

LAWRENCE LIVERMORE REPORT

A weekly collection of scientific and technological achievements from Lawrence Livermore National Laboratory: April 6-14, 2009.

CBS Evening News features Lab heart research



Lab researcher Bruce Buchholz, who works in the Center for Accelerator Mass Spectrometry, was recently interviewed about a story on heart cell regeneration that aired on the CBS Evening News with Katie Couric.

Buccholz was part of a team of scientists who studied the ages of heart cells by looking at the amount of carbon 14 in the atmosphere from above-ground nuclear tests conducted in the 1950s and 1960s.

Myocardial damage often results in chronic heart failure because of the loss and insufficient regeneration of heart cells. But this new finding may mean that patients, who have suffered myocardial damage as a result of a heart attack, may have some good news.

If the heart can make new cells, doctors may be able to simulate this process to help in the recovery of heart attack victims.

To watch the video, go here:

https://newsline.llnl.gov/_rev02/articles/2009/apr/cbs_heart_cells03apr2009.mov

Earful of NIF on Osgood Files



Radio personality Charles Osgood recently aired a story on the National Ignition Facility.

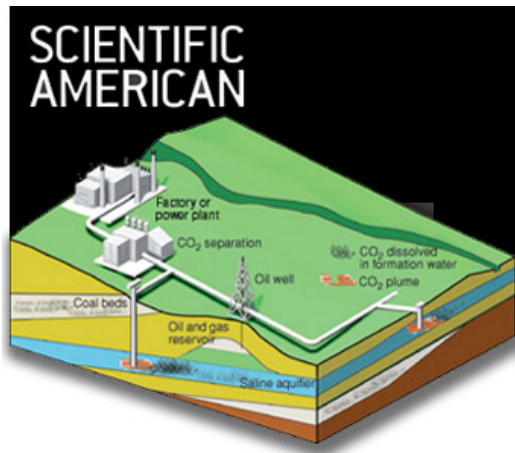
Osgood describes how the goal of NIF is to mimic the heat and pressure found in the center of the sun. By doing this, the Lab will be able to help ensure the reliability of the country's nuclear weapons without actually testing them.

NIF is expected to achieve fusion ignition some time next year. The plan is to shoot 192 laser beams onto a tiny target and produce enough heat and pressure to fuse to fuse hydrogen atoms as it would in the center of the sun.

To hear the story, go here:

https://newsline.llnl.gov/_rev02/articles/2009/apr/osgood_nif_31mar2009.mov

Making carbon capture safe



Carbon dioxide can be captured at its source and be injected into an underground formation

In a series on carbon capture and storage, *Scientific American* dives into the challenge that power companies face when they try to store carbon dioxide that is produced from creating electricity or natural gas.

The series features the Lab's Julio Friedmann, leader of the carbon management program, who talks about the unlikelihood of carbon escaping once it's stored deep underground.

In fact, air concentrations of carbon dioxide have to build up to more than 10 percent to be hazardous, which is difficult to achieve, according to modeling from the Laboratory. To read the article, go to <http://www.sciam.com/article.cfm?id=enhanced-oil-recovery>

Research leads to insight of earliest phase of animal domestication



A recent project using the Lab's Center for Accelerator Mass Spectrometry has added new insight to detecting the symbiotic human-plant-animal linkages that develop during the very earliest phases of domestication.

Lab scientist Tom Guilderson was part of a team using stable isotope and radiocarbon dating of ancient human and animal bone to document two distinct phases of plant and animal domestication in northwest China. The first phase showed that at various times between 7900 and 7200 calendar years before present people harvested and stored

enough broomcorn millet to provision themselves and their hunting dogs throughout the year; the second, much more intensive phase, was in place by 5900 during which two different food sources were cultivated and made significant contributions to the diets of people dogs and pigs.

The stable isotope methodology used is probably the best means of detecting the symbiotic human-plant-animal linkages that develop during the very earliest phases of domestication and is thus applicable to the areas where these connections first emerged and are critical to explaining how and why agriculture began in East Asia.

Complete details can be found in the *Proceedings of the National Academy of Sciences* at <http://www.pnas.org/content/early/2009/03/20/0809960106.full.pdf+html>.

LLNL geophysicist shakes it up in *Scientific American*



Lab geophysicist Shawn Larsen was recently featured in a *Scientific American* article that discusses whether earthquakes can truly be predicted.

In light of the recent earthquake in central Italy, the article reports on a claim from an Italian researcher in which he predicted the temblor just days ahead of it hitting the city of L'Aquila by examining radon emissions.

However, LLNL's Larsen said that earthquakes cannot be predicted. "Radon has been claimed to be a precursor of earthquakes for some time, since the late 70s. However, there has been no concrete evidence that it is indeed a predictor of earthquakes."

To read the full article, go to <http://www.sciam.com/article.cfm?id=radon-earthquake-prediction>

Police officers and firefighters represented Lab at Oakland memorial service



In solidarity with the law enforcement community, 11 members of the Protective Force Division and two Alameda County fire fighters stationed at LLNL represented the Laboratory at the memorial service March 27 for the four Oakland police officers killed in the line of duty.

Two sergeants and nine officers from the Protective Force Division (PFD) attended the ceremony at the Oakland Coliseum. More than 20,000 people, including representatives of law enforcement agencies across the country, attended an emotional memorial ceremony for the four Oakland police officers slain March 21 while pursuing a wanted parolee in East Oakland. The fallen officers were Sgt. Mark Dunakin, SWAT Sgt. Ervin Romans, Sgt. Daniel Sakai and Traffic Officer John Hege.

"We were deeply affected by the loss of four dedicated fellow officers. At such times it's important for us to show solidarity with the law enforcement community of which we are proud members," said Chuck Johnson, head of the PFD. "It is also appropriate for us, as a national security laboratory, to demonstrate our commitment to the rule of law and the security of the communities in which we live and work."

Latest *Newsline* available



Newsline provides the latest Lab research and operations news. See the most recent issue at <https://newsline.llnl.gov/rev02/index.php>

Photo of the week



Far out: Lab postdoctoral student Andrew Cunningham looks at a computer simulation of plasmas in stars.

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LLNL applies and advances science and technology to help ensure national security and global stability. Through multi-disciplinary research and development, with particular expertise in high-energy-density physics, laser science, high-performance computing and science/engineering at the nanometer/subpicosecond scale, LLNL innovations improve security, meet energy and environmental needs and strengthen U.S. economic competitiveness. The Laboratory also partners with other research institutions, universities and industry to bring the full weight of the nation's science and technology community to bear on solving problems of national importance.

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