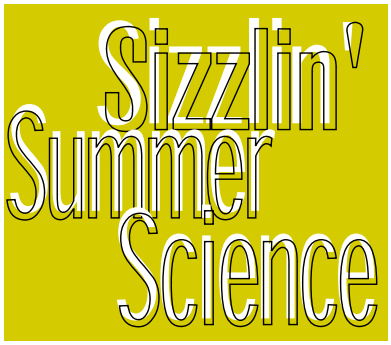
Discover LLNL

The Community Newsletter of Lawrence Livermore National Laboratory ◆ ◆ ◆ Summer 2003

Summer Science Lectures



Looking for something fun, free, and educational to do with your family this summer? How about some sizzling summer science to fill up a few sweltering July evenings?

Lawrence Livermore National Laboratory (LLNL) is offering a series of four free science lectures held at Livermore High School on Wednesday evenings in July.

Entitled "Sizzlin' Summer Science," the series promises to be a total family experience — geared for middle and high school students. The featured topics cover cutting-edge LLNL technology, exciting interactive demonstrations, and basic science concepts everyone can understand.

"These science presentations give families an activity they can do together during the summertime," said Christine Mixan, lecture series coordinator. "It's a great opportunity for students to stay involved with science education when school is out, and it's free entertainment for the whole family at the same time."

A key feature of this summer lecture series is the question-and-answer period following each presentation. This gives audience members the unique opportunity to interact with the scientists. "We want to get the community excited about science and the research we are conducting at the Laboratory," said Mixan.

All lectures are held at the Livermore High School Performing Arts Theater, 600 Maple Street, starting at 7 p.m. and ending at approximately 8:30 p.m. There is no pre-registration required. For more information, please call (925) 422-3138 or visit http://www.llnl.gov/ llnl/06news/ Community/lecture.html. ◆

Hot topics for Sizzlin' Summer Science Series

July 9 – "The Human Genome Project: What do your genes really do?" by Dr. Joanna Albala, Senior Biomedical Scientist in the Biology and Biotechnology Program, LLNL. Dr. Albala will conduct experiments using audience participation to demonstrate how a scientist uses genes to make proteins and how proteins are studied to understand cell function.

July 16 – "From CSI to Homeland Security: The many sides of forensic science." by Dr. Glenn Fox, Director of the Forensic Science Center, LLNL. Get a first-hand look at devices used in forensics as Dr. Fox showcases several exciting technologies.

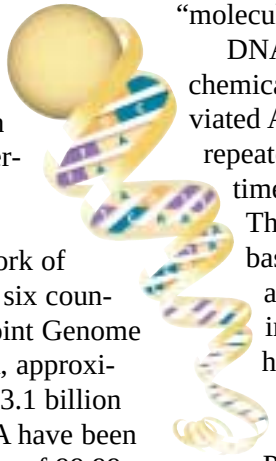
July 23 – "Protecting California's Wildlife: Endangered species in your own backyard." by Michael G. van Hattem, Wildlife Biologist, LLNL. After the lecture, don't miss your chance to get up close and personal with several intriguing animals available for viewing.

All lectures will be held in the Livermore High School Performing Arts Theater, 600 Maple Street

July 30 – "What's for Dinner? Avoid toxins lurking in your food." by Dr. Kristen Kulp, Cancer Researcher in the Biology and Biotechnology Research Program, LLNL. Join Dr. Kulp as she performs on-the-spot demonstrations to illustrate methods used to detect these toxins. Learn quick and easy cooking techniques you can use to reduce your exposure to harmful compounds.

Human Genome Project

On April 14, the U.S. Department of Energy (DOE) and the National Institutes of Health announced the completion of the Human Genome Project, an international effort begun in 1990 dedicated to determining the complete sequence of the human genome. Through the work of 20 sequencing centers in six countries, including DOE's Joint Genome Institute in Walnut Creek, approximately 98 percent of the 3.1 billion base pairs in human DNA have been determined to an accuracy of 99.99 percent.



The announcement coincided with the 50th anniversary of the landmark paper published by James Watson and Francis Crick that described the now famous double-helix structure of the DNA — the "molecule of life."

DNA is made up of four similar chemicals (called bases and abbreviated A,T, C, and G) that are repeated millions or billions of times throughout a genome. The particular order of these bases along the DNA underlies all of life's diversity, including whether an organism is human or some other species.

With the completion of the Human Genome Project, the JGI is now gearing up to sequence and study a wide variety of additional organisms whose genomes may shed light on the nature and functioning of the human genome, as well as many nat-

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The Joint Genome Institute (JGI) was founded by the Department of Energy in 1997 to consolidate the Human Genome sequencing efforts of LLNL, Los Alamos and Lawrence Berkeley national laboratories. The JGI played a key role in the Human Genome Project by sequencing chromosomes 5, 16 and 19, which make up about 11 percent of the genome.

Radiation Detection Center

Congresswoman Ellen Tauscher recently joined Laboratory Director Michael Anastasio and several Associate Directors at the official opening of LLNL's Radiation Detection Center (RDC).

The RDC serves as the focal point for the Laboratory's radiation detection research, which currently involves eight Laboratory Directorates and LLNL's Homeland Security Organization. The RDC is headed by Director Simon Labov.

The primary technical focus of the RDC is the detection, identification and analysis of nuclear materials and nuclear weapons.

Associated with the RDC are more than a dozen advanced R&D projects for detecting clandestine nuclear materials or devices. The instrumentation required for this mission can be used in many areas (e.g., nuclear physics, nuclear chemistry, particle physics, atomic physics, plasma physics, astrophysics, medical technology, and nondestructive evaluation) essential to other Laboratory programs.

The center also functions as an institutional resource for the Laboratory and government agencies, such as the Department of Energy, the Defense Threat Reduction Agency, and the Defense Advanced Research Projects Agency. As the center develops, it will provide special facilities for radiation detection instrument development, demonstrations, and joint experiments. The center also works to attract and train college students and postdocs in the field of radiation research in order to help bolster the number of young scientists with skills in radiation detection. ◆

Rep. Ellen Tauscher looks on while Simon Labov speaks during ceremonies marking the opening of the Radiation Detection Center at Lawrence Livermore National Laboratory.

Science & Engineering Fair

Tri-Valley area students Nicholas Rapp, Tamsen Drew and Vincent Howard recently returned from this year's Intel International Science & Engineering Fair in Cleveland, Ohio with numerous awards and prizes for their project entries.

Nicholas and Tamsen's team project, an autonomous underwater vehicle, earned both of them two Intel Foundation awards — a $5,000 cash award for outstanding science and technology in a project, and personal computers for best computer integration in a project. They also shared a U.S. Coast Guard Research and Development first place award of $5000, a United Technologies Corporation best in science award of 30 shares of common stock worth approximately $2,000, a *Science News* team project fourth place award of $500, and a Bureau of Reclamation/U.S. Department of the Interior honorable mention award for a water-related project.

Vincent's project, a study of central pattern generators on a hexapod robot with a vision recognition system, garnered an Intel Foundation fourth place award of $500 for the engineering category.

More than 1100 projects from 36 countries competed at this year's Intel International Fair. Nicholas, Tamsen (Amador Valley High School, Pleasanton) and Vincent (California High School, San Ramon) earned their trip to Cleveland after their tremendous showings at this year's Tri-Valley Science & Engineering Fair (TVSEF), of which LLNL is a major organizing sponsor. They will be offered summer employment at LLNL as part of their TVSEF award. ◆

Nicholas Rapp, Tamsen Drew and Vincent Howard were winners at this year's Intel International Science & Engineering Fair.

East Avenue Upgrade

Construction continues on the East Avenue upgrade project that will provide security enhancements to the East Avenue corridor between LLNL and Sandia national laboratory.

The project, which will include widening portions of East Avenue, the installation of control point kiosks and pop-up barriers, and a bus transfer area on the Sandia property, is proceeding toward completion in mid-July.

A truck inspection station is also planned for the LLNL side of East Avenue near Greenville Road for trucks making deliveries to both LLNL and Sandia.

Some minor traffic delays can be expected in the weeks leading up to project completion. Access to the corridor will then be limited to official LLNL, Sandia, contractor, NNSA and DOE badge holders, or individuals on an authorized access list.

Questions on the East Avenue upgrade project? Contact the LLNL Public Affairs Office at 925-423-3567. ◆

Genome

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ural processes that could provide insights into such DOE (and LLNL) missions as energy production, environmental cleanup, and finding solutions for global climate change.

Here at LLNL, genomic research will continue to be an important part of our biological research program. It will aid in the further development of advanced DNA-based identification methods, which can be integrated with rapid screening technologies for microorganisms that could be used in biological terrorism.

For more information on genomics and the Human Genome Project go to www.jgi.doe.gov, www.ornl.gov/hgmis, or www.genome.gov. ◆

Discover the Lab

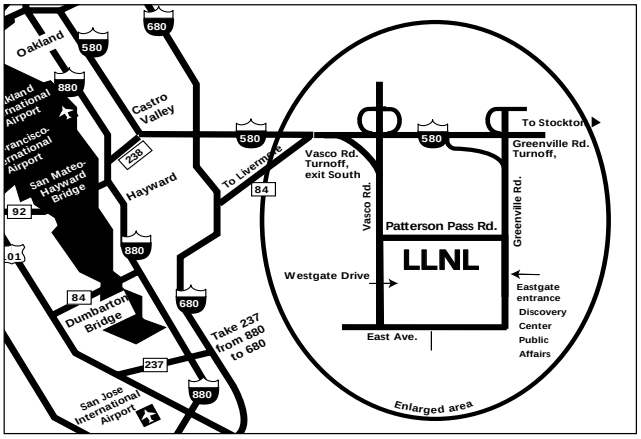
Discover the Laboratory's contributions to national security and national science at the Discovery Center, (formerly, the Visitors Center), located on Greenville Road just outside the Laboratory's East Gate.

Here you'll experience a broad-based display of the scientific technology developed at LLNL, as well as highlights of the Laboratory's research and history in such areas as defense, homeland security, and new energy sources.

The Discovery Center is open from 1-4 p.m., Monday through Friday. Call (925) 422-5815 for more information.

The Laboratory's Public Affairs Office also offers a tour of LLNL that may include stops at the Biology & Biotechnology Research Program, the National Atmospheric Release Advisory Center, and ASCI White, the nation's fastest and most powerful super computer. Tour participants may also visit the National Ignition Facility, the world's largest and most energetic laser system, and the Center for Accelerator Mass Spectrometry, renowned for its carbon dating capabilities.

This free, two-hour tour is offered on Tuesdays and Thursdays at 9 a.m. U.S. citizens must register two weeks in advance. Non-U.S. citizens must register sixty days in advance. Special group tours can also be arranged. Tour participants must be at least 18 years of age. For more information about tours, go to www.llnl.gov/pao, or call 925-422-4599.



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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"Ensuring national security and applying science and technology to the important problems of our time."

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