



Discover LLNL

The Community Newsletter of Lawrence Livermore National Laboratory ♦ ♦ ♦ Winter 2005

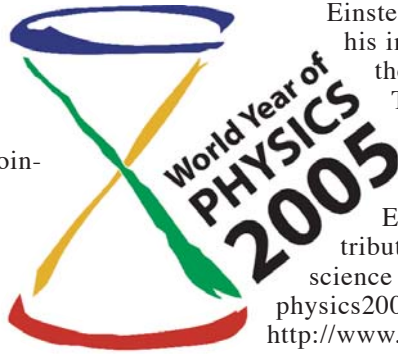
Celebrating World Year of Physics

To help raise worldwide awareness of physics and the physical sciences and their importance in everyday life, the international physics community has declared 2005 as the World Year of Physics.

This celebration coincides with the 100th anniversary of Albert Einstein's "miraculous year" in which he published three important scientific papers that have provided the basis for three fundamental fields in physics: the theory of relativity, quantum theory and the theory of Brownian motion.

The United States' theme for the World Year of Physics is "Einstein in the 21st Century." The American Physical Society, the American Association of Physics Teachers, the

American Institute of Physics and other physics organizations will be leading efforts throughout the coming year to help celebrate Albert Einstein, his ideas, and his influence on life in the 21st Century.



To learn more about the World Year of Physics and the impact of

Einstein's many contributions to the field of science go to <http://www.physics2005.org/> and <http://www.sc.doe.gov/>.

LLNL will be recognizing the World Year of Physics with a variety of community-oriented events such as science lectures, local school visits, and special Discovery Center displays. Information on these and other activities will be made available on the Laboratory's website (www.llnl.gov) and in the local community. ♦

Wayne Shotts appointed deputy director for Laboratory operations

Wayne Shotts, a longtime Laboratory physicist and senior manager, has been selected by Laboratory Director Michael Anastasio as the new Deputy Director for Operations.



Wayne Shotts

In making the appointment, Director Anastasio noted that Shotts brings more than 30 years of outstanding work in Laboratory programs — both at Livermore and at the Nevada Test Site — to this operations position. "He is an exceptional scientist and leader for

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Lab's Cherry Murray receives prestigious physics prize

Newly appointed Deputy Director for Science and Technology Cherry Murray has been awarded the American Physical Society's (APS) prestigious George Pake Prize for 2005.

Founded in 1899, APS is an international group of more than 41,000 physicists dedicated to the promotion of physics throughout the world.

The George Pake Prize is one of APS' most distinguished awards honoring outstanding work by physicists combining original research accomplishments with leadership in the management of research or development in industry.

Murray is a physicist and former senior vice presi-



Cherry Murray

dent of Bell Labs, Lucent Technologies. She received the award for her contributions to fundamental studies in surface and scattering physics, and for her previous leadership at Lucent Technologies.

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Laboratory gives back to the community

LLNL brought bundles of holiday cheer to hundreds of needy families in the Tri-Valley, Central Valley and surrounding region again this year through volunteer giving programs sponsored or supported by Laboratory employees.

A few examples of this generosity include the Brighter Holidays program, the Holiday Card Fund, Toys for Tots, and the B-Division toy drive.

Since 1989, the Brighter Holidays program has 'sponsored' needy area families. This year it touched the lives of 147 families throughout the greater Bay Area providing them with gifts of clothes, toys and basic necessities. Many donated bicycles, refurbished by the Laboratory's 'Cycletrons' bicycle club, were also given to adults and children through Brighter Holidays.

The Engineering Division assisted low-income and homebound seniors through its annual Holiday Card Fund. Employees donated the money they would have otherwise spent on greeting cards to the fund, which was then forwarded to the Senior Services Center of Livermore for the purchase of food certificates and baskets for needy seniors.

The Laboratory Fire Department



once again collected toys at its fire stations to assist the U.S. Marines Toys for Tots Christmas toy drive.

And, now in its 13th year, the B-Division toy drive raised approximately \$10,000 toward the purchase of some 1,000 toys for needy children in the Tri-Valley and surrounding area. ♦

Carolyn Staehle of the Tri-Valley Haven receives donated items through the Lab's toy drive.

HOME record contributions

With the help of more than 3,700 Laboratory employees, retirees and contractors, LLNL achieved its goal of raising \$1.6 million in contributions for the 2004 Helping Others More Effectively (HOME) Campaign.

With a theme of 'Bring HOME the gold', in honor of last summer's Olympic Games, the 2004 campaign exceeded last year's total of more than \$1.5 million.

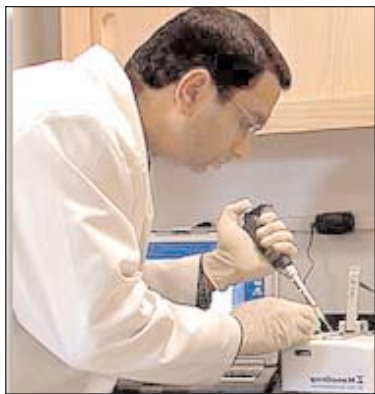
For the past 30 years, HOME has provided Laboratory employees with an opportunity to support community non-

profit agencies and charities through one-time monetary gifts or monthly payroll deductions.

This is the seventh consecutive year that employees have committed more than \$1 million to local worthy causes through HOME.

"Attaining our goal was made possible by Laboratory employees once again demonstrating their generosity and community spirit through donations and by volunteering time to a wide variety of non-profit endeavors," said LLNL employee and HOME Campaign Chair Al Moser. ♦

Microarray Center offers Lab-wide tools



Researcher Hitesh Kapur prepares a biological sample for quality assessment in the LMAC's NanoDrop spectrophotometer.

The recent opening of LLNL's Microarray Center (LMAC) will allow scientists across the Laboratory to take advantage of a powerful new tool to analyze DNA, proteins, and peptides for their research.

Microarrays, also known as biochips or gene chips, are small glass, nylon or silicon slides on which tiny amounts of DNA are spotted or "printed" by robots in a regular pattern. Each spot features short, immobilized DNA segments called oligonucleotides of a given sequence. There are up to 30,000 unique spots per slide, representing hundreds to thousands of different gene sequences.

Using microarrays, researchers can quickly and efficiently determine which genes in a cell are active, or "expressed," under differing conditions, as well as their level of expression and how they interact with each other.

LMAC's equipment and expertise in statistical analysis will help Laboratory scientists analyze and compare the activity of thousands of genes at a time — substantially furthering their research in such areas as how cells respond to radiation exposure, the causes of cancer and other diseases, and the genetic makeup of the bacteria that cause plague and anthrax. ♦

Science on Saturday kicks off in February

LNL's Science and Technology Education Program and the Livermore Chapter of Sigma Xi will kick-off the sixth season of Science on Saturday community lectures in

February with a physics-oriented talk entitled "Juggling the Power of Light: How Lasers Work."

Science on Saturday is a series of five lectures and demonstrations on topics selected from the forefront of science and technology research. A Laboratory scientist or researcher partners with a local teacher to present the material, which is targeted to middle and high school students and aligned with the California Science Standards. The lectures are free and open to the general public.

Each program is followed by



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| Feb. 5 | Juggling the Power of Light: <i>How Lasers Work</i> |
| Feb. 12 | Inside Forensics: <i>Behind CSI</i> |
| Feb. 19 | Decode This: <i>Decoding Genomes</i> |
| Feb. 26 | Plasma Spectroscopy: <i>What Happens at 100,000,000 Degrees</i> |
| March 5 | From the Big Bang to California: <i>Observations of the Universe</i> |

'Science Chat,' a more personalized interaction with that day's LLNL presenter. **'Science Chat' attendance is limited to a total of 50 students and teachers, and interested individuals must register online ahead of time at <http://education.llnl.gov/>.** Students must be accompanied by a teacher or faculty member to attend.

Other subjects that will be covered during the series are the use of forensic science by crime scene investigators, the technology of 'sequencing' genomes, and stars and other astronomical wonders of

the universe.

Science on Saturday will be held at the Amador Theater, located at 1155 Santa Rita Road in Pleasanton near Amador Valley High School. Each program will begin at 9:30 a.m. and conclude by 11:15 a.m.

The Laboratory is a major contributor to a number of other upcoming education related activities including Expanding Your Horizons Conferences for girls held in the Tri-Valley and

Oakland, the Tri-Valley Science and Engineering Fair, and National Engineers Day. Each of these programs will take place in February and March.

A Science on Saturday lecture series is also being planned for San Joaquin County in late Spring.

Additional information on LLNL sponsored or supported educational outreach programs can be found at <http://education.llnl.gov/> and <http://www.llnl.gov/community/events.jsp>. ♦

Science education opens doors to exciting biotech careers

Students in Berkeley and Oakland, from populations typically underrepresented in the sciences, are utilizing an award-winning hands-on, science-based education and job training program that opens doors to employment opportunities in the biotechnology industry.

Founded in 1993 in a collaboration between Bayer HealthCare and the City of Berkeley, Berkeley Biotechnology Education, Inc. (BBEI) identifies Berkeley High School and Oakland Life Academy (formerly Fremont High School) sophomores for enrollment in a three-year program that integrates courses in biotechnology and chemistry with on-the-job part-time or full-time summer employment at Bayer HealthCare and other area companies.

After high school graduation,

students continuing in the program enter the Biotech Career Institute at Laney College where they can obtain a Certificate in Biotechnology.

While enrolled at the Biotech Career Institute, students work in part-time co-op or intern positions in locations such as the Joint Genome Institute (JGI) in Walnut Creek, of which LLNL is a partner. JGI currently hosts five students in co-op positions



BBEI graduate, now JGI/LBNL employee Sanna Anwar (left) trains new technician Ranjana Ambannavar on the nuances of the JGI production sequencing line.

and has hired two BBEI graduates.

To learn more about BBEI visit <http://www.bbei.org/>. ♦

SHOTTS

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which he has earned many accolades during his career here. His recent efforts as head of our Homeland Security Organization allowed the Lab to make significant contributions to the nation's war on terrorism," said Anastasio.

Shotts joined the Laboratory in 1974 and has held a number of leadership positions. In 1995, he was appointed Associate Director for the Non-Proliferation, Arms Control & International Security directorate. He also led the Laboratory's Homeland Security Organization upon its inception more than two years ago. He had been serv-

ing as Deputy Director for Operations in an acting capacity following the retirement of Glenn Mara last October.

"It's an honor to be selected," said Shotts. "There is increasing emphasis on operational functions at our Lab, and I believe my experience on the program side of the Laboratory will be beneficial in this position." ♦

MURRAY

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At LLNL, Murray leads and provides management oversight of all Laboratory science and technology activities, including strategic planning; standards for scientific research performance and program quality; and the recruitment, development and retention of LLNL's scientific, engineering and technical workforce. ♦

Discover LLNL is a publication of the Public Affairs Office at Lawrence Livermore National Laboratory.

If you would like to be included in the distribution of Discover LLNL, please contact Scott Wilson, wilson101@llnl.gov, or call (925) 423-3125.

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