

Caltech 336

T E S S M T W T F S S M T W

The campus community biweekly

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Rare molecule defies odds

A rare type of ammonia that includes three atoms of deuterium has been found in a molecular cloud about 1,000 light-years from Earth. The comparative ease of detecting the molecules means there are more of them than previously thought.

In a study in the May 20 issue of the *Astrophysical Journal Letters*, an international team of astronomers reports on the contents of a molecular cloud in the direction of the constellation Perseus. The observations were done with the Caltech Submillimeter Observatory atop Mauna Kea in Hawaii.

The molecule in question is called "triple deuterated ammonia," meaning that each molecule is composed of a nitrogen atom and three deuterium atoms (heavy hydrogen), rather than the usual single nitrogen atom and three hydrogen atoms found in the typical bottle of household ammonia. While not unknown on Earth, the molecules, until recently, were thought by experts to be quite rare—so rare as to be undetectable from Earth.

But now that scientists have detected triple deuterated ammonia in the interstellar medium, they're still wondering why they were able to do so at all, says Tom Phillips, professor of physics, director of the Caltech Submillimeter Observatory, and leader of the Caltech team. No other molecules containing three deuterium atoms have ever been detected in interstellar space.

"From simple statistics alone, the chances for all three hydrogen atoms in an ammonia molecule to be replaced by the very rare deuterium atoms are one in a million billion," Phillips explains. "This is like buying a \$1 state lottery ticket two weeks in a row and winning a \$30 million jackpot both weeks. Astronomical odds indeed!"

see *Ammonia*, page 6

ITS cooks spam

John Dundas

Information Technology Services (ITS) has recently installed new software on its e-mail servers that helps users manage spam. Spam is unsolicited or unwanted e-mail, often sent in bulk by advertisers. The software used by ITS follows a set of rules to determine whether a message is spam, and tags messages that might be spam with a special header. Users can configure their e-mail software, such as Eudora, Outlook, or Netscape, to look for this header and to filter tagged messages automatically.

Because legitimate mail could potentially match enough rules to be mistakenly identified as spam, ITS does not recom-

see *ITS*, page 6

Postdocs are arising, associating

Organizing: it's the great American tradition. Across the country, postdocs are joining in—and Caltech's are no exception.

Postdoctoral scholars—newly minted PhDs pursuing one, two, or more years of additional research—face a unique set of concerns. Considered neither faculty nor staff, they have long had a shadowy status on campus. Changing demographics have led to a more competitive, less certain job market. And spending long hours in the lab often breeds loneliness and isolation. What's a postdoc to do?

For Liz Haswell and colleagues, the answer was to create the Caltech Postdoc Association (CPA), one of about 50 such organizations nationwide. In October, Haswell floated the idea of an association at a meeting of about 20 fellow biology postdocs. Gaining a positive response, the group then held a campuswide gathering that drew about 50 attendees. The time was ripe, it seemed, for postdocs to join together, find moral support, and address their shared concerns.

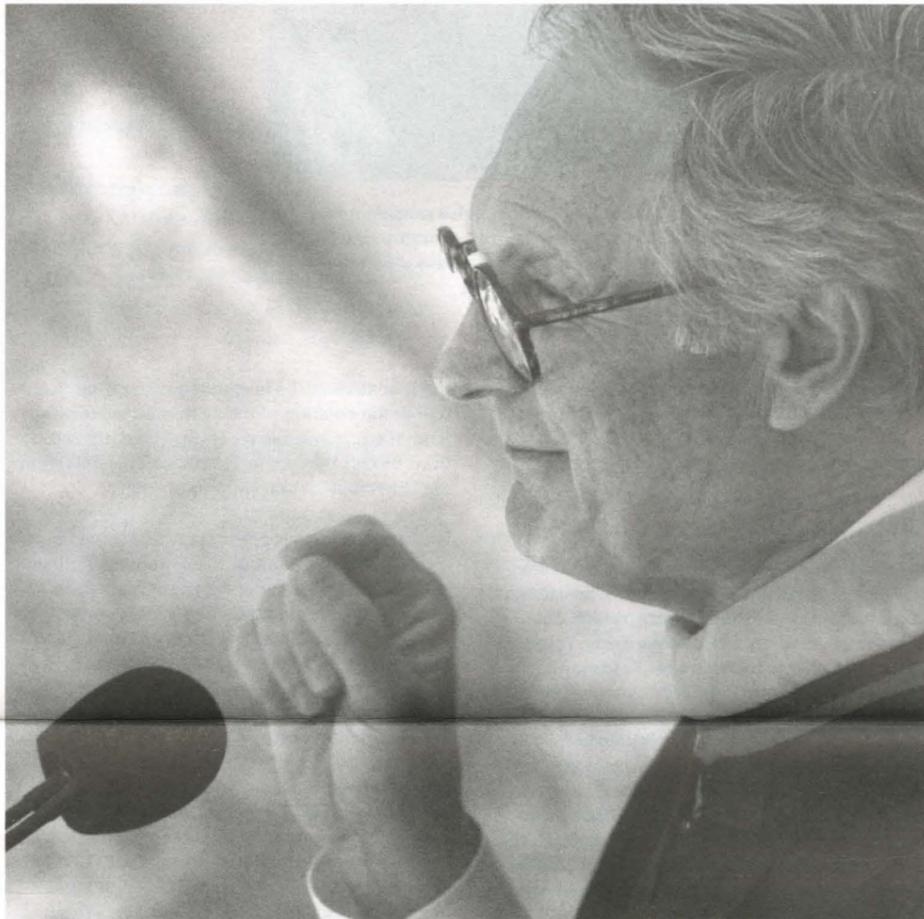
"We've received wonderful support from the academic divisions, faculty, and administration," said Haswell, who is the CPA's chair. The group has recently gained recognition from President Baltimore as an official campus organization, and particular encouragement from Marianne Bronner-Fraser, chair of the faculty board; Vice Provost David Goodstein, who is working with Haswell to set up an advisory committee; Elliot Meyerowitz, chair of the biology division (which has the largest number of postdocs); and John Richards, professor of organic chemistry and biochemistry, now the CPA faculty advisor. Along with recognition has come funding from division offices, the provost's office, and the Career Development Center, along with Human Resources, JPL, the NSF, and other sources.

The issues facing postdocs are broadly summed up in the CPA's mission to foster community, provide career and personal development resources, and develop a voice on campus and in the local community. To address these goals, the group has created five committees: social, career development, advocacy, outreach, and organization and membership.

One of the most common problems for postdocs is isolation, both social and scientific—"not knowing anyone else in your field," noted Helen McBride, a postdoctoral scholar in biology. Thus, the social and membership committees' networking and community-building functions are crucial. Recent social events have included a ski trip and monthly happy hour gatherings, and an annual family barbecue is planned for August.

see *Postdocs*, page 6

Looking for Feynman



Actor and science aficionado Alan Alda, the 2002 keynote speaker, used his research into Richard Feynman as a springboard to remind graduates that communication is as important as discovery. More commencement photos, page 6.

Training leaders for a better Pasadena

The group of 25 that gathered in late January included several of Pasadena's movers and shakers: a fire captain, a public television executive, a school principal, the vice president of a bank, a geochemist. The latter is Julianna Fessenden, a first-year postdoc in the Division of Geological and Planetary Sciences.

As the only Caltech-connected student at this year's Leadership Pasadena class, she would probably be the first to admit that she's not one of the more influential people in the city. She's more at ease on research trips to Alaska and Siberia, tracking carbon as it moves through sensitive environments. But Fessenden shared a crucial quality with her classmates: a drive to get involved.

Leadership Pasadena is a voluntary six-month program that fosters leadership skills and community building in the city. Every year it attracts leaders from the business, government, and nonprofit sectors who identify existing problems, seek opportunities for further change, and forge networks between themselves and other civic-minded people that will endure beyond the class.

Fessenden saw Leadership Pasadena as a way to improve Pasadena's parks and green areas, which would in turn contribute to the quality of life in the city.

Her goal included finding ways to teach citizens about the central importance of maintaining a clean and healthy environment.

"I wanted to teach kids the importance of their environment and to encourage them to go outside—for example, to the mountains and parks—but also to take care of their environment, something as simple as picking up their own trash," she said.

Education, geriatric health care, and the quality of life of the working poor were other themes that her classmates determined were areas with problems for which they would seek solutions.

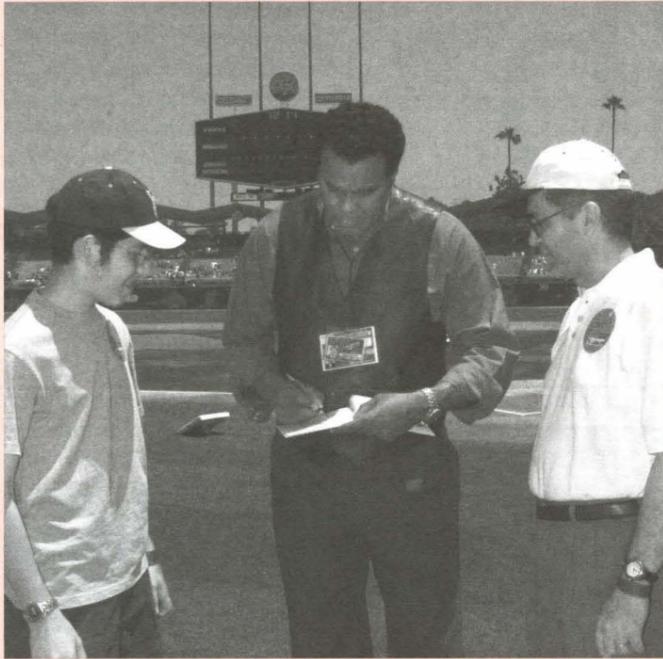
see *Leadership*, page 6

Summer vacation for 336

This is the last issue of *Caltech 336* for the academic year; we will resume publication again on September 19. Until we meet again, the 336 staff wishes everyone an enjoyable summer of cool breezes and no power outages.

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NewsBriefs



At the first-ever Caltech-JPL Dodger Day, Dodgers vice president for communications and former Los Angeles Lakers star Tommy Hawkins signed autographs for Mark Helou, son of IPAC executive director George Helou, and for Charles Elachi, director of JPL.

Personals

Welcome to Caltech

May

Simon Bruce Blakey, postdoctoral scholar in chemistry; **Eugene Carter**, research assistant I, computer science; **Sonia Chernobieff**, data librarian, Seismo Lab; **Nicholas Eddy**, research assistant I, chemistry; **Michael Feldmann**, senior consultant for user applications, Center for Advanced Computing Research; **Heidi Grimsley**, building attendant I, Athletics; **Nicholas Lawrence**, department assistant, biology; **Adam Paiz**, lab helper B, biology; **Nicola Raule**, postdoctoral scholar in biology; **Allison Ross**, catering coordinator, Athenaeum; **Fabricio Ruiz**, assistant animal lab technician, biology; **Robin Stein**, research assistant I, chemistry; **Nicole Tetreault**, research assistant I, biology; **Shree Krishna Pati Tripathi**, postdoctoral scholar in applied physics; **Oliver Tschauner**, visitor in geophysics; **Kisha Young**, research assistant I, biology; **Hao Yu**, postdoctoral scholar in biology; **Tai Yu**, department assistant A, Athletics.

June

Cynthia Kiser has joined the Office of Public Relations as system administrator for electronic media publications, effective June 10. As administrator for the Caltech server, her responsibilities will include the Caltech home page, @Caltech, and Tech Today. She received her PhD in biology from Caltech in 1998.

Bruce Rise is joining the staff of principle and major gifts in Caltech's Office of Development, effective June 24. Previously associate director of annual giving at Occidental College, and prior to that associate director of development programs with the United Way of Greater Los Angeles, he moved into the development field after several years in advertising and sales, and a brief stint in the theater. He received his bachelor's degree from the University of Florida.

Krissy Sudano has joined Development as associate director of the Caltech East Coast Regional Office, effective June 3. She will also be point person for regional donor events, including establishing the Associates on the East Coast and managing the Wall Street Group. She comes from Columbia Law School, where she worked in major gifts, and prior to that she was protocol officer at the UN, serving under Madeleine Albright. She received her BA in communications, law, economics, and government from American University in Washington, D.C., and has just earned her master of public administration from Columbia.

July

Michael Dickinson is joining Caltech effective July 1 as a professor of bioengineering. A specialist in insect flight dynamics and control of move-

ment in animals, he is credited with a significant role in the creation of the new interdisciplinary field of neuromechanics. He received his ScB from Brown University in 1984 and his PhD from the University of Washington in 1989.

Ivana Komunjer is coming to Caltech on July 1 as an assistant professor of economics. A financial econometrician, her research interests include time series analysis and "value at risk" analysis. She received her BS from École Polytechnique in 1997 and MSc from École Normale Supérieure in 1998 and is expected to receive her PhD in June from the HEC School of Management, Paris.

Mark Reinecke is joining the staff of principle and major gifts in Caltech's Office of Development, effective July 15. Most recently a senior director of development, he comes with nearly 20 years of experience at both cultural and educational institutions, including the University of Chicago, the Northwestern Memorial Foundation, and the Lincoln Park Zoo, all in Chicago. He received his undergraduate degree from the University of Miami and his graduate degree from the University of Chicago.

August

Gwen Strong is joining the staff of Caltech's Office of Development as manager of development events, effective August 1. An events coordinator at Stanford since 1999, she is currently part of the team that produces Stanford's Think Again tour. She attended the University of Arizona, and in her spare time she studies dance and writes screenplays.

New positions

May

Amy Vu, currently a lab assistant with environmental science and engineering, has undertaken the additional duty of precollege curricular writer with the Caltech Precollege Science Initiative (CAPSI).

June

Tommy Reid has joined the Caltech Alumni Association staff in the permanent position of administrative aide, effective June 1; he had been working for the association on a temporary basis. He will oversee reunion and Seminar Day logistics, as well as day-to-day responsibilities of the association's membership dues program.

July

Tracey Tromp, most recently associate director, environmental affiliates, in the Division of Geological and Planetary Sciences, where she worked to develop a program to bring corporations and faculty together to solve environmental problems, is joining Caltech's Office of Development effective July 8. She will work with the staff of

principal and major gifts on program development and campaign research and will serve as faculty liaison. She received her undergraduate degree from the University of Chicago and her MA and PhD from Princeton.

Retirements

William Jansen is retiring on July 1. A supervisor in custodial services, he has been at Caltech for 23 years.

Rosy Meiron, a senior department administrator in the Division of the Humanities and Social Sciences, is retiring on July 1, after 22 years at Caltech.

Michael Shumate is retiring on July 1, after 41 years at JPL and Caltech. Most recently a lecturer in applied physics, he has been honored with the ASCIT Lifetime Achievement Award by Caltech's undergraduate students. He earned his electrical engineer's degree from Caltech in 1964 and went on to receive his PhD from the Chalmers Institute of Technology, Sweden, in 1981.

Deaths

Elliott Lacy, head librarian of cataloging services for the Caltech Library from 1957 until his retirement in 1985, died on August 1, 2001. A resident of Van Nuys, California, he devoted his postretirement years to book collecting, chess, and music—especially the piano—and he was particularly fond of his 1919 Chickering grand reproducing piano and his collection of 5,000 piano rolls. He is survived by a sister, Elinor Shadle, and two nephews.

Walter A. Schroeder, PhD '43, of San Gabriel, California, on November 17, 2001. A senior research associate in chemistry, emeritus, at Caltech, he began his career at the Institute in 1943 as a research fellow, being promoted to senior research fellow in 1946, research associate in 1956, and senior research associate in 1981, retiring to emeritus status in 1986. He is survived by his wife, Ruth, and by two daughters, Glenna Lein and Rhonda Schroeder.

Honors and awards

Larry Gilbert, director of the Office of Technology Transfer, has been honored by the San Gabriel Valley Economic Partnership, with a plaque to be presented on June 5 at the Athenaeum. He is credited with having helped make Caltech a national leader in patents issued and start-up high-tech businesses created.

Shri Kulkarni, MacArthur Professor of Astronomy and Planetary Science, has been chosen as the 2002 Jansky Lecturer. Established in 1966 by the trustees of Associated Universities, Inc., the Karl G. Jansky Lectureship recognizes outstanding contributions to the advancement of astronomy. It is named in honor of the man who, in 1932, first detected radio waves from a cosmic source.

Crystal Thomas, CCM, general manager of the Athenaeum, has qualified for membership in the Honor Society of the Club Managers Association of America. "She joins a very select group of club managers worldwide who have attained this hallmark of professionalism." She earned her CCM (Certified Club Manager) designation as a result of fulfilling specific requirements in club management experience, education, and association activity, and since certification has earned 400 additional continuing education credits, which qualified her for membership in the Honor Society.

Classic text republished

The Society for Industrial and Applied Mathematics (SIAM) has republished *Methods of Mathematical Economics: Linear and Nonlinear Programming, Fixed-Point Theorems*, by Caltech's **Joel Franklin**, professor of applied mathematics, emeritus. Originally published in 1980, the book covers basic theories and methods that remain important today for understanding mathematical programming and fixed-point theorems. Considered an "easy-to-read classic," the *Methods of Mathematical Economics* has proven popular with students "by providing the necessary proofs and presenting the material in a conversational style." It is intended for undergraduate and graduate students of mathematics and economics, and for the topics discussed requires no background beyond an understanding of elementary calculus and linear algebra. A member of both SIAM and the American Mathematical Society, Franklin is also the author of *Matrix Theory* (published in 2000).

Winners of merit awards named

The 2002–03 Caltech Upperclass Merit Awards, which are based on outstanding scholastic achievement, research, and related endeavors, have been announced by the Faculty Committee on Scholarships and Financial Aid.

The awards are made possible through contributions from generous donors, including the Stuart Foundation and Lew and Edie Wasserman. Awards for the 2002–03 academic year include Carnation Scholarships, Caltech Prize Scholarships, and Rosalind W. Alcott Merit Scholarships. In addition, the John Stauffer Scholarship is specifically earmarked for chemistry/chemical engineering majors.

The faculty committee has awarded more than \$1 million to this year's recipients, who will receive awards ranging from three-quarters tuition to full tuition plus room and board for the next academic year. The recipients and their class for next year are listed below.

Michelle Allis, senior, engineering and applied science; Dario Amodei, sophomore, currently undeclared; Vincent Auyeung, sophomore, currently undeclared; Mark Bilinski, senior, mathematics and chemistry; Marko Cetina, junior, applied physics; Julie Cha, senior, chemical engineering; Anita Choi, junior, chemistry; Paul Choi, senior, chemistry; Wee Kang Chua, senior, chemistry; Helen Fei-Lun Chuang, senior, chemical engineering; Patrick Codd, junior, biology; Clinton Conley, senior, mathematics; Will Farr, senior, physics; Justin Fox, senior, engineering and applied science; Martin Grunthaler, senior, engineering and applied science; Nicholas Guise, senior, physics; Koun Han, junior, biology; Paul Hand, junior, applied and computational mathematics; James Hegeman, junior, mathematics; Geoffrey Irving, senior, mathematics; Liang Jiang, junior, physics; Cristian Jitianu, junior, electrical engineering; Basit Khan, senior, engineering and applied science; Angel Pui Ying Kong, junior, electrical engineering; Christina Lam, senior, electrical and computer engineering; Tin Yiu Tammy Lam, senior, chemistry; Robert Li, junior, biology; Xiaofeng Li, junior, electrical engineering; Eric Lin, junior, physics; Jonathan Lin, junior, mathematics; Po-Shen Loh, junior, mathematics; Michael Maire, senior, mathematics; David Moore, senior, electrical engineering; Collin Moshman, senior, mathematics; Gautham Nair, junior, chemistry; Or Neeman, junior, mathematics; Nathan Paymer, senior, engineering and applied science; Kaloyan Penev, senior, physics; Jesse Pino, senior, physics; Michael Rizk, senior, engineering and applied science; Mark Rudner, senior, chemistry; Mona Sheikh, senior, electrical engineering; Jonathan Simon, junior, physics; Neha Soni, senior, engineering and applied science; Sindy Kam Yan Tang, senior, electrical engineering; Joseph Tremoulet, senior, engineering and applied science; Nora Tu, senior, biology; Virginia Vassilevska, senior, mathematics; Jialan Wang, junior, mathematics; Lizhou Lisa Wang, junior, physics; Yingbing Wang, senior, chemical engineering; Sina Yeganeh, junior, chemistry.

June 24–September 22, 2002

M T W T F S S

Monday, June 24

Astronomy Tea Talk

106 Robinson, 4 p.m.—“Large-Scale Structure in the 2dF Galaxy Redshift Survey,” Peter Norberg, Durham University. Information: www.astro.caltech.edu/~kartik/tea_talks.

Tuesday, June 25

Quick Review for Electronic Theses

Sherman Fairchild Library, multimedia conference room, noon—Starting July 1, both paper and electronic copies of theses must be submitted. This presentation will offer a brief overview of techniques useful in the production and publication of Caltech electronic theses. The session will include tips on formatting, intellectual-property considerations, turning paper to pixels, creating PDFs, how to submit a thesis, and availability (viewing) issues. Information: 395-6713 or kathleen@library.caltech.edu.

Wednesday, June 26

Quick Review for Electronic Theses

Sherman Fairchild Library, multimedia conference room, noon—Starting July 1, both paper and electronic copies of theses must be submitted. This presentation will offer a brief overview of techniques useful in the production and publication of Caltech electronic theses. The session will include tips on formatting, intellectual-property considerations, turning paper to pixels, creating PDFs, how to submit a thesis, and availability (viewing) issues. Information: 395-6713 or kathleen@library.caltech.edu.

General Biology Seminar

119 Kerckhoff, 4 p.m.—“Functional Genomics of Memory in *Drosophila*: A Marriage of Pre- and Post-Genomic Approaches,” Josh Dubnau, Cold Spring Harbor Laboratory.

Thursday, June 27

Quick Review for Electronic Theses

Sherman Fairchild Library, multimedia conference room, noon—Starting July 1, both paper and electronic copies of theses must be submitted. This presentation will offer a brief overview of techniques useful in the production and publication of Caltech electronic theses. The session will include tips on formatting, intellectual-property considerations, turning paper to pixels, creating PDFs, how to submit a thesis, and availability (viewing) issues. Information: 395-6713 or kathleen@library.caltech.edu.

Friday, June 28

Quick Review for Electronic Theses

Sherman Fairchild Library, multimedia conference room, noon—Starting July 1, both paper and electronic copies of theses must be submitted. This presentation will offer a brief overview of techniques useful in the production and publication of Caltech electronic theses. The session will include tips on formatting, intellectual-property considerations, turning paper to pixels, creating PDFs, how to submit a thesis, and availability (viewing) issues. Information: 395-6713 or kathleen@library.caltech.edu.

Thursday, July 4

Independence Day holiday

Thursday, July 18

Von Karman Lecture Series

JPL, von Karman Auditorium, 7 p.m.—“Jupiter’s Moon Io: A World of Great Volcanoes,” Rosaly M. Lopes-Gautier, research scientist and member, Galileo NIMS Science Team, JPL. Admission is free. Information: www.jpl.nasa.gov/lecture.

Friday, July 19

Von Karman Lecture Series

Pasadena City College, 1570 E. Colorado, the Vosloh Forum (south of Colorado on Bonnie), 7 p.m.—“Jupiter’s Moon Io: A World of Great Volcanoes,” Rosaly M. Lopes-Gautier, research scientist and member, Galileo NIMS Science Team, JPL. Admission is free. Information: www.jpl.nasa.gov/lecture.

Thursday, August 22

Von Karman Lecture Series

JPL, von Karman Auditorium, 7 p.m.—“Journey to the Planets and Beyond.” Speaker to be announced. Admission is free. Information: www.jpl.nasa.gov/lecture.

Friday, August 23

Von Karman Lecture Series

Pasadena City College, 1570 E. Colorado, the Vosloh Forum (south of Colorado on Bonnie), 7 p.m.—“Journey to the Planets and Beyond.” Speaker to be announced. Admission is free. Information: www.jpl.nasa.gov/lecture.

Monday, September 2

Labor Day holiday

Thursday, September 5

Von Karman Lecture Series

JPL, von Karman Auditorium, 7 p.m.—“Voyager’s Exploration of the Solar System,” Edward Stone, Morrisroe Professor of Physics, Caltech. Admission is free. Information: www.jpl.nasa.gov/lecture.

Friday, September 6

Von Karman Lecture Series

Pasadena City College, 1570 E. Colorado, the Vosloh Forum (south of Colorado on Bonnie), 7 p.m.—“Voyager’s Exploration of the Solar System,” Edward Stone, Morrisroe Professor of Physics, Caltech. Admission is free. Information: www.jpl.nasa.gov/lecture.

Thursday, September 19

Von Karman Lecture Series

JPL, von Karman Auditorium, 7 p.m.—“A Unified View of the Universe,” Lute Maleki, senior research scientist and supervisor, quantum science and technology group, JPL. Admission is free. Information: www.jpl.nasa.gov/lecture.

Friday, September 20

Von Karman Lecture Series

Pasadena City College, 1570 E. Colorado, the Vosloh Forum (south of Colorado on Bonnie), 7 p.m.—“A Unified View of the Universe,” Lute Maleki, senior research scientist and supervisor, quantum science and technology group, JPL. Admission is free. Information: www.jpl.nasa.gov/lecture.

Boldly going “beyond silicon”

A unique month-long summer program will offer students an opportunity to study with renowned researchers who are creating revolutionary new computational substrates at the molecular and atomic levels. Interested members of the Caltech community are invited to attend the lectures.

Coordinated by André DeHon, assistant professor of computer science, and Erik Winfree, assistant professor of computer science and computation and neural systems, the Computing Beyond Silicon Summer School (CBSSS) will bring approximately 45 students from the United States, Canada, China, and England to campus from June 17 to July 17 to learn about post-VLSI (very large scale integration) computing.

The CBSSS program will bring together a unique collection of information regarding the promises and challenges of novel approaches to computation. Two lectures each weekday, at 9 and 10:35 a.m., will cover four major areas: core computing concepts and molecular, biomolecular, and quantum computing. All lectures will be held in 74 Jorgensen.

In addition to DeHon and Winfree, Caltech lecturers will be Hideo Mabuchi, associate professor of physics and control and dynamical systems, and Leonard Schulman, associate professor of computer science. Other lecturers are Len Adleman, USC; Michael Elowitz and Marcelo Magnasco, Rockefeller University; James Heath, UCLA; Tom Knight and Norm Margolus, MIT; Phil Kuekes, Hewlett-Packard; Charles Lieber, Harvard; Nicholas Pippenger, University of British Columbia; and Ron Weiss, Princeton University.

For more information and a schedule of lectures, visit www.cs.caltech.edu/cbss, call ext. 4142, or e-mail cbss@cs.caltech.edu.

CampusEvents

Also see weekly summer events at right.

Monday, June 24

Child Educational Center's Summer Camp
Through August 28—"Exploring Our Natural World," a program for children completing kindergarten through 6th grade, will be held at three locations: Michigan Avenue, at the site near Caltech; in La Cañada at the Oak Grove site, near JPL; and at Palm Crest Elementary School. Also offered at the Oak Grove site will be a pre-kindergarten program for children entering kindergarten in the fall. Registration and information: (818) 354-3418, lynn.farwell@ceconline.org, or www.ceconline.org.

Wednesday, June 26

Laser Safety Orientation
Keith Spalding Building, 11 a.m.—All laser operators and individuals working in areas where there may be exposure to laser radiation from Class 3b or Class 4 lasers are required to attend this training. Class size is limited; call 395-6727 to reserve a place.

Tools for Media Management
New Media Classroom, 363 S. Hill Avenue, noon—Learn about tools for organizing photos, videos, graphics, etc., for efficient searching and storage. Registration: dmc@caltech.edu. Information: 395-3420, carolynp@caltech.edu, or http://morel.caltech.edu/classes/demos.html. **This class will be repeated at 3 p.m.**

Watch Your Back
118 Keith Spalding Building, 3 p.m.—This course includes a brief discussion on back anatomy and proper methods and realistic approaches to handling and moving materials. There will be a video presentation and hands-on lifting. Please call 395-6727 to reserve a space.

Thursday, June 27

Caltech Architectural Tour
Athenaeum, 11 a.m. to 12:45 p.m.—Meet in the entry hall of the Athenaeum. Led by members of the Caltech Architectural Tour Service. Reservations: Susan Lee, 395-6327 or suze@caltech.edu.

Amnesty International Monthly Meeting
Caltech Y lounge, 7:30 p.m.—Amnesty International Group 22 holds its monthly meeting to discuss current activities and plans. All are welcome. Refreshments. Information: (818) 354-4461 or lkamp@lively.jpl.nasa.gov.

Saturday, June 29

Folk Music Society Presents Teada
Dabney Lounge, 8 p.m.—Teada is a young Irish group featuring uniquely sweet fiddle playing in tandem with the rhythmic subtlety of banjo/bouzouki playing. Admission is \$12 for adults and \$4 for children and Caltech students. Tickets and information: 395-4652, 1 (888) 2CALTECH, or events@caltech.edu. Individuals with a disability: 395-4688 (voice) or 395-3700 (TDD). Visit the Folk Music Society at www.cco.caltech.edu/~folkmusi.

Thursday, July 4

Independence Day holiday

Tuesday, July 9

Amnesty International Letter Writing
Athenaeum Rathskeller, 7:30 p.m.—An informal meeting at which we write letters on human-rights abuses around the world. All are welcome. Refreshments. Information: (818) 354-4461 or lkamp@lively.jpl.nasa.gov. (Note: During the summer, the Rathskeller may have different hours. If it is closed, we will meet on the patio.)

Wednesday, July 10

Photoshop 7 Update
New Media Classroom, 363 S. Hill Avenue, noon—New features of Photoshop 7 will be demonstrated, such as the Heal tool, the File Manager, a new auto color correct tool, new paint tools, and more. Registration: dmc@caltech.edu. Information: http://morel.caltech.edu/classes/demos.html. **This class will be repeated at 3 p.m.**

Tuesday, July 16

Special Caltech Folk-Dancing Club Meeting
Dabney Lounge, 7:30 p.m.—The Yeseta Brothers' Tamburica Band will play Croatian and Serbian music. Drop-ins are welcome. Donations accepted.

Wednesday, July 17

Posters Using Adobe Illustrator
New Media Classroom, 363 S. Hill Avenue, noon—Create large posters, including text, figures, and photos, using Illustrator. Registration: dmc@caltech.edu. Information: http://morel.caltech.edu/classes/demos.html. **This class will be repeated at 3 p.m.**

Friday, July 19

Fire-Extinguisher Training
Wilson parking garage (north), roof, 11 a.m.—This class teaches basic fire safety and includes hands-on fire-extinguisher training. Class size is limited; please call 395-6727 to reserve a space.

Sunday, July 21

Amnesty International Book Discussion
Vroman's Bookstore, 695 E. Colorado Boulevard, 2nd floor, 6:30 p.m.—This month's book, *Coyotes*, by Ted Conover, is an analysis of illegal immigration along the Mexican border. All are welcome, even if you haven't read the book. Registered members of the group can buy the book at a discount from Vroman's.

Wednesday, July 24

QuickTime Pro
New Media Classroom, 363 S. Hill Avenue, noon—Learn to edit movies, add text tracks, export still frames, and a lot more, using QuickTime Pro. Registration: dmc@caltech.edu. Information: http://morel.caltech.edu/classes/demos.html. **This class will be repeated at 3 p.m.**

Thursday, July 25

Amnesty International Monthly Meeting
Caltech Y lounge, 7:30 p.m.—Amnesty International Group 22 holds its monthly meeting to discuss current activities and plans. All are welcome. Refreshments. Information: (818) 354-4461 or lkamp@lively.jpl.nasa.gov.

Tuesday, August 13

Amnesty International Letter Writing
Athenaeum Rathskeller, 7:30 p.m.—An informal meeting at which we write letters on human-rights abuses around the world. All are welcome. Refreshments. Information: (818) 354-4461 or lkamp@lively.jpl.nasa.gov. (Note: During the summer, the Rathskeller may have different hours. If it is closed, we will meet on the patio.)

Sunday, August 18

Amnesty International Book Discussion
Vroman's Bookstore, 695 E. Colorado Boulevard, 2nd floor, 6:30 p.m.—This month's book is *Moghul Buffet*, by Cheryl Benard. All are welcome, even if you haven't read the book. Registered members of the group can buy the book at a discount from Vroman's.

Thursday, August 22

Amnesty International Monthly Meeting
Caltech Y lounge, 7:30 p.m.—Amnesty International Group 22 holds its monthly meeting to discuss current activities and plans. All are welcome. Refreshments. Information: (818) 354-4461 or lkamp@lively.jpl.nasa.gov.

Monday, September 2

Labor Day holiday

Friday, September 6

Folk Music Society Presents Old Blind Dogs
Dabney Lounge, 8 p.m.—The Scottish band Old Blind Dogs blends fine vocal and instrumental talents with traditional and original music. Admission is \$12 for adults and \$4 for children and Caltech students. Tickets and information: 395-4652, 1 (888) 2CALTECH, or events@caltech.edu. Individuals with a disability: 395-4688 (voice) or 395-3700 (TDD). Visit the Folk Music Society at www.cco.caltech.edu/~folkmusi.

Tuesday, September 10

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Sunday, September 15

Amnesty International Book Discussion
Vroman's Bookstore, 695 E. Colorado Boulevard, 2nd floor, 6:30 p.m.—This month's book is *In Our Own Best Interests: How Defending Human Rights Benefits Us All*, by William F. Schulz, executive director, Amnesty International USA. All are welcome, even if you haven't read the book. Registered members of the group can buy the book at a discount from Vroman's.

Friday, September 20

Folk Music Society Presents Musical Groups Fairport Convention and Equation
Ramo Auditorium, 8 p.m.—Fairport Convention is a legendary British group that brings together a diverse mix of traditional ballads, dance tunes, and contemporary and original songs. Opening the show is Equation, another fine British band. Admission is \$18 for adults; \$5 for children and Caltech students. Tickets and information: 395-4652, 1 (888) 2CALTECH, or events@caltech.edu. Individuals with a disability: 395-4688 (voice) or 395-3700 (TDD). Visit the Folk Music Society at www.cco.caltech.edu/~folkmusi.

Weekly events through the summer

Tuesdays, June 25 to September 17

Preschool Playgroup
Tournament Park, 10 a.m. to noon—Song and storytime, crafts and free play for toddlers and preschoolers (from walking to age 4). Information: (323) 550-8075 or jmph-p@pacbell.net.

Caltech Tai Chi Club
Winnett lounge, 7:15 p.m.—Sessions are free. Information: www.its.caltech.edu/~taichi/. Also meets on Fridays.

Caltech Folk-Dancing Club
Dabney Lounge, 7:30 p.m.—Meets every Tuesday until midnight. Drop-ins are welcome. Donations accepted.

Meeting dates:

June 25
July 2
July 9
July 16
July 23
July 30
August 6
August 13
August 20
August 27
September 3
September 10
September 17

Wednesdays, June 26 to September 18

Wednesdays in the Park
Tournament Park, 10 a.m. to noon—Conversation and coffee for parents and caregivers, and playtime for children. Information: 744-9919 or cdd@its.caltech.edu.

Meeting dates:

June 26
July 3
July 10
July 17
July 24
July 31
Call for August and September dates.

Fridays, June 28 to September 20

Caltech Tai Chi Club
Winnett lounge, 7 p.m.—Sessions are free. Information: www.its.caltech.edu/~taichi/. Also meets on Tuesdays.

Meeting dates:

July 5
July 12
July 19
July 26
August 2
August 9
August 16
August 23
August 30
September 6
September 13
September 20

For the Ballroom Dance Club summer program: jasonbc@its.caltech.edu or http://atcaltech.caltech.edu

They will come and build it

Whether it's a new cabinet, desk, countertop, or closet, or even a picture frame or bulletin board for your office or lab, Caltech's carpentry and paint shop can now make it faster, better, and cheaper.

According to supervisor Ken Lewis, the shop has added new production equipment over the past few years and now has a complete European cabinet-making system. About three years ago, he says, "the shop decided the only way we could remain competitive with outside vendors and maintain our high-quality standards was to upgrade to the European fabrication system." He submitted the idea to Joe Parker, superintendent of shops, and Reza Ohadi, associate director of campus operations, who approved the purchase of one of the machines that make up the system.

"Of course," Lewis says, "there was a stipulation that it had to save money and reduce production costs of cabinetry." Fortunately the machine proved cost-effective, and the shop continued adding equipment one piece at a time, with each demonstrating its worth before the next purchase.

The shop now has the five basic machines of the system and is starting to use them all together, Lewis says. The European system standardizes many procedures, such as boring 26 holes all at once for mounting bookshelves or installing drawer guides or door hinges, so that "together, the new equipment and system allow us to manufacture cabinets and other furnishings much more quickly and inexpensively."

In addition, the shop has acquired CAM-CAD (computer-aided manufacturing and design) software, which creates three-dimensional plans viewable from all angles, generates a list of pieces to be cut, and estimates the project cost.

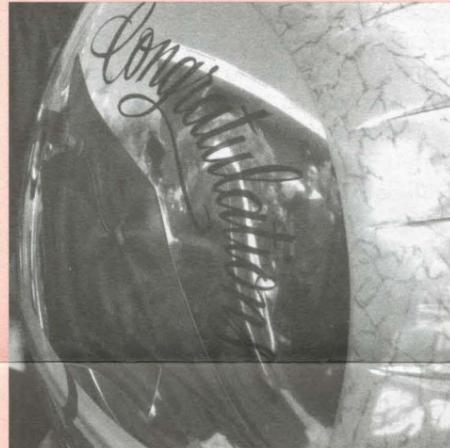
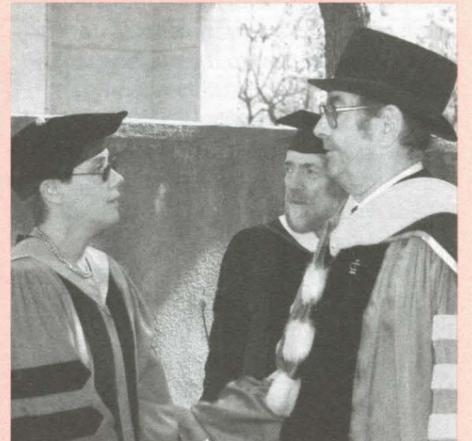
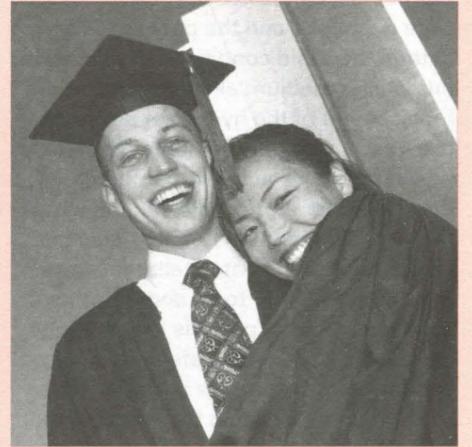
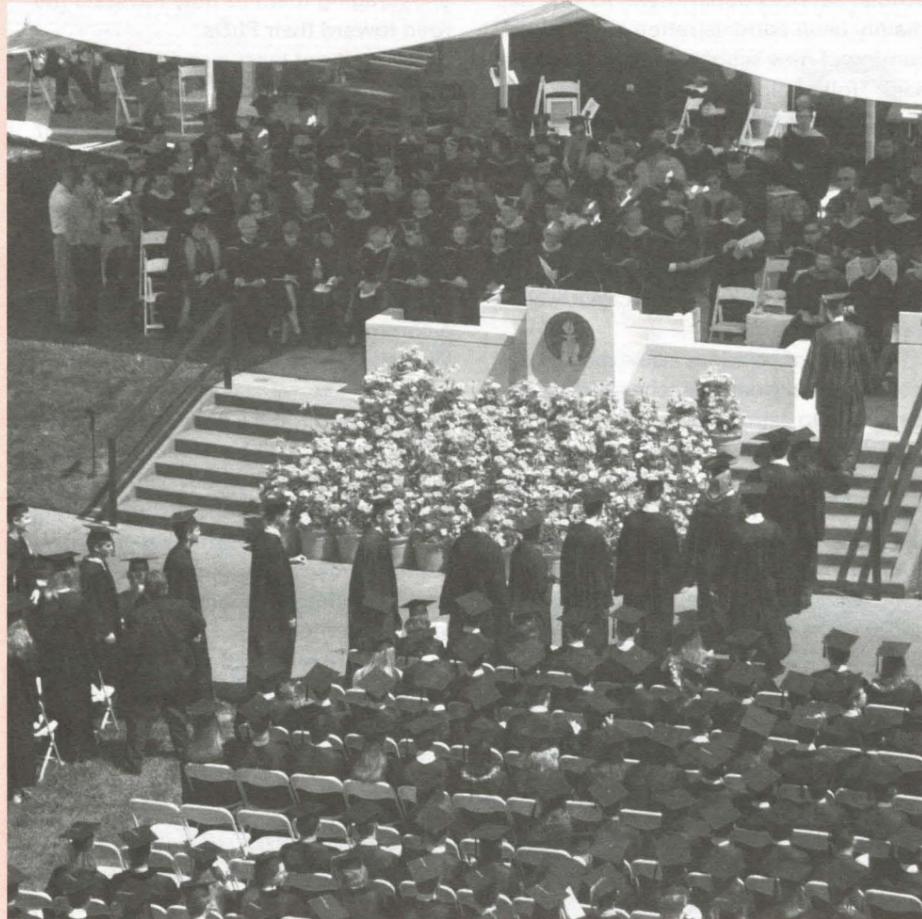
"Maybe one day, we'll even have equipment that automatically cuts the wood to size," Lewis says, noting that Northrop Grumman offered to donate such a machine but, at 40 feet long, "it was too large to fit in our shop."

Two new machines, a horizontal panel saw and an edge-banding machine, have enabled carpenters to work more easily with hardwoods, synthetic materials, and laminates. For laboratory and office countertop surfaces, the shop is now a certified Corian distributor and fabricator, and also works with other chemical-resistant materials such as Formica, epoxy resin, Chemsurf, and Trespa, as well as wood and marble.

Shop employees will do on-site estimates to determine the best and most economical way to upgrade or renovate an area, sometimes with the engineering and estimating department if electrical or plumbing work is needed. But "if water and electricity doesn't flow through it," Lewis says, "it's ours."

The carpentry and paint shop is located in the Physical Plant building. For more information, contact Lewis at ext. 2007 or klewis@caltech.edu.

"Help us love science the way you do"



Photos, clockwise from top left: Grads line up for their moment on stage; seniors Scott Payne and Emma Kang celebrate their achievement; professors Diana Kormos-Buchwald, Kip Thorne, and Harry Gray prepare for the processional; balloons enhance the day's festive mood; umbrellas provide spectators relief from the Valley sun.

Nearly 500 graduates received the long-awaited fruits of their labors at the Institute's 108th commencement on June 14. The ceremony included a welcome by Ben Rosen, chairman of Caltech's board of trustees; performances by the Caltech Convocations Brass and Percussion Ensemble and Glee Clubs; and the commencement address, "Finding Feynman," by actor Alan Alda.

Alda, who recently starred as the late Caltech physicist Richard Feynman in the hit play *QED*, drew his remarks from his experience in trying to portray the multifaceted, elusive Nobel laureate. He began

by marveling that Feynman had stood in that spot 28 years ago giving the commencement address and now an actor who had played him was doing the same. "This is the way the universe operates. This is what's called entropy."

He went on to admire Feynman's intellectual honesty; his ability to "say the most exquisitely subtle things in the language of the common people" and yet not dumb down the science; and his "gloriously courageous willingness to be unsure"—a legacy to which Caltech grads are heirs. Alda's ultimate inability to grasp the "real" Feynman, he said,

reminded him of an adage the physicist himself knew well: that the fun and discovery of the journey is more important than the destination.

Imploring the grads to "devote some significant part of your life" to "help us love science the way you do," Alda finished by challenging them to each make understood to a million people one thing they love about science. Why?

"Maybe for the same reason that the birds sing . . . Singing is the music nature makes when it dances the dance of life. You've learned so much in this place about how nature works. Is there anything more beautiful than that?"

"So sing. Sing out. Sing. Out."

Video of the commencement ceremony, a transcript of Alda's speech, and more photos can be viewed online at <http://pr.caltech.edu/commencement/02>.

Faculty board elects new members

The Officers of the Faculty announced the election of new faculty board members at the board's June meeting. Members-elect Judith Campbell, professor of chemistry and biology; Richard Flagan, McCollum Professor of Chemical Engineering; Janet Hering, associate professor of environmental engineering science; Pietro Perona, professor of electrical engineering; Andrew Ingersoll, professor of planetary science; and Fiona Harrison, associate professor of physics and astronomy, will begin their three-year terms July 1, replacing professors Frances Arnold, Jesse Beauchamp, Peter Bossaerts, Michael Hoffmann, Ares Rosakis, and David Wales, whose terms expire at the end of June. In addition, Henry Lester, professor of biology, has stepped in to complete the last year of the term of professor Kerry Sieh.

Golden Arrows point to Caltech staff

Two Caltech staff members received Golden Arrow Awards from the Pasadena Beautiful Foundation at a June 5 reception.

Virge Perdue Jr. of Physical Plant and Charles Reimann of Caltech Auxiliary and Business Services, together with his wife, Wendy Wright, received two of this year's 27 awards, given annually to homes whose exteriors and yards are kept in outstanding condition.

Reimann, who works in the housing facilities maintenance office, said that his 1909 California Craftsman house was cited for its "mass of colors and textures. Also, we added some trees and the Pasadena Beautiful organization is big on trees." The couple have lived in their home since 1988, and have spent about eight years restoring it.

Perdue—who for 11 years has been, not surprisingly, a groundskeeper at Caltech—won for his "idyllic" and

"charming" 1923 wood-frame bungalow, surrounded by hedges and flowers and shaded by a Chinese elm. The honor was particularly meaningful for Perdue, who arrived in Los Angeles in 1986 with \$300 and no job or place to live. With time and perseverance, however, things started looking up. He began renting the home in 1992, and purchased it two years later. "I wanted to have a positive influence on the community," he said of his landscaping efforts.

Awards organizer Wendy Crowley agreed, expressing the view that he will likely be "an inspiration to his neighbors."

Ammonia, from page 1

As for the reasons the molecules would exist in the first place, says Dariusz Lis, Caltech senior research associate in physics and the paper's lead author, the frigid conditions of the dense interstellar medium allow the deuterium replacement of the hydrogen atoms to take place. At higher temperatures, there would be a back-and-forth exchange of the deuterium atoms between the ammonia molecules and hydrogen molecules also present in the interstellar medium. But at the frosty 10 to 20 degrees above absolute zero that prevails in the clouds, the deuterium atoms prefer to settle into the ammonia molecules and stay there.

Phillips explains that the study's importance is in furthering understanding of the chemistry of the cold, dense interstellar medium, and the way molecules transfer from grains of dust to the gas phase. The researchers think the triply deuterated ammonia was probably kicked off the dust grains by the energy of a young star forming nearby, thus returning to the gas state, where it could be detected by the Caltech Submillimeter Observatory.

The study was made possible because of the special capabilities of the observatory, a 10.4-meter telescope constructed and operated by Caltech with funding from the National Science Foundation. The telescope is fitted with the world's most sensitive submillimeter detectors, making it ideal for seeking out diffused gases and molecules crucial to understanding star formation.

Also contributing to the study were astronomers from France, led by Evelyne Roueff and Maryvonne Gerin of the Observatoire de Paris, and from the Max-Planck-Institut für Radioastronomie in Germany.

Images can be viewed at www.submm.caltech.edu/cso/pictures.

ITS, from page 1

mend simply deleting these messages. Instead, users should send them to a special mailbox and examine the messages periodically before removing them.

For detailed instructions on what the service does and how to configure individual users' software, please see the announcement at www.its.caltech.edu. Whether e-mail users choose to change their own configuration or have a system administrator do it, ITS encourages everyone to read the instructions in order to understand the system's limitations, as well as to not inadvertently lose important mail.

Watch the Web site and other news outlets for future enhancements to this service, including the ability to individually customize the level of filtering applied.

John Dundas is director of Caltech's Information Technology Services group.

Postdocs, from page 1

Biology postdoc Anne Simon said that although Caltech has a postdoctoral scholar services department, its role has mainly been administration and the welcoming of new scholars. From there, she said, "follow-up has been parcelled out to various departments," so that until now there hasn't been a centralized system for uniting postdocs and meeting their needs. The membership committee's e-mail list—the only known comprehensive roster of Caltech postdocs—has become the CPA's most valuable resource.

Partners of postdocs also experience isolation, said Noelia Sánchez-Walker, who is married to astronomy postdoc Hector Arce. Lacking a green card, many are unable to work, and may also face language and cultural barriers. Sánchez-Walker heads the social committee's spouses and companions group, which aims to provide information on benefits, ESL classes, etc., and support services such as mentoring and a baby-sitting exchange.

The career development committee is dealing with another major area of concern for postdocs. According to McBride, in the 1980s the prevailing problem was a lack of PhDs, but the tide has since turned. Now "there's a glut, and no positions available. The tenure track is taking longer, and academic positions are in the minority." Many faculty advisors haven't experienced such a climate, she said, resulting in a kind of "just-get-a-job" attitude. "We'd like to let them know how they can help us," McBride said.

The group's monthly lunchtime series, featuring speakers on various career options in science, has proved popular. Haswell said that in view of the competitive academic job market, there's a need for more information on, and destigmatization of, nonacademic career choices such as private industry, law, technology, and K-12 education. "These positions are perfectly valid. Not everyone chooses the academic route—it's rigorous and stressful," she said, noting that science-literate people in such areas as science journalism and school curriculum development are a plus for society. Future topics and additional workshops will focus on goal setting, grant writing, and balancing work and personal life.

The CPA's advocacy committee seeks to ensure adequate health coverage, child care, and other benefits for postdocs, and to address gender and cultural diversity issues. The group is currently working with the Women's Center and the Women in Engineering, Science, and Technology club to establish a Distinguished Women Scientist Seminar Series to honor accomplished researchers and to provide female role models and mentors. McBride is also planning to set up a women's mentoring

program in which postdocs will be paired with graduate students, supporting and encouraging them as they navigate the road toward their PhDs.

Last but not least, providing a way to give back to the local community is the goal of the outreach committee. Led by geochemist Julianna Fessenden (see "Training leaders for a better Pasadena," page 1), the committee is coordinating volunteer opportunities in areas such as tutoring and mentoring students, teaching adult education classes, and creating a community garden, and is building a Web site where postdocs can find these listings.

On June 11, the CPA held the first of what is hoped will be semiannual town hall meetings, with about 50 postdocs in attendance. Other plans include holding a yearly welcoming retreat each fall; a campuswide survey of postdoctoral needs and interests; and a teaching/learning center.

For more information, visit www.its.caltech.edu/~cpa, or e-mail cpa-discussion@itsa.ucsf.edu.

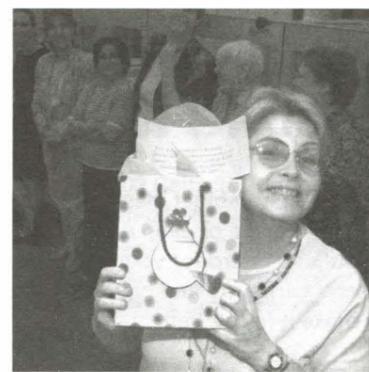
Leadership, from page 1

"We teamed up with Odyssey Charter School to teach the students about recycling and pollution's effects on the environment," she said. "We took them to Lower Arroyo Park to clear the area of trash." An artist in her group suggested that something be done with all the litter, so the students used the garbage to create art.

Leadership Pasadena is a completely volunteer activity, and everything that Fessenden and the children needed on their field trip, such as transportation to the park and materials to create the art, was donated or volunteered by the city or the school. Her participation in the program was encouraged by Caltech's Government and Community Relations Office, which financed part of the substantial fee.

One of the ways that Fessenden hopes to put her training into action is through the creation of a community garden. She has found allies in Athena Castro, the director of the Caltech Y, and grad student Jennifer Johnson, who has found a site at the Caltech Children's Center where she works. Fessenden said the idea could bear much fruit, in the literal and figurative sense.

"Through environmentally conscious projects, such as community gardens, we can bring students and community members closer to nature and increase their appreciation and their investment in the environment," she said.



Kathy Harris displays a present she received from her friends at Human Resources during a send-off party before her California AIDS Ride.

Harris rides to fight AIDS

Kathy Harris recently hopped on her Trek bicycle and rode with some friends for a short 93-mile jaunt from San Francisco to Santa Cruz. The next day, they went back on the road for a quick 103 miles, stopping to rest at King City. After seven days, she and her friends from Arcadia's Annunciation Catholic Church rolled in to Santa Monica, exhausted but happy for having raised nearly \$30,000 in California AIDS Ride 9.

"Each of us had to raise a minimum of \$2,700," said Harris, who works in the staff education arm of Human Resources.

To raise funds, her group turned to their church as well as the parishes of St. Thomas More in Alhambra and Holy Angels in Arcadia. They set up informational tables or the churches held second collections for donations or pledges.

"We got a very generous response, and money is still coming in," Harris said.

For months in advance, she and several of her teammates went to a Glendora gym for early morning spinning classes, sessions that simulated the hills and valleys to be encountered while riding on roads. With the addition of grueling roadwork, rides of 25, 40, and 60 miles became a cinch.

On day three, Harris suffered a major setback. On the road between King City and Paso Robles, Harris got hit with severe dehydration and heat exhaustion brought on by 103-degree heat. Despite that, Harris stayed with her team. "I got hospitalized and taken out of the ride," she said. "My role went from rider to cheerleader."

Her spirits were lifted by her team's success and the generosity of many who assisted, including David Werntz, the director of the Administrative Technology Center, who advised on their training.

Harris said the funds collected by her team—consisting of Clarence and Asela Calhoun, Gerrie Rothermel, Lono Tyson, Father Eugene Herbert, and Dee Bohrer—will go to AIDS Project Los Angeles, one of the nation's largest AIDS service providers.

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