Caltech336

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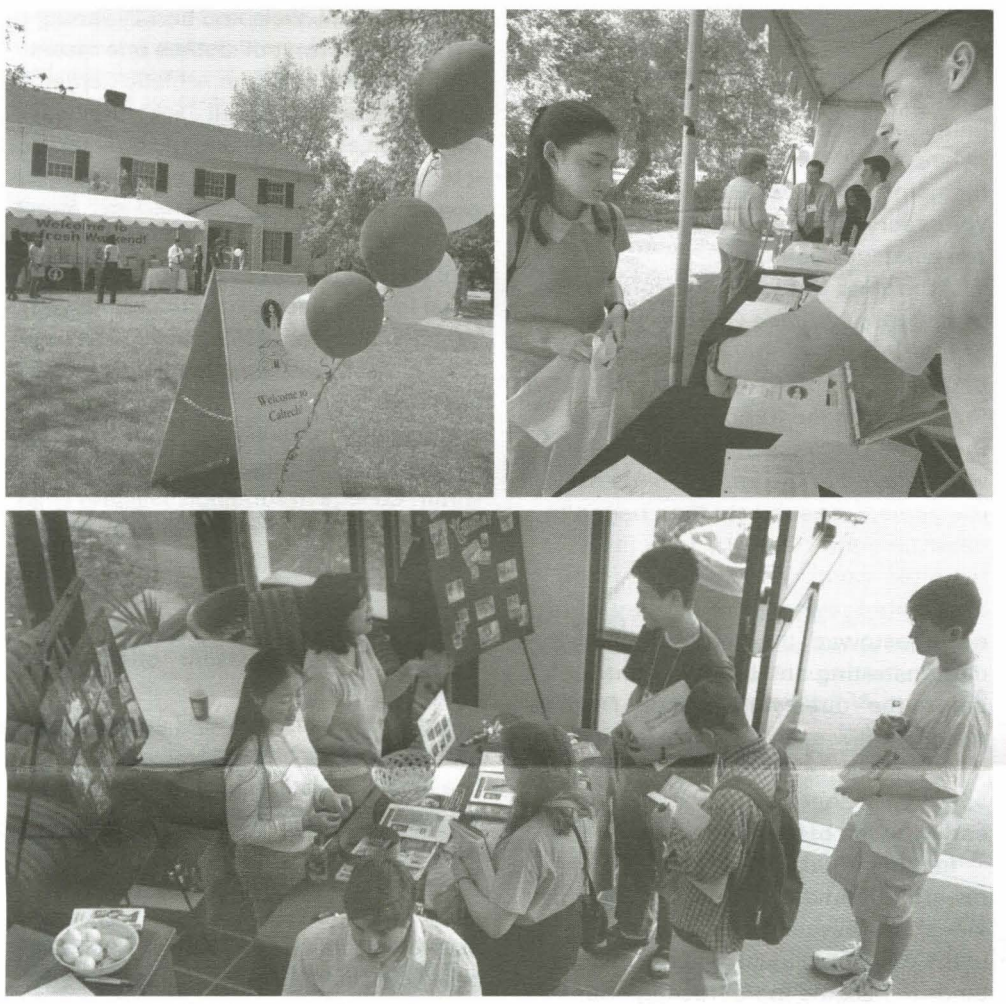
The campus community biweekly

April 21, 2005, vol. 5, no. 8

First look



Hundreds of high school seniors and their parents got an orientation to student life at Caltech during Prefrosh Weekend, beginning with registration in front of Steele House (top right and left). The social and academic activities, spread out over three days, gave visitors the chance to audit classes, mingle with undergraduates, get acquainted with Student Life organizations (bottom), tour the Huntington Library, have a night on the town, and learn about JPL's Cassini Project.

Take your children to work

Here's your chance to show your child what you and others do at the Institute. Take Our Children to Work Day, when your children also get to learn about science at Caltech, takes place this year on Thursday, April 28. The event is free and open to children of Caltech/JPL community members, in grades 4 through 12.

The day will begin at 10 a.m. and will include tours of laboratories and other work spaces; a pizza lunch; and an athletic activity. The day will include a science crafts component and the screening of a high-definition movie in Beckman Auditorium.

The researchers who will open their laboratory doors to these young visitors include professors Grant Jensen, Julia Kornfield, and Erin Schuman. Visitors to Jensen's lab will tour an electron microscope facility and view blown-up pictures of bacteria and proteins. Kornfield's lab tour will include playtime with liquids that are highly elastic and a tutorial on polymer synthesis and the roles these molecules play in the body. At Schuman's lab, visitors will view a

see Children, page 2

Campus promoting transit alternatives

They cometh by bicycle, on foot and by Gold Line, in buses and by carpool—some of them, anyway—and their numbers are growing as more staff, faculty, and students use alternative transportation.

Caltech recently earned a "high five" from the city of Pasadena for its efforts to boost campus participation in carpooling and other forms of alternative transportation.

During 2004, the Institute increased its average vehicle ridership from 1.34 to 1.43, edging closer to its goal of 1.5 riders per vehicle trip to campus. The campus guideline is monitored by the South Coast Air Quality Management District and by the city, and has been established to comply with requirements to reduce traffic congestion and improve air quality.

In a congratulatory letter, the Pasadena Department of Transportation said the improvement probably stems from better promotion of the Caltech Rideshare program by Security and Parking Services.

Among a range of promotional strategies, transporation coordinator Irma Cruz has created an alternative-transportation

see Transportation, page 6

Trust is its own reward

Who do you trust? The question may seem distinctly human—and limited only to "quality" humans, at that—but new research suggests that trust is handled by the human brain in much the same way that obtaining a food reward is handled by the brain of an insect. And it turns out that we can actually trust each other a fair amount of the time without getting betrayed, just because we are biological creatures.

Experimenters at Caltech and the Baylor College of Medicine used a new brain-imaging technique called "hyperscanning" to simultaneously scan the brains of test subjects as they influenced each other and built trusting relationships in the course of playing an economic game.

Reporting in the cover story of the April 1 issue of *Science*, the researchers described the results they obtained by hooking up volunteers to functional magnetic resonance imaging (fMRI) machines in Pasadena and Houston. One volunteer in one locale interacted with another volunteer he or she did not know, as the two played an economic

see Trust, page 2

Guide: Caltech makes the grade

A college guide now on the market, *Caltech: Off the Record*, offers what few college guides do: opinions and candid comments from Caltech students about everyone's favorite institute, Caltech.

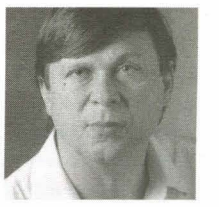
Unlike the typical college guide crammed with the cold numbers and bald statistics that parents seek on such things as admissions and financial aid, *Caltech: Off the Record* fortifies selected facts and figures with information on the topics that undergraduates really want to know about. The college guide is produced by the College Prowler, which has published guides to 200 other U.S. colleges.

The paperback comes in at a slim 160 pages, yet it features the valuable views of up to 100 of those who have actually studied, worked, and lived at the Institute. The guide also gives grades, from A to F, to

see Guide, page 6

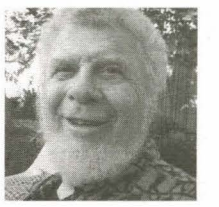
Distinguished alumni honored

The Distinguished Alumni Award is the highest honor the Institute bestows on a graduate, and is in recognition of a particular achievement of noteworthy value, a series of such achievements, or a career of noteworthy accomplishment. This year's awards will be presented on Saturday, May 21, during the annual Alumni Reunion Weekend and Seminar Day. This year's recipients are:



Mark M. Davis
PhD '81, Biology

Davis, the Avery Professor of Immunology at Stanford University, has been devoted to the study of T lymphocytes, a major component of the body's immune system. His discovery and characterization of T-cell receptor genes opened the way to understanding how these molecules recognize foreign antigens.



Leonard A. Herzenberg
PhD '56, Biology

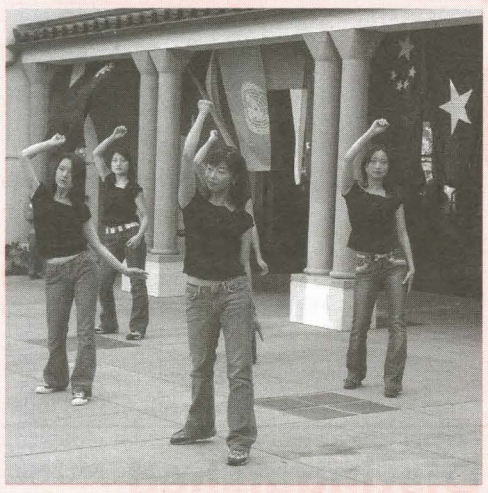
In the 1960s, Herzenberg conceived and oversaw the development of the fluorescence activated cell sorter (FACS), the first of a series of flow cytometry instruments that have become essential tools in biology and medicine. Since that time, he has continued to develop new FACS capabilities, and is credited with making flow cytometry available to genetic and immunologic studies.

Wilton W. Webster
BS '49, Mechanical Engineering

Wilton Webster is the senior science advisor at Biosense Webster, the cardiovascular catheter company he founded in 1969. Some 10 years later, the development of electrophysiology (the study of electrical activity in the heart) gave rise to the curing of patients with heart ar-

see Awards, page 6

NewsBriefs



The Caltech C Dance Group provided a rousing performance to the song "I Don't Know Kung Fu" at the International Food Fair and Culture Show on Friday, April 15, 2005.

Personals

Welcome to Caltech

March

Luis De La Cruz, utility mechanic, Physical Plant; **Yonggang He**, postdoctoral scholar in chemistry; **Beverly Johnson**, unit manager, Café 303, Dining Services JPL; **Timothy Kelley**, scientist / software engineer, materials science; **Carsten Seiler**, Web specialist, Development and Alumni Relations; **Raima Solomatina**, lab manager, biology; **Mark Thompson**, building attendant, Palomar Observatory.

April

Roya Bahreini, postdoctoral scholar in environmental science and engineering; **Andri Gretarsson**, experimental research scientist, Laser Interferometry Gravitational-Wave Observatory, Louisiana; **Hak-No Lee**, senior research technician, geological and planetary sciences; **Cristi Maetani**, international student programs office coordinator, Human Resources.

Retirements

Richard Goeden, a member of the professional staff with the Caltech Optical Observatories, retired on April 15 after 32 years at Caltech.

Larry Jones retired on April 1 after 34 years at Caltech. He was a senior technical manager with the Laser Interferometry Gravitational-Wave Observatory.

Susan Kallenbach is retiring on April 22. A member of the support staff in Development, she has worked at Caltech for 17 years.

Honors and awards

Engineering & Science, Caltech's quarterly magazine for exploring the Institute's intellectual life and research activities as well as for advancing interest in science and scientific issues, has received a silver medal in the Research Magazine category of the publications competition held annually by the Council for Advancement and Support of Education (CASE). Key players in the magazine's success have been its editor, the recently retired **Jane Dietrich**, managing editor (now editor) and science writer **Douglas Smith**, writer and contributing editor **Barbara Ellis**, graphic artist **Doug Cummings**, and photographer **Bob Paz**.

On April 14 the campus celebrated the 75th birthday of Amnon Yariv, Summerfield Professor of Applied Physics and professor of electrical engineering, with an all-day symposium followed by dinner at the Athenaeum.

Two win Beckman Prize

In a repeat of last year, two students were found to be so worthy of the Mabel Beckman Prize that both were selected for the honor. In their years at Caltech, Haluna "Penny" Gunterman and Andrea Vasconcellos were found to have demonstrated academic excellence, a commitment to service, and outstanding leadership.

Gunterman, a senior majoring in chemical engineering as well as in business economies and management, is president of the Caltech chapter of the American Institute of Chemical Engineers, vice president of the Caltech Society of Women Engineers, and president of Lloyd House. She has also advanced the efforts of an emerging-leaders program at the Institute.

Senior class copresident Andrea Vasconcellos, a major in biology, serves as the upperclass director-at-large for the Associated Students at Caltech, ASCIT. She has been active on the Women's Center student programming board and with the Athletic Advisory Committee. The recipient of a scholarship from the Donald A. Strauss Foundation, she has put the grant to use by teaching photography skills to underprivileged fifth graders.

Both women were cited for making a difference in the campus community through their concern for and support of their fellow students. A formal presentation of the prize will be made during commencement ceremonies in June.

The Mabel Beckman Prize is distributed to junior- or senior-class women who have achieved academic and personal excellence and demonstrated outstanding leadership skills, good character, and a strong interest in the Caltech community. Gunterman and Vasconcellos will receive a prize of $2,000 apiece.

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Weather station dedication

The WeatherNet weather station that has made the campus its home for the past six months will be formally dedicated in memory of Edward Lewis. Lewis, who was the Morgan Professor of Biology, Emeritus, at Caltech, an Institute alum, and a 1995 Nobel laureate in physiology or medicine, died last July at the age of 86.

Soon after Lewis earned his PhD at Caltech in 1942, he earned a master's degree in meteorology at Caltech in 1943, and served as a weather forecaster with the U.S. Army Air Forces in Hawaii and Okinawa during World War II.

Scheduled to speak are Elliott Meyerowitz, chair of the biology division; Fritz Coleman, chief weathercaster for KNBC-TV; and Stephanie Blozy, a meteorologist with WeatherBug, the company that distributes the weather stations as well as the data they collect.

The dedication ceremony will include the unveiling of the station's digital display, located on a wall in the lobby of Campus Planning. The Caltech community is invited to attend this event on Tuesday, April 26, beginning at 4:30 p.m.

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Caughey memorial

Caltech will honor and celebrate the life of Thomas Caughey, the Hayman Professor of Mechanical Engineering, Emeritus, at a campus memorial service on May 5.

Caughey was an internationally renowned leader in the field of dynamics and vibrations, particularly in the responses of nonlinear systems and randomly excited systems. His work was noted for its elegant style and mathematical rigor.

His awards include the Freudenthal and Theodore von Kármán medals from the American Society of Civil Engineers, and the Den Hartog Award of the American Society of Mechanical Engineers.

The Caughey memorial will take place in the main lounge of the Athenaeum at 4 p.m., and will be followed by a reception at 5:30, also at the Athenaeum. The Caltech community is invited to RSVP by April 28 by e-mail to csilva@caltech.edu or by calling ext. 4107.

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Children, *from page 1*

demonstration of equipment that helps scientists image live neurons.

In addition to the tours of these and other labs, workers in the carpentry shop will provide demonstrations of their craft. New this year will be a tour of Throop Pond. Children will see the ways that insects and plants have developed symbiotic relationships and depend on each other to survive.

Detailed information about this year's program, plus a registration form and a medical release form, is available online at http://cit.hr.caltech.edu/events.htm. Please complete these forms and send them to Susie Clark at 153-84 as soon as possible. Clark can be reached at ext. 1745. Volunteers are welcome and encouraged to participate.

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Trust, *from page 1*

game in which trustworthiness had to be balanced with the profit motive. During the game, the brain activity of the volunteers was continually monitored to see what was going on.

According to associate professor of philosophy Steve Quartz, director of the Social Cognitive Neuroscience Laboratory at Caltech, the results show that trust tended to occur earlier as the game progressed. That is, trust was delayed in the early rounds of the game; test subjects then began to determine the costs and benefits of the interchange, and eventually they anticipated rewards before they were even bestowed, their neuronal activity demonstrating an "intention to trust" before the round was finished. Once players knew each other by reputation, their intentions to trust were revealed about 14 seconds sooner than in the early rounds of the game.

In other words, the expectation of a reward is intimately involved in an individual's assessment of trustworthiness in the other individual, and the recipient tends to become more trusting prior to the reward coming—provided that there is no backstabbing.

Colin Camerer, Caltech's Axline Professor of Business Economics and the other Caltech faculty author of the paper, wittily notes that the study is also a breakthrough in showing that game theory continues to reward researchers who study human behavior.

"The theory about games such as the one we used in this study is developed around mathematics," he says. "But a mathematical model of self-interest can be overly simplified. These results show that game theory can draw together the social and biological sciences for new and deeper understandings of human behavior."

The results of the research interest Camerer and Quartz on several levels. For one, they demonstrate the neuroscience of economic behavior. "Neoclassical economics starts with the assumption that rational self-interest is the motivator of all our economic behavior," says Quartz. "The further assumption is that you can only get trust if you penalize people for non-cooperation, but these results show that you can build trust through social interaction."

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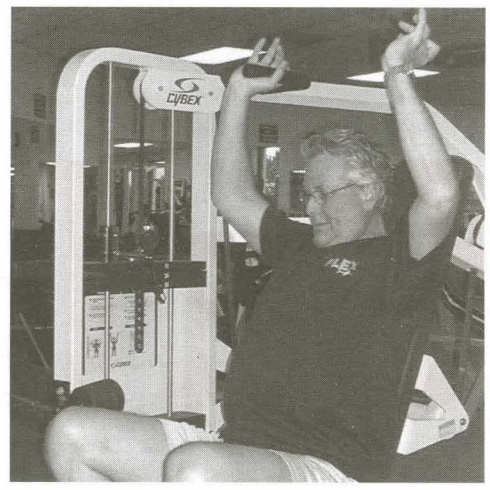

Wendell Jack, Caltech's new athletic director, joins other early risers at 6:30 a.m. during his daily workout in the Braun weight room.

Jack is back in action at Braun

"Hey, Wendell, welcome back!" shouts a gym rat in workout clothes one recent April morning in Braun Athletic Center. It may have been Wendell Jack's first week on the job as Caltech athletic director, but it was obvious that his face is a familiar one around campus.

One of Caltech's football coaches before the Institute dropped the sport for good in 1993, Jack also variously served between the years 1989 and 2000 as associate director, assistant director, and acting director of Intercollegiate Athletics, PE, and Recreation. He also taught PE classes.

Then in 2000 he was recruited by Hiram College in rural northeastern Ohio to become director of Athletics and Exercise/Sport Science. "My goal was to get entrenched in NCAA Division III Athletics," explains Jack, adding that Ohio and bordering states represent "one of the hotbeds," with 115 Division III schools.

"Hiram is a small liberal arts college, and very pretty. It's a very nice place to live, until you're in a hurry to get somewhere." He's *not* talking about traffic congestion. Some mornings, Jack opened his garage door to the sight of three-foot snowdrifts that needed to be shoveled before he could drive to work. Despite being charmed by the Amish countryside dotted with horse-drawn buggies, Jack says he and his wife, Sarah, felt a bit like California fish out of water.

After earning his EdD in higher education leadership and administration from Concordia University in River Forest, Illinois, the native Californian returned to the West Coast in 2002. Southern California's Whittier College recruited him as director of athletics. "It seemed like a great opportunity to get back to California. We were willing to trade the snow for the traffic jams." At Whittier, Jack oversaw intercollegiate sports, recreational services, and intramural and club sports.

When he learned that Caltech was looking for an athletic director, he decided to apply. Says Margo Marshak, vice president for student affairs, "Wendell Jack knows Caltech well, and he understands our athletic and recreational programs and their fit within our academic community." Marshak also thanked Mark Harriman for a job well down as interim director.

see Jack, page 6

For the record

In the April 7 article about fencer Katherine Harvard, *336* stated that the NCAA places schools in one of three divisions based on size. In fact, there are several criteria, including the number of athletic scholarships offered, the number of sports offered, as well as scheduling criteria.

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April 25–May 1, 2005

M T W T F S S

Monday, April 25

High Energy Physics Seminar
469 Lauritsen, 4 p.m.—Topic to be announced. Andrew Frey, postdoctoral scholar in physics, mathematics and astronomy, Caltech.

Shirley A. Kliegel Lecture in Geological and Planetary Sciences
155 Arms, Robert Sharp Lecture Hall, 4 p.m.—"Tectonically Driven Atmospheric Change and Climate Collapse as a Recurring Control on Precambrian Biological Evolution: A Specific Example from 3.2-2.7 Ga," Professor Donald Lowe, department of geological and environmental sciences, Stanford University.

Thomas Wolff Memorial Lecture in Mathematics
151 Sloan, 4:15 p.m.—"Two-Dimensional Continuous Random Systems," Wendelin Werner, professor of mathematics, University of Paris–Sud.

Tuesday, April 26

Beckman Institute Seminar Series
Beckman Institute auditorium, 10:30 a.m. to noon—"Imaging the Quaternary Structure of Individual Protein Complexes with Electron Cryotomography," Grant Jensen, assistant professor of biology, Caltech. Refreshments, 10 a.m. Information: 395-2791.

Caltech Library System Presents: Quick Review for Electronic Theses
Sherman Fairchild Library, multimedia conference room, noon to 1:30 p.m.—Caltech requires that theses be submitted in both paper and electronic versions. This presentation will offer a brief overview of techniques useful in the production and publication of electronic theses. The session will include tips on formatting, intellectual-property considerations, how to submit a thesis, and availability (who can see it and when) issues. No reservations are required.

Institute for Quantum Information Seminar
74 Jorgensen, 3 p.m.—Topic to be announced. Martin Roetteler, NEC Labs, Princeton.

Mechanical Engineering Seminar
206 Thomas, 3 p.m.—"Non-Normality and Instability in Microscale Spreading Films," Sandra Troian, professor of chemical engineering, Princeton University.

Ulric B. and Evelyn L. Bray Seminar in Political Economy
25 Baxter, 4 p.m.—"Polarized America: The Dance of Ideology and Unequal Riches," Keith Poole, professor of political science, UC San Diego.

Chemical Engineering Seminar
106 Spalding Lab, Hartley Memorial Seminar Room, 4 p.m.—"Influences of Intermolecular Interactions on the Formation of Electrospun Submicron Fibers," Professor Timothy Long, department of chemistry, Virginia Polytechnic Institute and State University.

Information Science and Technology Seminar
070 Moore, 4 p.m.—"Optimal Flooding Search in a Large Network," Professor Mingyan Liu, electrical engineering and computer science, University of Michigan–Ann Arbor.

Wednesday, April 27

Mathematical Physics Seminar
351 Sloan, noon—"Spectra of Positive and Negative Energies in the Linearized NLS Problem," Dmitry Pelinovsky, associate professor of mathematics, McMaster University.

Environmental Science and Engineering Seminar
142 Keck, 3:40 to 5 p.m.—"Estimating Primary Production Rates in the Ocean: Recent In Situ Versus Traditional In Vitro Methods," Professor Paul Quay, school of oceanography, University of Washington.

Astronomy Colloquium
155 Arms, Robert Sharp Lecture Hall, 4 p.m.—"The Field Brown Dwarf Luminosity Function," Jill Knapp, professor of astronomy, Princeton.

Organic Chemistry Seminar
147 Noyes, Sturdivant Lecture Hall, 4 p.m.—"Enzymes, Antibodies, and Organocatalysis: Rediscovery of the Rich Life of Amines," Professor Carlos Barbas, departments of molecular biology and chemistry, Scripps Research Institute.

Leakey Speaker Series on Human Origins
Beckman Auditorium, 8 p.m.—"Coexistence: Cooperation or Competition?", Craig Stanford, chair, department of anthropology, USC. Professor Stanford has conducted primate research in East Africa, South Asia, and South America. Tickets and information: 395-4652, 1 (888) 2CALTECH, or events@caltech.edu. Individuals with a disability: 395-4688 (voice) or 395-3700 (TDD). Visit Public Events at www.events.caltech.edu.

USGS Special Event
Beckman Institute auditorium, 8 to 9:15 p.m.—"Protecting Biodiversity in Southern California," Dr. Robert Fisher, biology, USGS.

Thursday, April 28

ESE & Society Discussion Group
151 Arms, Buwalda Room, 9 a.m.—Discussion groups are held on Thursday mornings from 9 to 10. Refreshments.

Thesis Seminar
147 Noyes, Sturdivant Lecture Hall, 1 p.m.—"Toward Imaging and Spectroscopy of Single Molecules with Nanoscale Mechanical Resonators," Bruce Lambert, graduate student in chemistry, Caltech.

Materials Research Lecture
106 Spalding Lab, Hartley Memorial Seminar Room, 2 p.m.—"Nanoscale Morphological Evolution Kinetics on TiN Surfaces: An In Situ STM and LEEM Study," Dr. Suneel Kodambaka, IBM.

Physics Research Conference
201 E. Bridge, 4 p.m.—"Can a Solid Be Superfluid?", M. H. W. Chan, professor of physics, Penn State University. Refreshments, 114 E. Bridge, 3:45 p.m.

SIAM Special Event
Beckman Institute auditorium, 4 p.m.—Caltech's student chapter of the Society for Industrial and Applied Mathematics presents "Scholarly Journals: Problems and Trends as the Web Turns 11," presented by Kimberly Douglas, university librarian, Caltech. Refreshments, Beckman Institute Courtyard, 3:30 p.m.

Social Cognition/Neuroscience Series
25 Baxter, 4 p.m.—" Emotion, Decision, and Individual Differences," Daniel Houser, associate professor of economics, ICES, George Mason University.

Robert W. Vaughan Lecture in Chemical Engineering
106 Spalding Lab, Hartley Memorial Seminar Room, 4 p.m.—"The Flow, Aging, and Memory of Soft Particle Pastes," Professor Roger Bonnecaze, department of chemical engineering, University of Texas, Austin.

Friday, April 29

High Energy Theory Seminar
469 Lauritsen, 11 a.m.—Topic to be announced. Professor Koji Hashimoto, Institute of Physics, University of Tokyo.

Mathematics of Information Seminar
239 Moore, 3 to 4:30 p.m.—Topic to be announced. Nevin Kapur, postdoctoral scholar in computer science, Caltech.

History and Philosophy of Science Seminar
Treasure Room, Dabney Hall, 4 p.m.—"Einstein as Object and Tool of Historical Research," Diana Kormos-Buchwald, associate professor of history, Caltech.

Inorganic-Organometallics Seminar
151 Crellin, 4 p.m.—"Catenanes, Daisy Chains, Polyrotaxanes, Oh My!", Erin Guidry, graduate student in chemistry, Caltech.

Kellogg Seminar
Lauritsen Library, 4 p.m.—"Searching for Reactor Neutrino Oscillations at Braidwood," Dr. Jon Link, Columbia University.

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May 2–8, 2005

M T W T F S S

Monday, May 2

Thesis Seminar
147 Noyes, Sturdivant Lecture Hall, 1 p.m.—"Rotational Spectroscopy and Observational Astronomy of Prebiotic Molecules," Susanna Widicus Weaver, graduate student in chemistry, Caltech.

Biophysics Lecture Series
153 Noyes, Sturdivant Lecture Hall, 4 p.m.—"Some Physical Aspects of the Origin of Life and of Artificial Cells," Professor Albert Libchaber, Rockefeller University.

Geological and Planetary Sciences Seminar
155 Arms, Robert Sharp Lecture Hall, 4 p.m.—"Has There Been Very Recent, Major Geologic Activity and Climate Change on Mars?", Professor Alfred McEwen, department of planetary sciences, University of Arizona.

High Energy Physics Seminar
469 Lauritsen, 4 p.m.—"EDM Searches: High Energy Physics on a Tabletop," David Kawall, University of Massachusetts.

Tuesday, May 3

Carnegie Observatories Colloquium Series
William T. Golden Auditorium, 813 Santa Barbara Street, 3:30 to 5 p.m.—"Early Results from the GALEX Nearby Galaxy Survey," Barry Madore, Observatories of the Carnegie Institution of Washington. Refreshments, 3:30 p.m.

Chemical Physics Seminar
147 Noyes, Sturdivant Lecture Hall, 4 p.m.—"Carbon Dioxide and Unusual Isotope Effects: From Single Collisions to Global Climate Change," Professor Kristie Boering, chemistry department, UC Berkeley.

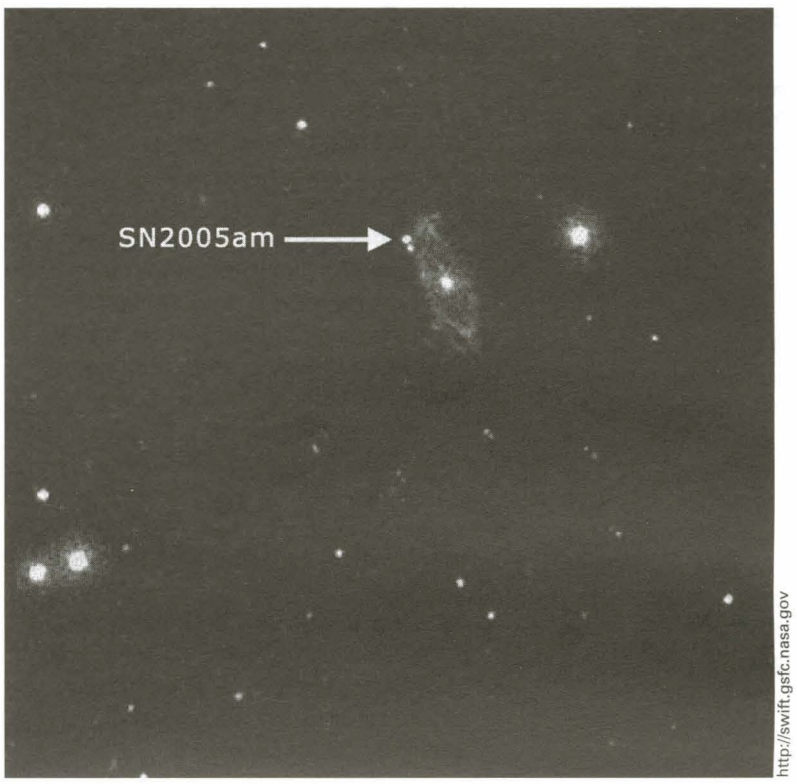
Wednesday, May 4

CIMMS Lunchtime Series
114 Steele, noon—"Progress Toward Efficient Viscous Simulation of Flapping, Deforming Wings for Investigations of Flying and Swimming," Professor Jeff Eldredge, mechanical and aerospace engineering department, UCLA.

Environmental Science and Engineering Seminar
142 Keck, 3:40 to 5 p.m.—"Upper Ocean Dynamics," Professor Raffaele Ferrari, department of earth, atmospheric, and planetary sciences, MIT.

Astronomy Colloquium
155 Arms, Robert Sharp Lecture Hall, 4 p.m.—"Bumps, Wiggles, and Holes in the Sky; Exploring the Early Universe," Amber Miller, assistant professor of physics, Columbia University.

Organic Chemistry Seminar
147 Noyes, Sturdivant Lecture Hall, 4 p.m.—"Natural Product Glycorandomization," Professor Jon Thorson, Laboratory for Biosynthetic Chemistry, University of Wisconsin–Madison.



The Swift Ultraviolet/Optical Telescope (UVOT) took this image of the new supernova 2005am on March 3, 2005. The UVOT image shows the supernova as the brightest point in its galaxy, NGC 2811. On Thursday, May 5, NASA's Neil Gehrels will present the first results from the Swift mission.

Thursday, May 5

ESE & Society Discussion Group
151 Arms, Buwalda Room, 9 a.m.—Discussion groups are held on Thursday mornings from 9 to 10. Refreshments.

Thesis Seminar
151 Crellin, 10 a.m.—"Corroles," Jeremy Weaver, graduate student in chemistry, Caltech.

Caltech Library System Presents: Endnote for Absolute Beginners
Sherman Fairchild Library, multimedia conference room, 2 to 3:30 p.m.—Learn what EndNote is and the basics of how it can work for you to create bibliographies within a word-processing document and as a search interface to online databases and catalogs, allowing you to directly export records to your computer. Not intended for Mac users. Class size is limited to eight participants. Registration: http://oliphaunt.library.caltech.edu/forms/cls-classes. Walk-ins will be accepted only if space permits.

Everhart Lecture Series
101 Guggenheim Lab, Lees-Kubota Lecture Hall, 4 p.m.—"The Sweeter Side of Cell Signaling: O-GlcNAc Glycosylation in the Brain," Nelly Khidekel, graduate student in biochemistry, Caltech. Refreshments, 3:45 p.m.

Memorial Service for Professor Thomas K. Caughey
Athenaeum, 4 p.m.—A memorial service to honor the contributions and to celebrate the life of Professor Thomas K. Caughey, Hayman Professor Emeritus, will be followed by a reception in the Athenaeum's main lounge. Please respond by April 28 to Christine Silva, 395-4107 or csilva@caltech.edu.

Physics Research Conference
201 E. Bridge, 4 p.m.—"First Results from the Swift Gamma-Ray Burst Mission," Neil Gehrels, NASA's Goddard Space Flight Center. Refreshments, 114 E. Bridge, 3:45 p.m.

Friday, May 6

High Energy Theory Seminar
469 Lauritsen, 11 a.m.—Topic to be announced. James Sparks, department of mathematics, Harvard.

Mathematics of Information Seminar
239 Moore, 2:30 to 4 p.m.—Topic to be announced. Nevin Kapur, postdoctoral scholar in computer science, Caltech.

Condensed Matter Physics Seminar
107 Downs Lab, 4 p.m.—Topic to be announced. Professor Subir Sachdev, department of physics, Yale University.

Inorganic-Organometallics Seminar
151 Crellin, 4 p.m.—"Developing Tripodal Carbene Chelators for Small Molecule Activation," Xile Hu, postdoctoral scholar in chemistry, Caltech.

Kellogg Seminar
Lauritsen Library, 4 p.m.—Topic to be announced. Erich Ormand, Lawrence Livermore National Laboratory.

CampusEvents

Monday, April 25

Bolero Dance Class
Winnett lounge, 7:30 p.m.—Bolero is a dance with the passion of rumba and the grace of the waltz. No partner or previous dance experience is required. Cost for Caltech students: $40 for the series, $6 per class; others, $56 for the series, $8 per class. Classes started March 28.

Tuesday, April 26

Defensive Driving
118 Keith Spalding Building, 8:30 a.m.—This class is geared toward those who operate campus-owned motor vehicles. Sharpen driving skills and raise awareness of safe driving to reduce the likelihood of accidents. Registration: 395-6727 or safety.training@caltech.edu.

Want to Be a Great Team Player?
Brown Gym classroom, 8:30 a.m. to 12:30 p.m.—Intended for nonsupervisors, this class will help you develop the skills to become a successful member of the team. Registration: 395-8055 or diane.williams@caltech.edu.

Beginning Ballet Class
Braun Gym, multipurpose room, 3:30 p.m.—A free, introductory ballet class for women and men with no prior dance experience. No special clothing or shoes are required. The seven-week series of classes began on April 12.

Wednesday, April 27

Caltech/JPL Toastmasters Club Meeting
Building 167 Conference room, JPL, 5 p.m.—Enhance your speaking skills without stage fright. The Toastmasters Club meets every second and fourth Wednesday of the month. Guests are welcome. Information: Dirk Runge, (818) 393-0465 or www.jplcaltechtoastmasters.com.

Salsa Dance Classes
Winnett lounge, 7:30 p.m.—Learn the fundamentals of salsa dancing. Free basic instruction starts at 7:30 p.m., the intermediate class at 8. The advanced class takes place at 10.

Thursday, April 28

Caltech Architectural Tour
Athenaeum, 11 a.m. to 12:30 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.

GSC Underrepresented Students Committee
Red Door Café, 5 p.m.—The Underrepresented Students Committee will meet. Information: gscus@its.caltech.edu. Meetings are open to members of the Caltech community.

Amnesty International Monthly Meeting
Caltech Y lounge, 7:30 p.m.—Caltech/Pasadena AI 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. Visit our website at www.its.caltech.edu/~aigp22.

Ethnic Visions Film Series: *Maryam*
Baxter Lecture Hall, 7:30 p.m.—An Iranian-born teenager living in suburban New Jersey thinks of herself as simply an American until anti-Iranian sentiment erupts in her community after American hostages are held in Iran. The director and the producer will be special guests. Information: http://events.caltech.edu/events/event-2265.html.

Intermediate-Level Standard and Latin Dances
Winnett lounge, 8 p.m.—The first hour focuses on standard dances such as waltz, quickstep, Viennese waltz, tango, and foxtrot. Instruction in cha-cha, rumba, samba, and jive Latin-style dances begins at 9. Fee: $25 for Caltech students; $40 and permission of the instructors for others. The eight-week series began on March 31.

Beginning-Intermediate Hip-Hop
Braun Gym, multipurpose room, 9 p.m.—No special clothing or shoes are needed. Cost for Caltech students, $25 for the series; for other Caltech community members, $50 for the series. A trial class costs $5 and $8, respectively. This seven-week series began on April 14.

Friday, April 29

Women's Water Polo
SCIAC Tourney, at Pomona-Pitzer, 8 a.m.

Capitol Steps
Beckman Auditorium, 8 p.m.—The Capitol Steps is a troupe of current and former congressional staffers who take a humorous look at current issues. (See Public Events contact information on this page.)

Saturday, April 30

Women's Water Polo
SCIAC Tourney, at Pomona-Pitzer, 8 a.m.

Coleman Chamber Ensemble Competition
Ramo Auditorium, 9 a.m. to 5 p.m.—The 59th annual Coleman Chamber Ensemble Competition will feature finalists vying for prizes. Open to the public, free of charge. The winners will be presented in formal concert on Sunday, May 1, at 3:30 p.m.

Beginning-Intermediate Belly Dance
Braun Gym, multipurpose room, 12:25 p.m.—No experience or special shoes are needed. Cost for Caltech students, $25 for the series; for other Caltech community members, $50 for the series. A trial class costs $5 and $8, respectively. This seven-week series began on April 16.

Fifth Annual Caltech Jazz Festival
Gates Library patio, 1 to 6 p.m.—The patio outside Gates Library will be the setting for this free afternoon of jazz. The concert will feature the Nolan Shaheed Ensemble, Big Band Theory, and SGS. Bring a blanket and some food.

Capitol Steps
Beckman Auditorium, 8 p.m.—(See Friday, April 29, for details.)

Sunday, May 1

Women's Water Polo
SCIAC Tourney, at Pomona-Pitzer, 8 a.m.

Beginning-Level Standard and Latin Dances
Winnett lounge, 2 p.m.—The first hour focuses on standard dances such as waltz, quickstep, and Viennese waltz. Instruction in cha-cha, rumba, samba, and jive Latin-style dances begins at 3 p.m. Fee: $25 for Caltech students; $40 for others. The eight-week series began on April 3.

Skeptics Society Lecture
Baxter Lecture Hall, 2 p.m.—"Empire of the Stars: Obsession, Friendship, and Betrayal in the Quest for Black Holes," Arthur I. Miller, professor of history and philosophy of science, department of science and technology studies, University College London. Donation is $8 for nonmembers and non-Caltech students. Free to the Caltech/JPL community. Tickets and information: 794-3119 or skepticmag@aol.com. A book signing will follow the lecture.

Capitol Steps
Beckman Auditorium, 3:30 p.m.—(See Friday, April 29, for details.)

Coleman Competition Winners Concert
Ramo Auditorium, 3:30 p.m.—Winners of the Coleman Chamber Ensemble Competition will perform in concert. (See Public Events contact information on this page.)

Monday, May 2

Bolero Dance Class
(See Monday, April 25, for details.)

Tuesday, May 3

Techniques for Identifying and Correcting Mistakes in Written Communication
Brown Gym classroom, 8:30 a.m. to 4 p.m.—This one-day program is designed for those whose job requires them to identify and correct errors in their writing or the writing of others. Open to supervisors and nonsupervisors. Registration: 395-8055 or diane.williams@caltech.edu.

GSC Insurance Meetings with Chickering Representatives
Winnett clubroom #1, 10 a.m.—David Paragone and Mike Conway from the Chickering Group will be on campus to answer any questions related to student health insurance. To schedule an appointment, contact Mike Conway at (877) 375-7912 or mconway@chickering.com. Walk-ins are welcome.

Beginning Ballet Class
(See Tuesday, April 26, for details.)

Wednesday, May 4

Salsa Dance Classes
(See Wednesday, April 27, for details.)

Thursday, May 5

Ethnic Visions Film Series: *Better Luck Tomorrow*
Baxter Lecture Hall, 7:30 p.m.—The film's director, Justin Lin, will be a special guest. Information: http://events.caltech.edu/events/event-2266.html.

Intermediate-Level Standard and Latin Dances
(See Thursday, April 28, for details.)

Beginning-Intermediate Hip-Hop
(See Thursday, April 28, for details.)

Friday, May 6

Friends of Caltech Libraries Annual Book Sale
Winnett lounge, 9 a.m. to 4 p.m.—Caltech faculty, staff, and students who become new members of the Friends of Caltech Libraries during this event will receive 1/2 off the membership dues and a 25 percent discount on books purchased during the day's sale. Continues on May 7.

Saturday, May 7

The Friends of Caltech Libraries Annual Book Sale
Winnett lounge, 10 a.m. to 2 p.m.—Caltech faculty, staff, and students who become new members of the Friends of Caltech Libraries during this event will receive 1/2 off the membership dues and a 25 percent discount on books purchased during the day's sale.

Beginning-Intermediate Belly Dance
(See Saturday, April 30, for details.)

Bandorama
Beckman Auditorium, 8 p.m.—This 27th annual concert brings together the Caltech Concert Band and both the Monday Night and Thursday Night Jazz Bands. A reception for all will follow the concert. Admission is free.

Sunday, May 8

Beginning-Level Standard and Latin Dances
(See Sunday, May 1, for details.)

Student Chamber Concert
Dabney Lounge, 3:30 p.m.—Caltech students will perform piano duets and music for small string and woodwind ensembles. Each program in the May chamber music series is different, with separate performers and repertoire. A reception will follow the concert.

Mondays

Lunchtime Pickup Ultimate Frisbee
Fox Stanton Track and Field, 12:15 p.m.—The Caltech Penultimate Frisbee players make up an informal recreational group that plays pickup games of Ultimate Frisbee at lunchtime on Mondays, Wednesdays, and Fridays. No experience is needed, and complete novices are welcome. Information: http://mailman.its.caltech.edu/penultimate.

Floorball Club
Brown Gymnasium, 9 p.m.— Caltech Floorball Club holds pickup floorball games on Mondays from 9 to 11 p.m. For more information, see our website at http://floorball.caltech.edu.

Tuesdays

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). Sponsored by the Caltech Women's Club. Information: 584-0970 or kimdeman@yahoo.com.

CIT Knitters Group Meeting
256 Mudd Laboratory, South, noon—All level of knitters and related handcrafters are welcome. We make items for others and ourselves. Information: 395-6905.

Caltech Tai Chi Club
Winnett lounge, 7 p.m.—Meets Tuesdays and Fridays weekly. Sessions are free. Information: www.its.caltech.edu/~taichi.

Wednesdays

Wednesdays in the Park
Tournament Park, 10 a.m. to noon—Every Wednesday there's conversation and coffee for parents and caregivers, and playtime and snacks for children. Stop by and make new friends from around the world. Sponsored by the Caltech Women's Club. Information: 793-2535 or nancyhewett@earthlink.net.

Lunchtime Pickup Ultimate Frisbee
Fox Stanton Track and Field, 12:15 p.m.—The Caltech Penultimate Frisbee players make up an informal recreational group that plays pickup games of Ultimate Frisbee at lunchtime on Mondays, Wednesdays, and Fridays. No experience is needed, and complete novices are welcome. Information: http://mailman.its.caltech.edu/penultimate.

Thursdays

Baby Furniture and Household Equipment
234 S. Catalina, 10 a.m. to 1 p.m.—Loans of kitchen and household necessities and baby furniture are made to members of the Caltech and JPL communities. Open on Thursdays only. No appointment is necessary. Information: 584-9773 or furnpool@caltech.edu.

Fridays

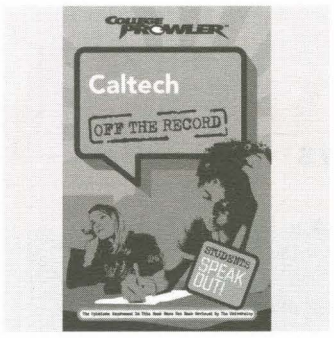
Lunchtime Pickup Ultimate Frisbee
Fox Stanton Track and Field, 12:15 p.m.—The Caltech Penultimate Frisbee players make up an informal recreational group that plays pickup games of Ultimate Frisbee at lunchtime on Mondays, Wednesdays, and Fridays. No experience is needed, and complete novices are welcome. Information: http://mailman.its.caltech.edu/penultimate.

Caltech Tai Chi Club
Winnett lounge, 7 p.m.—Meets Tuesdays and Fridays weekly. Sessions are free. Information: www.its.caltech.edu/~taichi.

Caltech Chess Club
Page House dining room, 8 p.m.—Be you master or novice, you will enjoy the chess club's weekly meetings. Information: www.its.caltech.edu/~citchess.

Public Events information and tickets

395-4652, 1 (888) 2CALTECH, or events@caltech.edu. Individuals with a disability: 395-4688 (voice) or 395-3700 (TDD). Visit Public Events at www.events.caltech.edu.



Guide, *from page 1*

various facets of campus life: What's the deal on guys and girls? How accessible are the professors? How safe do students feel on campus? What's the drug scene like? Students comment on these issues and more.

On academics, student responses ranged from the wildly enthusiastic to the decidedly mixed. One student said, "I have found the professors to be exceptional. They are all leaders in their field and it really shows," while another responded, "The teachers at Tech are undoubtedly brilliant. They just don't teach very well."

Judging by students' reports of class size as well as professors' knowledge, ability to communicate, accessibility, and interest in students' welfare, the College Prowler gave academics at Caltech an A.

Students also sized up the social scene, with Caltech men described variously as "antisocial trolls" by one student, "annoyingly nerdy" by another. On Caltech women, one student provided this insight: "In too many relationships, women realize they have control of the situation and take advantage of it, developing a boy toy." Another student summed it up with, "The attractiveness of both sexes is below the norm."

Caltech: Off the Record explains that the "ratio," or gender disparity, on campus, is an eternal topic of conversation, but goes on to state that dating is common. "People start hooking up at pre-frosh weekend—before they even start school here!" it observes. Using the criteria of attractiveness, intelligence, friendliness, the ratio of men to women, and level of engagement, the College Prowler gives Caltech guys a C, and Caltech girls a C-.

Additional chapters are devoted to the students' opinions on other topics crucial to quality of campus life, with pros, cons, and the ubiquitous College Prowler grade. These include Athletics (D+), Campus Dining (C+), Campus Housing (B), Computers (A), Night Life (C), Parking (B), Safety and Security (B), and Weather (A).

The online book merchant Amazon.com lists this guide as the College Prowler's number 7 seller, and gives it a rating of five stars, based on one reader's review (albeit written by the author herself, Mayra Sheik). The guide retails for $14.95, but can be found used for as low as $10.57.

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Jack, *from page 2*

Caltech is in the Southern California Intercollegiate Athletic Conference (SCIAC), along with Cal Lutheran, Claremont-Mudd-Scripps, LaVerne, Occidental, Pomona-Pitzer, Redlands, and Whittier, all NCAA Division III schools.

Division III institutions, including Caltech, tend to be smaller than high-profile Division I and Division II colleges, and they don't offer sports scholarships. Nevertheless, Caltech fields varsity teams in baseball, basketball, cross-country, fencing, golf, soccer, swimming and diving, tennis, track and field, volleyball, and water polo. A few of the sports are represented by both men and women's teams, and no student who wishes to participate is turned away, Jack says. "We are offering a lot of choices to 900 undergraduates."

Caltech students may be famous for their brains, not brawn, but this is not to say they don't take their sports seriously, says Jack. Many of these students bring the same tenacity to their sports that they apply to their studies. And he notes that Caltech is steadily improving, particularly in tennis, track, and cross-country. "Are we winning conference championships? No. Are we getting more competitive? Yes."

"I'm committed to offering our students the opportunity to compete. I'm very competitive myself, but in the big picture, the experience of competing in sports teaches lessons in character-building, fighting against adversity, and the values of teamwork."

Jack's department also runs the PE program, in which undergrads are required to complete three, 3-unit classes. Equally important, Jack says, is the value placed on fun, and helping students become well-rounded people, as expressed by the department's "sound-body, sound-mind" mission statement.

Students are only part of the picture. Anyone who spends more than a millisecond at Braun sees a mix of faculty, staff, and students in many classes and activities. They are seen shoulder to shoulder, practicing their downward dogs in yoga or burning calories on the elliptical training machines. They also mix it up in intramural sports, cosponsored by Athletics, the Graduate Student Council, and the interhouse committee.

As for major changes, Jack doesn't anticipate making many, except maybe continuing to draw more diverse users to campus sports and fitness opportunities, "from, literally, the rocket scientist from JPL to the campus custodian."

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Transportation, *from page 2*

feature that appears on Caltech Today (http://today.caltech.edu) with links to resources and past articles. Readers can learn how to find a carpool or vanpool partner, and how to receive $20 subsidies offered by the Institute to individuals who buy public transportation passes at the Bookstore.

The city also commended Caltech's plan to designate 10 percent of its the soon-to-open California Boulevard parking structure for carpool parking and for adding more campus bicycle racks.

In addition, Caltech persuaded the city to provide direct transportation from the Metro Gold Line Allen Station to campus on the Area Rapid Transit Service (ARTS) bus line, starting in February. The ARTS bus stops on Hill, Chester, and Wilson avenues.

Cruz is herself a great proponent of public transportation, traveling on an Orange County Metrolink train from Santa Ana to Union Station in Los Angeles, then riding the Gold Line and ARTS bus to get to campus each day. One of a number of employees who use alternative transportation from Orange County to campus, she was convinced to do so once she started coordinating the transportation program, she says. "I do it for personal reasons. That much driving is too hard on me personally, on my car, and on my gas expenses."

On an institution-wide basis, it's never easy to get people out of their individual cars, says Gregg Henderson, chief of security. "These challenges are faced by virtually every employer in Southern California. The prospect of public transportation is somewhat foreign. You are used to getting in the car and going any time you want."

Many people rely on their personal cars to drop children off at school and at child care, or to run errands during their lunch hours. "You do give up that freedom with some forms of alternative transportation, although with our program, we do offer incentives."

Clearly, Henderson says, incentives increase participation, as do rising fuel prices, traffic congestion, and limited campus parking.

Another alternative transportation user is Todd Swart, an administrative assistant in Security and Parking Services. Swart often walks or rides his bike from his home near Fair Oaks, and formerly used light-rail and buses when he lived in Altadena. Recently, his 1987 car was on its last legs, and he decided to donate it to charity. "What led to this decision is that I'm adamant about not getting into debt. When I get the money saved up I'll buy a new car. Until then, I'd rather live without."

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Awards, *from page 1*

rhythmias by radio-frequency ablation using catheters. Webster subsequently further modified his catheters for use in this emerging field.

Raymond L. Orbach
BS '56, Physics

Orbach is the director of the Office of Science at the Department of Energy, the third-largest federal sponsor of basic research in the United States. Before assuming this post, he had served for 10 years as chancellor of the University of California, Riverside. While there, enrollment at UC Riverside grew from 8,805 to more than 14,400 students. In addition to his administrative duties at Riverside, Orbach maintained an active research program in theoretical and experimental physics.

Gordon H. Sato
PhD '56, Biology

Best known for his contribution to the understanding of the multiple factors required for the culture and husbandry of mammalian cells outside the body, Sato exemplifies the nontraditional student. In 1950, he was working as a gardener near the Caltech campus, when he walked onto campus and ended up being interviewed by Nobel Laureate Max Delbrück, who recognized his potential and took him on as a graduate student.

After completing his PhD, Sato held a number of academic positions, founded several biotechnology ventures, and in the early 1980s codeveloped the cancer drug Erbitux. Today he devotes himself entirely to helping alleviate famine in Ethiopia.

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