

the laboratory connection

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your community's link
to information, opportunities, and people
at Los Alamos National Laboratory

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a
word
from

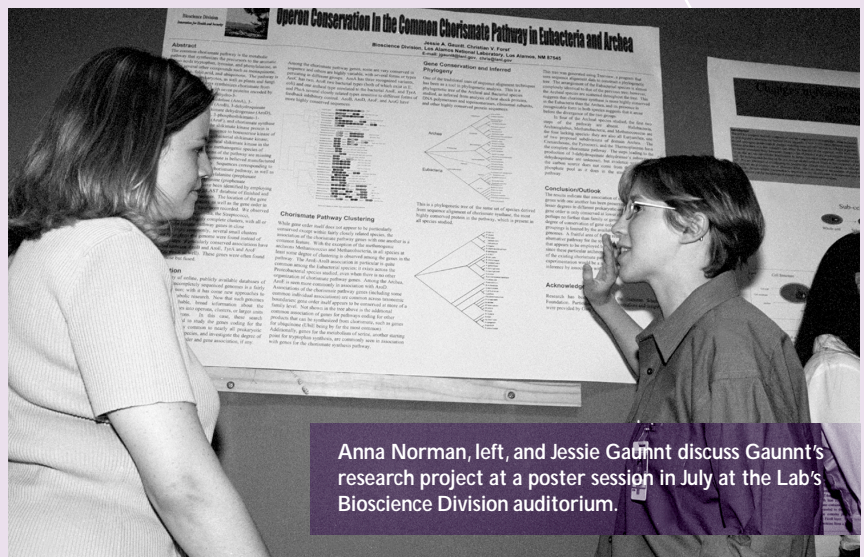
the Community Relations Office

Every summer, the Laboratory's ranks are increased by the many students who choose to spend their summer break here, learning new skills and considering how their futures and ours may coincide. The gap is widening between workers with critical skills nearing retirement and the youthful majority of the workforce. Training new workers to bridge that gap is one of our most pressing needs, and we are increasingly aware that our students, and their counterparts elsewhere, truly are the future of our Laboratory.

Many activities were planned for students to interact with Lab staff and with each other. Student breakfasts were held bi-weekly, with featured speakers giving presentations about a variety of Lab programs. Lab Director John Browne met with students and listened to their questions and concerns.

The students presented their work and ideas in a number of forums. Symposium 2001, held in Santa Fe early in August, highlighted student and postdoctoral research. The event provided a unique opportunity for students to present their scientific research to their peers, Lab mentors, technical staff, and representatives from industry, academia, government agencies and professional societies. Also in August, nearly a dozen students chosen by the Lab presented posters on the work they did exploring cutting-edge bioscience research. Their program, Interfaces in Bioscience, is targeted towards superior students who wouldn't normally be exposed to research at

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Anna Norman, left, and Jessie Gaunnt discuss Gaunnt's research project at a poster session in July at the Lab's Bioscience Division auditorium.

Bioscience Students Get Unique Research Experience

Ten outstanding undergraduate students from around the country got a unique opportunity to explore cutting edge bioscience research this summer, courtesy of the Laboratory and the National Science Foundation.

NSF supported the recruitment of the students, who interned in the Bioscience Division for 12 weeks. The program, Interfaces in Biology, targets undergraduate students before they make critical career decisions that may take them out of science and technology fields.

Claire Strother, from Wasilla, Alaska, learned about the internship from her biology club at New Mexico Tech. A biology major, she never actually worked in a lab before this summer. At Los Alamos, Strother has been doing protein analysis of irradiated cells under the supervision of her mentor, Donna Gadbois. The goal of her project is to determine at what level radiation no longer affects human cells.

"I'm having lots of fun," she said. "I've been exposed to a lot of new equipment and have learned about research techniques that have

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Laboratory Students Describe Community of the Future

Los Alamos National Laboratory is looking to its future leaders to solve its emerging problems by asking student employees to suggest avenues for building community and trust with its neighbors.

In July, a student conference, "Busting Myths and Building Trust," was sponsored by the Environmental Science and Waste Technology Division. Dozens of graduate and undergraduate students currently working at the Lab drew on their personal experiences to join senior Lab management and local government and business leaders in tackling the ongoing challenge of building and sustaining community in northern New Mexico.

The two-day conference included panel discussions on barriers and bridges to community, the social responsibility of corporations, how northern New Mexico currently supports the Lab and how the Laboratory can support northern New Mexico. Speakers, including representatives from local governments and businesses, focused on how the Lab can better interact with its neighbors.

Knowledge and communication can foster those interactions and can occur at all levels. Panelist Connie Thompson-Ortega, director of the Española Chamber of Commerce and former Mayor of Española, spoke of how former Lab Director Sig Hecker used to be known in the Española Valley as a great polka dancer, and how she recently encountered John Browne shopping for carne adovada at Center Market there. She also recalled campaigning door-to-door in Los Alamos while running for state senate. "People were wonderful," she said. "I left with such a positive feeling."

All the speakers agreed that the dynamic between Los Alamos and its neighbors off the hill has changed for the better since the Cerro Grande fire last spring, with the tremendous outpouring of support and aid that resulted from that tragedy.



Community and business leaders from northern New Mexico gave brief presentations on how they support the Laboratory. They are, left to right, Denise Smith of the Los Alamos Commerce and Development Corporation, Sharon Stover, chair of the Los Alamos County Council and Connie Thompson-Ortega, director of the Española Chamber of Commerce.

"We were always neighbors," said Sharon Stover, chairman of the Los Alamos County Council, "but since the fire we have become friends with our neighbors."

Divided into teams, the students prepared sets of principles for developing lasting relationships and action plans for achieving them. They presented their ideas to a panel of senior Lab managers. Education and quality of life were key to most of the suggested plans.

Amanda Naranjo from Environmental and Earth Sciences described how her Lab calculus tutor, Belinda Wong, made a critical difference in her life, and helped convince her to pursue a job here. Naranjo met Wong through the Santa Clara Pueblo Library's tutoring program while at Española Valley High School (EVHS).

"She helped me look at math as a tool," she said, "something you can really use." Naranjo will soon receive her Associate's Degree in Environmental and Waste Resource Management from Northern New Mexico Community College.

The students encouraged the Lab's Education Program Office to visit schools in connection with a variety of activities. "Lab representatives shouldn't go to the schools only to recruit," said

Andrea Chavez, who recently graduated from EVHS. "Employees should be willing to visit to emphasize learning and give students the opportunity to experience science and math as fun, not just as a job." Chavez works this summer in the Materials Science Technology Division and will study civil engineering at New Mexico State University in the fall.

Tiffany Rockage recalled how she used to love to watch her father's cryogenic demonstrations on Take Our Daughters To Work Day and wondered if elementary school children wouldn't be fascinated by watching dramatic experiments.

"They would put a banana into liquid nitrogen and it would get so hard you could hammer a nail with it," she said. "We could do amazing magic shows for the younger kids, along with the more advanced programs for the high school."

A suggestion for a monorail system linking neighboring communities with Los Alamos could someday be seen as visionary. According to Ware Hartwell, E-Division chief of staff, students involved in past conferences have helped Lab management set policy on recruitment strategies and facility revitalization.

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their schools, and students from minority groups traditionally underrepresented in science and technology fields. In July, a student conference examined the issue of sustainability and participants suggested ways the Laboratory can better communicate and interact with its neighbors.

The Laboratory is committed to providing rewarding work and learning experiences for students who will one day carry out its mission.

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just been developed. Before I leave, I will also be doing robotic analysis."

Zev Binder from Los Alamos intends to be a doctor. He attends the University of California, Davis, and has been working this summer using luminescent quantum dots as tags for single-molecule detection with his mentor, Peter Goodwin.

"I have had an enjoyable learning experience this summer, except for the physics," he laughed.

Reconsidering career options is a common result of this first hands-on research experience. Jessie Gauntt from Phoenix, Arizona studies ecological and evolutionary biology at Tulane, and has been working this summer with Christian Forst on bioinformatics databases. "My work is related to my studies," she said, "but I found out that I really like research."

Pre-med student Anna Norman attends the College of St. Benedict in Minnesota. She and her mentor, Mark MacInnes, have been working on a project of targeted gene replacement in mouse embryonic stem cells.

"It's made me think about doing research, either before or after med

school," she said. "I'm disappointed that I won't be here to see the end results of this project."

In addition to their individual projects, the students attend bio-informatics lectures every Tuesday evening and a journal session every Wednesday at noon where they take turns presenting research papers related to their projects. "It's been interesting to hear what everyone else in the group is working on," said Tamra Thayer, a senior biology major at Carleton College in Minnesota. "It's also given us experience in fielding questions about our work."

The students agree that the group activities, and the additional work they represent, have helped them bond. The students whose stay at the Lab began earlier in the summer have taken some hikes together, while the latecomers scramble to meet project deadlines.

Michelle Quinn from Prattville, Alabama studies biomedical engineering at Catholic University in Washington, D.C. She has appreciated the respectful attitude of her mentor, Tom Brettin, and the other Lab staff.

"I thought my mentor would treat me like a student," she said. "Most people treat you like one of the team of scientists. They expect you to meet deadlines and get things done, just like someone with a PhD."

Program Director Tracy Ruscetti is also pleased with its results.

"We would like to see it grow into a mechanism for recruiting and maintaining students in science fields," she said. "We want to give them an experience that makes a career in science attractive."

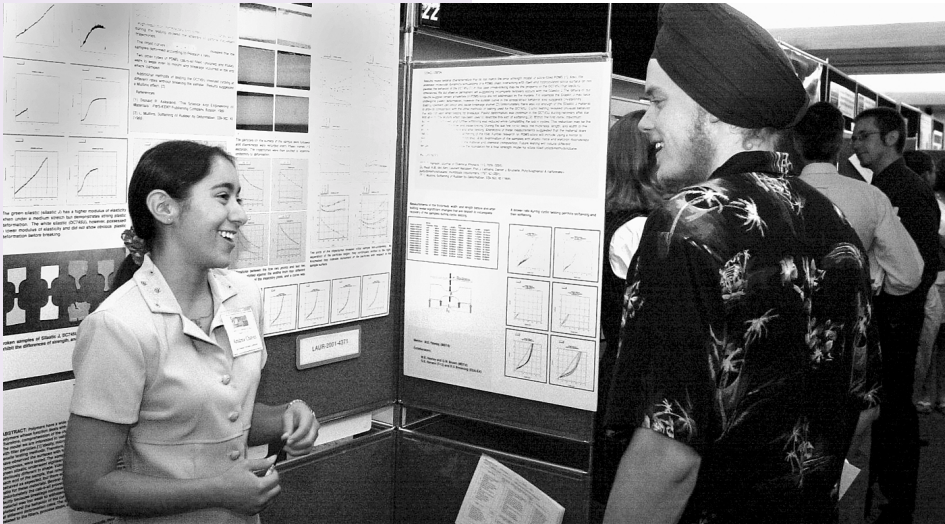
Web Pages

The Laboratory's Diversity Office and Ombuds Program have both unveiled new Web pages this summer. The Diversity page, at <http://www.lanl.gov/orgs/dvo/> features messages from Lab Director John Browne and Diversity Director Lisa Gutierrez about the importance of diversity and employee respect. It also has links to the Lab's diversity initiatives and the staff assigned to them, a "Science of Diversity" section and the new Diversity Library. There's also a "using your keyboard" link to explain the features that enhance accessibility for the visually challenged as well as for people with injuries related to using a computer mouse. The DVO Web page also announces the current week's diversity events, holidays, and international observances.

The Lab's Ombuds Program inaugurated a new Web page designed for Lab students. The site, at <http://www.lanl.gov/ombuds/Studenthome.html>, offers information on student organizations, programs and resources and referral suggestions for assistance in a variety of areas. There are links to sites featuring information on issues of concern to students from off-site student policies to tuition reimbursement.



Tracy Ruscetti of the Lab's Bioscience Division presents a \$2,000 check to Louis "Jerry" Atencio of Johnson Controls, a member of the Dixon Fire Department. The check represents the proceeds from registration fees of 248 runners and walkers who participated in the first annual Renewal Run in Los Alamos in May. The Dixon Fire Department is a small, volunteer fire department that brought its two water trucks, a small brush truck and a tanker to Los Alamos during the Cerro Grande Fire. The trucks provided water to firefighters and helped save homes from the blaze. The Dixon station is currently housed in a condemned building. The money from the Renewal Run will go into their building fund for a new station.



Andrea Chavez, left, of Structure/Property Relations, talks to Prabhu Khalsa about her research involving tensile testing of silica-filled polydimethylsiloxane at "Symposium 2001, Championing Scientific Careers," at Santa Fe Community College. Students and post-doctoral appointees presented nearly 100 poster sessions and technical presentations. The symposium was sponsored by the Education Programs Office.

Scholarship Fund

Lab employees donated or pledged more than \$111,000 this year to the Los Alamos Employees' Scholarship Fund, which funds college scholarships for local area students. The 2001 fundraising campaign exceeded its goals and the four-year-old fund continues to grow. A special scholarship has been created within the fund in the name of Allan Johnston, the former BUS division director who died earlier this year.

Since the creation of the fund, Lab employees and subcontractor personnel have contributed more than \$260,000 in donations or pledges. More than 100 high school seniors or college undergraduates from throughout northern New Mexico have received scholarships through the fund. Awards are based on academic performance, leadership potential, and career goals. Financial need, diversity and regional representation are an integral part of the selection process.

The scholarship fund is managed by the Laboratory and the not-for-profit Laboratory Foundation. For more information, contact scholarships@lanl.gov.

Affirmative Action, EEO Policy

Each year, the makeup of the Laboratory workforce changes as a shift towards greater diversity continues. Reaffirming the Lab's commitment to workforce diversity, a summary of its 2001 Affirmative Action Program is posted on the Office of Equal Opportunity (OEO) homepage at <http://www.lanl.gov/orgs/o eo/PDF/01-dirpolicystmt.doc.pdf>.



Students from throughout the Lab turned out at Urban Park in June for the annual student picnic sponsored by the Student Programs Advisory Committee, the Education Programs Office, and the Student Association. Students and their mentors dined on barbeque, potato salad, and watermelon.

UC, LANL News

The University of California and the Lab have announced plans to help address health care needs, including substance abuse, in Rio Arriba County. Under an agreement with the Rio Arriba Family Care Network (RAFCN) and Rio Arriba County, UC and LANL will provide academic and professional services at no cost through two of its campuses (UC San Francisco and UC San Diego), the UC Office of the President, the Laboratory, and the Laboratory Foundation.

The in-kind services will include assisting RAFCN in coordinating evaluation activities for Ayudantes, which advances access to health care for residents with limited English proficiency. The program will also bring together RAFCN staff with substance abuse treatment experts in screening and assessment and brief interventions. UC and Lab staff will help RAFCN set up administrative support systems and performance evaluation processes for its funding grants.

Student Discount Cards

This summer, students working at the Laboratory were issued free discount cards that could be used to purchase books, clothes, food, and other goods and services from participating Los Alamos businesses.

Approximately 20 local businesses, identifiable by the placards displayed in their windows, took part in the program, which will last through September. The program is a joint project of the Lab and the Los Alamos Chamber of Commerce and is intended to welcome students to the community.

Discount cards are available at the Community Relations Office.

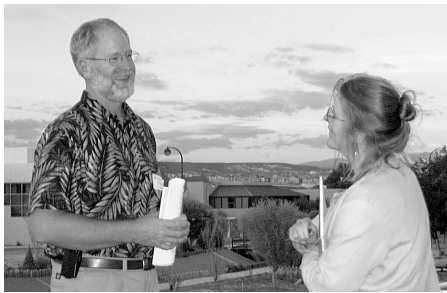
Earthwatch

Eight high school students from across the country came to Los Alamos this summer to explore the world of transient phenomena in astrophysics at Fenton Hill Observatory as part of the 2001 Earthwatch Student Challenge Awards Program.

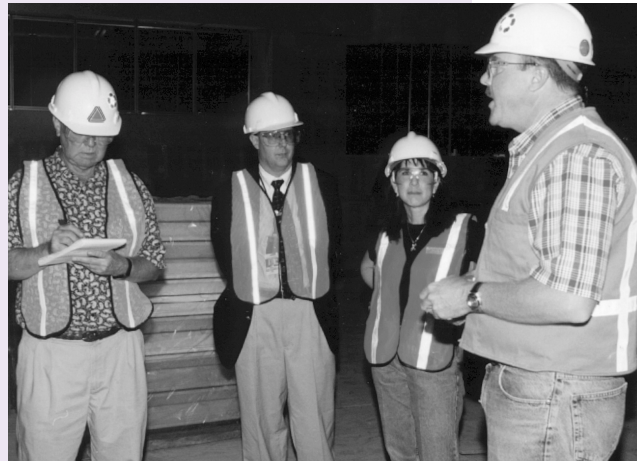
Earthwatch Institute's goal is to provide science and technology education by sponsoring awards expeditions for talented students. Using the telescopes at Fenton Hill, the students' main assignment was to locate a list of double stars—stars that are very close together—to determine if they can be detected as separate or if they appear contracted together.

The program also included a series of lectures by Lab experts and external speakers at the Bradbury Science Museum on a variety of astrophysics topics. The students also toured the Very Large Array radio telescope near Socorro and took hikes through archaeological sites.

For more information on the program, visit <http://www.laastro.lanl.gov/earth> online.



Doug Stavert, of the Lab's Air Quality group and Joni Arends of Concerned Citizens for Nuclear Safety take a break at Northern New Mexico Community College in Española. They were among about 60 people at a public meeting held at NNMCC to announce findings of a study of Cerro Grande Fire smoke inhalation by the Centers for Disease Control and the New Mexico Department of Health. Health experts from CDC and NMDOH sampled urine taken from emergency personnel and others who were heavily exposed to smoke from the May 2000 fire to determine whether those people had accumulated toxic levels of metals as a result of breathing the smoke. The study found that although some of the test subjects did have higher-than-expected levels in their urine, the presence of these metals could not be attributed to Cerro Grande smoke. Further study of the issue is planned.



Community leaders and members of the press got a first-hand look at the Laboratory's new Strategic Computing Complex (SCC), under construction at TA-3. The complex, which will house "Q", the most powerful tool ever devised for computer simulations, will open next year. Inside the now-empty building are, left to right, Roger Snodgrass, assistant editor of the Los Alamos Monitor, James Mercer-Smith, Deputy Associate Director for Nuclear Weapons, Sharon Stover, chair of the Los Alamos County Council, and John Bretzke, SCC Project Director.

Lab Geologist's Team Finds Oldest Human Ancestors

A Lab geologist is part of an international team of researchers that recently announced the discovery of fossil bones and teeth belonging to the earliest human ancestors yet discovered. The fossil remains of several individuals—hominids who lived in what is now Ethiopia between 5.2 and 5.8 million years ago—were found in Ethiopia's Middle Awash study area.

Giday WoldeGabriel coauthored several articles in the journal *Nature* connected to the discovery. The team discovered the first fossils in 1997, with the latest one found this year. The fossil bones predate the oldest previously discovered human ancestor by more than a million years. Based on a toe bone discovered among other fossils, the team concluded that the subspecies it represents—*Ardipithecus ramidus kadabba*—almost certainly walked on two legs when on the ground. The teeth found indicated that he ate less fruit and more soft leaves and fibrous food than his chimpanzee contemporaries. The research team believes the subspecies was about the size of a modern-day chimpanzee.

WoldeGabriel and his colleagues said the creature's environment during its life was a far cry from the harsh desert that exists there today. The area was as much as

1,500 feet higher in elevation and much colder and wetter. The area was peppered with active volcanoes and intense earthquakes.

"It's hard to imagine that life would go on under such hostile environmental conditions," WoldeGabriel said.

"*Ardipithecus* and the other animals inhabiting the region were real survivors." Finding the specimens was a tremendous challenge. Lakes, forest areas, volcanic rocks and recent sediments cover about 87 percent of the present-day Middle Awash area. The new subspecies fossils were tiny nuggets in a huge landscape littered with pebbles and boulders. To determine the age of the fossils, the team collected volcanic and sedimentary rocks that lay above, beneath, and within the sediments where they were found. To determine the age of the volcanic layers, they measured the amount of argon gas contained in their volcanic rocks. The dates of the ash layers and lava flows bracket the age of the fossil remains.

The international team includes more than 45 scientists from 12 different countries.

Lab Samples Student Opinion for Future Guidance



Lab Director John Browne fielded questions from the Lab's student population at a meeting held early in the summer. Browne meets with students every year to hear their views and concerns.

A survey of more than 700 anonymous graduate and undergraduate students at the Laboratory during 1998 and 2000 showed that most had a positive work experience and a good relationship with their mentors.

The survey, conducted by the Bureau of Sociological Research at the University of Colorado, Boulder, also revealed that two areas where improvements could be made were housing and the online employment application system. A new, improved online application is already available.

Kurt Steinhaus of the Science and Technology Base and Education Programs Office said the survey "gives us solid information about the strengths and needed improvements regarding student programs."

The 200-page report can be found at the Lab's Research Library, or at <http://lib-www.lanl.gov/la-pubs/00416769.pdf> online.

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