LabUPDATE

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News about the Berkeley, Livermore and Los Alamos national laboratories,
which are managed by the University of California for the U.S. Department of Energy

RESEARCH AND PUBLIC SERVICE NEWS

VARIATION DETECTED IN "STANDARD CANDLE": Berkeley Lab scientists led a team that, for the first time, measured tiny variations in the brightness of a kind of astronomical "standard candle" — a Type 1A supernova — used to determine the distance to far-off galaxies and the rate at which space is expanding. With this data astrophysicists calculate the composition of the universe, including matter of all kinds and mysterious dark energy. Although the brightness variation of the supernova was small, detecting it helps resolve uncertainty in cosmological measurements, according to Lifan Wang, head of the Berkeley Lab group. The information will also help clarify the mechanism of the "standard candle" itself — how Type 1A supernovae explode.

PROTEIN STUDY METHOD IMPROVED: Development of an experimental method for examining how proteins fold, one molecule at a time, was announced by an international team including a Lawrence Livermore Lab physicist. Protein folding is a normal function that, gone wrong, can lead to cancer, Alzheimer's and other diseases. The new method of study stems from the development of an instrument, a "microfluidic mixer," that makes it possible to observe the protein at intervals as folding occurs," explained physicist Olgica Bakajin, a Lawrence postdoctoral fellow. "This is a fundamental science project. We would like to understand the sequence of events through which a protein goes from a random coil to its functional 'folded' form…so we can come up with some general rules" about the process.

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Message from the president

This is my last message for "Lab Update" before I step down as University of California president on October 1. I want to take this opportunity to congratulate the UC-managed laboratories on their tremendous accomplishments and express my hope for a continued effective relationship between the labs and the University.

In the eight years of my presidency, and for decades before that, the Los Alamos, Lawrence Livermore, and Lawrence Berkeley national laboratories have made an unparalleled contribution to our nation's scientific progress and national security. The passage of time has seen change in many respects, but there has been this consistent theme with regard to the three laboratories: the importance to the nation of their work, and the University's pride in its association with these vital institutions. The recent death of Edward Teller reminds us once more of the historic contributions the national laboratories have made to our nation and world.

We do not know whether or in what form the University's laboratory management role will continue in the environment of contract competition. I hope the relationship can continue, but we must know more about the terms of the competition before we can make a decision about our participation. Others, not I, will be making that decision. But as I leave the presidency, I will carry with me the great satisfaction of knowing that the UC-managed national laboratories have been outstanding in their technical quality and critical in their importance to the nation. The credit belongs to the employees and friends of the laboratories, but I am proud to have played a supporting role.

May your future efforts be as successful as those of your distinguished history.

Richard C. Atkinson
President, University of California

MANAGEMENT NEWS

DYNES COMMENTS ON LABS

UC President-designate Robert Dynes was interviewed by the San Diego Union-Tribune for an article that appeared on Aug. 31. Following is an excerpt concerning the national laboratories.

Union-Tribune: The relationship between UC and the National Weapons Labs at Los Alamos is now threatened. How do you intend to deal with that?

Dynes: I'm intimately familiar with these laboratories. I've worked inside these laboratories for a quarter of a century. All these issues that now are becoming prominent have been there for a long time. Also, the science is superb. The university

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Research and public service news *(continued from front)*

BIGGEST COSMIC EXPLOSIONS ALSO MAY PROPEL FASTEST OBJECTS IN UNIVERSE: The most powerful explosions in the universe, gamma-ray bursts, may generate ultra-high energy cosmic rays, the most energetic particles in the universe, according to an analysis of NASA satellite observations made by Los Alamos researchers and others. The rare and mysterious ultra-high energy cosmic rays seem to defy physical explanation, for they are far too energetic to be generated by well-known mechanisms like supernova explosions. Researchers, including Maria Magdalena Gonzalez of Los Alamos and the University of Wisconsin, suggest that a pattern in the light from these enigmatic bursts could be explained by protons, driven like shrapnel by the extraordinary power of a gamma-ray burst, moving at nearly light speed.

SHAKE, RATTLE AND FLOW: A Berkeley Lab researcher is studying the effects of earthquakes on stream flow and well levels to better understand both seismology and hydrology. The dynamics of hydrological systems and earthquakes "are connected, and we can exploit their link to learn more about both," according to Michael Manga of the LBNL Earth Sciences Division. He and a co-researcher compiled observations from four decades of research on the impact of tremors on streams and wells. Dramatic water fluctuations have long been considered a curiosity. Their findings, published in Science magazine, argue that they are as useful scientifically as seismographs in explaining the complex dynamics that play out beneath the earth's surface.

SENSOR TECHNOLOGY ASSISTS EMERGENCY RESPONDERS: Researchers from Los Alamos and from the EPA have developed airborne infrared sensor technology to aid emergency crews by detecting and mapping hazardous and toxic chemical plumes unleashed by disaster or terrorist acts. The Airborne Spectral Photometric Collection Technology, known as ASPECT, is a high-tech sensor package on board a small aircraft operated by the EPA that allows timely surveillance of gaseous chemical releases from a safe distance.

LIVERMORE LAB JOINS NEUTRINO STUDY: LLNL researchers are helping study neutrinos deep in a Minnesota iron mine. Generated by nuclear reactions and by radioactive decay, neutrinos pass easily through matter. Neutrinos being studied now come from space but in future will be generated by FermiLab near Chicago.

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U.S. Department of Energy: www.energy.gov
National Nuclear Security Administration: www.nnsa.doe.gov
Lawrence Berkeley National Laboratory: www.lbl.gov
Lawrence Livermore National Laboratory: www.llnl.gov
Los Alamos National Laboratory: www.lanl.gov

Please direct questions about this newsletter to Chris Harrington, University of California Office of the President, (202) 974-6314, chris.harrington@ucdc.edu

MANAGEMENT NEWS *(continued from front)*

has been the contractor for Los Alamos and Lawrence Livermore labs for a long time. And I believe that the University should stand tall and be very proud of what it has accomplished. Still, the business practices at Los Alamos are a particularly glaring mistake that we weren't paying attention. We are now, I assure you. We've made a lot of people very uneasy and we've made some unemployed. But the science programs and the science-based weapons programs are the best in the world.

Looking forward, we are proceeding assuming that we will enter the competition to retain those contracts. I will reserve judgment on whether we do that or not until such time as I see the conditions that the Department of Energy puts forth for the contract. Running the labs is not our prime mission. If the conditions are such that they are not consistent with the mission of the university, we won't compete.

EDWARD TELLER: 1908-2003

The death of Edward Teller on Sept. 9 brought to a close an extraordinary chapter in UC history. Teller was a key figure in the Manhattan Project at Los Alamos during World War II, co-founded Lawrence Livermore National Laboratory in 1952, served as its director 1958-60, and has been a major figure in national defense and science policy. In a comment, President Richard Atkinson called Teller "one of the world's leading scientific minds" and referred to his "major contribution to the security of our nation and world peace."

LOS ALAMOS RELEASES PAY EQUITY STUDY

Los Alamos National Laboratory completed and released a study of pay equity and hiring practices. Named for author Finis Welch, professor emeritus at Texas A&M University, the study was released to fulfill "an important promise to the people of Northern New Mexico and the employees of this Laboratory," said LANL director Pete Nanos. Nanos directed follow-up management activities "guided by the highest principles of honesty, equity, fairness and openness. My commitment to this issue is unwavering." The report can be found online at: http://www.lanl.gov/worldview/news/welch.shtml

LOS ALAMOS DEBUTS DIVERSITY CALENDAR

LANL's Diversity Office has developed an online tool to help promote workplace diversity awareness. Weaving Our Worlds Diversity Calendar carries more than 800 events and traditions to help schedule meetings and activities consistent with cultural and religious observances. Entries range from holidays and food customs to the birthdays of scientists, political leaders and artists. The calendar is available at: http://lanldb1.lanl.gov/lanl/lanlevents.nsf/networkredirectForWOWCalendar?OpenAgent