Caltech336

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The campus community biweekly

March 21, 2002, vol. 2, no. 6

Ensminger named new HSS chair

She has traveled alone in war-torn areas of Africa and listened to lions pad around her tent at night, but now Caltech professor of anthropology Jean Ensminger takes on a different challenge, as the new chair of the Division of the Humanities and Social Sciences.

In making the announcement, Caltech provost Steve Koonin commented, "Jean brings a distinguished record of teaching and research, fine judgment, and demonstrated management skills to an important position of academic leadership within the Institute. We are very fortunate that someone of her talents is willing to take on this important responsibility."

Ensminger will be the first woman to serve as division chair at Caltech, and will take the helm on June 15, replacing John Ledyard, professor of economics and social sciences, who will be returning, he says, to "the best position in the world: full professor at Caltech." He will redirect his energies to his research in market and organization design, or focus on a new, unrelated area, or "go sailing, if my boat is still afloat."

For her part, Ensminger is enthusiastic about the prospects for the division, and hopes to build on its successes over the last two decades. "The division has transformed the study of political science and political economy in ways now emulated and dominant in virtually every major university in America," she says, "and is currently incubating several areas of expertise that have the same potential for transforming disciplines as we know them today."

see Ensminger, page 6

Undergrad award nominations urged

Applications for Caltech's 2002–03 Upper Class Merit Award Competition are now being accepted, and faculty members are encouraged to nominate freshmen, sophomores, and juniors who have shown outstanding academic achievement in their time at the Institute, says David Levy, director of financial aid. Eligible students may also apply directly themselves, and Levy urges them to do so. "A lot of students don't apply because

see Scholarships, page 6

A breakthrough on a tropical virus

Scientists at Caltech and Purdue University have determined the fine-detail structure of the virus that causes dengue fever. This advance could lead to new, more focused strategies for devising a vaccine against a viral illness that causes 20,000 deaths each year.

Reporting in the March 8 issue of the journal *Cell*, Caltech biology professor James Strauss, lead author Richard Kuhn of Purdue (a former postdoctoral scholar in Strauss's lab), and Michael Rossman and Timothy Baker of Purdue describe the virus's structure, obtained with a cryoelectron microscope. The detailed electron-density map shows the inner RNA core of the virus, as well as the other spherical layers that cover it. At the surface is the glycoprotein scaffolding thought to allow the virus to interact with the receptor and invade a host cell.

This is the first time the structure of a flavivirus has been described, Strauss says. Flaviviruses are a class of viruses that include the yellow fever, West Nile, tick-borne encephalitis, and Japanese encephalitis viruses. All are enclosed with a glycoprotein outer layer that includes minor projections out of the lipid layer due to the geometry of the scaffolding.

"Most viruses that cause serious illness are enveloped, including influenza, hantaviruses, West Nile virus, smallpox, and herpes—though not polio," Strauss says.

see Dengue virus, page 2

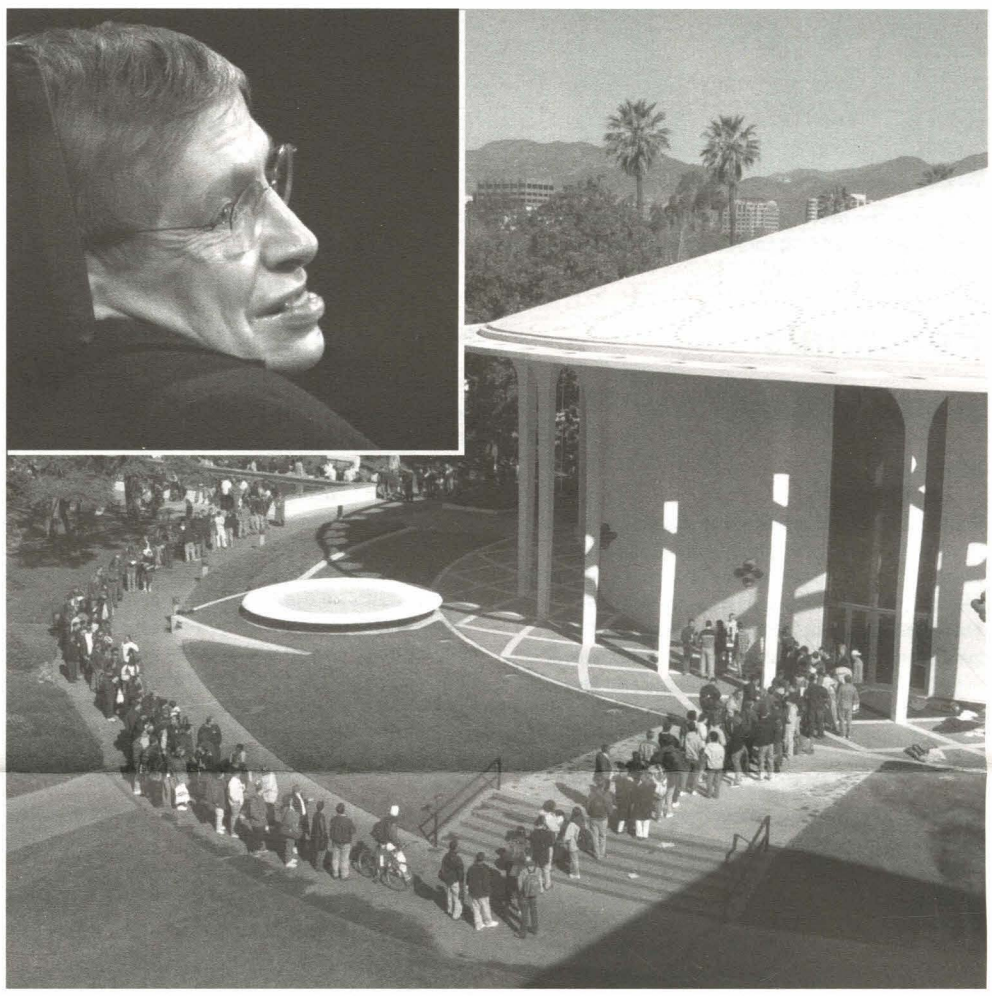
Dodgers to host Caltech/JPL Day

Dodger Dogs beware. On Saturday, June 1, more than 3,000 hungry baseball fans from Caltech and JPL—with families in tow—will descend on Chavez Ravine. That's when the first-ever Caltech/JPL Day will take place at Dodger Stadium. The entire Caltech community, including students, staff, and faculty, will have the run of the place. The L.A. Dodgers will face the Arizona Diamondbacks, with the game beginning at 1:10 p.m.

Clustered in Dodger Stadium's right-field pavilion, the fans from Caltech will begin the day at 11 a.m. A pregame carnival will offer an opportunity to scale a 28-foot mountain and race down a 30-foot slide. Athletes will be able to speed-check their fastest pitch or swing a bat in an inflatable batting cage. The usual carnival denizens will be there to entertain the kids, including face painters, magicians, balloon artists, and clowns.

see Dodgers, page 6

Hawking draws thousands



Fans of the British physicist and best-selling author Stephen Hawking braved the morning chill for hours in line outside Beckman Auditorium. With coats and bedrolls, they turned out for free pairs of tickets to Hawking's evening lecture on March 15.

Go WEST, young woman

It began when biochemistry graduate student Cynthia Collins noticed a trend among her colleagues. Quite often when women gathered, the conversation veered toward role models for women—or rather, the lack thereof—at Caltech.

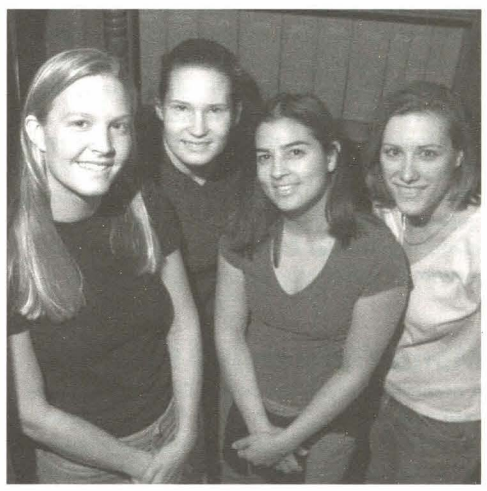
"We would wonder, how are we going to become the scientists we want to be, and still be able to have families as well as lives outside the lab?" Collins said. "Is there anyone who's doing it all that we can talk to?"

But as she looked around, she realized there *were* such role models, excellent ones. The problem was the lack of a network to connect those scientists and researchers with undergraduate and graduate students and postdocs who in a few years would be their peers. So to create a venue for dialogue, mentoring, and support, Collins and several friends formed the new Women in Engineering, Science, and Technology group.

"There's a lot of segmentation among undergraduates, graduates, and faculty, and also among the different academic options," said Sarah Heilshorn, a graduate student in chemical engineering. "We're trying to break down walls and increase communication, and make this a more welcoming place for scientists in general."

Heilshorn and Collins, together with graduate students Karli Watson (biology) and Sarah Monahan (chemistry), form WEST's steering committee. The group held its first events last fall, a lunch for students and postdocs featuring professors Janet Hering and Marianne Bronner-Fraser, and a forum, "The Status of Women at Caltech: Past, Present, and Future," open to the wider Caltech community. The committee aims to continue holding small faculty lunches and larger

see WEST, page 6



Sarah Monahan, Cynthia Collins, Karli Watson, and Sarah Heilshorn hope WEST will increase communication among women on campus.

NewsBriefs

Sally Ride, the first American woman in space and a Caltech trustee, was featured on KPCC radio's *Talk of the City* program March 13.

Personals

Welcome to Caltech

February

Postdoctoral scholars **Susana Andrade**, chemistry, **Daniel Bolon**, biology, **Kyle Caspersen**, aeronautics, and **Mindy Davis**, biology; **Camilla Haavik**, visitor, materials science; **Ryusuke Hayashi**, assistant biologist, biology; **Julie Heather**, staff scientist, geology; postdoctoral scholars **Henrik Jonsson**, biology, and **Hyungil Jung**, chemistry; senior department clerks **Leif Lapiad**, Registrar's Office, and **Rosemary (Beth) Larranaga**, Bursar's Office; **Michelle Larson**, postdoctoral scholar, physics; **Jun Liu**, visitor, electrical engineering; **Peter Yunju Lwigale**, postdoctoral scholar, biology; **Marina Marcilla**, custodian, Physical Plant; **Richard Ramos**, dishwasher, Dining Services; **Maria Roldan-Ortiz**, research assistant I, biology; **Eva Rueba**, postdoctoral scholar, chemistry; **Kai Schnee**, visitor, mathematics; **Cindy Shih**, research assistant I, biology; **Vivek Singhal**, research aide I, aeronautics; postdoctoral scholars **Andrew Ronald Tapper**, biology, and **Mary Thundathil**, materials science; **Gilbert Vera**, bus person I, Athenaeum; **Guifre Vidal**, postdoctoral scholar, theoretical physics.

March

Armando Amaya, assistant lab technician, biology; postdoctoral scholars **David Anderson**, aeronautics, **Hans-Dieter Arndt**, chemistry, and **Benjamin Arthur**, biology; **Carol Bastiani**, assistant biologist, biology; **Elin Boyle**, senior administrative secretary, Development and Alumni Relations; **Marianne Brouty**, research aide B, Infrared Process and Analysis Center (IPAC); **LaToya Brunston**, general clerk A, condensed-matter physics; **Monica Cantu**, accountant for gifts and endowments, Financial Services; **Juan Garrido**, elevator mechanic assistant, Physical Plant; **Anthony Guarino**, research assistant I, Seismo Lab; **Atiya Hakeem**, assistant biologist, biology; **Rosa Jaime**, food and beverage hostess, Athenaeum; postdoctoral scholars **Melita Keywood**, environmental science and engineering, and **Tim Lebestky**, biology; **Rose Mason**, front-office clerk, Athenaeum; **Georgia Mendoza**, travel specialist, Financial Services; research assistant I **Wenmin Shi** and postdoctoral scholar **Kum-Joon Shin**, biology; **Stephen TeBeau**, assistant electrician, Physical Plant; **Nancy Thienprasiddhi**, office assistant, geology; **Jason Woertink**, research assistant I, chemistry; **Daniel Zieber**, associate network/system administrator, Palomar Observatory.

Memorial service set

A memorial service for **Joyce Campbell** will be held on Saturday, March 23, at 11 a.m. at Grace Brethren Church in South Pasadena. The church is located at 920 Fremont Avenue, one block south of Mission. A Caltech employee for 15 years, most recently in GPS, Campbell died on February 27 after a battle with cancer.

Honors and awards

Denise Nelson Nash, director of public events, has been selected as a 27th Congressional District Woman of the Year. On March 27, she and eight other women will be hosted for lunch at the Twin Palms Restaurant in Pasadena by Congressman Adam Schiff, who is honoring the women for having "played a critical role in improving the quality of life" in the 27th District and having "made a difference in our community in a significant manner." Schiff will take the opportunity to hear their "thoughts and ideas about how the federal government can play a role in enhancing the neighborhood services and programs available to the residents of the 27th Congressional District."

Campus authors

The American University in Cairo Press has published *Voyage through Time: Walks of Life to the Nobel Prize*, by Caltech's **Ahmed Zewail**, Pauling Professor of Chemical Physics and professor of physics, and winner of the 1999 Nobel Prize in chemistry. The title refers both to his own past and to the split-second world of the femtosecond—equal to one-quadrillionth of a second, the femtosecond is a unit used to measure time at the atomic level. It was for his invention of a technique using ultrafast lasers to observe in real time chemical reactions at the atomic level that Zewail won the Nobel Prize. In his book, Zewail tells of his early life in Egypt, his relocation to the United States, and his academic and scientific achievements. He also explores the impact of science on the modern world in both developed and developing countries, and suggests a concrete course of action for the world of the less advantaged.

Caltech senior wins Churchill Scholarship

Michael Shulman, a senior in mathematics, will spend his next academic year doing graduate studies in math at Churchill College, University of Cambridge, as one of 11 Churchill Scholars nationwide who have been chosen from a pool of students nominated by 67 major colleges and universities. He is the 12th Caltech student to have won a Churchill Scholarship since the program was founded in 1963 to enable outstanding American students to do graduate work in engineering, mathematics, and the physical and natural sciences at Churchill College. In addition, three former Churchill Scholars are currently in residence at Caltech: Chevron Professor of Chemical Engineering **John Brady**, Associate Professor of Chemical Physics **Mitchio Okumura**, and Member of the Professional Staff **Alan Cummings**.

Getty taps Rosenstone

Professor of History Robert Rosenstone will soon join the ranks of researchers at the Getty Center in Brentwood. He will join the center's research arm in September as a Getty Scholar, concentrating in biography on film.

Rosenstone has been at Caltech for 35 years, and in the last decade, he has divided his time between teaching here and writing about historical film from a variety of countries. "I deal always with film from around the world, so I'm not just an American when it comes to film," he said.

Rosenstone has also written two biographies; it was *Romantic Revolutionary* , his biography of John Reed, that was used as the basis for the 1981 feature film *Reds.* Rosenstone served as a historical consultant for that project as well.

His year at the Getty will be spent researching how well films capture a past life and then bringing those works and his findings into the larger discourse of history. As broad in scope as the topic of biographical film is, Rosenstone will feel his way around and see what develops. "I'm really at the beginning of this project," he said. "I'm not sure what the shape of it is yet."

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Dengue virus, *from page 1*

The surprise for the researchers was the unusual manner in which the glycoproteins are arranged. Details from the Caltech and Purdue computer-generated images show a highly variegated structure of glycoprotein molecules that are evenly dispersed, but with a surprisingly complicated pattern.

"It's symmetrical, but not with the obvious symmetry of most symmetric viruses," Strauss explains. "This was not an expected result."

Strauss says it's still unclear what the odd symmetry will ultimately mean for future research aimed at controlling the disease, because the precise function of the different structural domains of the glycoproteins are still not known. But a more detailed view of these structures is the beginning of a more informed strategy for a focused medical or pharmaceutical attack, Strauss says. "You can think of the protease inhibitors for HIV. Those in large part came from knowing the structure of the HIV enzymes you were trying to interfere with."

Thus, the new work could lead to drugs that will bind to the virus to prevent it from entering the cell, or perhaps from reassembling once it is already inside the cell.

Dengue fever is a mosquito-spread disease that has been known for centuries, but was first isolated in the 1940s after it became a significant health concern for American forces in the Pacific theater. A worldwide problem, the disease is found throughout Latin America, the Caribbean, Southeast Asia, and India, and is currently at epidemic levels in Hawaii.

Especially virulent is the closely related dengue hemorrhagic fever, which is responsible for most of the deaths. The disease is a leading cause of infant mortality in Thailand, where there is an especially vigorous program to find an effective vaccine.

More information can be found on the Center for Disease Control Web site at www.cdc.gov/ncidod/dvbid/dengue/index.htm.

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News, views from the Safety Office

These news briefs are excerpted from the Safetech Journal, *a quarterly newsletter published by Caltech's Environment, Health, and Safety Office. For more information on campus safety, e-mail safety@caltech.edu or visit http://safety.caltech.edu.*

911 and your wireless phone

One reason people purchase cell phones is to be able to call emergency response services. But your call may not reach help. That's because not all wireless carriers allow 911 calls to access local emergency response systems, as required by the FCC.

When purchasing a cell phone, find out if the carrier provides wireless 911 service. Make sure the service connection is available in all areas of promised coverage. Also, find out if the cell phone company provides enhanced wireless service. Enhanced service, which the 911 operator needs to identify the caller's location, requires upgrades the carrier may not have made in all areas.

AED: The shock of life

The newest member at the Braun Gym is the AED, or automated external defibrillator. It is a laptop-sized device that analyzes a cardiac-arrest victim's heart rhythm and advises a rescuer to deliver a shock when appropriate. Audible prompts tell the rescuer what to do, from attaching electrodes to the patient's chest to pushing a button to deliver a shock. This shock, called defibrillation, can only be administered when the AED's internal computer chip detects the presence of irregular cardiac rhythms. It may help the heart to reestablish an effective rhythm of its own.

Anyone using an AED should have proper training. AED training is available through the American Red Cross First Aid/CPR/AED classes, which are offered through the Safety Office during the first month of each quarter and can be specially arranged for groups of 10 or more.

Caltech radiation safety

In January, an inspector from the state Department of Health Services radiological health branch visited Caltech to conduct an inspection of our activities as they relate to radiation safety regulations.

The inspector looked at the Safety Office's records regarding how radioactive material is received, used, stored, processed, and removed. He also inspected benches and floors in the laboratories for contamination, checked for evidence of food in the labs, and observed compliance with regulations.

Despite this rigorous scrutiny, no violations were found. This is the third inspection in the past eight years in which Caltech has been found to run clean and orderly labs, thanks primarily to the Institute's Radiation Safety Committee.

One of the issues discussed with the inspector was the security of radioactive materials. After September 11, Environment, Health, and Safety Services has taken steps to lock up large sources of radioactive materials. For laboratories using radioactive material, personnel should lock lab doors, storage cabinets, and freezers. Staff and students should be vigilant and inform Security of any suspicious activity. Security of the campus, community, and country is now, more than ever, everybody's responsibility.

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the academic week at Caltech is a printed version of selected events from the online @Caltech calendar, **http://atcaltech.caltech.edu/calendar/**. To publish events online, register as an event planner on the @Caltech calendar. If unable to submit electronically, please call (626) 395-3630. For further information or a schedule of deadlines, call **(626) 395-3630**, fax (626) 449-2159, write *336 Calendar*, 1-71, California Institute of Technology, Pasadena, CA 91125, or e-mail **debbieb@caltech.edu**.

March 25–31, 2002

M T W T F S S

Monday, March 25

Astronomy Tea Talk
106 Robinson, 4 p.m.—"Luminosity Functions of Galactic Disks and Spheroids from Quantitative Morphology," Andrew Benson, postdoctoral scholar in astronomy, Caltech. Information: http://astro.caltech.edu/~jlc/colloquia.html.

General Biology Seminar
119 Kerckhoff, 4 p.m.—"Analysis of JNK Signaling in the Regulation of Tissue Morphogenesis," Beth Stronach, department of genetics, Harvard Medical School.

Inorganic-Electrochemistry Seminar
147 Noyes, Sturdivant Lecture Hall, 4 p.m.—"From Olefin Metathesis Catalysts to Dihydrogen Complexes: The Chemistry of Group 6 Imido Diamide Complexes," James M. Boncella, professor of chemistry, University of Florida, Gainesville.

Solid State Sciences Seminar Series (S^5)
102 Steele, 4 p.m.—"Growth and Superconductivity of MgB_2 Thin Films and Single Crystals," Professor Sung-Ik Lee, Pohang University of Science and Technology, Korea. Refreshments, Watson lobby, 3:45 p.m. Information: www.its.caltech.edu/~yehgroup/s5/.

Tuesday, March 26

CACR/ASCI Seminar
Powell-Booth 100, 3 p.m.—"Programming Paradigms for High-Performance Computing: The Trade-off between Elegance and Performance," Hans P. Zima, visiting associate in the Center for Advanced Computing Research, Caltech. Information: www.cacr.caltech.edu/calendar/seminars.

Carnegie Observatories Colloquium Series
William T. Golden Auditorium, 813 Santa Barbara Street, 4 p.m.—"The Lick Observatory Supernova Search with the Katzman Automatic Imaging Telescope," Alex Filippenko, professor of astronomy, UC Berkeley. Refreshments, 3:30 p.m.

General Biology Seminar
119 Kerckhoff, 4 p.m.—Topic to be announced. David McClay, professor of biology, Duke University.

Wednesday, March 27

Organic Chemistry Seminar
153 Noyes, Sturdivant Lecture Hall, 2 to 3:30 p.m.—"Selectivity in Covalent and Noncovalent Synthesis," Professor Michael J. Krische, University of Texas at Austin.

Wiersma Lecture
24 Beckman Labs, 4 p.m.—"Hippocampal Memory: Genes, Dreams, and Network Machines," Matthew Wilson, department of brain and cognitive science, MIT.

Thursday, March 28

Biochemistry Seminar
147 Noyes, Sturdivant Lecture Hall, 4 p.m.—"Subverting the Ribosome: Mechanism of Translation Initiation by Hepatitis C Virus," Jennifer Doudna, Henry Ford II Professor, department of molecular biophysics and biochemistry, Yale University, and associate investigator, Howard Hughes Medical Institute.

Friday, March 29

Inorganic-Organometallics Seminar
151 Crellin, 4 p.m.—"Development of a Novel Tandem Acyl-Claisen Rearrangement and Progress Towards the Total Synthesis of Erythronolide B," Vy M. Dong, graduate student in chemistry, Caltech.

LIGO Science Seminar
155 Arms, Robert Sharp Lecture Hall, 4 p.m.—"Retrofit Upgrade to the Livingston Seismic Isolation Systems," Dennis Coyne, member of the professional staff, LIGO Laboratory, Caltech.

Gray chemistry forum to air

The second Congressional Science Scholar Forum, featuring Beckman Professor of Chemistry Harry Gray, will air on Charter Communications public-access channels 25 and 56 this month. Gray's lecture, "The Future of Chemistry: Fuel from Sunlight and Water," outlines how the next generation of chemists will play a critical role in averting imminent energy shortages by creating new alternatives. The quarterly forums are presented by Congressman Adam Schiff in conjunction with Caltech.

Channel 25 (Burbank, Glendale, La Canada, La Crescenta) airtimes:

Saturday March 23	2 p.m. and 8 p.m.
Sunday March 24	2:30 p.m.
Saturday March 30	2 p.m. and 8 p.m.
Sunday March 31	2:30 p.m.

Channel 56 (Pasadena, Alhambra, San Gabriel) airtimes:

Friday March 22	5 p.m.
Saturday March 23	5 p.m. and 8:30 p.m.
Monday March 25	8 p.m.
Thursday March 28	5 p.m.
Saturday March 30	5 p.m. and 8:30 p.m.
Monday April 1	8 p.m.

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April 1–7, 2002

M T W T F S S

Monday, April 1

Aeronautics Seminar
101 Guggenheim Lab, Lees-Kubota Lecture Hall, 1 p.m.—"Spacecraft Autonomy," Dr. Richard Doyle, JPL. Information: www.galcit.caltech.edu/seminars.shtml.

Geology and Planetary Sciences Seminar
155 Arms, Robert Sharp Lecture Hall, 4 p.m.—Topic to be announced. Steve Finkel, assistant professor of molecular biology, USC. Information: www.gps.caltech.edu.

Organic Chemistry Seminar
147 Noyes, Sturdivant Lecture Hall, 4 to 5:30 p.m.—"Porphyrin: A Lead Structure Par Excellence," Professor Emanuel Vogel, University of Cologne, Germany.

Sloan-Swartz Seminar
24 Beckman Labs, 4 p.m.—"Sensorimotor Processing in Higher Dimensions," Doug Tweed, associate professor of physiology, University of Toronto. Refreshments, lobby, 3:45 p.m.

Tuesday, April 2

Bioengineering Seminar
101 Guggenheim Lab, Lees-Kubota Lecture Hall, 3 p.m.—"Approximate Solutions of the Flow across Mechanical Heart Valves and in Left Ventricle Assist Devices," Dr. Moshe Rosenfeld, division of engineering, Tel Aviv University, Israel. Refreshments, 2:30 p.m.

Civil Engineering Seminar
206 Thomas, 4 p.m.—"Model Selection, Identification, and Robust Control for Dynamical Systems," Ka-Veng Yuen, graduate student in civil engineering, Caltech. Refreshments, 210 Thomas, 3:45 p.m.

Organic Chemistry Seminar
147 Noyes, Sturdivant Lecture Hall, 4 p.m.—"Intramolecular Dendrimer Self-Organization: Effect of Hydrogen-Bonding and Packing Interactions on Dendrimer Folding," Jonathan R. Parquette, assistant professor, department of chemistry, Ohio State University.

Wednesday, April 3

Astronomy Colloquium
155 Arms, Robert Sharp Lecture Hall, 4 p.m.—"Abundances in Globular Cluster Turn-Off Stars," Raffaele Gratton, Astronomical Observatory, Padua, Italy. Information: http://astro.caltech.edu/~jlc/colloquia.html.

Chemical Research Conference
147 Noyes, Sturdivant Lecture Hall, 4 p.m.—"The Hydroxylation of Small Alkanes by the Particulate Methane Monooxygenase," Professor Sunney Chan, Hoag Professor of Biophysical Chemistry, Emeritus, Caltech.

Solid State Sciences Seminar Series (S^5)
102 Steele, 4 p.m.—"Superfluid Density, Heterogeneity, and Condensation of High-T_c Superconductors," Professor Yasutomo Uemura, department of physics, Columbia University. Refreshments, Watson lobby, 3:45 p.m. Information: www.its.caltech.edu/~yehgroup/s5/.

Earnest C. Watson Lecture Series
Beckman Auditorium, 8 p.m.—"Planets Orbiting Nearby Suns," David Charbonneau, Millikan Postdoctoral Scholar in Astronomy, Caltech. Admission is free. 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.

Thursday, April 4

William and Myrtle Harris Distinguished Lectureship in Science and Civilization
Beckman Institute auditorium, 4 p.m.—"Galileothek@: Information Technology and Research in the Humanities," Dr. Paolo Galluzzi, professor of history of science, University of Florence, Italy. Refreshments. Information: www.hss.caltech.edu/ses/SEPP.html.

Physics Research Conference
201 E. Bridge, 4 p.m.—"The Origin of Galactic Cosmic Rays," Sir Ian Axford, visiting scientist, Institute of Geophysics and Planetary Physics, UC Riverside. Refreshments: 108 E. Bridge, 3:45 p.m. Information: www.pma.caltech.edu/~physcoll/PhysColl.html.

Friday, April 5

Mathematical Physics Seminar
351 Sloan, noon—"One Application of Trace Formulae for Jacobi Matrices," Oleg Safronov, research assistant, department of mathematics, Royal Institute of Technology (KTH), Stockholm. Information: www.math.caltech.edu/events/mathphys.html.

Fluid Mechanics Seminar
101 Guggenheim Lab, Lees-Kubota Lecture Hall, 3 p.m.—"Turbulent Deformations: Dynamics and Statistics of Velocity Gradients in the Inertial Range of Turbulence," Professor Charles Meneveau, department of mechanical engineering, Johns Hopkins University. Information: www.galcit.caltech.edu/Seminars/Fluids/CurrentFluids/index.html.

Caltech/JPL Association for Gravitational-Wave Research Seminar Series
155 Arms, Robert Sharp Lecture Hall, 4 p.m.—"Time-Delay Interferometry for LISA," Massimo Tinto, JPL.

General Biology Seminar
119 Kerckhoff, 4 p.m.—"Headless Flies Resulting from Interference with the Twin of Eyeless/Eyeless Pathway," Professor Markus Noll, Institute for Molecular Biology, University of Zurich.

Watsons explore space and mind

This month's Watson Lectures will describe the search for planets in outer space beyond the solar system and probe the inner space of the mind. All lectures take place on Wednesday evening at 8 p.m. in Beckman Auditorium, and are free and open to the public.

On April 3, David Charbonneau, Millikan Postdoctoral Scholar in Astronomy at Caltech, will present "Planets Orbiting Nearby Suns." The question of whether or not the stars of the night sky are encircled by families of planets similar to Earth has intrigued astronomers for centuries. However, it is only in the last decade that direct evidence for planets outside Earth's solar system has been found. Ongoing searches now deliver newly discovered planets by the dozen, and many of these are far stranger than anyone has ever imagined. Charbonneau will introduce neighboring planetary systems and describe how the detection of such elusive, Earth-like worlds may be much closer than previously thought.

"Can a Machine Learn to Play 'Where's Waldo'?" wonders Pietro Perona, Caltech professor of electrical engineering and director, Center for Neuromorphic Systems Engineering. In his April 24 talk, Perona will address this query and many more. In daily life human beings can recognize shoes, grocery stores, automobiles, animals, and mothers-in-law just by looking. How do we do it? How did we learn to do it? And can we build a machine that does it too? Working to find answers to such questions gives insight into the human mind and is helping researchers develop machine vision systems that will assist in driving cars on busy roads, detect dangerous people in airports, and search for images on the Web.

No tickets or reservations are required for the Watson Lectures. A minimum of 700 seats will be available on a first-come, first-served basis, beginning at 7:30 each lecture evening. For more information, call Caltech Public Events at (626) 395-4652, e-mail events@caltech.edu, or visit www.events.caltech.edu/watson/.

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CampusEvents

Monday, March 25

Baby Furniture and Household Equipment Pool
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 community. Information: 584-9773.

Women's Tennis
vs. Pacific Lutheran University, 2 p.m.

Tuesday, March 26

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.—Meets Tuesdays and Fridays weekly. Sessions are free. Information: www.its.caltech.edu/~taichi/.

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

Wednesday, March 27

Baby Furniture and Household Equipment Pool
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 community. Information: 584-9773.

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.

Emergency Preparedness Training
Keith Spalding Building, room 118, 3 p.m.—This course will describe the campus emergency operations plan, including information about the emergency operations center, evacuation, fire prevention and protection techniques, behavioral principles during an emergency, and personal preparedness. Information and reservations: 395-6727. Open to Caltech community members only.

Banff Mountain Film Festival
Ramo Auditorium, 7:30 p.m.—Included in this year's films are *Unizaba*, about unicyclists exploring Mexico; *Desert Friction*, about climbing a 500-foot granite slab in the Namibian desert; and *Gelada Baboon—The Battles of Braveheart*, which shows a male gelada as he defends his harem from aggressors. Last year's festival sold out, so get your tickets early. Tickets and information: 395-4652, 1 (888) 2CALTECH, events@caltech.edu, or ticketmaster.com. Individuals with a disability: 395-4688 (voice) or 395-3700 (TDD).

Thursday, March 28

Video Compression for Web, PowerPoint, CD, DVD
New Media Classroom, 363 S. Hill Avenue, 10 a.m. to noon—Learn how to produce videos for playback on personal computers and discs (CD/DVD). Information: http://twing.caltech.edu/workshops. Open to Caltech/JPL community members only.

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: 395-6327 or suze@caltech.edu.

Baseball
vs. MIT, 2:30 p.m.

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.

Friday, March 29

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

Saturday, March 30

Baseball
doubleheader, at Simpson College, 11 a.m.

Track and Field
Cal/Nev State Meet, at Fresno State, 11 a.m.

Sunday, March 31

Track and Field
Cal/Nev State Meet, at Fresno State, 11 a.m.

Monday, April 1

Baby Furniture and Household Equipment Pool
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 community. Information: 584-9773.

Tuesday, April 2

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.—Meets Tuesdays and Fridays weekly. Sessions are free. Information: www.its.caltech.edu/~taichi/.

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

Wednesday, April 3

Baby Furniture and Household Equipment Pool
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 community. Information: 584-9773.

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.

Women's Water Polo
vs. Cal State San Bernardino, 4:30 p.m.

Friday, April 5

Women's Club Welcoming Coffee
Red Door Café, 9 to 10:30 a.m.—All new and current members of the Caltech/JPL community are invited. This is a chance to meet friendly people and learn about the Women's Club and its activities.

Baseball
at Occidental College, 3 p.m.

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

Falun Dafa Workshop
125 Baxter, 7:30 p.m.—This free workshop includes video documentaries explaining what Falun Dafa (also known as Falun Gong) is and why it is persecuted in China, as well as five sets of Falun Gong exercises.

Saturday, April 6

Women's Tennis
vs. University of San Bernardino, 9:30 a.m.

Track and Field
Riverside Track Classic, at UC Riverside, 11 a.m.

16th Annual All-Mozart Concert
Dabney Lounge, 8 p.m.—The free program consists of *Sinfonia Concertante*, K. 364, performed by Isaac See '03, violin, and Sean Hardesty '04, viola; and the "Great" Mass in C Minor, K. 427, performed by the Caltech Chamber Singers and the Chamber Orchestra.

The Second Hand
Beckman Auditorium, 8 p.m.—Three performers use their bodies and an odd assortment of props and costumes to create a sinewy blend of dance, wit, and muscle. 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.

Sunday, April 7

Men's Tennis
vs. alumni, 2 p.m.

Women's Tennis
vs. alumni, 2 p.m.

16th Annual All-Mozart Concert
Dabney Lounge, 3:30 p.m.—The free program consists of *Sinfonia Concertante*, K. 364, performed by Isaac See '03, violin, and Sean Hardesty '04, viola; and the "Great" Mass in C Minor, K. 427, performed by the Caltech Chamber Singers and the Chamber Orchestra.

Coleman Chamber Concert
Beckman Auditorium, 3:30 p.m.—The Eighth Blackbird sextet will perform works by the Minimum Security Composers Collective, Kellogg, Kernis, Rzewski, and Coleman. 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.

FOCAL presents Patt Morrison

The Friends of the Caltech Libraries will host its annual spring membership luncheon on Wednesday, April 10, at the Athenaeum, featuring guest speaker Patt Morrison.

A *Los Angeles Times* columnist, radio and television personality, political commentator, and "feminist *extraordinaire*," Morrison will discuss her most recent book, *Rio L.A.: Tales from the Los Angeles River*. The book will be available for sale and she will sign copies before and after the luncheon.

A former professor of journalism at USC, Morrison has won five Emmys and four Golden Mike awards as founding host and commentator on KCET-TV's nightly current-affairs program, *Life and Times Tonight*. Her television interviews have included a wide variety of personalities, from former presidents to film stars to the archbishop of Canterbury. In 2000, Morrison received the Los Angeles Press Club's Joseph M. Quinn award for lifetime achievement—the first woman in 25 years to do so. She is a graduate of Occidental College.

The event is part of FOCAL's annual membership drive. The group also hosts an author's dinner in December, a book sale in May (members are invited to a special preview), and events such as desserts, teas with authors, and a variety of speakers. FOCAL supports Caltech's libraries by providing funds for special needs that fall outside the regular budget.

The luncheon, which is open to the public, will begin with a no-host reception at 11:30 a.m., with lunch served at noon. The cost is $25 per person for members and two guests, or $28 for nonmembers; reservations are due by Friday, April 5. Contact K. C. McBride at (626) 395-6411 or mcbride@library.caltech.edu.

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Eine kleine Mozart concert

In the mood for a little Mozart? The Caltech music department will present the 16th annual All-Mozart Concerts on Saturday, April 6, and Sunday, April 7, in Dabney Lounge.

The works to be played are the *Sinfonia Concertante* in E-flat, K. 364, for solo violin, solo viola, and orchestra; and the "Great" Mass in C Minor, K. 427, conducted by Don Caldwell, director of the Caltech Chamber Singers. These are two of Mozart's "milestones," Caldwell says, normally performed with a large orchestra and, in the case of the mass, a large chorus. The concert is notable in that it will present the works with a small chamber orchestra and a chorus of just 16 voices.

Caltech students Isaac See (violin) and Sean Hardesty (viola)—whom Caldwell calls "quite extraordinary undergrads"—will perform the *Sinfonia* along with a chamber orchestra. "Both of these students have played major concerto repertoire with the Caltech-Occidental Orchestra," he says. "The Brahms violin concerto and Walton viola concerto are major-league stuff. They both are really fine players."

A sophomore physics major, Hardesty began violin studies at age 5, and switched to the viola five years later. He was the principal violist for three years at his Alexandria, Virginia, high school and in the 2000 Northern Virginia Senior Regional and Virginia All-State orchestras, and placed in several regional competitions. Hardesty has performed in master classes with Roland and Almita Vamos, and in the Cavani, Ying, and St. Lawrence string quartets, and has studied with Ralph Fielding, Ricardo Cyncynates, and Hazel Cheilek.

See, a junior studying mathematics and biology, attended high school in Phoenix, Arizona, where he studied violin with Frank Spinosa at Arizona State University. In addition, he was a member of the Phoenix Symphony Guild Youth Orchestra and served as concertmaster of the regional and all-state orchestras. He currently is in the process of deciding between careers in medicine and research.

With just two choruses of eight voices each, the Chamber Singers will perform the C Minor Mass, which is "probably Mozart's most difficult choral work," says Caldwell. "This is an encore of sorts of their amazing performance of Mozart's *Requiem* last year with only 16 voices. Both works are normally the province of a large symphony chorus. We can make it work because of wonderful, talented singers and orchestra players, and because of Dabney Lounge's acoustics."

The concerts, which begin at 8 p.m. on Saturday and 3:30 p.m. on Sunday, are free and open to the public. Caldwell encourages attendees to arrive early, as "the concert plays consistently to standing-room-only audiences."

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The three performers of The Second Hand will intertwine like a sculpture in motion at the Beckman Auditorium, Saturday, April 6, at 8 p.m.

Ensminger, *from page 1*

Specifically, she notes that the absence of disciplinary boundaries at Caltech is spawning research that will "reshape the philosophy of mind, behavioral economics, and the frontier between neuroscience, psychology, and economics, while the division's uniquely seamless boundary between literature and history, together with proximity to the Huntington Library, affords us another opportunity to blossom in the humanities."

Ensminger is an uncommon anthropologist: her line of research is in an area known as experimental economics, a field, she notes, that the division has played a pivotal role in shaping. She is interested in how people make economic decisions, and her work involves running experiments—described to the participants as games—that use real money in order to learn something about real behavior. Unlike most experimental economists, however, Ensminger takes the method out of the university laboratory and into small-scale communities in Africa and elsewhere.

The simplest game she uses plays for fairly high stakes, usually a day's wages, whether the game is played in Hamilton, Missouri, or Wayu, Kenya. Ensminger will bring a group of people together to play in pairs. Player one is told he or she has, say, $50 to divide with the other person; both will remain anonymous to one another, and player one can give player two any amount or nothing. How is the money divided? More fairly than one might guess, often as high as a 50-50 split.

Even more counterintuitive to conventional economic theorizing, says Ensminger, is that the more involved a society is in a market economy—that is, working for wages, or raising something (crops or cattle) and selling it in order to live—the fairer people tend to be. Across 16 societies studied around the world, the United States is the most fair-minded reported to date, while hunter-gatherers are the least.

For almost 25 years, Ensminger has traveled to Africa, living and studying with the Orma tribe, partially nomadic cattle herders in northeastern Kenya, near the Somali border, where she will return this summer for five weeks. In the beginning, she lived in a tent on the grounds of a local school, in a place frequented by roaming lions at night. Now she stays in the compound of the local chief, but there is a greater danger—banditry.

"My field site became very dangerous in the 1990s because of the collapse of the Somali state," says Ensminger. "There is an ethnic conflict between the Orma and the Somali, who want to take over Orma territory. A phenomenal number of people I know have either been shot or killed by the bandits. It's not a war; it's like the Wild West with armed bandits on the loose."

As a woman traveling alone, carrying cash, and in one of the few cars in the area, she is obviously a target for bandits. And while she feels safe in the Orma villages, she admits to being "unabashedly terrified whenever I go on the roads in and out of that area." Still, that is where 20 years of her research is, and she is not willing to give it up.

It is that kind of perseverance she intends to bring to working with her colleagues as division chair. "I'm honored and delighted to have the opportunity to work with faculty of the extraordinary quality found here, and I look forward to the possibilities and challenges that lie ahead."

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Scholarships, *from page 1*

they think they're not qualified," he said. "But we give every applicant equal consideration. We encourage students not to disqualify themselves ahead of time."

The competition is notable both for its basis—solely on merit, without regard to financial need—and for the size of the awards. Scholarships range from three-quarters tuition to full tuition and room and board, which last year translated into awards of $15,678 to $27,450.

"I think this is very unusual for a university to do," says Paul Bellan, professor of applied physics and chair of the Scholarships and Financial Aid Committee. "It's our way of recognizing true scholarship and the outstanding students here."

He says that awards aren't based only on a stellar grade-point average, "otherwise we could just have the registrar send us a computer file." The selection committee also considers exceptional experiences, such as a Summer Undergraduate Research Fellowship or noteworthy summer job; the applicant's personal statement; and faculty recommendations.

Bellan notes that the selection process is fairly rigorous, not unlike choosing students for admission to the Institute. The selection committee, comprising seven to eight faculty members and students, reads more than 100 applications and ranks each one. The awards number 40 to 50 per year, recognizing the top 5 to 8 percent of Institute students.

The Merit Awards are made possible through endowments provided by the Stuart Foundation, the Wasserman Student Aid Endowment, the Rosalind W. Alcott Endowment, and the John Stauffer Charitable Trust. Applications are due in the Financial Aid Office by 5 p.m. on Friday, April 12. For more information, contact the Financial Aid Office at ext. 6280 or finaid@caltech.edu.

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WEST, *from page 1*

forums and events on a regular basis.

Collins notes that men are also welcome at the open forum discussions. "Men are very important to any discussion of women at Caltech."

The committee credits the Caltech Women's Center for providing financial support in WEST's first few months, before the group recently received funding from the President's Diversity Initiative Fund. Melany Hunt, professor of mechanical engineering, serves as faculty advisor for WEST, and a number of other faculty, including professors Hering, Bronner-Fraser, Pamela Bjorkman, Frances Arnold, and Jackie Barton, have lent their time and backing.

Feedback to the group has been "very positive, from both women and men," Heilshorn said. "I've been really encouraged by that, and by the faculty response." Student sign-ups for the first faculty lunch overflowed to fill the next several lunches, and a recent panel discussion, "A Day in the Life of a Caltech Professor," drew a crowd estimated at more than 100. The audience eagerly listened as faculty members discussed their day-to-day work and how they juggle careers, families, and personal time.

The event shed light on many questions facing students, said Collins. Topics covered everything from a professor's administrative responsibilities to how to become a good manager, to dealing with the "two-body problem"—referring to the dilemma of couples who meet in graduate school, marry, and then must both find good jobs in the same city. Added Watson, "Dennis Dougherty [Hoag Professor of Chemistry and a panelist] said afterward that 'there's obviously a need' for this kind of information."

WEST's next event will be a combined women's art exhibit and wine and cheese social on Friday, April 26, from 3 to 6 p.m. in Dabney Lounge. The event is open to all women of the Caltech community, and students are especially encouraged to submit their artwork. To make a submission, contact westclub@caltech.edu by April 5.

Monahan said, "We wanted a social event to introduce WEST to the campus. And the art aspect fits well with our mission. As graduate students, we often feel defined by that role. We thought this would be a good way to celebrate other areas of life, and get to know people in a different light other than in a lab."

The steering committee welcomes suggestions for future events and discussion issues. For more information, e-mail westclub@caltech.edu or visit the group's Web site at www.its.caltech.edu/~westclub.

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Dodgers, *from page 1*

In addition to the game, the sights, and the Dodger Dogs, the entire Caltech contingent will also be there to witness Caltech president David Baltimore throw the first pitch to JPL director Charles Elachi.

"I'm available whenever they contact me," said Caltech's baseball coach John D'Auria.

Tickets for this outing cost $10 per person and go on sale beginning April 1. They can be purchased at the Human Resources office, Tech Express, the ticket office, and at the credit union's La Cañada branch. At JPL, tickets will be sold at the employee store.

Caltech has arranged for charter buses that will leave campus that morning for Dodger Stadium at 10:45 a.m. The charge is $3. Parking for private vehicles is available at the stadium for $8.

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First baseperson

Freshman Kristen Zortman plays first base (and is the sole woman) on this year's Beaver team.

Caltech 336

The campus community biweekly
March 21, 2002, vol. 2, no. 6

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Published by the Office of Public Relations

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Pasadena, California 91125

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