

Story tips from the Department of Energy's Oak Ridge National Laboratory July 2010

EurekAlert

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HEALTH -- Stride right . . .

People recovering from injuries, the elderly and even athletes could one day benefit from a gait analysis technology being developed by a team at Oak Ridge National Laboratory. The patented system uses electrical signature analysis to measure, interpret and record the current drawn by a treadmill as a patient walks. "When the heel strikes, the load increases, resulting in an increase in the current drawn by the motor," said Charles Hochanadel, a physical therapist and co-inventor of the technology. "Changes in the current represent the various phases of gait and allow us to interpret what's going on during each stride." Other inventors are Daryl Cox of the Energy and Transportation Science Division and Howard Haynes of the Measurement Science and Systems Engineering Division. "We are really just beginning to explore potential applications, including expanding from the lower body to upper extremities such as shoulder rehab and other commercial applications," Cox said. [Contact: Ron Walli, (865) 576-0226; wallira@ornl.gov [2]]

BIOFUELS -- Nano-reactors . . .

A National Academies Keck Futures Initiative award of \$100,000 will help researchers from Oak Ridge National Laboratory and State University of New York in their quest to create a yeast strain to produce biofuels. ORNL's Miguel Fuentes-Cabrera and SUNY's Qing Lin are looking at exporting two bacterial micro-compartments, Eut and Pdu, into yeast to create a biofuel-producing yeast strain. Eut and Pdu produce acetaldehyde, an indispensable intermediate in the production of biofuels such as ethanol and fatty acids. The scientists believe that this would make it possible to increase the yield of biofuels by encapsulating acetaldehyde, a volatile and toxic organic compound in the nano-sized micro-compartments. This was one of 13 projects chosen for awards in the area of synthetic biology, the theme of this year's Futures conference. [Contact: Ron Walli, (865) 576-0226; wallira@ornl.gov [2]]

RESEARCH FACILITIES -- A place to sleep . . .

Visiting scientists working at the Spallation Neutron Source (SNS) and the adjacent Center for Nanophase Materials Sciences (CNMS) at Oak Ridge National Laboratory

often conduct experiments that run at all hours of the day and night. To help take some of the edge off this grueling schedule, the laboratory is building a guesthouse just down the hill from the SNS. This will enable researchers to monitor their experiments without having to drive the 20 miles back and forth between hotels and the laboratory. Similar to a small, on-site hotel, the guesthouse will have 47 units, including a mix of single and double rooms. The rooms will be equipped with amenities that include cable, microwave ovens, wireless Internet and easy access to the cafeteria and offices. Groundbreaking occurred in February, and ORNL expects to welcome researchers to the guesthouse by early spring of 2011. [Contact: Jim Pearce, (865) 241-2427; pearcejw@ornl.gov [3]]

CLIMATE -- Potential gold mine . . .

By applying advanced data mining techniques to observed and model-simulated climate data, a researcher at Oak Ridge National Laboratory envisions the creation of a new set of tools that can provide valuable insights into climate science. Ultimately, Karsten Steinhaeuser believes this work will lead to improvements in predictive modeling and reduce uncertainty. "We are effectively using data mining techniques to 'learn' the not-so-well-understood physical relationships in the global climate system," said Steinhaeuser, who is earning a doctorate at the University of Notre Dame. While traditional approaches have focused on descriptive analysis, Steinhaeuser noted that this "unified framework" approach uses complex networks to discover relationships between ocean climate indicators and land climate from observed data. [Contact: Ron Walli, (865) 576-0226; wallira@ornl.gov [2]]

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Source URL (retrieved on 12/27/2014 - 10:36pm):

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