LAWRENCE LIVERMORE REPORT

A weekly collection of scientific and technological achievements from Lawrence Livermore National Laboratory: June 8-15, 2009.

NPR's 'Science Friday' tackles NIF

The NIF target positioner.

National Public Radio's Talk of the Nation "Science Friday" recently featured the National Ignition Facility's Program Director Ed Moses and discussed how the Laboratory plans to achieve fusion on earth.

The goal of NIF is to blast, for billionths of a second, a target the size of a pea filled with hydrogen. This would create the extreme pressures and temperatures that are found in stars like our sun where hydrogen atoms fuse together to make helium and give off loads of energy in the nuclear fusion process.

Host Ira Flatow asks Moses why fusion will be achieved now as opposed to all the attempts in the past.

To hear the interview, go to https://publicaffairs.llnl.gov/news/lab_report/movies/NPR_ScienceFriday_EdMoses_0609.mov

To grill or not to grill

As the weather begins to heat up so does the barbecue. But what's better for your health: gas or briquettes?

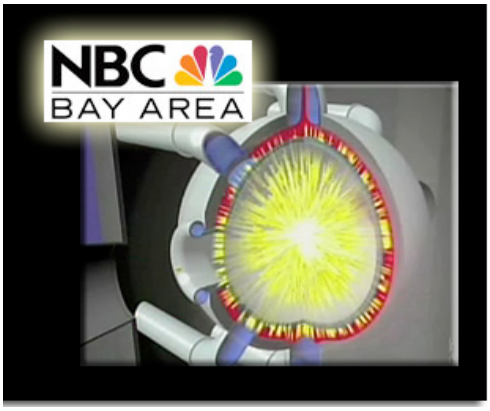
Scientists at the Lawrence Livermore National Laboratory have studied both gas and briquette fires and found them about equal in their potentially dangerous emissions.

The primary risk in barbecuing lies in the grilling of meat, more specifically, the charring of them. When meats are cooked over 350 degrees Fahrenheit, potent carcinogens called heterocyclic aromatic amines, or HAAs, are formed. They are strong mutagens that cause cancer in laboratory animals.

A second carcinogen is formed when fat drips onto the coals, poly aromatic hydrocarbons are produced. They rise back up and affect the food. Scientists are convinced this is an area that needs more study.

To read more, go to
http://www.theunion.com/article/20090610/FEATURES/906099992&parentprofile=search

KNTV goes inside NIF for dedication



KNTV recently featured the dedication of the National Ignition Facility.

Reporter Bob Redell interviews NIF Project Director Ed Moses, who talks about how NIF can revolutionize the way the planet is powered.

"When people think about the cosmos and when they look at the stars. That is fusion," Moses said. That is what's powering the universe. We've never been able to do it on earth in a small controlled manner."

But that is exactly what scientists intend to try to do starting summer 2010.

To see the full story, go to https://publicaffairs.llnl.gov/news/lab_report/movies/KNTVNIF_PM_dedication_pm_29may2009.mov

Computational tools used to ID virulence of swine flu

With the H1N1 strain hitting the world this spring, scientists turned to a diverse range of computer-based tools to help predict the virus' virulence.

Earlier algorithms have focused on single mutations in flu viruses that were associated with a statistically significant influence on virulence. But the latest generation of algorithms assesses combinations of mutations, that on their own, might not have a statistically significant effect but do seem to influence virulence when they appear together.

Jonathan Allen and Tom Slezak, both computer scientists at Lawrence Livermore, have developed an algorithm that looks for combinations of mutations that viruses share. They looked at samples from 2,100 influenza cases representing numerous flu viruses that occurred within the past century — including the past three major pandemic outbreaks - which occurred in 1918, 1957 and 1968.
They found 34 amino acids conserved at specific points in the genomes of all three of these pandemic viruses. On the basis of their examination of a 2009 swine flu sequence, they determined the strain had only half of the 34 amino acid markers correlated with the deadly pandemics.
To read the complete story, go to
http://www.nature.com/nm/journal/v15/n6/full/nm0609-587.html

BBC Radio tips its hat to the National Ignition Facility

BBC Radio recently interviewed NIF Project Director Ed Moses who describes how plans to build the National Ignition Facility really started in the 1960s with the invention of the laser. The goal: to create nuclear fusion in a controlled manner on earth.
When ignition is achieved, NIF could very well be the Holy Grail of energy when more energy comes out than goes in.
"This comes from what Einstein taught us in E=mc2. With a tiny bit of mass you can get a huge amount of energy that is carbon free," Moses said. "We need carbon free energy sources and this certainly could be one in the years ahead."
To hear the complete story, go to
https://publicaffairs.llnl.gov/news/lab_report/movies/BBC_NIFEdMoses_31may2009.mov

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Photo of the week

Wily Coyote: A juvenile coyote lurks around the Laboratory's employee community gardens.

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To send input to the Livermore Lab Report, send e-mail mailto:labreport@llnl.gov.

The Livermore Lab Report archive is available at: https://publicaffairs.llnl.gov/news/lab_report/2009index.html