NEWSLINE

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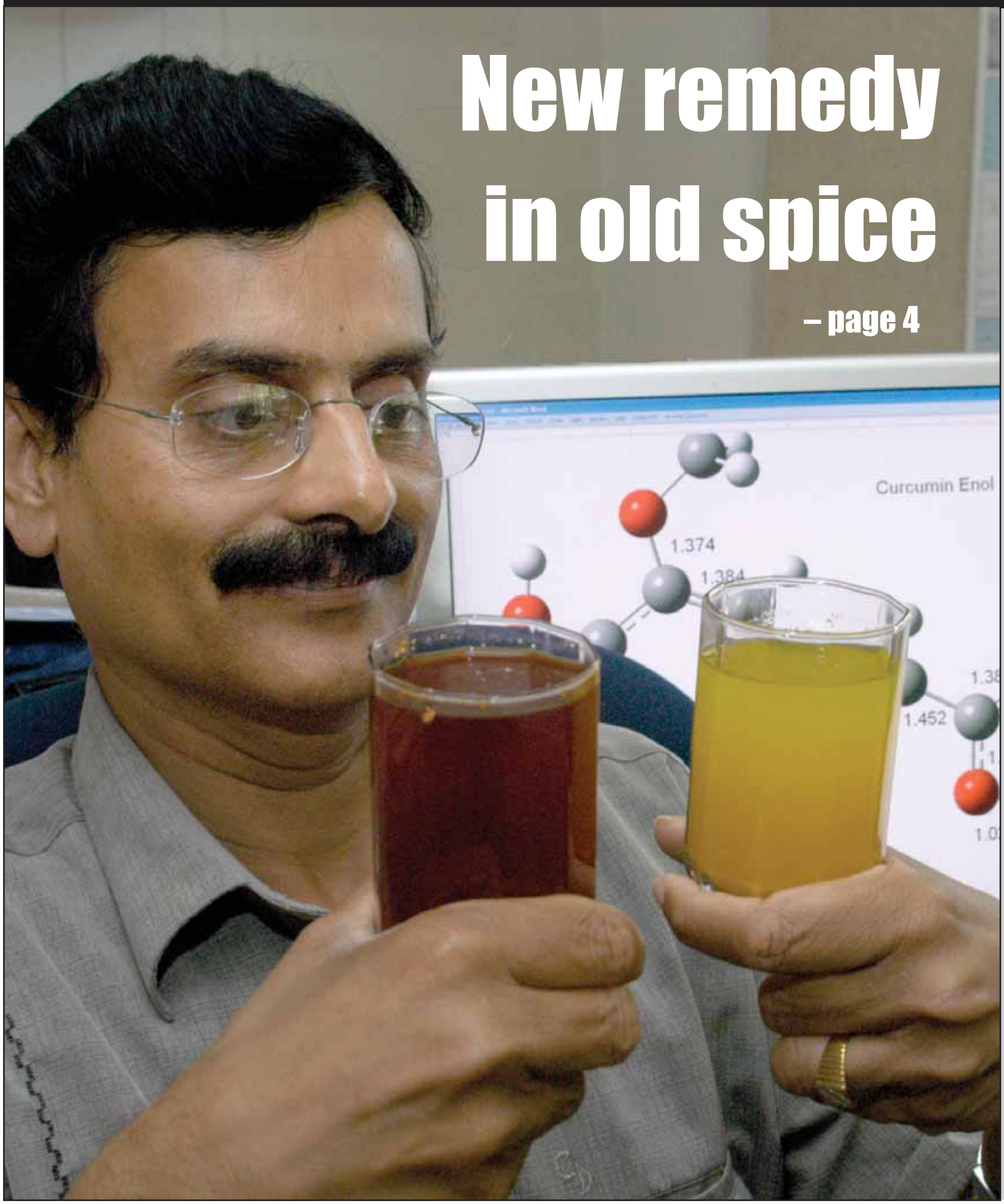

New remedy in old spice

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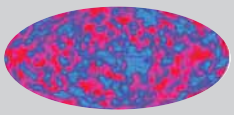
WHAT'S **INSIDE**



LAB ANNOUNCEMENTS

Final Request for Proposal to operate Lab is issued

The Department of Energy National Nuclear Security Administration has issued the final Request for Proposals (RFP) for the competitive selection of a contractor to manage and operate Lawrence Livermore National Laboratory.

All offers and proposal information are due no later than 2 p.m. Mountain Time Oct. 12, 2006. The planned contract award date is the February-March 2007 timeframe.

The RFP includes provisions to reward excellence through performance incentive fees, contract award term extensions, and reinvestment of cost savings into contractor directed research and development, according to the NNSA press release. Potential offerors have 90 days to submit proposals after release of the RFP.

The RFP describes the criteria NNSA will use in selecting a future contractor. Key criteria include the potential contractor's management approach to conducting world-class science and technology; achieving excellence in Laboratory operations and business operations; the organizational structure for managing the Laboratory and the naming of key personnel, including the proposed Laboratory director; and past performance.

Proposals will be evaluated and assessed against the criteria contained in the final RFP by a Source Evaluation Board (SEB), a panel of career NNSA officials chaired by Walter Lips, senior source evaluation adviser. The SEB will submit its evaluation to the Source Selection Official, C.S. Tyler Przybylek, senior adviser to the administrator. Przybylek will make the contractor selection decision.

The RFP is publicly available at NNSA's Website at http://www.doeal.gov/LLNL Competition/RFP.htm. Additional information is available at http://www.doeal.gov/LLNL Competition/WhatIsNew.htm

UC Regents tap Miller to lead team in Lab contract competition

The University of California Board of Regents has named Interim Director George Miller as the team leader in preparation for the Lawrence Livermore National Laboratory contract competition.

A national security and nuclear weapons expert and a leader in large-scale facilities management, Miller has worked at the Laboratory for more than 34 years. He will lead the University's efforts through the upcoming Department of Energy (DOE) competition for management and operations of the Laboratory.

A final decision regarding the University's participation in the contract competition for the future management of LLNL will be made by the UC Regents at a later date. If the board votes to compete and UC is awarded the contract, Miller will be named Laboratory director.

"George Miller is an excellent choice to lead UC through this important competition and to lead the Laboratory into the future," said Gerald L. Parsky, chairman of the UC Board of Regents. "George has the skills, knowledge and experience to ensure that Livermore Laboratory continues to make incredible scientific, technological and homeland security contributions to our nation."

In a letter to Lab employees, UC President Robert Dynes said he was pleased that Miller has accepted the "awesome responsibility" to help shape the future of LLNL.

"George first came to the Lab as a physicist in 1972 and throughout his tenure at the Laboratory has taken on a number of leadership positions, including his current position as director," Dynes said. "While taking on these roles, George always has remained true to his scientific roots while demonstrating his abilities as a trusted leader.

Throughout his career at LLNL, George has led with integrity, collaboration and a drive for excellence. These skills are critical to leading our team, and the Laboratory, into the future."

> *"This competition process will allow us to showcase to the entire nation the very best our Laboratory has to offer."*
>
> *– George Miller*

"I am honored to have been selected for this position as I believe strongly in the national security mission of our Laboratory, our future and most importantly, in all of you," Miller wrote in a message to employees. "Of course, this action by the Regents, coupled with the release of the final Request for Proposal (RFP), now officially begins a new era for our Laboratory. I want to reassure all of you that the fundamental work of our Laboratory — our great science, ongoing technological accomplishments and our first-rate business operations — will and should continue at the highest level we can achieve."

"Our Laboratory has always embraced change and taken on difficult challenges. Over our history, we've sought out new frontiers in weapons design, lasers, computations, energy, biosciences and homeland security," Miller said. "This competition process will allow us to showcase to the entire nation the very best our Laboratory has to offer. We are a great Laboratory and with your help, we will improve upon our excellent successes."

The contract to manage LLNL expires Sept. 30, 2007. On July 14, 2006, the DOE's National Nuclear Security Administration (NNSA) released the final Request for Proposals (RFP).

The deadline for submitting bids is Oct. 12, 2006. According to DOE, a source evaluation board made up of DOE technical and business experts will review the proposals submitted and provide recommendations to the source selection official. The NNSA Service Center has established a Web page for information associated with the Laboratory Management and Operating Contract Competition at http://www.doeal.gov/llnl Competition/Default.htm

Lights out for pioneer supercomputer ASCI White

By Don Johnston
Newsline

ASCI White, the scalable platform that confirmed Livermore as a world leader in high-performance computing, was shut down Thursday in a Bldg. 451 ceremony.

A large cluster of shared memory multiprocessors developed in partnership with IBM, ASCI White's 12.3 teraFLOPs (trillion floating operations per second) held the No. 1 position on the industry standard Top500 ranking of the world's fastest supercomputers for three straight lists and enabled numerous stockpile stewardship milestones. ASCI White was installed in late 2000 and dedicated in an August 2001 ceremony.

The confidence inspired by White transformed what had been the Accelerated Strategic Computing Initiative (ASCI) into the National Nuclear Security Administration's (NNSA) Advanced Simulation and Computing (ASC) Program, a cornerstone of the Stockpile Stewardship Program.

"ASCI White shows how far we've come at Livermore," said Randy Christensen, chief scientist for Defense and Nuclear Technologies. "Leading up to the ASCI period, we were right behind Finland in high-performance computing. White is emblematic of the fact the Laboratory has led the resurgence of high-performance computing in the world. Before that it was considered a dying industry."

"The work ASCI White has done was the fundamental drive that revitalized the high-performance computing industry," he said, adding that "what we're really celebrating is the effort of the people in this room who made that work possible."

"With ASCI White the ASC program came into its own," said Mike McCoy. "ASCI White was the first ASC capability computer to be used to meet major ASC milestones by all three laboratories in one year. In effect, this machine was the first tri-lab capability resource.

JACQUELINE MCBRIDE/NEWSLINE

From left, Michel McCoy, Kim Cupps, Mark Seager and Dona Crawford switch off ASCI White computer racks at the conclusion of a remembrance ceremony in Bldg. 451, during which the supercomputer was eulogized.

"It's because of the codes, the computers and the underlying science at this Laboratory that we've been so successful," he said.

In addition, McCoy said the service system established by Livermore Computing (LC) for remotely accessing the machine was adopted as a model by other NNSA laboratories for supercomputers installed at their sites. ASC supercomputers serve weapons scientists at Los Alamos, Sandia and Lawrence Livermore national laboratories.

White permitted the ASC program's first 3D simulation of a complete weapon system detonation. While low resolution by today's standards, the simulation nonetheless indicated that the program was on track to develop 3D codes for conducting high-resolution simulations on 100 teraFLOP class systems, such as Purple and BlueGene/L.

Mark Seager, an architect of White and its predecessors, recounted the origins of the machine, which began as a "one-liner in the Blue Pacific contract," opening the way for an upgrade. Seager also lauded the work of the people who overcame all the technological challenges to making ASCI White work for the program.

Noting that ASCI White was a unique computing resource when it came on line, Dona Crawford, associate director for Computation, said "we set the bar really high for how you use the machine across the three laboratories."

"You're lucky if you have one or two things in your career where you can say 'I made a difference,' " Crawford said, emphasizing the team nature of high performance computing. "Those who worked on ASCI White can say 'I made a difference… I made history.' For that we honor you and we honor the machine."

Brian Pudliner and Mike Zika offered fond remembrances from the code developer's perspective. Following the remembrance ceremony, presided over by Lynn Kissel of ASC, participants went into the Bldg. 451 computer room and shut down the machine for the last time.

Creating a 'future pipeline of excellence' through Seaborg program

By Linda Lucchetti
Newsline staff writer

Approximately three hundred undergraduate and graduate students are currently spending their summer days studying and conducting research at LLNL. About 50 students each year are recruited and hired through Chemistry and Materials Science's (CMS) Glenn T. Seaborg Institute (GTSI), an organization known for attracting highly motivated students who are seeking a challenging research experience.

GTSI students are enrolled in one of three programs: Computational Chemistry and Materials Science Internship; Nuclear Science Summer Internship Program; or the Undergraduate Summer Institute.

These three summer internships provide a "hands-on" research experience, a lecture series and an introduction to a broad spectrum of ongoing Lab research — from materials science to radiochemistry and radiation detection to astrophysics.

Each program is tailored to a broad-range of scientific talent, encouraging and fostering excellence. The continued success of the internship programs serves as a tribute to the institute's namesake — renowned nuclear scientist and Nobel Prize winner Glenn T. Seaborg, a staunch advocate of science education.

"The summer program's success would not be realized without the continued support and commitment of the Lab's CMS Directorate," Annie Kersting, GTSI director said. "CMS is dedicated to furthering educational efforts that encourage the brightest students to return to the Lab, creating a future pipeline of excellence. Our students have come back as SEGRF students, Lawrence Fellows, postdocs and staff. It's a real cross-directorate team effort that makes it work — from the educational and administrative support of GTSI through computer, operations and safety infrastructure support across CMS. And, of course, we would not have a summer internship program without the outstanding effort of scientists from multiple directorates (CMS, NHI, NIF PAT and E&E) who act as mentors."

JACQUELINE MCBRIDE/NEWSLINE

Glenn T. Seaborg Institute summer students Patrick Conlon and Jessica Mintz are looking at images of cyanobacteria and bacterial spores taken with CMS' new ultra-high resolution field emission scanning electron microscope (SEM). Mintz is pointing to a spore 1/100 the size of a human hair.

What draws students from around the country to enroll in one of the GTSI summer programs? For one, the focus of the institute is hands-on science. Mentors are carefully selected and matched with the right students. And, the institute and mentor connection does not stop there.

Throughout the program, GTSI staff communicates with mentors and monitors the students' progress. Students are encouraged to attend a weekly seminar series designed to inspire the students on a broad range of science topics specifically tailored to each of the three programs. A student highlight continues to be the yearly weekend hiking trip in Yosemite National Park. The GTSI programs culminate in a poster symposium held in August when students present their research findings on projects conducted over the course of the summer.

To find out more about the Glenn T. Seaborg Institute and summer internships, go to the Web at http://www-cms.llnl.gov/seaborginstitute/

SCIENCE NEWS

Pigment in spice may prevent Alzheimer's

By Don Johnston
Newsline

Using computer modeling, a Laboratory scientist has demonstrated that the spice pigment curcumin has unique characteristics that may help prevent and even treat Alzheimer's disease.

Curcumin is the yellow pigment in the East Indian root plant turmeric (*Curcuma longa*) commonly used as a spice in east Indian cuisine.

The computational research by Lab chemist Krishnan Balasubramanian builds on the experimental work of medical researcher Gregory Cole, a professor of neuro and brain chemistry at UCLA. Cole's studies on mice have demonstrated that the yellow curcumin pigment prevents and may even cure Alzheimer's disease. Curcumin is not to be confused with the common spice cumin, which is made from the seeds of the *cuminum cyminum* plant.

Results of Balasubramanian's work were published in the April edition of the Journal of Agricultural and Food Chemistry published by the *American Chemical Society* under the title, "Molecular Orbital Basis for Yellow Curry Spice Curcumin's Prevention of Alzheimer's Disease."

Alzheimer's Disease is caused by the accumulation of amyloid plaque in brain cells in combination with oxidative stress and inflammation. "The greatest challenge for medical researchers has been to find a drug to treat Alzheimer's that is able to penetrate the protective blood-brain barrier without doing more harm than good," said Balasubramanian.

By conducting experiments on mice, Cole's research group was able to show that the yellow curcumin pigment prevents and may even serve as a cure for Alheimer's disease. Curcumin injected in vivo into aged mice crossed the blood-brain barrier, bound to amyloid plaques and decisively reduced amyloid levels and plaque accumulation.

Cole's group hypothesized that the curcumin binds directly to small amyloid species, consequently inhibiting aggregation and formation of plaque both in vitro and in vivo.

"When I read about this research I was very excited," said Balasubramanian. "My interest in chemistry in general and turmeric in particular goes back to my childhood when I watched my mother cook in our home in Madras (India)."

It was not clear as to which chemical properties of curcumin gave it these unique characteristics. Through computational modeling using the Advanced Simulation and Computing (ASC) program's UV machine, Balasubramanian was able to explore the special properties of the curcumin molecule.

Research has revealed a "duality" to the curcumin molecule's character that allows it to penetrate the blood-brain barrier — a natural mechanism to protect the brain from harmful substances — and yet also possesses a seemingly contrary quality that allows it to bind to amyloid plaque, according to Balasubramanian.

Curcumin's other properties — as a preventive and chemotherapeutic agent for colon cancer, for example — are well known, he noted. "But the most recent finding that it may prevent or even cure Alzheimer's disease is the most spectacular."

Brain chemistry is difficult to understand and very few agents can penetrate the blood-brain barrier and also act as a prevention or cure for Alzheimer's or other diseases, Balasubramanian said, adding other known preventive or curative agents are either toxic or not well suited to penetrating the blood-brain barrier.

Through computer modeling, Balasubramanian is seeking to better understand the features that make curcumin a "dual agent": on the one hand its "hydrophobic" ability to penetrate the blood-brain barrier, and on the other hand, its "polar binding" features that allow curcumin to bind to amyloid plaque.

There is also a question as to whether a metal ion, which may be a cause of Alzheimer's, binds to curcumin, consequently preventing the disease. As more experimental and medicinal studies are carried out, it is important to understand the mechanism of curcumin's AD prevention.

The computational study carried out at LLNL shed light for the first time into electronic and three-dimensional structural features of curcumin that are responsible for its observed anti-Alzheimer's property. The study demonstrated that: the molecule exhibits hydrophobic (water-hating) features as well as hydrophilic (water-loving) features at the ends and center. In addition, the study showed that the former's electronic characteristic (hydrophobic) facilitates penetration of curcumin into the blood-brain barrier, while the latter feature (hydrophilic) facilitates binding of curcumin to amyloid and thus disintegrating the brain plaque responsible for Alzheimer's.

The LLNL study also revealed the correct three-dimensional structure of the most stable form of curcumin, which provides the active sites for binding to amyloid. The electronic features were shown at the center of the curcumin's molecular structure would enable curcumin to scavenge metal ions such as copper ions, which also contribute to brain toxicity and Alzheimer's.

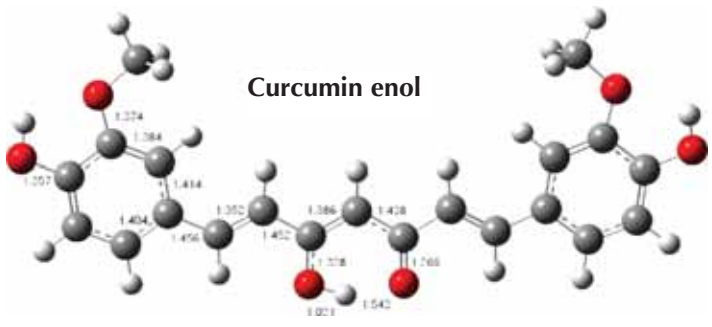
"It's important to understand the molecular mechanisms of curcumin's preventive and curative properties for Alzheimer's so other drugs can be discovered through molecular similarity," he said.

PHOTOS BY BOB HIRSCHFELD/NEWSLINE

Computational chemist Krishnan Balasubramanian recreates the experiment he conducted as a teenager showing color change resulting from turmeric.

Fascination with color spices up Lab chemist's career

If variety is the spice of life, one spice holds particular significance in the career of computational chemist Krishnan Balasubramanian — turmeric.



Curcumin enol

Balasubramanian's recent computational modeling work on curcumin, the yellow pigment in the east Indian spice turmeric (see accompanying article), has brought his career as a chemist full circle. As a high school student in Madras, India, he developed an early interest in the dramatic color change in turmeric when it was mixed with other ingredients.

"Turmeric is a very common ingredient in many walks of typical east Indian life," he said. "It's commonly used in east Indian cooking, cosmetics and traditional religious ceremonies. It was its use in religious ceremonies that triggered me to think about the color change."

In these rituals turmeric is mixed with water, rice and an alkaline substance (predominantly calcium hydroxide), dramatically turning the spice's natural yellowish color to a deep red, "a phenomenal color change."

Balasubramanian conducted experiments in his home chemistry lab, mixing turmeric with a variety of substances. In 1972 at age 16, he submitted a report to a national science talent search exam on preliminary research conducted at Loyola College in Madras, which earned him a scholarship. He chemically explained the color change and showed that turmeric can be used for acid-base titration.

In retrospect, he said his explanations were "naïve" and based on unsophisticated scientific methodologies. But his interest in turmeric and other color phenomena such as color in flowers did not stop there.

In 1976, he applied the more advanced Pariser-Parr-Pople quantum mechanical method to color change in turmeric and performed some of his early computational chemistry work first at the Birla Institute of Technology and later on the more powerful DEC-10 system at the Tata Institute for Fundamental Research in Bombay.

"Color change in turmeric provides an effective and colorful demonstration of analytical methods for my students in quantum chemistry," said Balasubramanian, who also is an adjunct professor at Cal State Hayward.

"It's very exciting to have the opportunity to pursue my lifelong interest in turmeric with this research into its potential to treat Alzheimer's disease," he said.

Balasubramanian works on materials aging problems for stockpile stewardship in the CMS Directorate's Chemistry and Chemical Engineering Division. He has published more than 500 journal publications, two books and is a winner of several awards including the Robert S. Mulliken award, Alfred P. Sloan fellowship, Camille & Henry Drefus Teacher-Scholar award and Fulbright research award.

SCIENCE NEWS

Collaboration forges new scientific ground

By Don Johnston
Newsline staff writer

By combining the high-performance computing capabilities and scientific expertise of the Laboratory and UC San Diego, scientists now are able to conduct larger scale and more detailed simulations of climate change and the cosmology of the early universe.

Scientists from the Lab and UCSD gathered in Livermore last week to assess progress in the first year of a collaboration to develop computational tools for advancing research in global climate change and cosmology.

Lead scientists from UCSD and their Lab collaborators presented early results to an advisory panel of subject matter experts from Lawrence Berkeley Laboratory, UC Davis, UC Santa Cruz and LLNL. Laura Gilliom of the Lab's University Relations Program oversaw the panel.

The goal of the project is to provide scientific data management technology that will enable researchers to organize, analyze and manipulate large sets of observational and simulation data. One of the great challenges researchers in many fields face is extracting and manipulating specific bits of information from hundreds of terabytes (trillions of bytes) and even petabytes of data.

"The scientific applications driving the collaboration relate to science we need here at the Laboratory," said Jim McGraw, LLNL lead on the project, in his opening remarks. "We want to continue to build a strong partnership and collaboration that will extend well beyond the three-year project."

Driving the project are two scientific applications being run on the Lab's Thunder supercomputer, among other resources.

Global climate modeling

Scientists are constructing global climate models to determine the impact of climate change on water supplies. Researchers are using a detection and attribution analysis to answer the question: Can we detect a global warming signal in the main hydrological features of the Western United States? Resolving this question involves making runs of global climate and scaling down to regional models — models unprecedented in size and scope. Principal Investigator Tim Barnett of UCSD's Scripps Institution of Oceanography is leading this effort in collaboration with Doug Rotman of the Lab's Energy and Environment Directorate.

Researchers have conducted the large-scale simulations of climate change over centuries — 1,100 years — to better understand "natural variability" of climate over time. "Natural variability" characterizes the natural factors such as volcanoes and El Niños in climate change.

Separate "control runs" simulating historic climate change and current day — calibrating models against observed climate data — are needed to improve the accuracy of models, according to Barnett and Rotman.

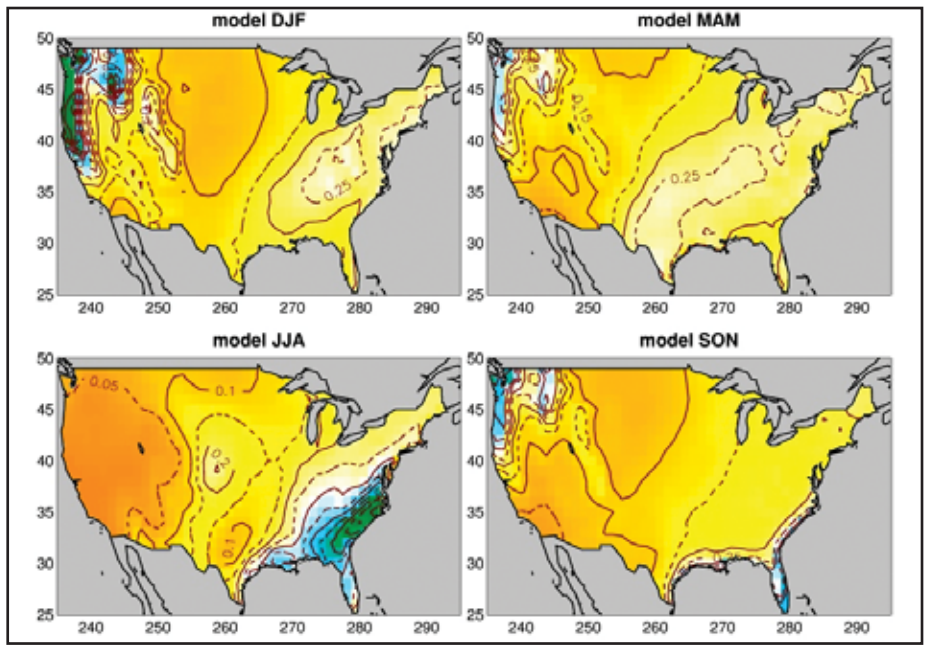


FIGURE COURTESY OF UCSD

This model shows precipitation patterns in the United States, which are important to West Coast hydrology.

Rotman noted that the natural variability in global climate needs to be well understood before "anthropogenic forcing" — manmade factors such as greenhouse gasses — can be identified and reliable predictive simulations of future climate change conducted.

Researchers achieved their first-year milestone with the development of a standard scenario for historic and current- day climate modeling and have begun "downscaling" for selected geographic regions, such as the Western United States.

The outcome of this research has important implications for environmental issues faced by the State of California and the Western United States — air and water quality, the management of water resources and the health of ecosystems. This partnership with UCSD is a component the Lab's Aurora California Initiative.

Cosmology simulations

The second scientific application involves cosmology simulations of the early universe and the generation of simulated observations for the Large Synoptic Survey Telescope (LSST), a project in which the Laboratory is a collaborator. Principal Investigator Michael Norman of UCSD is leading this scientific application in collaboration with Frank Graziani of the Lab's B Division.

Cosmologists and weapons scientists are both interested in a better understanding of such physics phenomena as radiation transport and thermonuclear burn, according to Graziani.

"This academic partnership is a great opportunity to solve a difficult problem of common interest," Graziani said. "We face the same issues in understanding radiation hydrodynamics."

From a Laboratory perspective, Graziani said the collaboration brings the advantage of trying new approaches using a UCSD radiation transport code and "connects Lab scientists with the external radiation transport community."

To date, scientists have completed two of a suite of cosmological hydrodynamics simulations of galaxy clusters of unprecedented resolution and successfully transferred four terabytes (trillion bytes) of data to UCSD's Supercomputing Center. Researchers also have produced large sky maps of interest to the LSST).

Scientists plan to simulate the evolution of the galaxy cluster population. Galaxy clusters are large concentrations of matter that gravitationally lens and distort light from background galaxies. One of the LSST's missions will be to use observations of gravitational lensing to map the large-scale distribution of matter in the universe.

Data distribution and access

An integrating element of the collaboration is an effort to improve data grid technology for distributed data analysis, which allows the transfer and/or sharing of large data sets between LLNL and UCSD's Supercomputing Center.

McGraw said the scientific applications at the heart of the collaboration require the development of more sophisticated tools for transferring, storing, organizing and manipulating observational and simulation data sets of unprecedented size in a timely manner. This is important for the publishing of data in digital library technology for use by the broader scientific community.

"This LLNL-UCSD project represents a new model for collaboration with UC campuses," Gilliom said. "We wanted to enable collaborations that were more peer-to-peer and broader in scope."

This collaboration is being funded with $2 million over three years through the UC Directed Research and Development (UCDRD) program. These are funds that the university receives from DOE/NNSA for managing the Laboratory, but which UC has elected to reinvest in research projects important to Lab missions.

In the past, the funds were disbursed to individuals or small groups in the form of small awards, she said.

Gilliom said the idea behind the new approach is to use these funds as "seed money" for collaborations "with clear mission relevance" that would continue well beyond the three-year time frame of the initial funding.

"Our collaborators in San Diego are first rate and working together is generating some really good scientific ideas," said McGraw. "The review gave us an opportunity to highlight some important early results and to receive helpful suggestions for moving forward."

NOTEWORTHY NEWS

Lab's Mike Uzelac honored for work on JCATS

When Mike Uzelac retired from the Laboratory, it wasn't only LLNL that recognized his achievements. Two other government agencies also joined in honoring him.

Uzelac, the director of LLNL's Conflict Simulation Laboratory and part of the Infrastructure and Force Protection Division in the Nonproliferation, Homeland and International Security (NHI) directorate, retired last month after a 19-year career here.

Under Uzelac, one of the Conflict Simulation Laboratory's main software models has been the Joint Conflict and Tactical Simulation (JCATS), which is the major high-resolution battlefield simulation used by the Department of Defense.

On June 14, Uzelac was honored by Maj. Gen. Richard Wightman, deputy commander of the Joint Forces Command, at the command's Suffolk, Va., headquarters for his significant contributions to the Department of Defense.

As a surprise, Uzelac's wife, Tisa, was flown to Virginia by the Joint Forces Command and escorted into the ceremony by Wightman.

From left: Maj. Gen. Richard Wightman presents a certificate and mementos to Mike Uzelac, while his wife Tisa Uzelac looks on.

Uzelac was presented several mementos, including a framed U.S. flag that had flown over the Joint Forces Command Headquarters and commemorative CDs containing the first delivery of JCATS (version 1.0) to the military in 1997 and the most recent version (JCATS 7.1) delivered last month.

On June 30, Uzelac was honored by the U.S. Secret Service, which presented him an award in recognition of the contributions made by JCATS to the Secret Service's mission.

Since its beginning in 1996, JCATS has grown into the most widely known and used conflict simulation model in the world, supporting planning, training and rehearsal for combat operations on a daily basis.

Today, there are about 350 users of JCATS, including the U.S. Army, U.S. Marine Corps, the U.S. Coast Guard, the Secret Service, Department of Energy security, NATO and 13 allied nations.

'Ironman' Patrick Buckley steeled to race for cancer research

By Linda Lucchetti
Newsline staff writer

Patrick Buckley has been perfecting his physical prowess while applying his love of sports and the outdoors to a good cause.

An engineer in the Lab's New Technologies Engineering Division (NTED), Buckley has been in training since last October, preparing for the arduous "Ironman Canada" competition in August while raising money for blood cancer research.

The competition, to be held in Penticton, British Columbia, is the largest Ironman in the world, with more than 2,000 competitors posed to race a grueling 2.4-mile swim, 112-mile bike, and a 26.3-mile run. Buckley is dedicating his training and competition to help raise funds for cancer research — particularly blood cancers, lymphoma and leukemia.

"I was looking for a program that could provide me with an athletic goal and at the same time, allow me to be part of a worthwhile cause," Buckley said. "I found I could gain both by entering this event."

TNT is the world's largest endurance sports training program, and the leading fund-raising campaign of The Leukemia & Lymphoma Society. The organization is working toward cures for such diseases as non-Hodgkin's lymphoma — the sixth most common cancer in the United States, and leukemia — the No. 1 killing disease of children.

Patrick Buckley

This year, TNT will train 30,000 people — from novice to seasoned athlete — to run or walk a marathon or half marathon, cycle a century ride or complete an Olympic or Ironman distance triathlon.

Buckley is a strong advocate for finding a cure for blood cancer diseases. He knows many who have been affected by leukemia, Hodgkin's or non-Hodgkin's lymphoma or myeloma. In fact, several team members in the competition are cancer survivors.

"I see how research helps people. Science and research can do a lot now, when only a few years ago there were no treatment options," Buckley states, adding that he already has raised nearly $13,000, and is aiming to reach a goal of $15,000.

Originally from New York, Buckley accepted a career position at the Lab last September, after participating in a joint MIT-LLNL program that brought him to Livermore as an intern over three summers. He completed his thesis work at the Lab and was awarded his master's degree in 2004.

Choosing the Lab was an easy decision, he says. "Not only does the Lab offer a wide spectrum of research, but the location here in the Bay Area is great for the outdoor activities I enjoy, like bicycling and kayaking."

In NTED Buckley is part of the Lab team conducting research on the Shape-Memory Polymer (SMP), a "smart" material that has the ability to change size and shape in response to changes in temperature. Using a temperature-dependent process, these polymers can be deformed into any shape and when stimulated, regain a previous "memory" shape to achieve its function.

"Think of a car panel being dented. With this new material, you wouldn't need to take the car to a body shop for a lot of work, just break out the hair dryer" Buckley explains in simple terms.

Buckley is enjoying his preparation and training for the August competition as much as he is looking forward to the actual event. A former rower, he considers himself to be in good shape, but religiously exercises every day — usually running when he can during the noon hour and bicycling after work and on weekends. In addition, along with other local participants — including Lab employee Paul Nowak of AX Division — he takes advantage of the organized events and training sessions that TNT offers in San Francisco.

But for Buckley, the training will not cease in August. "My goal in Canada will be to qualify for the world championship that will be held in Hawaii."

For more information about Buckley's goal, blood cancer diseases and the "Team in Training" program, go to the following Websites: http://www.active.com/donate/tntgsf/patrickreganbuckley; http://www.leukemia-lymphoma.org/all_ toplevel.adp?item_id=4187;http://www.teamintraining.org/hm_tnt

Presidential award winners

NNSA Deputy Administrator for Defense Programs Thomas D'Agostino, far left, Livermore PECASE winners Wendelin Wright and Michael Zingale, third and fourth from left, DOE Secretary Samuel Bodman and the other DOE PECASE winners celebrate at a DOE ceremony on Wednesday afternoon.

Stanford professor and former Laboratory postdoc Wendelin Wright and Stony Brook University assistant professor and Livermore collaborator Michael Zingale received Presidential Early Career Awards for Scientists and Engineers (PECASE) in a White House ceremony Wednesday.

Specifically, Wright was cited "for research into the deformation and failure of metals and polymers under dynamic loading using high-speed and spatially resolved infrared measurements of temperature, for guidance and leadership of fellow researchers, and for her exceptional ability to communicate difficult technical concepts to colleagues and students."

Zingale was cited "for advancing the detailed simulation of turbulent combustion and demonstrating parallel, multi-physics methods used in national security-related applications, for pioneering collaborations with fellow researchers, and for training students in computational astrophysics."

Wright and Zingale are among 56 researchers supported by nine federal departments and agencies including seven "early career" researchers, funded by the U.S. Department of Energy's Office of Science and the National Nuclear Security Administration (NNSA) to receive PECASE awards. They were both nominated by the Laboratory.

The pesidential award is the highest honor bestowed by the U.S. government on outstanding scientists and engineers who are beginning their independent careers. Each presidential award winner received a citation, a plaque and a commitment for continued funding of their work from their agency for five years. John Marburger, director of the White House Office of Science and Technology Policy, presented the awards.

"All of us here at the Energy Department are very pleased that these individuals are being recognized by the president for the intellectual rigor, relevance and high technical standards of their work," Secretary of Energy Samuel Bodman said. "We are proud to honor these seven awardees as a means of encouraging promising young scientists and engineers to pursue work in areas of importance to the Department of Energy's energy research and national security missions."

After the White House awards ceremony, the seven DOE researchers described their work at a ceremony at DOE headquarters hosted by DOE Undersecretary for Science Raymond Orbach and NNSA Deputy Administrator for Defense Programs Thomas D'Agostino.

Wright and Zingdale also received the Office of Defense Programs Early Career Scientist and Engineer Award. NNSA's national security laboratories nominated the recipients in recognition of their work in support of the administration's national security mission.

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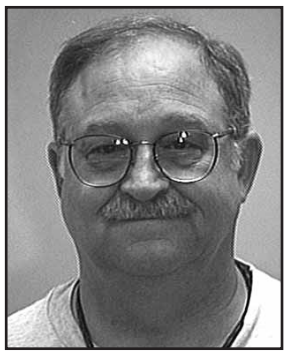
PEOPLE NEWS

in MEMORIAM

William Rice, a senior engineering associate out of the Defense Technologies Engineering Division, died Monday in an auto accident on Highway 84.

He was 59.

Rice's supervisor, Matt Wraith, said he and Rice's colleagues were "struggling" to accept what had happened to their friend.



William Rice

"Bill was such a great guy — a great sense of humor, everybody's father. He was the kind of person you could turn to no matter what kind of issue you had. We'll really miss him."

Rice died late Monday afternoon after the truck he was driving collided with a tractor trailer. Livermore Police continue to investigate the accident.

Grief counselors from the Lab's Employee Assistance Program were made available to Rice's colleagues. Services for Rice are tentatively scheduled at the Office of Emergency Services in Dublin, at 11 a.m. Saturday, Aug. 12.

Rice worked at the Lab for approximately 22 years. Prior to joining LLNL, he was co-owner of a machine shop. Rice also served as a captain in the Alameda County Sheriff's Reserves, and was recently honored for 30 years of service. He was the range master at the Santa Rita shooting range, where he trained reserve officers.

Born in Albany, he was raised in the East Bay, attended Arroyo High School in San Lorenzo and Cal State Hayward. He also served in the ROTC.

Rice enjoyed spending time with his wife and children and was an avid fisherman of the San Francisco Bay, the Pacific Ocean and Alaskan coast. He enjoyed working with electronics, music and photography.

Survivors include his wife of almost 25 years, Judith; his 19-year-old daughter, Ashley; and his 15 year-old son, Chris.

Kenneth Street, Jr.

Kenneth (Ken) Street, who divided his career between LLNL and teaching at UC Berkeley, died March 13 at the Feather River Hospital in Paradise, Calif. He was 86.

Street was born in Berkeley in 1920. He received a Bachelor of Science degree in chemistry from the University of California in 1943. He immediately went on active duty in the Navy's pre-flight program at St. Mary's College, where he graduated as a regimental commander.

He was a World War II fighter pilot, flying a F4U Corsair. He spent his service with the Marine Corps in the South Pacific in Okinawa and the Philippines and he became the first lieutenant to receive the Air Medal and the Distinguished Flying Cross.

Street returned to UC Berkeley in 1946 and received his doctorate degree in nuclear chemistry in 1949.

He joined the Lab when it was founded in 1952. During his 35-year career at the Lab, he served in key positions as associate director of Chemistry, Lab deputy director and associate director for Energy and Resource Programs.

Street's interest in geochemistry led to an interest in geothermal energy and from there to other forms of energy. He later became a professor of chemistry at UC Berkeley, where he remained until his retirement in 1986.

He enjoyed spending time in the mountains, playing tennis, sailing and backpacking with his wife and three children. He moved to Taylorsville, Calif. in 1997.

He was preceded in death by his eldest son Ken Street. He is survived by his wife Jane, of Taylorsville, daughter Christine Meigs and son-in-law John Carnahan, of Taylorsville, son Steve Street and daughter-in-law Marsha, of Westwood, Calif., sister Marge Saunders, of Yuba City, six grandchildren and five great-grandchildren.

Donations may be made in his memory to the UC Camp of Forestry in Meadow Valley.

SCIENCE NEWS

Recent study shows online news has short half-life

Who wants yesterday's papers?
Nobody in the world
--ROLLING STONES, 1966

By Charles Osolin
Newsline staff writer

It seems the old adage that there's nothing staler than yesterday's news is as true for online news as for the paper variety.

A recent readership study of news articles on the Internet shows that clicks on news stories peak within a few hours and fall off rapidly after that. Half of the total readers of an average article have looked at it within 36 hours, according to the research.

Eivind Almaas, a biomedical scientist in the Laboratory's Microbial Systems Division and a co-author of the study, said Website developers "have been assuming that as soon as something is on the Web, it's easily accessible. That's true if you know it's there — you can easily find it using a search engine. But if you don't know to look for it, it quickly gets lost in the mass of articles out there.

"Web portal developers might have to consider this fact when they're designing their interfaces," he said.

The research followed the browsing history of about 250,000 unique visitors to origo.hu, a popular Hungarian news and entertainment portal that receives about 6.5 million hits a day. The monthlong study shows that online news readership decays rapidly according to a mathematical "power law," instead of at a gradual rate over time. A paper describing the study, "Dynamics of Information Access on the Web," appeared in the June issue of *Physical Review E*, a journal published by the American Physical society.

Almaas participated in the research while doing his postdoctoral work with physicist Albert-László Barabási, who heads the Center for Complex Network Research at the University of Notre Dame. He said the Web readership findings are consistent with other aspects of human behavior studied at the Center — such as the letter-writing habits of Charles Darwin and Albert Einstein.

"When we look into human dynamics, we find that humans behave frequently in an intermittent pattern," he said. "Instead of a constant probability that you will do a certain task (known as a Poisson distribution), people tend to wait and then do a lot of things in a short time — for example, checking and responding to E-mail. Some you might deal with right away, but others you put in a queue and deal with later."

According to the paper, Web browsing also follows this "bursting, non-Poisson activity pattern that is a generic feature of human behavior."

"News organizations constantly put up news items on their page or portal," Almaas said, "and in a couple of hours or days they get shoved further and further down in the stack of new items until they disappear from the list. There is a difference between articles in how attractive they are, and that decides the half-life time — for example, if there's a news piece about a current event and it's ongoing, with a number of follow-up articles, we would expect more hits to the original articles as long as the item is still in the news.

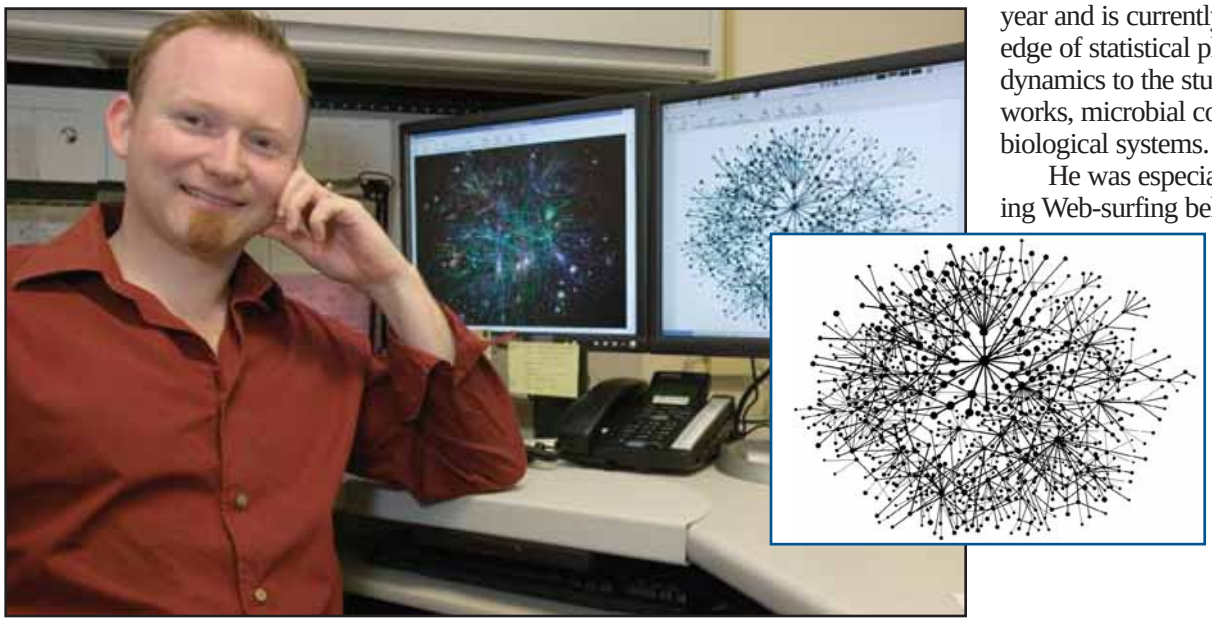
"The lesson for Web developers is that if they want certain things to be easily accessible and well-read, they need to be prominently displayed. As soon as an item is moved from the main Web page, it decreases in its attractiveness."

Almaas came to the Laboratory last year and is currently applying his knowledge of statistical physics and network dynamics to the study of cellular networks, microbial communities and other biological systems.

He was especially interested in studying Web-surfing behavior on a news portal, where pages and links are changing rapidly, because such sites are more akin to the dynamic nature of biological networks and social interactions than "static" sites that rarely change.

"Many of the techniques that we used to study the Web portal can be used to study biological networks," he said. "In metabolism, you have the production of some molecules on demand, while others are continuously being produced and consumed. So either the networks themselves are changing in time, or we have dynamics on the network that are changing in time. The Web pages (nodes) we studied could correspond to proteins, and the links between news pages to physical interactions between proteins.

"One of the strengths of the network approach is that it's very general," Almaas said. "Systems one wouldn't expect to show a lot of similarity have very similar features when represented as networks."



JACQUELINE MCBRIDE/NEWSLINE

Biomedical scientist Eivind Almaas has co-authored a readership study of news articles on the Internet, showing that readership peaks within a few hours and then rapidly falls. Inset: A diagram of the Hungarian Web portal showing the central node and links to other pages and documents.

'At HOME in Our Community' project to donate school supplies

The "Back 2 School Giveaway" project is now under way. The 2006 HOME Campaign's "At HOME in Our Community" August project will help equip local students with all the right supplies for school.

Lab employees may donate any school supply. Suggested items include: backpacks, three-ring binders, No. 2 pencils, paper, markers, colored pencils, crayons, calculators, glue sticks, rulers, Sharpie pens, pencil pouches, folders, spiral notebooks and $10 gift cards from Wal-Mart or Payless Shoes. If you would like to donate cash, write "JTV Back-2-School" on your check or envelope.

Look for the list of collection points in your area and where you can drop off your donations in upcoming editions of *NewsOnLine*. Donations need to be received by Monday, Aug. 14.

Also, volunteers are needed to help during the giveaway event on Saturday, Aug. 19, 7:30 a.m.-3 p.m. at the Jublilee Tri-Valley (JTV) Youth Center, 841 Rincon Ave., Livermore.

For more information, call Nadine Horner, 3-9051, or Germaine Clark, 2-1135. In addition, there will be a brown-bag meeting of all the HOME Campaign Organization Team Leaders (OTLs) on Tuesday, Aug. 1, noon-1 p.m. in Bldg. 235, Gold Room. Meeting maker invitations will be sent out to the OTLs.

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