LOS ALAMOS NATIONAL LABORATORY

CURRENTS

SPECIAL STUDENT ISSUE

JUNE 2009

Lab archaeology student protects heritage sites

Postdoc passionate about renewable energy

Improving life-saving air monitoring system

Easier diabetes monitoring

Los Alamos NATIONAL LABORATORY EST. 1943

Students, diversity, and being unique

The month of June at the Laboratory always brings with it a sense of renewed energy, excitement, and possibility. More than just the arrival of summer, June represents the expansion of an important element in the Laboratory's periodic table of diversity: students.

Creative and innovative institutions like Los Alamos National Laboratory recognize the importance of having such diversity in our organizational culture. Embracing student populations brings new thinking and ideas, strengthens pipelines for future endeavors, and gives even the most seasoned employees the opportunity to further develop through their own exploration of mentoring and teaching.

Providing a welcoming work environment in which all students can succeed despite differences in things such as gender, race or ethnicity, physical abilities, sexual orientation, or religion also is critical to our success. By encouraging a mutually respectful working environment, we support the diversity required to enhance problem solving, make new discoveries, and cause positive change.

Dixon Wolf

And yet diversity is about more than just protected-class statuses like race and gender. Fields of study, types of degrees, schools attended, work assignments, and placements within the Laboratory are just some of the many factors that define student diversity.

Regardless of affiliations, all students are individuals and bring with them unique experiences. Above all, I encourage our students to use this opportunity to not only learn more about their area of interest but also themselves. It is the ability to be unique—to be different—that not only creates the next big breakthrough but ultimately defines who we are.

— C.J. Bacino, Laboratory Diversity Officer

About the cover: Joseph Aguilar of Environmental Protection Division stands in front of petroglyphs in Mortandad Canyon on Lab property. See page 4 for story. Photo by LeRoy N. Sanchez.

Thibault Cantat receives ParisTech Best Thesis Award

Thibault Cantat earned the ParisTech Best Thesis Award for 2008. Cantat's thesis, "A Joint Theoretical and Experimental Approach to New Carbene Ligands: Applications in Organometallic Chemistry and Catalysis," was chosen by a judges' panel.

The panel awarded a prize of 3,000 Euros (about $4,200) to three laureates whose research contributed to the progress of scientific knowledge, the understanding of problems in society, or the emergence of technological innovation. ParisTech, a consortium of 11 of the most prestigious French research institutes and universities in the vicinity of Paris, covers all the fields of science, engineering, and technology.

Cantat, who studied chemistry at the Ecole Normale Supérieure in Paris and received his doctorate from the Ecole Polytechnique, joined the Lab as a Director's Postdoctoral Fellow in Condensed Matter and Thermal Physics (MPA-10) and Physics and Chemistry of Materials (T-1), where he uses experimental and theoretical approaches to study chemical behaviors of early actinides. Jaqueline Kiplinger of MPA-10, and Philip Hay and Enrique Batista, both of T-1, are his mentors.

Juan Duque wins engineering award

Juan Duque, a Director's Postdoctoral Fellow in the Physical Chemistry and Applied Spectroscopy (C-PCS) group, was selected to receive the 2009 Ralph Budd Award for research in Engineering at Rice University.

The award is given annually to the graduate student judged to have the best doctoral thesis in the School of Engineering for that year. Duque's thesis is "Electrochemistry and Self-Assembly of Complex Single-Walled Carbon Nanotube Nanostructures." Steve Doorn of C-PCS was his LANL mentor for the thesis research.

Barsoum joins LANSCE as sixth Wheatley Scholar

Michel Barsoum, distinguished professor of Materials Science and Engineering at Drexel University, joined LANSCE's Lujan Center as the sixth John Wheatley Scholar. Los Alamos established the Wheatley Scholar program in 1997, in honor of one of its illustrious researchers, John Wheatley.

Barsoum is a Fellow of the American Ceramic Society and an Academician in the World Academy of Ceramics. He has more than 200 papers and 16 issued and pending patents. His textbook, *Fundamentals of Ceramics*, is in its second printing. Barsoum discovered and characterized the "MAX" phases in ceramics, a new class of machinable ternary carbides and nitrides with remarkable toughness and thermal properties.

During his one-year Wheatley Scholar term, Barsoum will help develop programs in neutron-scattering instrumentation, particularly for advanced materials, composites, and ceramics.

Laocharoensuk, Watkins to meet with Nobel laureates

Laboratory researchers Rawiwan Laocharoensuk and Erik Watkins will attend the 59th Meeting of Nobel Laureates (June 28 to July 3) in Lindau, Germany. These meetings give 500 of the world's best young researchers the opportunity to interact with Nobel Laureates.

Laocharoensuk, a Laboratory postdoc and Director's Postdoctoral Fellow, works in Physical Chemistry and Applied Spectroscopy and the Center for Integrated Nanotechnologies. She holds a doctorate in chemistry from Arizona State University and a bachelor's degree from Prince of Songkla University in Songkhla, Thailand.

Watkins has made significant contributions to the surface reflectometer at Los Alamos Neutron Science Center. He is pursuing a doctorate in biophysics from the University of California, Davis and holds a bachelor's degree in physics from Hampshire College in Amherst, Massachusetts.

Gallegos wins UNM outstanding student award

Laboratory student Iris Gallegos of Program Management II received a 2009 Raza Excellence Outstanding Student Award from the University of New Mexico's El Centro de la Raza. The award recognizes students who have demonstrated an outstanding commitment to the Raza community both on and off campus and who have dedicated time and effort to helping and improving the lives of Hispanos and Latinos. She was honored at an awards ceremony in April at the University of New Mexico.

Rich past, bright future

Lab archaeology student protects heritage sites

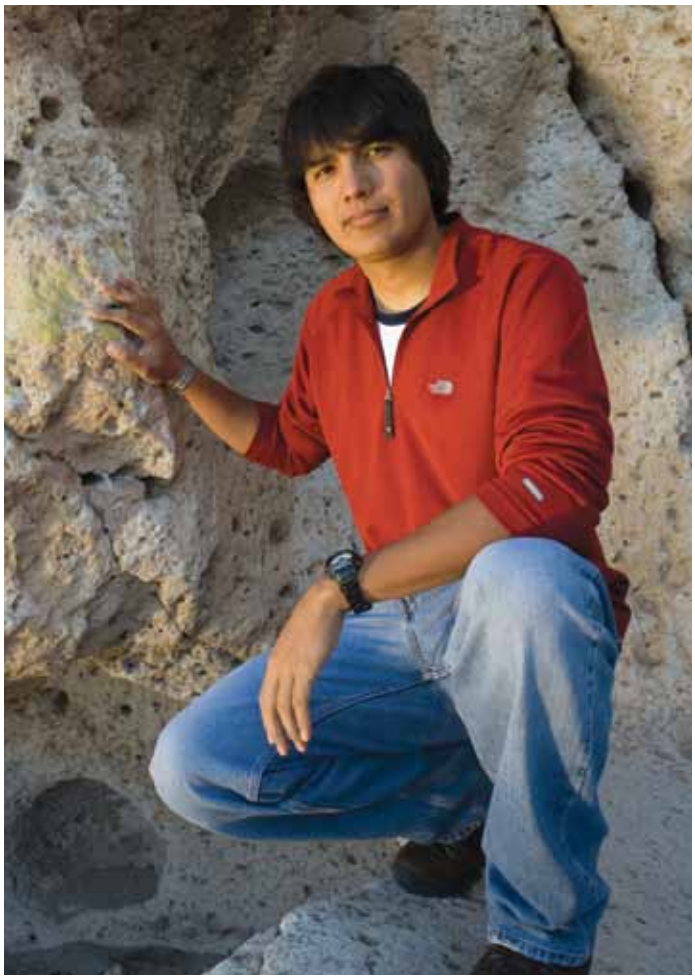
Sometimes, you just know when a match is right. Such was the case with Joseph Aguilar, archaeology, and the Laboratory. Aguilar first joined LANL's Cultural Resources Team in 2001 as an archaeology student at the University of New Mexico. "There were numerous cultural resource-management projects taking off then," he remembered. "Students were being hired to do archaeological field work, and I was fortunate enough to get a spot on the team."

Aguilar said archaeology is a good career fit because it allows him to help protect his heritage. As a member of San Ildefonso Pueblo, he considers the Pajarito Plateau, including areas now occupied by the Lab, his ancestral homeland.

"Our history is written on that land," he said. As a child, Aguilar often would explore the mesas and canyons on San Ildefonso land, some of which border the Lab, to hunt or collect wood. "I always wondered why we could not collect wood or chase a deer past a certain fence line and what all those strange buildings were across the canyon," he said. "I later learned about the history of the Laboratory and its place in the world from my mother, Patricia, who worked at the Lab for nearly 25 years; my grandmother, Pilar, who worked in the former Biosciences Division for about 20 years; and my grandfather, Martin, who put in 35 years in administration."

Over the years, Aguilar has worked on several projects aimed at protecting cultural resources on the plateau, such as the Cerro Grande Rehabilitation Project. "The 2001 fire impacted more than 300 archaeological sites on Lab land," he said. Another project is the Nake'muu Monitoring Project, which aims to protect a village constructed in the 1300s located near the Dual Axis Radiographic Hydrodynamic Test (DARHT) facility.

While projects vary in size and scope, their primary goal is to effectively manage the more than 2,000 archaeological sites in the area and to help the Department of Energy comply with federal requirements, such as the National Historic Preservation Act, the Native American Graves and Repatriation Act, and the Archaeological Resources Protection Act, he said.



LeRoy N. Sanchez

Joseph Aguilar pauses among petroglyphs in Mortandad Canyon on Lab property.

Aguilar said that the Cultural Resources Team has done much to address surrounding pueblos' concerns about cultural resource and environmental management. Team members reach out to tribal members and others to educate them about cultural resources located at the Lab, Aguilar said. "Just recently, our team hosted a site visit for San Ildefonso youth, their teachers, and mentors," he said. "It was fun hanging out with the kids and watching them learn about their history." Aguilar noted that it is important to get Native Americans involved in archaeology because tribal members, archaeologists, and anthropologists historically

"My work emphasizes the strength and determination of Pueblo people to defend their culture against all odds and to continue to live their way of life."

tended to disagree on many issues. "But this is beginning to change with more Native Americans establishing themselves in the field," he said.

At present, Aguilar is completing his master's thesis, which focuses on the archaeology of the Pueblo Revolt era (1680 to 1696) at San Ildefonso Pueblo's Tunyo (Black Mesa). He said he chose this topic because the Pueblo Revolt helped shape today's Spanish and Pueblo cultures in New Mexico and merit more in-depth research. "My work emphasizes the strength and determination of Pueblo people to defend their culture against all odds and to continue to live their way of life," he said.

Aguilar has presented his work at the Pecos Conference on archaeology and the Society for Historic Archaeology. He won top prize at the master's level at the 2008 Annual National American Indian Science & Engineering Society conference. The Lab's Tribal Relations leader, Elmer Torres, praised Aguilar's achievements, saying, "He's a role model to Native American and other students."

Numerous people in the Environmental Protection Division have supported his work and research, Aguilar said. Among these are his mentor, Bruce Masse, and fellow team member Steve Hoadland, both of Ecology & Air Quality, his former team leader Brad Vierra, Barbara Tenorio-Grimes of the Government Affairs Office, and Louis Naranjo of Facility & Field Services.

LeRoy N. Sanchez

Aguilar helps manage more than 2,000 archaeological sites, which include many petroglyphs like these.

Aguilar is starting his doctorate in archaeology at the University of Pennsylvania in the fall. Until then, he plans to spend as much time as he can with his family.

— *Tatjana K. Rosev*

Building relationships with neighboring pueblos

LANL is located on lands that are rich in Native American history. The 69 square miles of the Pajarito Plateau contain more than 2,000 archaeological sites, representing history spanning 7,000 years. The majority of sites at the Laboratory date to the Ancestral Pueblo Period (AD 600 to AD 1600). Archaeological sites include scattered artifacts, one- to three-room structures and plaza pueblos.

Because of the Laboratory's location in Northern New Mexico and on ancestral tribal lands, and because it shares a border with San Ildefonso Pueblo, the Lab—along with the Department of Energy—has sought over the years to develop a working relationship with San Ildefonso and other nearby pueblos.

"Mutual trust, respect, and effective communication are the key elements in maintaining those relationships," said Elmer Torres, the Lab's Tribal Relations leader. DOE has developed formal accords and cooperative agreements with the Lab's neighboring pueblos of Cochiti, Jemez, Santa Clara, and San Ildefonso. "These agreements define how issues related to the environment, education, security, safety, employment, technical assistance, emergency response, cultural resources, and business initiatives are to be managed," said Torres, who added that more recently the Lab has worked cooperatively with DOE to expand tribal outreach activities to include the Eight Northern Pueblos.

"Our recent priorities with the pueblos have centered on cooperation around economic development and increasing educational opportunities that can generate interest in math and science and position Native Americans for future career opportunities at the Lab," said Barbara Tenorio-Grimes, who leads tribal education initiatives.

Two such LANL initiatives, the Pueblo Elementary Schools Consortium Education Outreach Program and the Summer Environmental Science Program, are designed to enhance students' understanding of math and science concepts, with a long-range goal of developing a student pipeline to provide a local source of qualified graduates in science and engineering.

The Pueblo Elementary Schools Consortium Education Outreach Program provides hands-on science activities for students in grades K-6 at area Bureau of Indian Education schools, and the Summer Environmental Science Program (a partnership between LANL and the Valles Caldera National Preserve) aims to enhance environmental science education for middle and high school students from the Accord Pueblos.

These Lab education initiatives mesh well with the DOE post-secondary education scholarship program at UNM-LA and the DOE-funded Santa Fe Indian School Community Based Education Model.

Student helps improve life-saving air monitoring system

Air monitoring can save workers' lives by alerting them to the presence of harmful pollutants and directing them to vacate the area. Continuous air monitoring (CAM) systems constantly sample the air in radiological laboratories and other workspaces, such as the Lab's Plutonium Facility, for the presence of airborne radioactivity.

Lab student April Martinez played a crucial role in improving the CAM system at Technical Area 55, said David Wannigman of Health Physics Operations (RP-1). The state-of-the art system notifies workers to vacate the area when particles of plutonium and other actinides are detected in the workplace.

Sandra Valdez

April Martinez improves the continuous air monitoring system for TA-55 by measuring the instrument's response to different radioactive sources.

Martinez recently tested TA-55's CAMs on a daily basis for sensitivity, how low the alarms were set, and how fast they alerted. "We tried to reduce the response time from minutes to seconds to see how long it would take for a CAM to alarm and whether an individual in the field had enough time to get out before being contaminated," she said.

Numerous tests were necessary, as lowering the CAM alarm set points and reducing response time were balanced against the risk of generating false alarms, Wannigman explained.

Martinez said this was the first time she had tested CAMs. "That made [working with them] a challenge, but in a good way," she said. "I had the opportunity to learn things I never thought I'd learn."

Martinez graduated from Española Valley High School in 2008 and is majoring in software engineering at Northern New Mexico College. She came to Los Alamos in August 2008 through the Lab's undergraduate program and, because of her work in RP-1, has become interested in radiation protection.

"I consider working at the Lab a great accomplishment," Martinez said. "I like the environment and the people around me; everyone is really nice and very helpful." She added, "I would recommend working at the Lab to my friends and anyone willing to learn and continue growing their knowledge, as well as their careers."

— *Tatjana K. Rosev*

WELCOME, STUDENTS

On behalf of the Laboratory, I welcome you here and hope you have a safe and rewarding experience. The Laboratory has many programs and procedures in place to ensure your health and safety. Your mentor is responsible for working with you to make sure that you are aware of the hazards of your work and the controls required to protect you. You are responsible for following the requirements that apply to the work you are assigned, including completing any required training. Your mentor also should inform you of the requirements for reporting any problems, injuries, or illnesses.

An important thing to keep in mind is that if you have any doubt about your safety, stop what you are doing and notify your mentor. You also need to be aware that your actions can affect the safety of your coworkers and others, so integrate safety into everything that you do, including your commute to and from the workplace.

I encourage you to use the many resources available to you as a Laboratory employee to keep you safe and healthy. These include your mentor, your worker safety and security team representative, deployed Industrial Hygiene and Safety personnel, and Occupational Medicine. They can provide you with general information or information specific to the work that you have been assigned. If you don't know who to call, you can call the Safety Hotline at 5-SAFE (7233) or send an e-mail to safety@lanl.gov.

I sincerely hope that you enjoy your experience here at the Laboratory and that you leave here with some valuable knowledge and skills, including safety skills, that you can apply in your future endeavors.

— Chris Cantwell, associate director for Environment, Safety, Health, and Quality

Plesko lauded for Outstanding Paper

Catherine Plesko won an Outstanding Student Paper Award at the American Geophysical Union Fall Meeting in San Francisco. Plesko's paper was recognized among the best of a strong group of student presenters.

Plesko studied the formation of large-impact craters on Mars using high-performance computers and the Crestone RAGE hydrodynamics code at LANL. The study addressed how asteroid or comet impacts may have warmed the Martian climate and altered the nearby landscape. Substantial evidence exists that liquid water was once present on the surface of Mars at a time when the sun was too faint to make the planet surface warm enough. Large-object impacts may have triggered Martian climate change early on. Plesko and her scientific collaborators modeled the impacts on the Martian surface as it was believed to have existed 3.5 billion years ago.

The award-winning paper is the basis for Plesko's doctoral dissertation at the University of California, Santa Cruz.

Plesko came to the Lab in 1997 as an Earthwatch Challenge Award student. After doing periodic summer research at the Lab, Plesko, along with her colleagues and advisor, received a minigrant from the Institute of Geophysics and Planetary Physics to study large-impact collisions. Plesko has been a graduate research assistant in Applied Physics Division since 2007 and will defend her thesis soon at UC Santa Cruz.

Rosev paper wins social science award

Tatjana K. Rosev of the Communications Office recently won Top Graduate Paper for her research "Reaching for the Stars: Acculturative Experiences of German Sojourners on a Southwestern Air Force Base." She received a certificate and $500 at the 2009 Western Social Science Association conference in Albuquerque.

Rosev, who holds a German graduate degree in law, completed her master's degree in communication at the University of New Mexico while working at the Lab and was named valedictorian of her class. This fall she will begin her doctorate in communication at UNM.

Student programs abound at Lab

Students are key to the Laboratory's future, and numerous programs exist to bring them into the Lab for internships that will help prepare them for careers in science, engineering, and other relevant fields. Programs are geared toward high school, undergraduate students, and graduate students, as well as postdocs, and each offers its own unique opportunities.

Examples of student programs include the Science Undergraduate Laboratory Internship in collaboration with the Department of Energy's Office of Science and the Lab's Laboratory Directed Research and Development program; the Service Academy Research Associates program in collaboration with the Department of Defense; and the Faculty and Student Teams (FaST) program in collaboration with the DOE Office of Science and New Mexico Consortium; and the Homeland Security summer internships.

Last year, LANL invested $65 million in various student and postdoc programs and events. The Lab funded 1,119 high school, undergraduate, and graduate student internships in 2008, at a total cost of $24 million. In addition, the Lab supported technician training programs conducted with regional colleges.

For more information on Laboratory educational programs, contact Scott Robbins at 667-3639 or srobbins@lanl.gov.

— Tatjana K. Rosev

Many summer interns showcase their work during the Student Symposium.

The LANL Institutes: Partnering with higher education for the Lab's future

In 2007, the Laboratory established the National Security Education Center to build technical and educational collaborations with universities in technical areas key to the Lab. The center brought together five LANL Educational Institutes—the Engineering Institute, Materials Design Institute, Institute for Multiscale Materials Studies, Information Science and Technology Institute, and Institute for Advanced Studies—each with a partner university or consortia of universities, such as University of California, San Diego and University of California, Santa Barbara.

"LANL established the National Security Educational Center to increase partnerships with universities and to serve as a mechanism for student engagement in core mission areas for the Laboratory. Students are the foundation of our collaborative research programs, and ultimately many will come to the Laboratory as technical staff," said Nancy Sauer, NSEC director.

For more information, go to the LANL Institutes Web site at http://institutes.lanl.gov/institutes/.

Summer lecture series under way

The history of actinides and other stories is the first of 18 lectures scheduled this summer at the Laboratory and cohosted by the LANL Institutes and the Materials Science and Technology and Materials Physics and Applications divisions. The lectures are designed for students but open to all Laboratory employees.

Lectures explore scientific topics ranging from separations technology for advanced nuclear fuel cycles, to nanotechnology to understanding HIV infections through evolutionary dynamics to climate modeling and climate change. See the LANL Institutes Web page at http://institutes.lanl.gov/ for the complete list of scheduled talks.

Three tours of Laboratory facilities—the Center for Integrated Nanotechnologies, the National High Magnetic Field Laboratory, and the Los Alamos Neutron Science Center—are planned. Contact Debbie Wilke at dwilke@lanl.gov to sign up for the tours.

Pay it forward

Mentors help students and coworkers succeed

Sandra Valdez

Christy Baca of the Human Resources Division helps Kimberly Luebcke of High Power Electrodynamics during a recent new student orientation.

"Our student internships are designed to introduce students to world-class scientific research projects, utilizing scientists and nonscientists as mentors. Our best-in-class programs give students a well-rounded experience that contributes to their lifelong learning, while helping to develop the scientific talent society will need to confront the significant technical challenges ahead."
— ***David Foster**, Education and Postdoc Office program manager*

"When you become a supervisor, you may become a mentor without realizing that's what you've chosen. I enjoy seeing people succeed, and I feel good about helping that process along, even in small ways."
— ***Carol Burns**, Science, Technology and Engineering*

"When you are mentoring you are not only sharing what you have learned, but you are constantly learning yourself through observation and interaction. Those being mentored bring a fresh set of eyes."
— ***Doug Coombs**, Scientific Software Engineering*

"Mentoring is one of the fundamental leadership responsibilities. Working to improve the skill set of high potential employees here at LANL is a pleasure and privilege. It is an important tool to become a learning organization."
— ***John Tseng**, Stockpile Manufacturing and Support*

"Although it's different each time, becoming a mentor always needs to be natural to both sides. For me, being able to help young scientists is the source of great personal satisfaction — a return to perhaps the brightest side of my previous academic career."
— ***Piotr Zelenay**, Sensors and Electrochemical Devices*

"The most rewarding aspect is seeing those people that I have mentored become productive colleagues."
— ***Timothy Foley**, Explosive Applications and Special Projects*

"Having had fantastic mentors who helped me throughout my professional career reinforces for me the importance of giving back to others who might benefit from my skills. Also, mentors help ensure the success of students who will someday be the future workforce of the Laboratory."
— ***Steve Sandoval**, Communications Office, 2008 LANL Mentor of the Year*

"Being a mentor was not a work assignment, but time well spent committed to helping, supporting, enabling, and inspiring a fellow coworker to achieve success. It is a role I learned so much from and will forever cherish."
— ***Kathy Leckbee**, Deployed Training Services*

"I became a mentor when my brother, who's eight years younger than me, was born. To me, mentoring means satisfaction in watching bright motivated students and young researchers turn into fully independent scientists."
— ***Marcelo Jaime**, National High Magnetic Field Laboratory*

At a glance

Useful information

Education and Postdoc Program Office:
7-4866

LANL Students' Association:
http://www.lanl.gov/students/

Occupational Medicine:
7-7890

Operations Support Center (reporting unusual events):
7-6211

Emergency:
911

Badge Office:
7-6901

Bradbury Science Museum:
7-4444

Park-and-Ride commuter bus service:
1-866-551-7433

LA Taxi:
7-8294 or 7-5307

Fleet Management (for government vehicle roadside assistance):
5-9420

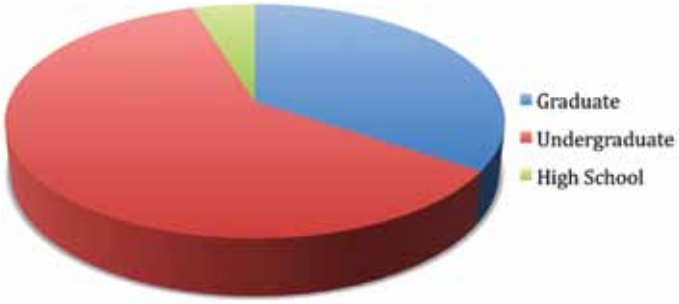
Maintenance and Site Services (after normal operating hours):
7-5177

LANL UPDATE Hotline (emergency messages):
7-6622

Atomic City Transit:
http://www.losalamosnm.us/transit/Pages/default.aspx

Lab students

Education Level



Work Status

The number of students in active status at the Laboratory as of May 27, 2009 is 1,065, a number that will fluctuate throughout the summer.

Student calendar of events, summer 2009

June	New Student Orientation, 7:30 a.m., Canyon Complex (offered every Monday and Wednesday to June 22)
June	Research Library tours
June 1 - 29	Student Sustainability Challenge. Submission deadline: July 29, send to gogreen@lanl.gov. For more information, contact Angelica Gurule (ENV-RRO) at 7-6711 or at agurule@lanl.gov.
June 10	Résumé Workshop for Students
June 11	"High Altitude Adaption" class in large conference room at Occupational Medicine, TA-3, Bldg 1411. Noon to 1 p.m. Instructor: Physician Assistant Kathy Siebe.
June 17	Tour of CINT
June 17	Wellness Center Student Orientation Breakfast
June 18	Behavioral Interviewing Workshop
June 24	All-student meeting with director, 11 a.m., Duane Smith Auditorium, Los Alamos High School
June 25	Research Library Luncheon
June 25	"Nutrition for High Altitude Adaptation" class in large conference room at Occupational Medicine, noon to 12:50 p.m. Instructor: Registered dietitian Marta Gentry Munger.
July 6	Call for Distinguished Student and Mentor Awards
July 9	All-students picnic, Urban Park
July 15	Tour of Trident Laser Facility
July 22	Tour of CINT
July 28	Delivering Technical Talks Workshop
Aug. 4 and 5	Annual Student Symposium, University of New Mexico, Los Alamos

For the complete student calendar of events, go to http://int.lanl.gov/students/calendar/

Student Symposium highlights research

Students working this summer at the Laboratory can showcase their research at the "Championing Scientific Careers" symposium August 4 and 5 at University of New Mexico, Los Alamos.

The symposium helps prepare Laboratory students for careers in science and nontechnical fields, while encouraging them to share their research and projects through poster presentations and technical talks, said Brenda Montoya of the Education and Postdoc Program Office. "The symposium is a great way to gain presentation experience in a professional setting, network with [Laboratory] personnel, and meet other students," she said.

Scheduled activities include poster presentations during which the public can look at student research, technical talks, and a reception on the evening of August 5.

More information is on the Student Symposium Web page at *http://www.lanl.gov/education/symposium/index.shtml*.

Postdoc passionate about renewable energy

Michael Ham gets set to launch a caped monkey carrying a message in support of renewable energy.

Richard C. Robinson

Michael Ham, a postdoctoral student in Applied Modern Physics, is preparing to unleash on Washington, D.C. a thousand flying, screaming monkeys to promote renewable energy.

In the meantime, Ham, who collaborates with a team of LANL researchers on the Artificial Retina Project and specializes in neural network research, is content to help teach others how to build a simple electric-powered vehicle as part of a four-week class at the University of New Mexico-Los Alamos.

"We are going to use two 36-volt drills—essentially two very big cordless drills—as a power source for an electric vehicle," said Ham. "The idea of this class is to get people involved in building an electric vehicle and to start thinking about renewable energy. For this reason, we would like to partially power the vehicle with solar cells."

Ham's class will be taught through UNM-LA's adult continuing-education program. The two-hour class begins July 9 for four consecutive Thursdays and is open to individuals possessing technical knowledge or a sincere interest in renewable energy. Those with fabrication or welding skills also are urged to sign up.

"We will custom build the frame, so there's the challenge of making the vehicle look good and not like something that was just thrown together," he said.

So how do flying monkeys fit into Ham's plans?

Ham is president of KinAestheticWind, a nonprofit company dedicated to supporting and creating renewable energy research. As part of his promotion efforts, Ham hopes to build an electric lowrider sports truck. To fund the project, supporters can donate $20 to the cause. With each donation, Ham will send a launchable, shrieking monkey with an alternative-energy message on its cape to a member of Congress and to the president and vice president of the United States.

One thousand monkeys should fund the lowrider project and cover every member of the House of Representatives and the Senate and the two most influential leaders of the free world, according to Ham. He already has netted nearly 20 donations in the first month since his promotion began.

"The monkeys will show our leaders and the media that renewable energy is an issue that can't be ignored," he said.

For information on Ham's class at UNM-LA or the KinAestheticWind renewable energy efforts, go to *http://www.la.unm.edu and www.kinaestheticwind.com*.

— James E. Rickman

Students' Association promotes, advocates for students

The Laboratory's Students' Association is a group "by students, for students" that hosts social events such as the annual mentor and student summer picnic, movie nights, and sporting events.

All student employees at the Laboratory are members of this group and are encouraged to attend events sponsored by the Students' Association.

The Students' Association Web page (http://www.lanl.gov/students/) has useful information about housing, professional development and contacts, ride and carpool information, a calendar of events and hyperlinks to other Web pages with helpful information.

Dixon Wolf

Pawan Rastogi prepares a quantum dot sample for optical characterization at the Center for Integrated Nanotechnologies.

"I got involved in the Students' Association primarily because I want to help students have a rewarding experience," said Pawan Rastogi of the Center for Integrated Nanotechnologies, cochair of the association. Rastogi came to Los Alamos as a summer student two years ago. He graduated from Columbia with a degree in chemistry and premedicine.

Rick Korzekwa of Nuclear and Particle Physics, Astrophysics and Cosmology, cochair of the association, graduated from the University of Illinois and plans to attend graduate school at the University of Texas, Austin.

A student at the Lab since 2004, Korzekwa said, "The Students' Association helps connect students. "The association also works to keep students actively engaged with peers and other students, finding activities for them to do during off hours or lectures at the Lab they might be interested in attending."

Brenda Montoya of the Education and Postdoc Program Office said her office works closely with the Students' Association with the primary goal to make students' Laboratory experience fulfilling. "The Laboratory values students, and it's important that they find their work experience here meaningful," she said.

— *Steve Sandoval*

LANL Facebook

A recently created Facebook page gives Laboratory students a venue for networking and learning about activities and events outside the Laboratory. It's also a place where students can chat and learn about Lab events, summer housing *(http://www.lanl.gov/students/FindResidence.htm)*—and options for transportation to and from work. There's also a section for photos of Lab students and student events.

The Facebook page was created by Pawan Rastogi of the Center for Integrated Nanotechnologies, cochair of the Students' Association, primarily as a venue to announce activities for students. It's open to current and former Lab students and is accessible from the Students' Association Web page *(http://www.lanl.gov/students/)*.

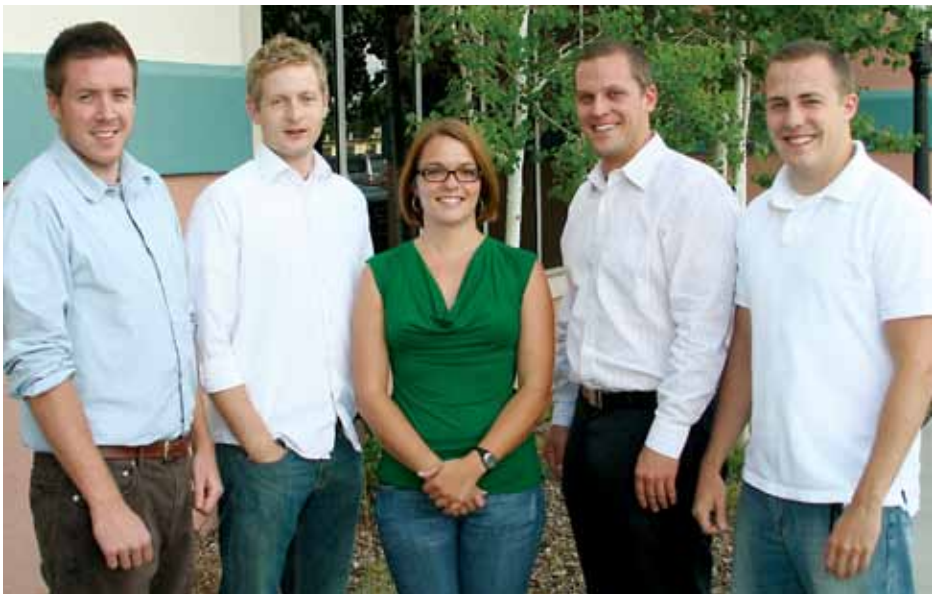
There is no cost to use the page, but students have to register first with Facebook. Only Students' Association officers can create group-related Facebook events.

Write to saexec@lanl.gov to learn more about the Students' Association Facebook site.

MBA Program helps move Lab technology to market

Each year, master's of business administration students descend on the Laboratory to assist Technology Transfer Division's technology-management teams, Laboratory inventors, and regional entrepreneurs with a variety of business development and commercialization activities.

These interns, who arrive in June, help Lab scientists and regional entrepreneurs answer important questions, such as how to define the product or service their technology can provide, who are the potential customers, how the technology or service stacks up to the competition, and what is the go-to-market strategy.



Many students have gained valuable business experience working in the Laboratory's MBA internship program, including former participants (left to right) William Hamilton, Daniel Weed, Renee Barnett, Jarrett Hines, and Matthew Grunseth.

This summer, 11 MBA interns will work at the Laboratory, according to Belinda Padilla of TT Division. The group of students is a notable increase from last year's class of four.

"The pool of candidates for the 2009 summer program exceeded 200, and the final 11 represent a diversity of technical, business, and geographic backgrounds and experience," said Padilla. "This year's class is particularly large to serve a variety of new regional and Laboratory programs, including LabStart and the new Energy Security Centers."

LabStart is a joint venture formed under the Los Alamos Venture Acceleration Initiative to strategically spin off technology-based companies from the Laboratory with an emphasis on establishing new businesses in Northern New Mexico.

The program's "Class of 2009" represents a variety of highly ranked business schools, such as Cornell University, Dartmouth College, Massachusetts Institute of Technology, University of Tennessee, University of Wisconsin, Carnegie Mellon, University of Texas at Austin, Wichita State University, University of California, Berkeley, and University of California, Los Angeles.

The projects, which are selected by the students, support regional entrepreneurs and commercialization of Laboratory technology and new businesses based on LANL technology and expertise. Having students pick the projects in which they are interested helps ensure that they are excited by and engaged in the activity.

"The LANL MBA internship is a full-contact activity," explained Padilla. "Students have the opportunity to compare business theory with business realities in the world of technology transfer."

Many former MBA interns now work as technology-transfer professionals at the Laboratory and in private companies such as Google, BP Amoco, Skype, and Intel. Still others have taken the entrepreneurial leap, said Padilla.

— Mig Owens

Students challenged to think about environmental stewardship

Sandra Valdez

Angelica Gurule hands out give-away items to promote reducing environmental impact at the Otowi Building cafeteria.

Changing the way people think about the environment is no easy task. But with support from the Lab, Angelica Gurule of the Environmental-Risk Reduction Office is doing just that.

Last summer, she created and organized the Student Sustainability Challenge, a competition that asked students to generate environmentally friendly ideas that could be implemented at the Lab. Her managers, Dennis Hjeresen and Pat Gallagher, supported her all the way, Gurule said. "I had an idea, and they helped me build it into something that would benefit the Laboratory as a whole," she explained. The competition is on again this summer and will challenge students to implement best practices to reduce their environmental impact at work.

Gurule, who holds a bachelor's degree in environmental science from the University of New Mexico, joined the Lab in February 2003 as an undergraduate student. "I heard lots of great things from friends about the Laboratory's student program." said Gurule, who decided to apply. She said she owes much to her first mentors, Yvonne Wood of Field Services Weapons and Lois McFarland of Field Services Operations.

Gurule said she loves her work at the Lab because it exposes her to a variety of environmental issues, ranging from energy and fuel conservation to waste minimization, environmentally preferable purchasing, pollution prevention, and communications. "This includes writing weekly *ENVIRO-LINKS*, distributing awareness materials for the Environmental Management System, and giving presentations," she said. Recently, Gurule helped inform Otowi Building cafeteria guests about ARAMARK Corp.'s new menu, which features produce from local farmers' markets on Thursdays.

For more on the Student Sustainability Challenge, see the events calendar on page 11 or contact Gurule at 7-6711.

— *Tatjana K. Rosev*

Expediting liquid carry-on screening for air travel

Lab researcher employs MRI technology to enhance airport security

A terrorist plot to blow up aircraft with liquid explosive components carried aboard was thwarted in London in 2006, prompting today's three-ounce restriction for carry-on liquids. MagViz is a direct response to that type of threat, said Michelle Espy, SQUID (superconducting quantum interference device) team leader and technical staff member in Physics Division.

Using magnetic resonance imaging (MRI), MagViz identifies chemicals by measuring the magnetic interaction of their protons with the local molecular environment, though the fields are one thousand to one million times lower than MRI machines used in hospitals. MagViz then matches the proton signals from the scanned items to those in a database of benign and 'threat' liquids.

The technology not only detects liquid explosives in less than 60 seconds, it scans multiple containers simultaneously, detects volumes as small as one millimeter, and "sees through" metal containers.

"No other technology I am aware of can ensure that hazardous chemicals aren't getting taken aboard aircraft without looking one bottle at a time," said Espy, who holds a doctorate in physics from the University of Minnesota and has been at the Lab since 1996.

With three team LANL Distinguished Performance Awards, a 2008 LANL Star Award, and a 2001 team DOE Energy 100 Award under her belt, Espy said her ultimate goal is to help people. MagViz offers the potential to do just that in more ways than one.

Richard Robinson

Michelle Espy is project leader for the MagViz liquid detection and analysis system.

"A low-field MRI machine like MagViz could mean that MRI as a medical tool could be available to millions that do not have access to MRI – either because of economics or location," explained Espy.

MagViz was demonstrated in the Albuquerque Sunport in December 2008 and was used there for several weeks to scan confiscated items. Espy and her team are now building a second prototype to be completed in July, and the technology was recently submitted for a 2009 R&D 100 Award.

"MagViz is one of those areas of research in which the benefits of the technology increased over time as scientists began to realize other applications," said Terry Wallace, principal associate director for Science, Technology, and Engineering. "What started at Los Alamos National Laboratory as a novel technique for brain imagery and a benefit to the medical profession has suddenly been realized as a useful technology for protecting the homeland as well. Technology like this is what makes Los Alamos a premier national security science laboratory."

— *Mig Owens*

Transforming diabetes monitoring

Breath analysis could replace the finger prick

In his spare time, Yixiang Duan paints, plays league tennis, and invents potentially life-altering technologies. His Breath Acetone Monitor will provide diabetics with an alternative to pricking their fingers. Instead, they will simply test their breath to monitor blood-sugar levels using a portable detector.

The technical staff member in Chemical Diagnostics and Engineering and 15-year Lab veteran started working on the breath test technology in 2005. "The project was worked primarily in my spare time, since there had been no funding to support the research, although Laboratory Directed Research and Development funding was sought years ago," he said.

The Breath Acetone Monitor uses microplasma discharge in conjunction with either a small spectrometer or a single-channel photo detector to analyze breath acetone, which has been shown to correlate with blood glucose, thus making the substance an effective alternative biomarker for diabetes.

"The most recent milestone for the monitor is human breath testing in the laboratory, and the next step should be further study on the monitor's capability and suitability," Duan said.

Dixon Wolf

Yixiang Duan shows an image of microplasma used for monitoring blood glucose levels.

Author of more than 100 peer-reviewed papers and more than 20 invention disclosures/patent applications, Duan holds a bachelor's degree in radiochemistry from Fudan University in China, a master's degree in analytical chemistry from the Chinese Academy of Sciences, and a doctorate in analytical chemistry jointly from Jilin University and Indiana University.

"The Breath Acetone Monitor is a prime example of how the multidisciplinary focus of science at Los Alamos National Laboratory gives rise to real-world solutions to problems of national importance," said Terry Wallace, principal associate director for Science, Technology, and Engineering. "A device that provides accurate blood sugar monitoring while sparing diabetics from the pain, anxiety, and inconvenience of poking their fingers to draw blood could help diabetics better manage and cope with their disease."

The device, a 2009 R&D 100 Award submission, also is designed for health screening and inspection, and Duan is in conversation with potential industrial partners and venture capital representatives to investigate commercialization of the technology.

— Mig Owens

MeetingMaker holidays

The Laboratory recently added holidays to the *MeetingMaker* calendar. To learn more about the reasons behind the initiative and the holiday-selection process, visit "What's New" on the Office of Equal Opportunity and Diversity Web site at *http://int.lanl.gov/orgs/hr/oeod/*.

Lab contracts help support New Mexico's economy

Contracts totaling more than $753 million were awarded to several New Mexico small businesses by Los Alamos National Security, LLC.

Among the subcontracts awarded was one to COMPA Industries, Inc. The contract is valued at $395 million for five years with an option to extend for five years.

Operations Support Center ramps up

The Operations Support Center is Laboratory employees' one-stop shop for reporting and obtaining assistance with abnormal or unusual events, requests for emergency managers and responders, and information regarding operations and facilities at the Lab.

The Operations Support Center hotline, 7-6211, will be staffed by emergency communications specialists and on-call emergency managers, 24 hours a day, seven days a week.

Call the hotline for such things as stalled vehicles along Lab roads, water leaks, hazardous materials, environmental concerns, unattended packages, facility problems, or any other concerns or problems that may come up.

Call 911 first for medical emergencies or life-threatening situations such as a heart attack or other medical concerns, fire, or criminal activity.

For all other situations requiring immediate response, contact the Operations Support Center at 7-6211 for assistance.

More information is at *http://int.lanl.gov/orgs/eo/emer_man/eoc.shtml online*.

WSST safety talk series

Billy Robbins, an internationally recognized motivational safety speaker whose electrical injury resulted in amputation of both his hands, will present "Hooked on Safety" at 10 a.m. and 2 p.m. June 23 and 24. The talk is part of a series of speakers sponsored by the Lab's Institutional Worker Safety and Security Team. *http://int.lanl.gov/esh/wsst/wsst_series.shtml*.

Unofficial foreign travel to a sensitive country

Planning your summer vacation? Employees who intend to visit a country deemed sensitive by the Department of State must submit Form 1743, Notification of Unofficial Foreign Travel to a Sensitive Country, 30 days before the travel date. *http://int.lanl.gov/security/documents/security-smart/foreigntravel_0806.pdf*

Flexible Spending Account cards

Flexible Spending Account participants should be aware that previously issued Consumer Accounts MasterCards will remain active during 2009. United HealthCare will not be issuing new cards automatically. If you have destroyed or lost your Consumer Accounts MasterCard, call United HealthCare toll free at 1-866-680-0994 to request a new card. *http://www.lanl.gov/worklife/benefits/tax/hsa.shtml*.

June service anniversaries

Find the June service anniversaries online at *http://www.lanl.gov/news/currents/2009/june/anniversaries.shtml*.

In Memoriam

- Eugene Adolph Plassmann, 87, died April 5
- Donald Yusnukis, 79, died April 5
- Albert Henning Barlich, 76, died April 20
- Charles A. Linder, 79, died April 30
- Charles "Robbie" Robertson, 75, died May 3

Make safety and security integral to every activity we do.

Anatomy of an emergency highway kit

Having a flat tire in a government vehicle was a not-so-subtle reminder to Lab employee Chad Hanawalt of the importance of having an emergency highway kit. It also spurred a recent effort by the Security and Safeguards Directorate's Workers' Environment Safety and Security Team (WESST).

Hanawalt, who works in the Vulnerability Assessment Office, had the blowout on U.S. 84/285 near the Santa Fe Opera around 8:30 p.m. while returning to Los Alamos from a business trip. He was able to pull the government vehicle off the dark highway onto the shoulder to assess the situation.

Hanawalt quickly discovered the vehicle didn't have a flashlight, flairs, or other emergency equipment. Northbound traffic meanwhile was zipping by, creating an unsafe condition. To make matters worse, Hanawalt's personal cell phone was inoperative. It took nearly three hours, but he eventually was able to change the tire.

The next day, ADSS Chief of Staff Christy Archuleta heard about the experience and contacted the organization's deployed safety officer and vehicle property representative to see if emergency road safety equipment could be purchased for ADSS's nonemergency vehicles. The individual turned to Robert Gonzales, chair of the WESST and vice-chair of the Lab's institutional Worker Safety and Security Team, for help with this safety issue.

Gonzales of Classified Matter Protection worked with a Voluntary Protection Program vendor to develop an emergency highway kit, and in less than 45 days it was shipped to the Laboratory and placed in ADSS nonemergency vehicles. The emergency highway kit comes in a bright red bag with ADSS-WESST and LANL printed on the front and includes a heavy-duty flashlight, yellow safety vest, orange "Call the Police" tape, and a bright reddish orange collapsible cone with a flashing red beacon light.

Sandra Valdez

Robert Gonzales, in the red WSST shirt, shows students the contents of the highway emergency kit.

"These kits now provide the appropriate safety equipment that can be quickly accessed and placed to mitigate a potential safety situation if any of our vehicles break down while being used on travel or on Laboratory property during the cover of darkness," said Gonzales.

Based on the success of the kit in ADSS and the minimal cost (less than $30) from the vendor, other Laboratory organizations have expressed an interest in acquiring these kits for their government vehicles.

For more information about the emergency highway kit, contact Robert Gonzales at 7-0447 or check with your organization about securing such a kit for your government vehicle.

Student safety tip

When driving government vehicles this summer in the course of performing work, get clear directions to your destination, follow all rules of the road, watch out for bicyclists and pedestrians, and drive defensively. For more information about defensive driving, go to *http://www.roadtripamerica.com/DefensiveDriving/Drive-Safe*.

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Work experience options for high school students

High School Cooperative (Co-Op) Program

For high school students looking to get a head start on their career and earn money in the process, the High School Co-op Program could be just the thing. The program combines academic studies with on-the-job training in a variety of technical and administrative career fields. Students can work full-time during the summer and continue part-time during the academic year.

Students are selected based on aptitudes and interests, grade point average, and number of credits toward graduation.

Here's what some current and former high school co-op students said about their experience at the Lab:

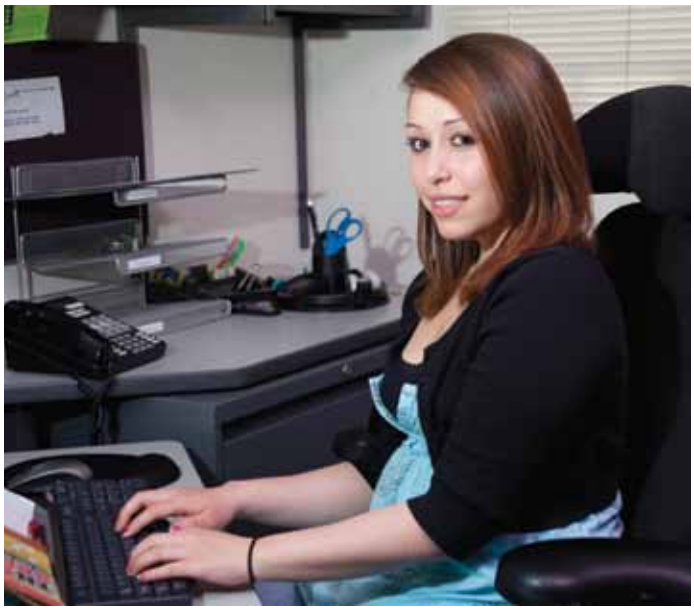
"This is my first time working at the Lab and, so far, it has been very interesting and fun," said Los Alamos High School senior **Adam Izraelevitz**, who works in Statistical Sciences this summer. He recently received a $4,000-per-year, four-year gold scholarship from the Los Alamos Employees' Scholarship Fund (LAESF).

Valerie Duran was a senior at Pojoaque Valley High School when she joined the Lab through its high-school co-op program. She plans to continue working in the Nuclear Nonproliferation group as an undergraduate student majoring in engineering at the University of New Mexico, Los Alamos. "I feel very privileged to work here because I know the experience and knowledge that comes with this job," said Duran.

Eric Dai, who recently received a $2,500-per-year, four-year silver scholarship from LAESF, joined the Lab last November. The LAHS senior has been working part-time in the Theoretical Division to develop software tools for simulation data. "I really like my work," he said.

An undergraduate student at UNM, Los Alamos, **Gabriella "Gabby" Garcia** came to the Lab as a high school co-op student from Española Valley High School. "I enjoy working here very much and plan to stay a few more years," she said. Garcia works in the Waste Disposition Project Division Office, where she has just finished helping office staff complete an audit related to shipments of remote-handled transuranic drums from Los Alamos to the Waste Isolation Pilot Plant in Carlsbad. "Gabby's a very valuable asset to us," said her supervisor, Melissa Porter.

— *Tatjana K. Rosev*



Sandra Valdez

Gabby Garcia began her career at the Lab as a high school co-op student and plans to stay here for several more years.

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