking before a packed Masur Auditorium, Sen, as predicted by Varmus, also challenged received wisdom by observing that robust economies don't necessarily foment higher life expectancies, and that "to rely on a doctor's view of health might be a great mistake."

"Amartya is one of those figures who achieve mythic status while retaining abundant humility and great humor," noted Varmus. "He is the recipient of so many honorary degrees that he must be a Million-Mile Member of every airline in the world." He called Sen "a writer with moral force," and "remarkable cultural range. He is sociable, witty, concerned for others, and

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Scientists, Start Your Engines

## Ultra-Swift Internet2 Connection Now Available at NIH

By Carla Garnett

NIH recently opened a new on-ramp to the next generation Internet (NGI) via a high-speed (155 Mbps, or millions of bits per second) connection to the very high performance Backbone Network Service (vBNS). Launched in 1995, the vBNS is a nationwide network supporting high-performance, high-bandwidth research applications and is the product of a 5-year cooperative agreement between MCI and the National Science Foundation.

The vBNS was designed for the scientific and research communities and originally provided high-speed interconnection among NSF supercomputing centers and connection to NSF-specified network access points. Currently, the vBNS connects NSF supercomputing centers and research institutions that are selected under the NSF's high-performance connections program.

Speed It Up a Little More

Paving the way for the new ramp took a bit longer than anti-

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## YOUNG SCIENTIST WINS BIG, CONTINUED FROM PAGE 1

School Science Fair and won the grand prize.

With her win at the Rockville fair she earned the chance to compete regionally in the 43rd Montgomery Area Science Fair, where she won first place in the microbiology category and grand prize in the life science senior division. As part of her prize, she won an expense-paid trip to compete in the 50th

Intel International Science and Engineering Fair (ISEF) in Philadelphia. She also picked up two additional honors—a Graduate Women in Science Certificate of Recognition and a United States Army Certificate of Achievement.

“When I saw the other participants

had such fabulous projects, I felt very lucky to have won the regional fair,” said Yu. “I had a great time in Philadelphia. I got to see a lot of different projects that students my age from all over world are working on.”

At the ISEF, Yu won third place in the microbiology category—earning a \$1,000 scholarship, and a United States Army Certificate of Achievement that included a \$3,000 savings bond and a medal. She also received the Association of United States Army 1999 London Youth Forum Award, which included \$150 and an expense-paid trip to London to attend the forum in July, where she will also present her project.

“One of the reasons she was successful was not only the amount of work and the level of science that were involved in her project, but also her personal understanding of the scientific work itself,” said Dr. Eugene Major, chief of NINDS’s Laboratory of Molecular Medicine and Neuroscience and Yu’s preceptor. “Her ability to orally present the science to others was the key to her success. We are very proud of her.”

The Intel ISEF, the world’s largest pre-college science competition, is often called the “Olympics” of science fairs because of its global reach, scientific scope and size. Each year the competition, which was held in May, brings together approximately 1,000 students from more than 40 countries to compete for scholarships in 15 categories representing all life sciences, from behavioral and social sciences to microbiology and zoology.

Yu came to NIH in 1998 as part of a special program sponsored by the Howard Hughes Medical Institute and the Montgomery County school system. Each year HHMI selects a limited number of Montgomery County school students who excel

in science to spend a year at NIH as interns, conducting research under the guidance of NIH mentors.

Yu began working in Major’s lab last July. Her project involved the expression and isolation of a recombinant protein, rBKVP1. She discovered that this recombinant protein produced a virus-like structure capable of transferring a gene into human cells. This method of gene transfer can be applied to various genes or cells and has potential for other uses in addition to gene therapy.

“I’ve been interested in science since I was very little,” said Yu, whose father is an herbalist. “Science comes very naturally to me.”

A well-rounded student, Yu has other interests besides science. She not only serves as the news managing editor of her high school newspaper *The Rampage*, she also designed and maintains the newspaper’s Web site.

Yu plans to extend her science project working at NIH throughout the summer, and to continue her studies this fall as a freshman at Johns Hopkins University. She recently won a \$10,000 Woodrow Wilson Research Scholarship from the university, where she will major in biomedical engineering. As a participant in the Howard Hughes program, Yu also received a Certificate of Recognition for Scientific Accomplishment and a State of Maryland Governor’s Citation. She plans to attend medical school and earn an M.D./Ph.D. degree.

“I want to thank my preceptor and my mentors who helped me with my project,” said Yu. Her mentors are Peter N. Jensen, a biologist, and Dr. Stephan Frye, a visiting fellow, both working in LMMN. **R**



*Yu and her mentors and preceptor (from l) Dr. Stephan Frye, Peter N. Jensen and Dr. Eugene Major celebrate her successful project.*

## NIH RECORD

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NIH Record Office  
Bldg. 31, Rm. 2B03

Phone 496-2125  
Fax 402-1485

Web address  
<http://www.nih.gov/news/NIH-Record/archives.htm>

Editor  
Richard McManus  
rm26q@nih.gov

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Assistant Editor  
Carla Garnett  
cg9s@nih.gov

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**OSE's Summer Film Festival Returns**

The popular Science in the Cinema—a free 6-week film festival open to the public—is about to begin. Following each film, a guest speaker with expertise in the film's subject area will comment on the science depicted in the film and entertain questions. The program runs Thursday evenings from 7 to approximately 9:30 in the Natcher Bldg. Auditorium. Seating is on a first-come, first-served basis. This year's selection features an interesting variety of films and renowned guest speakers:

**At First Sight**, July 15—Amy, an architect from New York, falls in love with Virgil, a blind masseur. She convinces him to undergo experimental surgery to restore his sight after a lifetime of blindness. Virgil must then learn to deal with the changes that being able to see brings to his life. Based on a story by Oliver Sacks. Starring Val Kilmer, Mira Sorvino and Kelly McGillis (1999, Rated PG-13). Guest speaker: Dr. Scott M. Whitcup, clinical director, National Eye Institute

**Permanent Midnight**, July 22—True story of Jerry Stahl, a recovering heroin addict remembering his past. Stahl was a TV sitcom writer making a \$5,000-a-week salary, while feeding a \$6,000-a-week drug habit. While in rehab, he recalls the story of his descent into drug addiction. Starring Ben Stiller, Elizabeth Hurley (1998, Rated R). Guest speaker: Dr. Alan I. Leshner, director, National Institute on Drug Abuse

**Mask**, July 29—Rocky, a boy with a fatal congenital facial deformity, attempts to live a normal life with the help of his biker gang mother, Rusty. The film is based on the real life story of Rocky Dennis, a likeable teenager who defies doctors' expectations of how long he had to live. Starring Cher, Eric Stoltz (1985, Rated PG-13). Guest speaker: Dr. Harold C. Slavkin, director, National Institute of Dental and Craniofacial Research

**Hilary and Jackie**, Aug. 5—Based on the true story of renowned cellist Jacqueline du Pre, who developed multiple sclerosis when she was at the height of her success, the film explores the complex relationship between Jackie and her sister, Hilary, from their childhood through adulthood. Starring Emily Watson, Rachel Griffiths (1998, Rated R). Guest speaker: Dr. Henry F. McFarland, chief, Neuroimmunology Branch, National Institute of Neurological Disorders and Stroke

**Lust for Life**, Aug. 12—This biography of the painful life of artist Vincent van Gogh was adapted from the bestselling novel by Irving Stone. The film explores the relationships the tormented genius had with his brother Theo and with fellow painter Paul Gauguin. It shows many of van Gogh's paintings

and the environments and emotions that inspired them. Starring Kirk Douglas, Anthony Quinn (1956, not rated). Guest speaker: Dr. Kay Redfield Jamison, professor of psychiatry, Johns Hopkins University School of Medicine

**Longtime Companion**, Aug. 19—In July of 1981, an obscure story appeared in the *New York Times* about an outbreak of a rare form of cancer called Kaposi's sarcoma in a number of gay men. The film tracks a group of seven friends in New York City, beginning on that day, continuing through the '80s, and ending after AIDS has affected all of their lives. Starring Campbell Scott, Bruce Davison (1990, not rated). Guest speaker: Dr. Anthony S. Fauci, director, National Institute of Allergy and Infectious Diseases

Now in its sixth year, Science in the Cinema is sponsored by NIH's Office of Science Education. For more information, visit <http://science-education.nih.gov> or contact Ellen Dobbins, phone: 402-2828, email: [Ellen\\_Dobbins@nih.gov](mailto:Ellen_Dobbins@nih.gov). ■

**STEP Presents 'Life in the Extremes'**

You think you have it rough! Imagine living in ice water, a volcano, salt water, boiling water, and the great depths of the oceans. Also imagine that some of the more useful products that are used in science and in everyday life come from some of these organisms. These and other topics will be addressed in the Science for All session titled, "Life in the Extremes: Some Like It Hot..." presented by the Staff Training in Extramural Programs committee on Tuesday, July 20 from 8:30 a.m. to noon, Wilson Hall, Bldg. 1.

Topics and speakers include "Squeezing DNA Out of Rocks: Microbial Life Deep in the Ocean Crust," Dr. Stephen J. Giovannoni, professor of microbiology, Oregon State University; "Some Like It Hot: Microorganisms from Life's High-Temperature Extreme," Dr. James F. Holden, research associate faculty of biochemistry and molecular biology, University of Georgia; and "Speculations on Phenotype from Genotype in Uncultivated Microbes," Dr. Jeff Stein, chief scientific officer, Quorum Pharmaceuticals.

The session is free and open to all NIH staff on a first-come, first-served basis. No advance registration is necessary. Please inform us regarding any need for sign language interpretation or reasonable accommodations on or before July 15. For more information, contact the STEP office at 435-2769.



Dr. Helene Gayle, director of the National Center for HIV, STD and TB Prevention, Centers for Disease Control and Prevention, will present the fifth annual John Diggs Lecture on Tuesday, July 27 at 11 a.m. in Wilson Hall, Bldg. 1. The title of her lecture is "Beyond AIDS: STDs in the New Millennium." This seminar is cosponsored by the speakers bureau of the NIH Black Scientists Association, NIAID's Office of Special Populations and Research Training, the NIAID minority scientists advisory committee, the NIH Office of Equal Opportunity, the NIH Office of the Director and NINDS. The seminar is open to the public, but targeted to NIH summer students. Sign language interpretation will be provided.



Dr. Carole A. Heilman was recently named director of NIAID's Division of Microbiology and Infectious Diseases (DMID). For the past 3 years, she has been deputy director of the Division of AIDS (DAIDS). She joined NIAID in 1986 as a program officer in DMID and served as chief of its Respiratory Disease Branch from 1988 to 1996. She completed postdoctoral training and served as a senior staff fellow at NCI, where she carried out molecular biology research related to the regulation of gene expression during cancer development. At NIAID, her many accomplishments include coordinating the development of acellular pertussis vaccines while chief of the Respiratory Disease Branch. During her tenure as DAIDS deputy director, she established creative research programs such as the Innovation Grants Program for AIDS Vaccine Discovery.

#### ECONOMICS NOBELIST, CONTINUED FROM PAGE 1

deeply committed to his origins while thinking deeply about the whole world."

Sen, admitting he was humbled by the generous introduction, gave a two-part, 50-minute lecture on competing concepts of equity (for example, who decides what ill health is, the patient or the health care professional?) and a theme he labeled "relational reach," which attempts to unravel the complicated network of forces influencing health, among them the economy. But as abstruse as the analysis quickly got—including brief layovers at "competing concepts of individual advantage" and "competing procedures of social choice aggregation"—Sen's asides were what won the audience. At various points he compared being tethered to his lavalier microphone to the ropes binding the village goat, and also congratulated himself on knowing at least one endearing story about Spanish dictator Generalissimo Francisco Franco: By way of illustrating the gulf between a patient's self-report of morbidity versus a professional assessment, he said that Franco's physicians, who believed he was close to death, arranged for Fascist musicians to serenade the general with the refrain "Adios, Franco," to which the still-sentient general is reported to have replied, "Where are they going?"

"There are many influences on health—the economy is one of them," Sen explained. "Economic affluence may be good for your health," he continued. "Clearly, there is a connection between income, social status and health. But how much of the variation in health is explained by income difference? How does it work?"

With wealth comes better schooling, and better marshalling of information, he said. But is it a relative lack of stress, or the opportunity for exercise (because you are not too tired at the end of a day's labor) that confers health? "Further analysis is needed," he said. "We need an integrated view of what is going on."

There is an extensive literature on life expectancy and gross national product, per capita, which are linked very closely, Sen said. But he introduced two new variables—public expenditure on health care, and poverty, "the fate of the worst off." Allowing that GNP creates more resources for public health care, he said "even without GNP growth you may be able to raise life expectancy very dramatically" by a social policy that favors the "extremely labor-intensive" fields of health care delivery and education. "It does matter how you spend your income," he argued.

He pointed out that African Americans in the United States may be poor in relation to whites, but are "tremendously rich" when their incomes are compared with Third World places such as China and India. Yet longevity is higher in these impoverished locales than in Black America.



NIH director Dr. Harold Varmus (r) welcomes 1998 Nobel laureate Dr. Amartya Sen to NIH. Sen delivered the annual director's cultural lecture.

"Yes, it's very important to think about income," Sen observed, "but it's only one variable among many. Remember, economics is about earning and spending."

Continuing his probe of the conventional wisdom, he asked what it means to be well in an area where most people are sick most of the time. He showed a chart comparing self-report of morbidity in such disparate locales as the United States, Kerala and Bihar (the latter being two Indian states he has studied). The Americans, despite their affluence, overwhelmingly report more feelings of illness.

Sen applauded the broadening of the discussion taking place today in the adjacent fields of health and economics. "Equity is a complex issue," he allowed, "but it is eminently discussable."

The so-called "dismal science" didn't get any less complicated during his talk, but neither was it unbearably heavy.

During a brief period during which Sen took audience questions, he observed that no nation has its economic act entirely together—he has only glimpsed pieces of the ideal in his travels. He noted, "It's really quite scandalous that the U.S. has so many—more than 40 million people—uninsured compared to Europe, but they have very high unemployment, in the range of 11-12 percent."

His answer to the final question placed him squarely, he said, in the tradition of economics luminaries of the past, including Adam Smith and Karl Marx: "Income in itself is not a value. Leading a good life is more important." ■

#### Women Needed for NICHD Study

NICHD's Developmental Endocrinology Branch is seeking healthy female volunteers for endometrial biopsy. Women must be under age 35 and have had at least one child. Compensation provided. If interested, call Dr. Rhonda Hearn, 402-0851. ■

## Book Bridge Project Concludes with Author's Visit

The fifth and final public forum of the Diversity Book Bridge Project was held recently by the NIH Office of Equal Opportunity. The forum featured Bebe Moore Campbell, author of the novel *Brothers and Sisters*, who read passages from her book. The reading and discussion session that followed focused on the concept of managing diversity and its relevance and impact on the NIH community.

The Diversity Book Bridge Project was introduced to the NIH community as part of the Workplace Diversity Initiative, an integral part of OEO's longterm strategy to better manage diversity in the workplace. Book Bridge uses literature as a tool to discuss diversity issues.

*Brothers and Sisters* explores diversity issues such as sexual harassment, welfare-to-work programs, differences in a diverse workforce, affirmative action and gender relationships. The main goal of the project was to examine the challenges and opportunities NIH faces as a diverse workforce by reading and discussing similar issues described in the novel.



Bebe Moore Campbell

Also, the 1999 NIH Champions of Diversity were recognized for the first time and honored for their commitment to fostering an inclusive work force that promotes respect for diversity. The champions of diversity include Dr. Harold Slavkin, NIDCR director, for demonstrating outstanding leadership of trans-NIH activities designed to raise awareness and respect for diversity as well as for chairing the NIH committee for recruitment of a diverse workforce; Dr. George Counts, NIAID associate director for clinical research, for his outstanding leadership and contributions as the first chairperson of the NIH



Campbell concludes her visit with a book signing and a reception.

PHOTOS: ERNIE BRANSON

Diversity Council; Donald Poppke, NLM executive officer, for holding visible roles relative to diversity including the vice-chair and chair of the NIH Diversity Council, and for taking an active leadership role on the NLM Diversity Council; and Mishyelle Croom, EEO manager, and Carroll Hanson, diversity catalyst, both of NHLBI, for development and implementation of an inhouse training module on diversity for NHLBI employees. Naomi Churchill, OEO director, also presented NIH deputy director Dr. Ruth Kirschstein with a champion of diversity medal for her continuous dedication to all aspects of diversity management and for her faithful attendance at all the book bridge forums.—John Medina III



NIH deputy director Dr. Ruth Kirschstein congratulates Carroll Hanson, NHLBI diversity catalyst, who was named a 1999 champion of diversity.

## Heart Disease Study Needs African Americans

The Heart Disease Risk Factors in African Americans study is investigating the relationship of obesity to heart disease risk factors in healthy, nondiabetic African-American men and women who are normal weight, overweight and obese between the ages of 18-55. The study currently is recruiting new participants. Specifically, the study is looking at risk factors for triglyceride concentration and the triglyceride-related risk factors of unhealthy cholesterol (low-density lipoprotein), good cholesterol (high-density lipoprotein) and body fat distribution. There will be a series of four outpatient visits to the Clinical Center, in which participants will have body fat analyses, an electrocardiogram, blood tests including cholesterol profiles, an oral glucose tolerance test and an intravenous glucose tolerance test. Participants will be paid. Call 402-7119 for more information. ■

## Otitis Vaccine Seeks Volunteers

NIDCD is recruiting 40 volunteers between the ages of 18-35 for a phase 1 trial of a vaccine to prevent middle ear infections commonly seen in childhood. Volunteers need to have a healthy immune system without chronic disease or respiratory problems. Participants will be paid. Call Suzanne at 496-7491 for details. ■

## Female Volunteers Needed

The Behavioral Endocrinology Branch, NIMH, is seeking female volunteers ages 18-45 to participate in a 5-month study of the effects of reproductive hormones on measures of cerebral activity and blood flow. Volunteers must have regular menstrual cycles with no changes in mood in relationship to menses, be free of medical illnesses and not taking any hormones or medication on a regular basis. They will complete daily rating forms and be asked to participate in studies of cerebral blood flow with positron emission tomography and magnetic resonance imaging. Payment will be in accordance with the duration of each visit and the type of protocol. For more information, call Linda Simpson-St. Clair, 496-9576.

## NEXT GENERATION INTERNET, CONTINUED FROM PAGE 1

pated, according to the NLM team that helped broker the various agreements to get vBNS access for NIH.

"NIH's application broke ground in that we were the first government site to go through the process of applying to become attached to the vBNS as just a site," explains team member Mike Gill, a network engineer with the Communications Engineering Branch of NLM's Lister Hill National Center for Biomedical Communications. Various federal networks including the Department of Energy's ESNET and NASA's NREN already connect to the vBNS, but NIH was the first federal site that is not also a nationwide network.

One requirement of the application was that NIH needed to be invited to join by a university. Dr. Richard Ewing, dean of science at Texas A&M University, extended the invitation.

Future frontiers for the enhanced connectivity environment of the vBNS are limited only by the creativity of its users. Gill and other team members hope the new capability will spur application



At NLM, (from l) Jules Aronson, Victor Cid and Mike Gill are reviewing preliminary vBNS performance testing results.

development (see sidebar, Putting Speed to Good Use). Also, an evaluation of access to multimedia (text and digital x-ray) databases is under way.

The vBNS is already being used—with great success—to access NLM databases, although the degree of

success depends on the connection at the endpoints, known as the "last mile" problem, and the computer and network setup at both ends of the connection.

"As fast as the vBNS is, it can be limited just like the 'regular' Internet in this way," Gill said. "However, with institutions also equipped with 155 Mbps access to the vBNS, we can expect higher transfer rates. Things that were not practical before are now practical."

Joe Mambretti, director of the International Center for Advanced Internet Research at Northwestern University, agrees the possibilities generated by the increase in speed are unlimited. "This could be the subject of a very large paper," he says. "One example may be digital video. The traditional Internet does not do video well. It is essentially a text and image medium. The video that is there consists of small, grainy, jittery images. With our current next generation infrastructure, we can do full-motion, full-color, full-screen video with CD-quality audio. Increasingly, we are seeing demos of very high resolution images also. The more information in the image, the higher the quality and resolution. [More and more] these networks are

used for 3D imaging. Also, with the advanced network it is possible to access large amounts of research data, for example, for longterm studies of numerous medical records."

## How're We Doing?

A study is planned for measuring the response time of accessing NLM information from remote vBNS locations and collecting other performance data about the network paths between NLM and the remote sites, according to Gill. The work is being done in two phases: phase I, which involves a limited number of vBNS sites, is designed to implement and test the tools and methodologies needed. Phase II will attempt to collect more extensive data among a larger group of institutions that may represent the biomedical community in vBNS.

"We are measuring a number of network performance parameters between remote sites in vBNS and our web servers and other hosts at NLM," explains Victor Cid, an NLM visiting scientist from the University of Chile in Santiago who is coordinating the evaluation. "Performance measurements are currently being obtained from computers at Yale University, University of Maryland at College Park, University of Washington, University of Illinois at Chicago, University of Southern California, Texas A&M University and UCLA. In the future we may be also testing from other locations. One set of experiments measures the time it takes to access web pages from our web servers at NLM and retrieve some large data sets. We are also measuring a number of other technical parameters such as network delay, communications anomalies, maximum data throughput, performance variation over time, and so on. We are running similar tests from computers at NLM to the same remote locations to study network asymmetries."

Additionally, they are using performance data obtained through other metric efforts within vBNS and the Internet, such as the Advanced Network & Services' Surveyor project, he says. A special

**Deceptively Fast: Comparing Potential Speed to P**

Although the new vBNS connection offers the potential to transfer data at 155 Mbps, actual transfer speeds can and will vary widely, depending on several other conditions, explains NLM visiting scientist Victor Cid, who is conducting evaluations of NIH's new high-speed on-ramp to the Next Generation Internet (Internet2). Users need to consider all conditions when attempting to calculate their own actual transmission rates, he cautions.

"155 Mbps is the speed of the link between NIH and vBNS," Cid says. "The end-to-end speed between two computers communicating through vBNS can be different. We are certainly limited by the speed of our link to vBNS, but there are many other factors that

network setup will allow them to perform the same set of experiments through both the vBNS and the current Internet (called the commodity Internet).

"We expect to obtain data that will give us a reasonable estimation of the performance perceived by current NLM users when they access our information services through vBNS. The data will also allow us to explore some overall performance



*Senior Systems Scientist Jim Seamans uses the kind of large image file applications for which NIH's new access ramp to the vBNS is ideal.*

characteristics and some of the potentials of this high-bandwidth network."

The benefit of such testing is two-fold, Cid points out. Not only will it tell developers how well the new on-ramp is working, but it may also reveal new ways to get the most out of both the vBNS and the commodity Internet. In addition, establishing vBNS connections here keeps NIH on the cutting edge of high-speed computer communication.

"vBNS is an experimental network, a 'test-bed' to study and develop future networked applications and new network technologies," Cid concludes. "The current Internet has been often plagued with communications delays and other problems. What we learn from vBNS may help us improve the Internet and teach us how to use it better. NLM and NIH have become very dependent on the Internet for different scientific and non-scientific purposes. NIH's participation on vBNS is a natural step towards an increased involvement of our community on the evolution of Internet and other related communication technologies."

#### actical Speed

make it practically impossible for an application to reach that speed. For example, the speed of my LAN at NLM is only 100 Mbps; my workstation is fast but my communications software is not optimized for high-bandwidth networks, etc. The applications themselves (for example, Web servers) can be bottlenecks in the end-to-end communications. We will compare the end-to-end performance measured through vBNS with the performance measured through the commodity [regular] Internet from different types of computer platforms. It will also be possible to compare the measured speeds with the theoretical maximum speeds of the network paths (the speed of the slowest link on the network path)."

#### Putting Speed to Good Use

NIH's new speedy connection to NGI is limited only by how creative application developers are. One group has already used the new access ramp to solve a problem common in what is called "volume rendering"—imaging techniques that help users visualize 3-dimensional data.

"Volume rendering of medical data produces accurate, highly detailed images of internal anatomy not available by other means," says Greg Johnson, associate staff programmer analyst at San Diego Supercomputer Center, University of California, San Diego. "Such imagery is useful for both diagnosis and education, and animation of these images is often critical to the analysis—to determine the size and orientation of key anatomical features relative to one another, for example." However, he points out, high resolution volume data—such as that from the Visible Human Project at the National Library of Medicine—exceed the computer processing unit and random access memory limitations of current workstation technology. Such systems are unable to generate images at the rates necessary to sustain an effective exploration of the subject under study.

But Johnson and his colleagues at SDSC have come up with a solution. They have developed a system that combines advances in high performance computing, Web programming and network connectivity.

"Called the Massively Parallel Interactive Rendering Environment (MPIRE), the system can render multi-gigabyte volume datasets at near-interactive rates and deliver the results to any desktop computer equipped with a Web browser," he explains. MPIRE consists of two major components: a set of software engines for performing the rendering calculations and a graphical user interface in the form of a Java applet.

In a typical MPIRE session, the user loads a Web page containing the applet, and configures the desired rendering parameters and high-performance computing (HPC) system. An MPIRE engine is then automatically started on the HPC platform, the data loaded from disk local to the host, and an image created and sent back to the applet. From there the image is automatically updated as the user modifies the camera position, lighting, coloration or other rendering parameter.

Johnson predicts that distributed computing applications of the not-too-distant future are likely to go one step further. Data from an archive at one location would be automatically retrieved on demand and processed by a program running on a computer at another site. The data would then be controlled entirely via a graphical user interface running on the user's local computer at yet a third location.

"Data is seamlessly obtained, processed and delivered using multiple physically distributed discreet resources," Johnson points out. "At this point the user may no longer be aware—or even care—about the nature or location of these resources. They could be anything from simple tape storage arrays, to complex, multi-processor supercomputers situated in another room, another building or even another country. Here we find ourselves entering the next period of the Computer Age, an era of transparent computing."

Transparency comes in part by providing uniform access to the remote resources, he concludes. "The World Wide Web is an excellent example of this principle in action. Here users move from Web page to Web page through the consistent user interface offered by the browser, with little knowledge of the types or locations of the serving computers. For the interface to be effective, however, it must be backed by high-bandwidth, low-latency wide area networks of the type represented by the NLM's connection to the vBNS."

**TRANSPLANT CENTER OPENS, CONTINUED FROM PAGE 1**

cells or kidneys, followed by novel therapies to prevent their immune systems from rejecting the transplants. If the therapies are successful, these patients could be cured of their diabetes or renal disease.

Rejection is a major hazard of organ or tissue transplantation. Powerful drugs are given to suppress the patient's immune response, but side effects can be unpleasant enough to cause patients to stop taking the drugs. This step can mean almost certain organ rejection.

"Very rarely a patient that stops taking antirejection medicine does not reject the transplanted organ," said Dr. David Harlan, head of the

new unit. "So we do know that it's possible to achieve a state of peaceful coexistence between the transplanted organ and the recipient's immune system."

Recent research in rhesus monkeys has led to

immunologic strategies using antibodies to block the rejection process and essentially fool the body into thinking that the transplanted tissue is its own.

This research has been spearheaded by Harlan and Dr. Allan Kirk of the Naval Medical Research Center. In partnership with the CC, NIDDK, Walter Reed Army Medical Center, and the University of Miami's Diabetes Research Institute, Harlan and Kirk plan to test their promising therapy, and others, in patients at the Clinical Center.

"With these new therapies, we are trying to manipulate the immune system so that this peaceful coexistence happens more often," Harlan said.

At the ribbon cutting, Kirk explained the team's vision for the new unit: "The common goal is to cure people with diabetes and renal failure—and every other end-stage organ disease that is amenable to transplantation—and to do so without giving the patient another disease, that is, immunosuppression. I truly believe that we are extraordinarily close to being able to do that."

"This is among the most exciting scientific opportunities I've seen for the Clinical Center in the last 10 years," said Dr. David Henderson, CC deputy director for clinical care. "It's what this building was built for—to translate these wonderful basic science findings [in animals] to humans." ■

**Panel Endorses Non-Animal Test of Chemicals**

It's a first in the effort to reduce use of animals in testing: A scientific panel sponsored by NIH, NIEHS, the National Toxicology Program and major regulatory agencies on June 22 endorsed the use of a non-animal test to replace, in many cases, the use of animals to determine if a new chemical is likely to burn or corrode human skin.

The new test can often replace a method in which a chemical or chemical mixture is placed on the intact skin of a laboratory animal.

The review was conducted by an independent panel of the new interagency coordinating committee on validation of alternative methods, which is sponsored by key research and regulatory agencies.

The panel said the new method can fully replace the use of animals for testing corrosiveness and irritation in some cases, while in others, only a single animal is required to confirm a chemical's corrosiveness. Dr. William Stokes, NIEHS associate director for animal and alternative resources, said, "Current regulations usually require three animals for each chemical that is evaluated for skin corrosivity and dermal irritation. Since there are more than 2,000 chemicals introduced each year, this could result in a considerable reduction in the use of laboratory animals to identify corrosives."

Skin corrosiveness testing is conducted to ensure that chemicals and products are properly labeled to alert consumers and workers to take precautions to prevent chemical burns to the skin and eyes. ■

**Healthy Adults 60 and Older Sought**

The National Institute of Allergy and Infectious Diseases seeks healthy adults age 60 and older who have never had shingles for a study to determine whether an enhanced version of the chickenpox vaccine (varicella vaccine) can prevent shingles (zoster) or lessen its complications. The time commitment is one initial visit to the Clinical Center and monthly phone calls via a toll-free number for up to 5 years. There is no charge for participation. For more information, call 1-800-411-1222.

In addition, a presentation describing the study will be held on Thursday, July 22 from noon to 1 p.m. in the Sheldon M. Wolff Conf. Rm. (Rm. 11S235), Bldg. 10 for people who may be at risk of developing shingles. ■

**Sleep Study Recruits**

NIH is looking for male and female volunteers ages 20 to 35 who routinely sleep 9 or more hours nightly or 6 or fewer hours nightly. Volunteers must have no sleep disturbances or insomnia, no history of mental illness, be in good general health and not taking any medications or birth control pills. The study requires a stay on the research unit for 4 consecutive days. Compensation is available. For more information, call 496-6981. ■



*Cutting the ribbon to open the new Organ and Tissue Transplant Research Center are (from l) Terri Wakefield, the unit's head nurse, and Cmdr. Allan Kirk and Capt. David Harlan of the U.S. Navy, two researchers heading clinical trials of novel antirejection therapies.*

### NIGMS Grantee Receives Chemistry Award

Dr. Terrence Collins, an NIGMS grantee for 7 years, recently received the 1999 Presidential Green Chemistry Challenge Academic Award.

The award, established in 1995 and administered by the Environmental Protection Agency as part of the Clinton administration's reinventing government program, recognizes "outstanding chemical technologies that incorporate green chemistry principles into chemical design, manufacture, and use." The EPA defines green chemistry as that which nurtures the environment and human health through the innovation of chemical technologies that prevent pollution.

Collins, a professor of chemistry at Carnegie Mellon University, received the award for developing a class of molecules, called oxidation catalysts, that reduce the amount of chlorine required for a variety of industrial bleaching processes. The catalysts, crafted from nontoxic components, may find use in the laundry and paper industries and may also someday be used to treat drinking water by cleansing it of harmful parasites.



Dr. Terrence Collins

Collins, who said he was flattered to be chosen for this year's award, noted that previous awards have featured sophisticated chemical wizardry used to tackle very down-to-earth problems. The 1996 award, Collins noted, was granted to "someone who figured out how to use the contents of a cow stomach to break down New York City garbage."

While Collins' innovation won't clean up garbage, it does promise to offer a measurable advantage over current chlorine-based bleaching methods. It works by jump-starting a natural whitening agent, hydrogen peroxide, which is either present in, or can be easily added to, water-based solutions. According to Collins, a key plus to his green catalysts is that he can tailor their shelf life. This feature, called "dial-a-lifetime," permits scientists to control how long the catalysts stick around before they self-destruct.

Collins received the award, consisting of a certificate and a crystal sculpture, at a June 28 ceremony at the National Academy of Sciences.

The 1998 Presidential Green Chemistry Challenge Award went to Dr. Barry Trost, an NIGMS grantee for 33 years who is the Tamaki professor of humanities and sciences at Stanford University. He was recognized for the development of "atom economy," a concept that can be used to simultaneously reduce the amount of feedstocks used and the amount of waste produced in chemical processes. ■



Dr. John Ruffin (top, second from l), NIH associate director for research on minority health, chats with Margaret Knight (c), executive director of the Association of American Indian Physicians (AAIP) and NIEHS principal investigator Dr. Jerrel Yakel, during lunch with about four dozen Native American high school students who visited NIH recently as part of the National Native American Youth Initiative. The initiative, offered by AAIP as part of its health, biomedical research and policy development program, is an intense academic enrichment and reinforcement program consisting of mini courses in leadership, communication, study and testing skills plus assertiveness, networking and professional behavior, interactive learning and time management. The young scholars were chosen from across the United States for an all-expenses-paid, week-long visit to the Washington, D.C., metropolitan area. In an effort to encourage the students to consider professions in the health sciences, NIH's Office of Research on Minority Health hosted the program on campus. The visit was also supported financially by ORMH and many other NIH institutes and centers. Below, Yakel, who gave the keynote address to the group, chats with some of the students during the lunch break.



### Moody Teenagers Sought

You and your 14-16-year-old may be eligible to take part in research at the National Institute of Mental Health. This is a study about how young people experience emotions, and how bad moods can cause problems. Payment will be provided. For details, call Barbara Usher, 496-1301. ■



*Dr. Clifton A. Poodry, director of the NIGMS Division of Minority Opportunities in Research, received an honorary doctorate of science from the State University of New York at Buffalo this past May. He was recognized as being "a leader in biological research and a major advocate for minority education in the sciences." He came to NIH in 1994 from the University of California, Santa Cruz, where he was a professor of biology. A native of the Tonawanda Seneca Indian Reservation in western New York, Poodry earned both a B.A. and an M.A. in biology at the State University of New York at Buffalo. He received his Ph.D. in biology from Case Western Reserve University.*

## **NIH Library's Clifford Retires After 31 Years** **By Kathryn Dudley**

NIH Library patrons may notice the absence of a stylish, smiling presence at the information desk; Catherine J. Clifford retired June 1 after 31 years of federal service. She took the lion's share of hours at the information desk in recent years. "Catherine set high standards for gracious customer service, which we all strive to live up to. Her indepth knowledge of NIH publications and programs will be sorely missed," said Susan Whitmore, chief of the information and education services section.

Clifford's enthusiasm was obvious to Dr. Gordon Guroff of NICHD, who commented, "I have always enjoyed my meetings with Ms. Clifford because of her calm presence, her winning smile, and her helpful attitude. There are some people with whom contact is a pleasure because you know that you will come away with the information you need and with a good feeling about the moments you spent getting it. Ms. Clifford is one of those people."

It is not surprising that Clifford's credo is, "Find pleasure in your work." Working with NIH staff and investigators has been a special pleasure for her: "It's like detective work, helping people find the information they are looking for. It's fun!"

Clifford's entry into library work began when her daughter, Maria, volunteered her to work at the Walt Whitman High School library. Clifford enjoyed the work so much she decided to make it her career. She arrived at the NIH Library on Mar. 23, 1968, as a library technician working at the circulation desk. As her career advanced, two important opportunities served as stepping stones. The first was the NIH Library Counseling Program, which she began in March 1971. It was designed to enhance available and potential skills by offering on-the-job training. With the help of counselors, career ladders were established to develop opportunities and provide training. The second stepping stone was Clifford's enrollment in the Upward Mobility College Program. As a result of this program she received a bachelor of science degree in biology in 1976 from Federal City College and was promoted to a technical information specialist.

Although she is a native Washingtonian, Clifford has traveled and lived all over the United States and Europe, including places like Alaska, Germany, Paris, Spain, Holland and Italy. Traveling is still something she loves to do and to share; she has taken her teenage grandson Marcus on a trip every



*Catherine J. Clifford*

summer since he was 4. When asked about a favorite destination, she says she's enjoyed every place she's visited or lived. "Look for the good things—my mother taught me that—and you will find them. That's true of people too."

Her fondest memories at NIH are of helping people. She also believes the help she's provided and the NIH Library are truly appreciated. Suzanne Grefsheim, NIH Library Branch chief, attests to this: "Over the years, I've received a number of fan letters from many of the readers Cathy has helped. They all admire her diligence in ferreting out information and comment on her warm and pleasant personality."

Clifford anticipates the leisure to participate in a variety of activities in her retirement, and plans to continue enjoying her family, friends and good health. She can be reached at [cjclifford@erols.com](mailto:cjclifford@erols.com). ■

### **NCI Scientist Lee Dies Suddenly**

Dr. Young K. Lee, a visiting fellow in the National Cancer Institute's Laboratory of Medicinal Chemistry, died Apr. 29 of complications from stomach cancer. She was expecting her second child when she learned of her diagnosis.

Lee came to NIH in 1998 following the completion of her Ph.D. studies in medicinal chemistry under department chairman Dr. Wayne Anderson at the State University of New York at Buffalo. She earned her M.S. and B.S. degrees at the Seoul National University in Korea, her homeland.

During her tenure at NCI, Lee conducted research under the direction of Dr. Terry Burke on the development of new inhibitors of HIV integrase as potential new AIDS therapeutics. Lee was particularly interested in preparing inhibitors that would bind irreversibly to the integrase enzyme so that its X-ray crystallographic structure could be determined. She had recently developed a new synthetic approach to produce highly reactive integrase inhibitors in stable latent forms. These molecules could be unmasked in a final step to yield inhibitors that would irreversibly bind to the HIV integrase enzyme. Lee had successfully applied this technology to a series of HIV integrase inhibitors that are currently undergoing biological evaluation.

Lee's ashes have been returned to Korea by her family. To assist them, a memorial fund has been set up at the NIH Federal Credit Union in the name of her husband, Myungsik Yoo. Donations may be sent to the NIH Federal Credit Union at P. O. Box 6475, Rockville, MD 20849-6475.



**HRDD Training Tips**

The Human Resource Development Division, OHRM, will offer the courses below. Hands-on, self-study, personal computer training courses are available through the HRDD's User Resource Center at no cost to NIH employees. For details, visit HRDD online at <http://trainingcenter.od.nih.gov/> or call 496-6211.

*Management, Supervisory & Professional Development*  
 Creating Distinctive Customer Service 8/18  
 How to Deal with Frustrating Situations 8/19  
 Enhancing Relationships in the Work Environment 8/31

*Administrative Systems*  
 Basic Time & Attendance Using ITAS 8/17  
 Professional Service Orders 8/17  
 Travel for Administrative Officers 8/19  
 Foreign Travel 8/23  
 Travel for NIH Travelers 8/25  
 Price Reasonableness in Simplified Acquisitions 8/26

*Administrative Skills Development*  
 Developing Positive Assertiveness 8/19

*Communication Skills*  
 Writing Skills Review 8/17  
 Your Telephone Image 8/18  
 Thoughtprint II 8/30  
 Communication in the Workplace 8/31

*Computer Applications and Concepts*  
 Adobe PageMaker 6.5 Production 1 - Mac 8/17  
 Introduction to JavaScript Scripting 8/18  
 Adobe PageMaker 6.5 Production 2 - Mac 8/19  
 Advanced Visual Basic 5.0 8/23  
 Introduction to MS Excel 7.0 - Office 95 8/23  
 Intermediate FileMaker Pro 4.0 8/24  
 Advanced Corel WordPerfect 7.0 8/24  
 Advanced MS PowerPoint 98 - Mac 8/25  
 Introduction to Macintosh 8/26  
 Advanced MS Word 97 - Office 97 8/30  
 Advanced MS Excel 97 - Office 97 8/30  
 Advanced MS Word 7.0 - Office 95 8/31

*Career Transition*  
 NIH Retirement Seminar - FERS 8/4

*Human Resource Management*  
 Processing Employee Benefits Actions 8/25

**Blood Study Seeks Women**

The Clinical Center clinical pathology department is seeking healthy postmenopausal women to take part in a study of normal blood. To be eligible, you must have had no abnormal bleeding or clotting in the past. Study participants must be willing to not take any hormone treatment for 9 months. Participants will be required to give a small sample of blood in an initial screening. Based on the results, some women will be asked to give additional small blood samples once a month for 3 months. The study involves no hormones or medications. Participants will be paid \$50 for each blood draw. For more information, call Donna Jo Mayo, 496-5150. ■

**CIT Courses and Seminars**

All courses are on the NIH campus and are given without charge. For more information call 594-3278 or consult the training program's home page at <http://training.cit.nih.gov>

Java	7/12,15
WIG - World Wide Web Interest Group	7/13
Using SQL to Retrieve DB2 and Oracle Data	7/13-14
Using Photoshop for Acquiring Scientific Images	7/15
NIH Data Warehouse Travel Mini Session	7/15
NIH Data Warehouse Research Contracts and Grants	7/16
Database Technology Seminar	7/16
Avoiding Pitfalls in Statistical Analysis	7/19
Introduction to HTML	7/20
Topics in S-PLUS	7/20
Using FileMaker Pro on the Web	7/20
Getting Started with Knowledge Management	7/20
The NIH Contractor Performance System	7/20
NIH Data Warehouse Personnel Costs (Human Resources)	7/20
DB2 and Oracle Data Definition, Control, and Advanced Manipulation	7/21-22
Seeking Information on the Web	7/23
Choosing Telephone Services at NIH	7/23
SAS Fundamentals I	7/26-27
BRMUG Macintosh Users Group	7/27
Practical Tools for DNA/Protein Sequence Analysis II	7/27
Genetics Computer Group (GCG) Sequence Analysis	7/27-29



Joy Jackson of the Medical Arts and Photography Branch and Bill Holcomb of the Radiation Safety Branch hold a "Telly Award" for producing quality training videos. Telly

Awards have, since 1980, recognized outstanding nonnetwork video productions. The 1996 radiation safety refresher training video Labman and Radman won a Gold Telly statuette in the 20th anniversary of the Classic Telly Awards; more than 4,200 NIH'ers have seen this film. The newest 1999 radiation safety training video on radioactive waste procedures in the laboratory won a Silver Telly in the 20th annual Telly Awards competition. Jackson and Holcomb have produced seven training videos in the past 9 years and have won nine awards for their collaborations.

**Women on HRT Sought**

The Behavioral Endocrinology Branch, NIMH, is looking for women who have experienced depressed mood, anxiety or irritability during hormone replacement therapy (HRT). Free hormonal evaluation and payment are offered for those who complete the study. To be eligible you should be a medically healthy woman between ages 45-65, be medication-free (except HRT), and have experienced mood symptoms during the progestin part of your HRT. For more information call Linda Simpson-St. Clair, 496-9576.

## 17th Annual Camp Fantastic BBQ Collects \$3,000 for Kids' Event



The 17th annual Camp Fantastic barbecue and raffle, held June 15 by the Recreation & Welfare Association, raised about \$3,000 for Special Love Inc., which hosts the camp each year. As picnickers wait in the food line, they were entertained by the band Street Life, and by fellow attendees who performed an impromptu country line dance.

PHOTOS: CARLA  
GARNETT



The Baltimore Orioles mascot mugs for the camera with event organizers Karen Ciaschi and Randy Schools, R&W president.



More than 50 volunteer workers helped make the annual barbecue successful. Above (from l) Bob Bingamon, Charles Butler and Agnes Richardson, sell raffle tickets. Prizes included two round-trip domestic airline fares, a mini vacation in the Poconos, French cooking classes, gift certificates for merchandise at area retailers and tickets to various local amusement parks and sports events.



Bowie Baysox Mascot "Louie" lifts a cool drink.



Fare from Down Under: The Outback Steakhouse joined forces with R&W for the first time at this year's picnic. As a result, the "barbie chook and bacon sandwich" may become an event tradition.

### Six Win Meritorious Rank Award

Six NIH senior executives have won the 1998 Presidential Rank Award of Meritorious Executive for sustained accomplishment and leadership that gets results. Each receives a lump-sum payment of \$10,000. The awards are limited to 5 percent of the 6,800-member Senior Executive Service; this year, only 252 executives earned this honor.

The winners are Dr. John Daly, NIDDK; Dr. Elke Jordan, NHGRI; Dr. Barnett Kramer, NCI; Earl Laurence, NIDDK; Dr. John McGowan, NIAID, and Dr. John Ruffin, OD.

### Obsessive, Compulsive Adults Sought

The adult obsessive compulsive disorder research unit at NIMH is looking for adults ages 18-65 who are currently experiencing obsessions (distressing/intrusive thoughts) or compulsions (repetitive/ritualistic acts) for a medication augmentation study. Call John Gause at 496-3421. ■