



Lawrence Livermore will lead design development on Reliable Replacement Warhead

In early March, the National Nuclear Security Administration (NNSA) selected Lawrence Livermore National Laboratory to lead the Reliable Replacement Warhead (RRW) design development program. Sandia National Laboratory California will assist Lawrence Livermore, with support from Los Alamos National Laboratory and Sandia National Laboratory New Mexico.

The RRW program will provide a replacement warhead for a portion of the nation's sea-based nuclear weapons that is safer to manufacture, more cost-effective to produce, and less costly

to maintain than existing warheads. NNSA and the national laboratories have determined that this design can be certified without the need for nuclear testing.

Initially, RRW would serve as a complement to the current nuclear stockpile. Its ultimate purpose, however, is to be a more cost-effective and reliable long-term replacement.

"I am honored that our Laboratory has been selected to take on this critical project to ensure our continued national security," said LLNL Director George Miller.

An important aspect of RRW is its ability to exercise and maintain the critical skills of the country's nuclear weapons design, engineering and production personnel. An integrated team of designers and engineers led by Livermore Lab will work to develop the nuclear explosive component of the weapon. Sandia California will develop the non-nuclear components and ensure compatibility with the U.S. Department of Defense's Trident submarine-launched ballistic missile delivery system. The U.S. Navy will lead the overall project team. ■

American Cancer Society honors Lab's efforts

Lawrence Livermore National Laboratory recently was recognized by the American Cancer Society with the 2007 Corporate Recognition Award for consistent outstanding charitable contributions and leading efforts in cancer awareness and research. The award was given to LLNL



John Lazar (center right) and Dr. Carolyn Bruzdunski (right) of the American Cancer Society present the Corporate Recognition Award to Larry Federber (left) and Mark

at a ceremony for Lab employees in March.

"The award is given to outstanding corporations and organizations who demonstrate a commitment to furthering the mission of the American Cancer Society," explained Kristen Ogdon, American Cancer Society corporate relations man-

ager for the Greater Bay Area.

Ogdon cited three specific reasons for the award: the Laboratory's exemplary work in educating employees about cancer and chronic disease prevention and care; being the largest contributor to the Daffodil Days campaign, not only in the Bay Area but also in Northern California (raising nearly \$32,000 last year and a total of more than \$133,000 over the past five years); and supporting both the Livermore and Tracy Relay for Life events for several years, raising thousands of dollars, as well as helping to increase community awareness in the fight against cancer. ■

Lab by the numbers

2,796 EMPLOYEES

Reside in Livermore, with an annual payroll of nearly \$280 million. 4,183 employees live in Alameda County, with an annual payroll of just under \$422 million.

3,500 STUDENTS

Livermore students who took part in Super Science Field Trips and Fun with Science visits to schools.

\$16 MILLION

Vendor procurements made to Livermore, with \$60 million made to Alameda County businesses.

LARGEST DONOR OF BLOOD

To American Red Cross in Northern California. Also No. 1 money raiser in area for American Cancer Society's Daffodil Days Campaign.

LLNL hosts ETEC Teacher Academy

Teachers interested in an advanced degree who participate in the Edward Teller Education Center (ETEC) Teacher Research Academy can gain graduate course credit through California State University East Bay (CSUEB).

ETEC is a University of California Davis School of Education and Livermore Lab collaborative that provides K-14 teacher professional development around science and technology.

The Teacher Research Academy, now in its fifth year, is a four-tiered professional development program. Middle and high school teachers learn about Lawrence Livermore's cutting-edge scientific research while using advanced scientific instrumentation with classroom activities.

ETEC has partnered with CSUEB to provide individuals participating in programs in biotechnology, biophotonics, fusion and astrophysics, or energy and environmental technologies, with graduate course credit that will count toward a master of science in education degree. ■

For more information, contact Richard Farnsworth with LLNL's Science and Technology Education Program at 925-422-5059, or go to the Web at <http://etec.ucdavis.edu/>.

New director for Teller Education Center

The University of California's Edward Teller Education Center (ETEC), located at Lawrence Livermore National Laboratory, has a new director, Carey Kopay.

Kopay came to ETEC from the University of California, Davis Biotechnology Program, where she led K-14 educational outreach and facilitated partnerships between industry and high school science programs.

Kopay has a California State Teaching Credential in biology and general science and has taught at both the high school and community college levels. She also received a master's degree in biology from the University of California, Santa Barbara. ■



New ETEC director Carey Kopay helps a young scientist create DNA jewelry.

Tri-Valley Science and Engineering Fair

In March, 298 students in grades seven through 12 from Danville, Dublin, Livermore, Pleasanton and San Ramon competed for cash and other prizes at the 11th annual Tri-Valley Science and Engineering Fair, hosted by LLNL and held at the Robert Livermore Community Center.

More than 120 local scientists and engineers, most representing the Lab, deliberated over this year's 230 project entries. A total of 216 special and project awards were presented.

Sweepstakes winners in the Senior Division category were: Richard Li, an 11th grade student from Monte Vista High School in Danville, for "A Novel Approach to Rapid Diagnosis of Cancer," and Yuyang John Mei, an 11th grade student from Monte Vista for "A Novel Pathway for PTEN Chemo Sensitization."

Winning in the Junior Division were Nitya Furtado, an eighth grade student from Pine Valley Middle School in San Ramon, for "Magnetic Magic!" and Alison Burklund, an eighth grade student from Valley Montessori School in Livermore, for "Hazardous Waste. What Soil Fits its Taste?"

Senior Division Winners will go on to compete in the Intel International Science and Engineering Fair, May 13-19, in Albuquerque, N.M. Junior Division winners are eligible to compete in the California Science Fair. ■

For more information about the Tri-Valley Science and Engineering Fair, go to the Web at <http://tvsef.llnl.gov>.

Alison Burklund, an eighth grade student from Valley Montessori School, discusses her project with Tiziana Bond, an LLNL engineer.



LLNL researchers develop new explosives detector



Lab researchers are shown operating the Single-Particle Aerosol Mass Spectrometry (SPAMS) system.

Airplane passengers and baggage might be screened one day by a machine under development at LLNL that can detect explosive, chemical and biological agents at the same time.

A team of LLNL researchers has conceptually proven that a three-in-one machine, or “universal point detection system,” can be achieved. Using a system they call Single-Particle Aerosol Mass Spectrometry, or SPAMS, the Livermore scientists have developed and tested the technology for detecting chemical and biological agents.

New research expands SPAMS’ capabilities to include several types of explosives that have been used worldwide in improvised explosive devices and other terrorist attacks.

“SPAMS is a sensitive, specific, potential option for airport and baggage screening,” George Farquar, LLNL researcher said. “The ability of the SPAMS technology to determine the identity of a single particle could be a valuable asset when the target analyte is dangerous in small quantities or has no legal reason for being present in an environment.”

The team’s latest advance, using its mass spectrometry system to detect the presence of minuscule particles of explosives, is described in the March 1 edition of *Analytical Chemistry*, a semi-monthly journal published by the American Chemical Society.

Local fifth graders enjoy Engineers Day

More than 500 fifth-graders, teachers and chaperones from 10 schools in Livermore, Brentwood, Oakland, Danville, Pleasanton, San Leandro and San Ramon descended on Livermore’s Robert Livermore Community Center in February to celebrate Lawrence Livermore National Laboratory’s annual Engineers Day. Engineers Day recognizes the careers and work of engineers and inspires students to consider careers in Engineering.

Hands-on activities included creating DNA jewelry, learning about waves on a wave tank and playing a trash can guitar to understand waves and music. Other favorite exhibits included “Fun with Science,” where students could concoct colorful slime, and the ever-popular energy bike.

Students also received awards for competing in several engineering contests like the Egg Dummy Vehicle Crash Test and The Second Annual LLNL Engineers Day Regatta.

“It’s awesome,” said Connie Ormond, a first-time teacher to the event. “This is the Exploratorium right here in Livermore.”



Rick Sawicki of LLNL demonstrates to a budding protege the sound of music on a trash can guitar.

For more information about Engineers Day go to the Web at http://www-eng.llnl.gov/Engineers_Day/.

TAKE A TOUR



SITE 300 • LAWRENCE LIVERMORE NATIONAL LABORATORY

Site 300 tour highlights include:

- » Environmental remediation facilities and wetlands,
- » View of the Contained Firing Facility,
- » Observation points for wildlife and surrounding properties.

Tours are held at 10 a.m. the first and third Fridays of each month, are free and open to visitors 18 and older.

Advance registration required. To sign up, visit the Public Affairs Website: <http://www.llnl.gov/pao/com/tours.html> or call (925) 422-4599.

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