

Caltech 336

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

The campus community biweekly

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Caltech senior Dirk Englund experiences a moment of weightlessness on NASA's infamously named Vomit Comet research plane.

Adventures in zero gravity

Though the nickname Vomit Comet would ignite fear in most people, four Caltech students eagerly anticipated their chance to board NASA's modified KC-135 jet tanker in the name of science.

Twice a year, university students across the country are encouraged by NASA's Johnson Space Center in Houston to submit research proposals to its Reduced Gravity Student Flight Opportunities Program. Selected teams are given two flights on the KC-135, during which they conduct their experiments. The research plane flies through 30 parabolic trajectories, producing about 30 seconds of weightlessness each time.

For the summer 2001 session, Caltech senior physics majors Serena Eley, Dirk Englund, and John Ferguson, and sophomore aeronautics major Joseph Jewell were one of 35 teams selected to participate. The team's fiber-optic experiment is sponsored by Caltech's Hideo Mabuchi, associate professor of physics, and Lute Maleki and Vladimir Itchenko of JPL.

The experiment focused on a new type of glass called ZBLAN—an acronym based on the metals in it: zirconium, barium, lanthanum, aluminum, and sodium. Because of its wider band of wavelength transmittance, ZBLAN could be the fiber-optic material of the future.

see *Vomit Comet*, page 6

Caltech a top school in rankings

The new academic year brought with it an updated list of the nation's best colleges, compiled by *U.S. News & World Report*. No sooner were the rankings made public than they were met with sharp criticism; to many college and university presidents across the country, the controversial list is nothing short of baloney.

The debate stems from skepticism regarding the list's basic validity, changes in the methodology, and accusations that the formulas used to determine a school's position are largely arbitrary.

In this year's rankings, Caltech dropped one notch down to no. 4 in the category of Best National Universities that offer doctoral degrees. In the past few years it has hovered among the top spots, clinching the no. 1 spot in 1999 and slipping in last year's list to a tie at no. 3.

The data that the magazine gathers to compile its lists has also come under fire, especially information such as the amount of alumni donations, students' SAT scores, and the school's overall reputation. Perhaps most damaging was an article from a former *U.S. News* data analyst, who wrote in the *Washington Monthly* that the magazine's editors ignore "measures of learning and good educational practices."

Caltech's administrators have remained silent on the issue, but those

see *Rankings*, page 5

A summer of political biology

David Baltimore

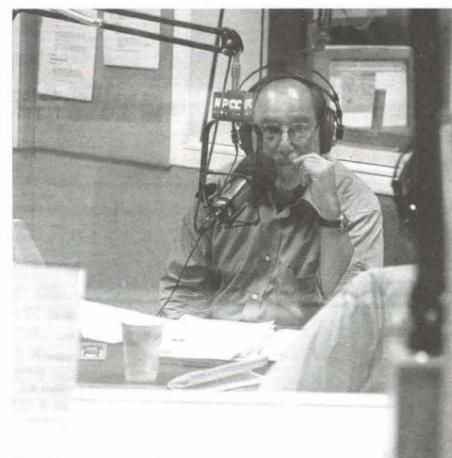
This was the summer when politics hit biology. In earlier years, the research community successfully countered such attempts, but this summer the politicians were determined to have their say. The scientific issues at stake were two: stem cells and cloning. They entail quite separate processes but they do interact. Let's start with stem cells.

The phrase *stem cells* was coined long ago for cells that both renew themselves and give rise to a variety of progeny cells. The first were ones that can develop into blood cells. Then stem cells of skin and nerve and other tissues were found. These are "adult stem cells," and in each case the specialized cells that can be derived from them are limited to one organ. However, certain cells derived from early embryos have the potential to make all the different cells of the embryo—they are known as *embryonic stem cells*. These cells have excited the politicians because of the need to derive them from embryos. Their potential value is that it might be possible to control their development so that they become a source of cells to be used therapeutically anywhere in the body, say for treating Parkinson's disease or diabetes.

Only a few years ago scientists learned how to derive human embryonic stem cells. As a source, they mainly used embryos derived in vitro, made by mixing sperm and egg in the laboratory and allowing fertilization to occur. Thus, these embryos have never been inside a person and can only grow into a tiny ball of cells. If implanted into a woman, however, they can grow into a human being, and

see *Political biology*, page 6

Summer scenes at Caltech



On August 7, President David Baltimore sat in as guest host on public radio station KPCC's *Airtalk*, taking calls and interviewing experts in science and the media, AIDS, and the upcoming Nobel Centennial celebrations. More photos, page 5.

Reacting to a day of tragedy

April White

Many of us feel emotionally drained and physically fatigued after a week of watching and listening to news about the tragedy that struck our nation on September 11. Through our technologies we watched the World Trade Center towers collapse, saw the Pentagon burning, and learned about a fourth plane crash in Pennsylvania. The magnitude of such events can seem overwhelming.

Many of us feel shocked and deeply wounded. Being able to so directly see and hear the details of this tragedy has made it that much more real for us and perhaps has increased our stress response.

Experiencing traumatic events even indirectly can elicit both emotional and physical reactions. It seems obvious that directly experiencing a trauma—such as losing a loved one or being uncertain about a loved one's safety—can bring on intense emotional and physical feelings, but what we usually don't think about is how indirectly witnessing a tragedy can affect our overall sense of well-being.

You may have watched the round-the-clock news coverage of rescue efforts and the replays of the attack. You may have feared for your own safety and the safety of your family. These feelings are a common response to traumatic events whether we experience them directly or indirectly.

Although you may not have experienced a direct loss from the events on September 11, you may nonetheless have felt tremendous personal effects. Some reactions you may have felt or might currently be feeling are

- Physical and mental fatigue
- Sore or tight muscles, especially in the neck or back
- Difficulty sleeping, or sleeping more
- Feeling a sense of disorientation
- Increased anxiety or fear
- Increased feelings of sadness or loss
- Difficulty concentrating or focusing
- Decreased or increased appetite
- Irritability and anger
- Withdrawing or isolating yourself from people
- Feeling depressed

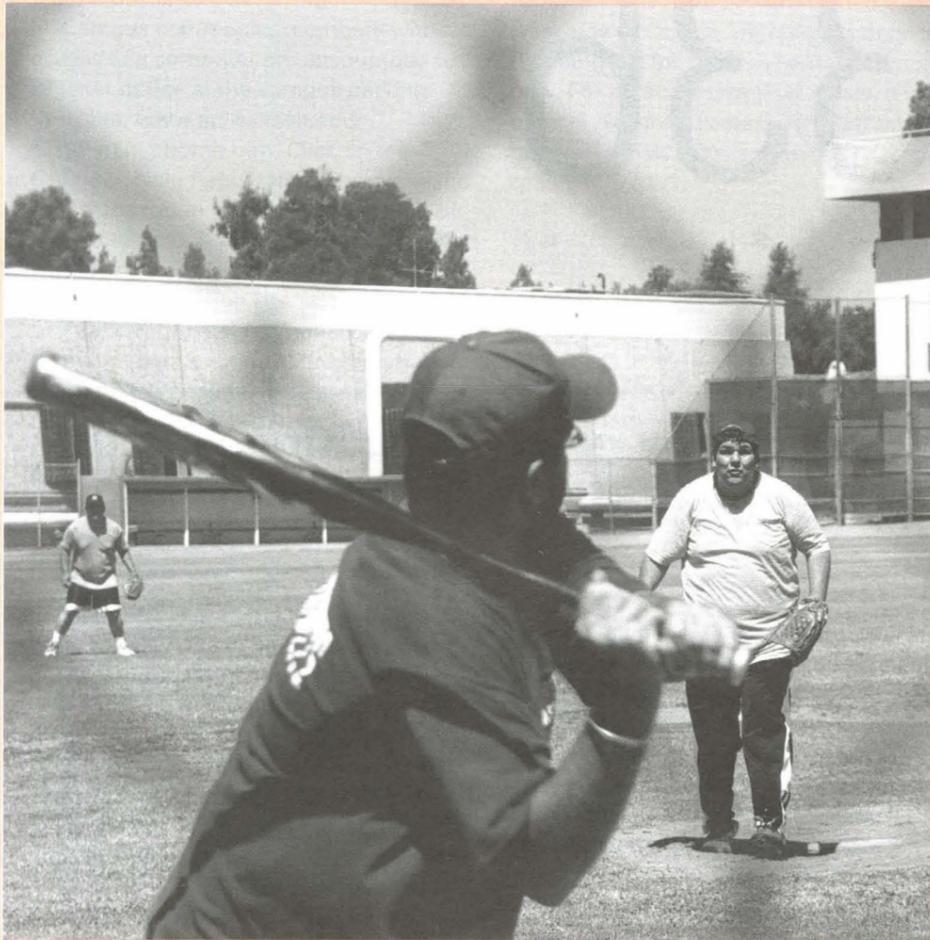
Workplace symptoms can include

- Impairment of concentration and short term memory
- Careless mistakes or accidents
- Impatience and irritability
- Inappropriate or unexpected emotional behaviors
- Increased use of sick and vacation leave
- Increased absenteeism
- Lowered productivity
- A concentrated (but short-term) increase in productivity

These lists are not exhaustive, but are intended to help us understand some of

see *Trauma*, page 5

NewsBriefs



Hey batter batter—swing! A scene from a C League softball playoff game in which the Athenaeum's team, D'Ath Strix, beat the undefeated Chemistry division's Poor Bastards, 16-8, and proceeded to the finals.

Personals

New positions

William Dunphy, formerly associate professor of biology, became professor of biology on July 1. He is also an associate investigator with the Howard Hughes Medical Institute. He received his bachelor's degree from Harvard College and his PhD from Stanford University, and he joined Caltech in 1989 as an assistant professor.

Melany Hunt, formerly associate professor of mechanical engineering, became professor of mechanical engineering on June 1. After receiving her BS from the University of Minnesota and her MS and PhD from UC Berkeley, she joined Caltech in 1988 as an assistant professor.

Dan Kevles became J. O. and Juliette Koepfli Professor of the Humanities, Emeritus, on July 1. A member of the Caltech faculty since 1964, when he arrived as an assistant professor of history, he received his bachelor's and doctoral degrees from Princeton University. He was appointed professor of history in 1978 and Koepfli Professor of the Humanities in 1986.

Julia Kornfield, formerly associate professor of chemical engineering, became professor of chemical engineering on July 1. She received her BS and MS degrees from Caltech and her PhD from Stanford University, and she joined the Institute's faculty in 1990 as an assistant professor.

Molly Nercessian has joined Caltech's Alumni House as its new administrative aide and house manager. A graduate of Cal State Long Beach, she most recently worked as advertising and marketing coordinator for the West Coast office of *Runner's World* magazine. Prior to that, she had been a department assistant in Caltech's office of faculty housing. She has also worked in promotions for local CBS radio affiliate KLSX-FM.

Lia Peterson, after serving as acting director of the Alumni Fund for three months, became director on July 9; she had joined Caltech in 1999 as assistant director, and was promoted to associate director last year. A graduate of UC San Diego, where she received BA degrees in English literature and history, she began her professional career as a phone-a-thon representative at UCSD. She later worked in annual giving and corporate and foundation relations at Mount St. Mary's College, and prior to joining Caltech she was assistant director of annual giving at Scripps College.

Fredric Raichlen, professor of civil and mechanical engineering, became emeritus on July 1, after nearly 40 years at Caltech. He came to Caltech as an assistant professor of civil engineering in 1962, after receiving his bachelor's degree from Johns Hopkins and his master's and doctoral degrees from MIT. He was appointed full professor in 1972 and professor of civil and mechanical engineering in 1997.

Mark Richardson has joined Caltech as an assistant professor of planetary science, effective July 11. A specialist in the weather and climate of the terrestrial planets, with a current emphasis on Mars, he received his BS in 1995, MS in 1996, and PhD in 1998, all from UCLA. Richardson was a postdoctoral scholar in planetary science at Caltech for slightly over two years.



Candace Rypisi joined Caltech on August 13 as the new director of the Caltech Women's Center. A holder of undergraduate and graduate degrees from Arizona State and Colorado State, Rypisi (pronounced Repish) has a master's degree in literature with a graduate certificate in women's studies. She comes to Caltech from Cornell University's Women's Resource Center, where she was director for three years. With this change in leadership, the Caltech Women's Center will become part of Student Affairs, allowing the center to better focus on the needs of Caltech students while continuing to serve all members of the campus community.

Retirements

Fred Asiri retired May 1 after nearly 13 years at Caltech. He was a civil and structural engineer with the Laser Interferometry Gravitational-wave Observatory project.

Robert Flaker, a telephone installer with the Administrative Technology Center's telecommunications office, retired on April 1. He had worked at Caltech for 10 years.

Beverley Johnson retired on May 1. A senior department clerk with the Administrative Technology Center's telecommunications office, she had worked at Caltech for 21 years.

Deaths

Graham Berry, who was news bureau director for Caltech's office of public relations from 1958 until he retired in 1977, died on July 25; he was 92. He is survived by his wife, Doris.

Theodore Nichols, an assistant storekeeper for Physical Plant, died on July 12; he was 53. He had been hired in January 2000, and on disability since May 23 of this year.

Honors and awards

Kaushik Bhattacharya, professor of applied mechanics and mechanical engineering, and **Hideo Mabuchi**, associate professor of physics, were both selected to participate in the National Academy of Engineering's seventh annual Frontiers of Engineering Symposium, held September 13-15 at the National Academies' Arnold and Mabel Beckman Center in Irvine, California. "The program brings together outstanding engineers (ages 30-45) from industry, academia, and government to discuss pioneering technical work and leading-edge research in various engineering fields and industry sectors." This symposium featured topics in the areas of aeronautics and aerospace, civil systems, wireless communications, and technology and the human body.

The 2001 ASCIT (Associated Students of Caltech) Teaching Awards have gone to **Oscar Bruno**, professor of applied and computational mathematics, **Dirk Hundertmark**, Taussky-Todd Instructor in Mathematics, **Edward McCaffery**, visiting professor of law, **Thomas Neenan**, lecturer in music, and **Charles Peck**, professor of physics. At the same time, **George Cheron**, lecturer in Russian, and **Glen George**, lecturer in computer science and electrical engineering, have been honored with ASCIT Lifetime Achievement Awards.

David Chan, assistant professor of biology and Bren Scholar, has been named a Rita Allen Foundation Scholar. The award carries a \$50,000 stipend for up to three years. A graduate of Harvard Medical School and MIT, Chan joined Caltech in January 2000. He specializes in research on mitochondria, components of the cell that are important in energy metabolism and also in programmed cell death.

Sandra Ell, Caltech's treasurer and chief investment officer, has been elected by Pasadena's Utility Advisory Commission to be its vice chairman.

James Gates, visiting professor of physics, was one of five speakers who participated in the first Isaac Asimov Memorial Panel Debate. Held last February 13 at the American Museum of Natural History, the debate was on the "Theory of Everything." Gates has also received an honorary degree, a doctor of humane letters, from Georgetown University.

Nick Nichols, director of Caltech's Industrial Relations Center, has been invited to participate in the Leadership Program on Japan. Sponsored by the Japanese Ministry of Economy, Trade and Industry, the program brings together each year 12 participants from abroad to meet with Japanese business leaders and government officials. The program involves visits to a number of prominent Japanese industries and discussions on the key economic, market, and business issues facing Japan in its international relationships.



Remembering two good friends and coworkers

Caltech Physical Plant employees José and Maria Villegas were killed in a car accident with an alleged drunk driver on their way to work August 10. Their many friends and colleagues in the Caltech community will miss them. The suspect, who has prior DUI convictions, is being charged with murder in connection with the accident.

"I knew both of [the Villegases], but I knew Maria for a longer time. I met her when I started nine years ago and I got to know her better in the last three years. We spent breaks together and talked. She was a good person, always happy and smiling. She was the kind of person who always got along with everyone. She had a good sense of humor and was very friendly, too."

—Socorro Mendez, third floor, Kerkhoff

"José was always nice and cheerful. He was always industrious and anxious to get going. That helped because he would lift our morale. When we got paired up, it was easier for me to get into the work because he always put a lot of energy into it. That way it was easier and quicker. He was always here early and he was always ready to lend a hand and pitch in."

—Mauro Hernandez, Beckman Institute

"[José] was a very friendly man. You could get to know him in 15 minutes. You couldn't ask for a better person to work with. He was an awfully nice person. We got along very well when we worked together, and Maria was the same."

—John Bennett, Beckman Institute

"They were two of my best workers. Both of them were always able and willing to do any work at any time. They were very dependable and very friendly."

—Maria Delgado, custodial supervisor

"Maria was a warm and outgoing person who always had something nice to say. My family was close to her, as were many people on campus. She typified the best of Caltech's employees."

—Steve Koonin, Caltech provost

A note of thanks

On behalf of the Villegas family, we are truly grateful and touched by the kindness the staff, students, and everyone at Caltech have expressed to us.

Our parents sincerely enjoyed, and were proud to work at, Caltech. They would share stories about how wonderful the students were to them and how much they liked their coworkers. They treasured their friendships with the members of the Caltech family.

Thank you for your thoughts and prayers. They have given us strength and helped ease our spirits. We are grateful and will always remember your acts of compassion and love.

Sincerely,
The Villegas Family

September 24–October 7, 2001

M T W T F S S

Events in roman type are open to the public

Events in *italic type* are open to the Caltech community only

Monday, September 24

Everhart Lecture Series Applications/Nominations

The Everhart Lecture Series selection committee is seeking applications and nominations for speakers for the 2001–2002 lecture series. The deadline is October 4. Application/nomination forms and information: www.its.caltech.edu/~els or els@its.caltech.edu.

Friday, September 28

LIGO Seminar

West Bridge, LIGO Science Conference Room, 11 a.m.—“Thermal Noise from Optical Coatings as a Limiting Noise Source in Advanced LIGO,” Andri Gretarsson, Syracuse University.

Institute for Quantum Information Seminar

102 Steele, 3:30 to 5 p.m.—Topic to be announced. Markus Grassl, University of Karlsruhe, Germany.

Saturday, September 29

Computation and Neural Systems 15th Anniversary Celebration

Beckman Institute auditorium, 9:30 a.m. to 4:30 p.m.—CNS founding fathers David Van Essen, Carver Mead, and John Hopfield will head a list of alumni speakers throughout Saturday and a half day on Sunday. All Caltech faculty, students, and alumni are invited. Information: 395-8195 or lhcrum@caltech.edu. (See article on this page.)

Sunday, September 30

Computation and Neural Systems 15th Anniversary Celebration

Beckman Institute auditorium, 9 a.m. to noon—CNS founding fathers David Van Essen, Carver Mead, and John Hopfield will head a list of alumni speakers. All Caltech faculty, students, and alumni are invited. Information: 395-8195 or lhcrum@caltech.edu.

Monday, October 1

Aeronautics Seminar

101 Guggenheim Laboratory, Lees-Kubota Lecture Hall, 1 p.m.—Hans Hornung, C. L. “Kelly” Johnson Professor of Aeronautics and director of the Graduate Aeronautics Laboratories, will introduce first-year aeronautics graduate students and other interested parties to GALCIT. Information: www.galcit.caltech.edu/seminars.shtml.

Geological and Planetary Sciences Seminar

155 Arms, Robert Sharp Lecture Hall, 4 p.m.—“Current Plate Motion and Crustal Deformation in the Eastern Mediterranean,” Shimon Wdowinski, Rosenstiel School of Marine and Atmospheric Science, University of Miami, and department of geophysics and planetary sciences, Tel Aviv University, Israel.

Wednesday, October 3

Environmental Science and Engineering Seminar

142 Keck, 4 p.m.—“Dynamics of Summer Monsoon Convection Zones,” Professor David Neelin, department of atmospheric sciences, UCLA.

NIMH Silvio Conte Research Center for Neurobiology Seminar

24 Beckman Labs, 4 p.m.—Topic to be announced. Professor Michael Fanselow, department of psychology, UCLA.

Thursday, October 4

Geology Club Seminar

151 Arms, Buwalda Room, 4 p.m.—“Exhumation and Erosion of the Central Wasatch Mountains, Utah: Insights from Low-Temperature Thermochronometers and Thermo-Kinematic Models,” Todd Ehlers, postdoctoral researcher, department of geological sciences, University of Washington. Refreshments, 3:45 p.m. Information: www.gps.caltech.edu/seminars/geoclub/geoclub.html.

William Bennett Munro Memorial Seminar

25 Baxter, 4 p.m.—“The German Middle Ages and German Medieval Historians,” Dr. Caspar Ehlers, Max Planck Institute, Germany.

Physics Research Conference

201 E. Bridge, 4 p.m.—“First Scientific Results from the Sudbury Neutrino Observatory,” Arthur B. McDonald, department of physics, Queen’s University, Kingston, Ontario, Canada, and director, Sudbury Neutrino Observatory Institute. Refreshments, 108 East Bridge, 3:45 p.m. Information: www.pma.caltech.edu/~physcoll/PhysColl.html.

Friday, October 5

Fluid Mechanics Seminar

101 Guggenheim Laboratory, Lees-Kubota Lecture Hall, 3 p.m.—“Numerical Simulations of a Deflagration-to-Detonation Transition in Gaseous Systems,” Alexei Khokhlov, laboratory for computational physics and fluid dynamics, Naval Research Laboratory. Information: www.galcit.caltech.edu/Seminars/Fluids/CurrentFluids/index.html.

Institute for Quantum Information Seminar

102 Steele, 3:30 p.m.—“Proof of Security of Quantum Key Distribution (With Two-Way Classical Communications),” Hoi-Kwong Lo, MagiQ Technologies, Inc.

CNS turns 15 years old

In 1986, a unique confluence of ideas, people, and recent scientific and technological developments came together at Caltech, giving rise to a new interdisciplinary graduate program: the computation and neural systems PhD program.

Since that time, the program has continued to grow and, now in its adolescence, the CNS program at Caltech is celebrating its 15th birthday with a weekend gathering on September 29 and 30. “This promises to be a wonderful opportunity to bring everybody back to campus and to hear about achievements over the past 15 years,” says Christof Koch, Troendle Professor of Cognitive and Behavioral Biology and professor of and executive officer for computation and neural systems.

The CNS program studies problems at the interface between cellular biology and neurobiology, electrical engineering, computer science, and physics. Its unifying theme is the relationship between the physical structure of a computational system (physical or biological hardware), the dynamics of its operation, and the problems that it can solve. CNS students and faculty have carried out groundbreaking work in a range of fields, including computer science, electrical and neuromorphic engineering, neural networks, robotics, biophysics, neurophysiology, and artificial life.

CNS will also soon welcome its newest faculty member, Assistant Professor Thanos Siapas, currently at MIT. His expertise involves recording and analyzing the neural activity of hundreds of individual neurons in parts of the mammalian brain thought to be involved in memory and spatial orientation. He will be a member of both the Division of Biology and the Division of Engineering and Applied Science.

The birthday bash begins Saturday morning with a continental breakfast in the Beckman Institute courtyard, and finishes on Sunday at noon. Highlights will include presentations by three of the option’s founders: Caltech’s John Hopfield, Dickinson Professor of Chemistry and Biology, Emeritus, and Carver Mead, Moore Professor of Engineering and Applied Science, Emeritus; and David Van Essen, BS ’67, now Edison Professor of Neurobiology at Washington University in St. Louis.

Celebration organizers are also seeking scanned or digital photos of “humorous, humble, or solemn moments in the life of the CNS program” to publish on its Web site. Images can be e-mailed to lhcrum@caltech.edu.

Registration information and a schedule of events can be found on the celebration Web site at www.anniversary.cns.caltech.edu, by e-mailing lhcrum@caltech.edu, or by calling (626) 395-8195.

CampusEvents

Monday, September 24

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, September 25

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: Jennifer Pearson, (323) 550-8075 or jmph-p@pacbell.net.

Caltech Folk-Dancing Club

Dabney Lounge, 7:30 to 11:45 p.m.—Meets every Tuesday until midnight. Drop-ins are welcome. Donations accepted.

Women's Volleyball

vs. Pomona-Pitzer College, 7:30 p.m.

Wednesday, September 26

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.

Men's Soccer

vs. Pomona-Pitzer College, 4 p.m.

Thursday, September 27

Caltech Architectural Tour

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

Friday, September 28

Club and Resource Fair

Avery House, 3:30 to 5 p.m.—Various campus clubs and resources will give out information. New students are encouraged to attend. Information: 395-6194 or suef@caltech.edu.

Women's Volleyball

vs. Cal Lutheran University, 7:30 p.m.

Falun Gong: The Real Story

101 Kerckhoff, 7:30 to 9:30 p.m.—Through video documentaries and discussion, learn about what Falun Gong is and why it is persecuted in China. Information: www.its.caltech.edu/~falun.

Saturday, September 29

Caltech Day of Service

7 a.m. to 3 p.m.—A day of student service to the community. Volunteers may choose a day with Habitat for Humanity, the Santa Monica Trail Coalition, Rebuilding Together—Pasadena, or other organizations. Free transportation is provided. Information: 395-6163 or gregf@caltech.edu.

Men's Soccer

vs. Claremont-Mudd-Scripps, 11 a.m.

Water Polo

vs. alumni, 11 a.m.

Cross-Country

Stanford Invitational, at Stanford, 3:30 p.m.

Occidental-Caltech Chamber Orchestra

Thorne Hall, Occidental College, 8 p.m.—Allen Robert Gross, conductor, and Heather Henderson, soprano, performing Rossini, Berlioz, and Mozart. Admission is free. 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, September 30

Caltech Y: Compression

Center for Student Services, noon to 2 p.m.—Celebrate the end of summer and the start of the school year, on the lawn in front of the Caltech Y. Free food and entertainment with a Spanish flavor in honor of National Hispanic Heritage Month. Information: 395-6163 or gregf@caltech.edu.

Chamber Music Auditions: Piano Only

Student Activities Center, room 12, noon to 2:30 p.m.—Sign-up sheets for appointment times will be posted on the door. If possible, bring a short prepared piece. Information: 395-6198 or dbing@caltech.edu.

Concert and Jazz Band Auditions

Student Activities Center, room 15, noon to 2:30 p.m.—Open to all members of the Caltech/JPL community. Sign-up times for auditions will be posted on the door. Information: 395-3714 or wbing@caltech.edu.

Men's Glee Club and Chamber Singers

Student Activities Center, room 3, 2 to 5 p.m.—Sign-ups in room 3. First rehearsal, Monday at 5 p.m. Information: 395-6197 or dgc@caltech.edu.

Women's Glee Club: Sign-Up/Placements

Student Activities Center, room 1, 2 to 4 p.m.—Open to all women in the Caltech/JPL community. No auditions necessary. First rehearsal, Monday, October 1, 5 to 6 p.m. Information: 395-6260 or dlavertu@caltech.edu.

Caltech-Occidental Chamber Orchestra

Ramo Auditorium, 3:30 p.m.—Allen Robert Gross, conductor, and Heather Henderson, soprano, performing Rossini, Berlioz, and Mozart. Admission is free. 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.

Chamber Music Auditions: Instruments Other than Piano

Student Activities Center, room 12, 8 to 10:30 p.m.—Sign-up sheets for appointment times will be posted on the door. If possible, bring a short prepared piece. Information: 395-6198 or dbing@caltech.edu.

Concert and Jazz Band Auditions

Student Activities Center, room 15, 8 to 10:30 p.m.—Open to all members of the Caltech/JPL community. Sign-up times for auditions will be posted on the door. Information: 395-3714 or wbing@caltech.edu.

Monday, October 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.

Men's Glee Club and Chamber Singers

Student Activities Center, 1 to 4 p.m.—Sign-ups in room 3. First rehearsal at 5 p.m. Information: 395-6197 or dgc@caltech.edu.

Women's Glee Club: Sign-Ups/Placements

Student Activities Center, room 1, 3 to 6 p.m.—Open to all women in the Caltech/JPL community. No auditions necessary. First rehearsal, 5 to 6 p.m. Information: 395-6260 or dlavertu@caltech.edu.

Chamber Music Auditions: Instruments Other than Piano

Student Activities Center, room 12, 4 to 6 p.m. and 8 to 10:30 p.m.—Sign-up sheets for appointment times will be posted on the door. If possible, bring a short prepared piece. Information: 395-6198 or dbing@caltech.edu.

Concert and Jazz Band Auditions

Student Activities Center, room 15, 4 to 6 p.m.—Open to all members of the Caltech/JPL community. Sign-up times for auditions will be posted on the door. Information: 395-3714 or wbing@caltech.edu.

Men's Soccer

at Whittier College, 7 p.m.

Chamber Music Auditions: Instruments Other than Piano

Student Activities Center, room 12, 8 to 10:30 p.m.—Sign-up sheets for appointment times will be posted on the door. If possible, bring a short prepared piece. Information: 395-6198 or dbing@caltech.edu.

Concert and Jazz Band Auditions

Student Activities Center, room 15, 8 to 10:30 p.m.—Open to all members of the Caltech/JPL community. Sign-up times for auditions will be posted on the door. Information: 395-3714 or wbing@caltech.edu.

Tuesday, October 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: Jennifer Pearson, (323) 550-8075 or jmph-p@pacbell.net.

Caltech Folk-Dancing Club

Dabney Lounge, 7:30 to 11:45 p.m.—Meets every Tuesday until midnight. Drop-ins are welcome. Donations accepted.

Women's Volleyball

at Occidental College, 7:30 p.m.

Robert Bly

Beckman Auditorium, 8 p.m.—Poet Robert Bly will read from his new collection. The event is a cooperative effort of Art Center's Archetype Press Literature and Art Series and Caltech's Words Matter program. Copies of the handmade, limited-edition book will be available at the reading, and thereafter at the Caltech bookstore. Information: 395-4652, 1 (888) 2CALTECH, or events@caltech.edu. Individuals with a disability: 395-4688 (voice) or 395-3700 (TDD).

Wednesday, October 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.

Men's Soccer

at Occidental College, 4 p.m.

Friday, October 5

Women's Volleyball

at the University of Redlands, 7:30 p.m.

Saturday, October 6

Planning for Your Child's Educational Future

4th Floor Council Room, Verdugo Hills Hospital, 182 Verdugo Boulevard, Glendale, 10 a.m. to noon—David Levy, assistant dean and director of financial aid, Caltech, and Catherine Thomas, associate dean of admissions and financial aid, USC, will discuss financial planning for your child's college education. The free seminar is sponsored by the Child Educational Center and Verdugo Hills Hospital Foundation. Continental breakfast, 9:45 a.m. Reservations by October 1. Call (818) 354-3418.

Men's Soccer

at the University of Redlands, 11 a.m.

Women's Volleyball

vs. Whittier College, 7:30 p.m.

Sunday, October 7

Skeptics Society Lecture

Baxter Lecture Hall, 2 p.m.—“The Great Environmental Debate: What Is the Real State of the World?”, Bjorn Lomborg, associate professor of statistics, University of Aarhus, Denmark. Donation is \$8 for nonmembers, \$5 for members and non-Caltech students. Free to the Caltech/JPL community. Tickets and information: 794-3119 or skepticsmag@aol.com.

Caltech joins Paseo Colorado grand opening

Billed as Pasadena's newest landmark, the long-awaited Paseo Colorado complex will open its doors to the public with a weekend of festivities, beginning with a ceremony on Friday, September 28, at 9:30 a.m.

The open-air complex is located on Colorado Boulevard between Los Robles and Marengo Avenues, the site of the former Plaza Pasadena mall, and integrates structures for residential, office, retail, and entertainment use in a single “mixed-use urban retail destination.”

Along with other Pasadena institutions, Caltech, JPL, and the U.S. Geological Survey will host exhibits throughout the day. Caltech will have a display honoring the 100th anniversary of the Nobel Prize, of which 27 winners have been associated with the Institute as faculty or alumni. The USGS will host an exhibit on earthquake technology, and JPL will showcase a one-half-scale model of the 2001 Mars Odyssey, which is scheduled to land on Mars on October 23.

The day will culminate in a free Pasadena Symphony concert and the dramatization of famous works of art in Pasadena museums by the renowned Pageant of the Masters, beginning at 8 p.m. On Saturday and Sunday, projects will be on display from the “Pasadena: The City of the Future” collaborative art and science program, which paired mentors from Caltech and Art Center College of Design with Pasadena Unified School District middle school students. Teams of students will present their models of a future Pasadena, created together with their mentors. Live music, entertainment, and demonstrations will continue throughout the weekend.

For more information on the grand opening events, visit www.paseocolorado.com or call (626) 795-8891.



Neal named Caltech trustee

Philip Neal, chairman and chief executive officer of Avery Dennison Corporation, has been named as Caltech's newest trustee.

Neal's career spans more than two decades in corporate finance and senior management at Avery Dennison, the global leader in pressure-sensitive technology. He has been instrumental in the growth and development of the multi-billion-dollar Fortune 500 company since joining in 1974 as controller. He was appointed CEO in May 1998 and chairman in May 2000. Prior to joining Avery Dennison, Neal was associated with McKinsey and Company in Los Angeles. He received an economics degree from Pomona College in 1964 and an MBA from Stanford University in 1966.

Throughout his career, Neal has received numerous honors and awards. He is a trustee of Pomona College and has also served on the boards of the Independent Colleges of Southern California, Edwards Lifesciences Corporation, the Los Angeles Area Chamber of Commerce, and the Los Angeles World Affairs Council. He is a member of the California Business Roundtable, the Los Angeles Business Advisors, and the Board of Governors of Town Hall, Los Angeles.

Rankings, from page 1

from other schools have not been as quiet. Steven B. Sample, the president of USC, has reportedly called the list "silly" and "bordering on fraud." His university placed 34th on the list of best national universities. UC Berkeley chancellor Robert Berdahl expressed a similar sentiment, calling the rankings "highly questionable." His university ranked 20th among national universities, but came in first among public colleges.

Among its other findings, the magazine determined that Caltech was the top national university in terms of best value. The Institute was listed at an overall no. 4 in the category of Best Undergraduate Engineering Programs.

A number of Caltech's engineering specialties showed good numbers: aerospace/aeronautical/astronautical (no. 6), chemical (no. 10), civil (no. 15), computer (tied at no. 10), electrical/electronic/communications (no. 6), environmental/environmental health (no. 9), and a respectable no. 9 in mechanical engineering.

Although Caltech's position in the magazine's rankings may shift incrementally from one year to the next without apparent rhyme or reason, students and their families can rest assured that, in any case, they are receiving a rich educational experience at a top university.

To view the 2002 *U.S. News & World Report* college rankings in more detail, log on to www.usnews.com/usnews/edu/college/rankings/rankindex.htm.

Trauma, from page 1

our possible reactions to such devastating events. In the weeks following those events it is important to give yourself a routine of sleep, to eat regularly, and to seek support.

Try to identify the things that make you feel relaxed, like exercising, reading, being around family and friends, or arranging for personal time. It is easy to forget about taking care of yourself when you are distracted by the events around you. A list of resources for you and your family is at the end of this article.

Campus resources

- Staff and Faculty Consultation Center (counseling), ext. 8360
- Student Counseling Center, ext. 8331
- Ombuds Office, ext. 6990
- Security Office, ext. 5000 (emergencies) or ext. 4702 (other)
- Residence Life, ext. 6194
- International Student Programs, ext. 6330
- Caltech Y, ext. 6163
- Minority Student Affairs, ext. 6208
- Women's Center, ext. 3221

Web resources

www.crinform.org/terrorism

Provides information on conflict resolution, terrorism and international conflict and is sponsored by the Conflict Resolution Information Source.

www.ncptsd.org/

This site is from the National Center for Posttraumatic Stress Disorder and contains information on managing stress in reaction to terrorist events.

www.opm.gov/ehs/pdf/trauma.pdf

A manager's handbook for handling traumatic events.

www.helping.org

Provides information on how to help with disaster relief.

www.afsc.org

Provided by the American Friends Service Committee and includes resources and solutions for peaceful and nonviolent retaliation.

www.CNN.com/SPECIALS

Current news, information, and resources.

www.cnn.com/education

Articles and resources for parents and children.

April White is the comanager of the Staff and Faculty Consultation Center.

Donating blood

Blood donation centers are currently overwhelmed with donors, but will have an ongoing need for blood in the coming weeks and months. The Red Cross suggests waiting a few days or weeks before donating.

• **Red Cross Donation Center**
81 North Lake Avenue (at Union)
(currently taking names for future donations)

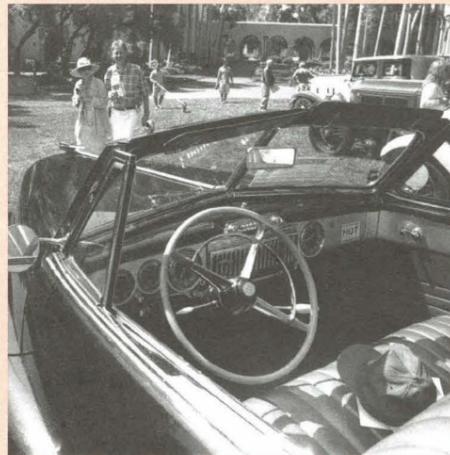
• **Huntington Memorial Hospital**
100 W. California Boulevard
Call (626) 397-5422 for appointments

In addition, Human Resources will try to arrange a campus blood drive in the near future.

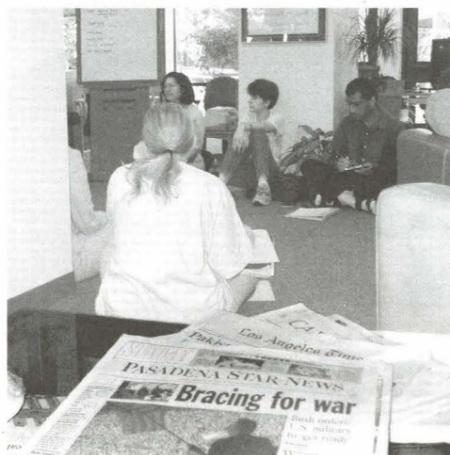
Monetary donations

The Caltech Y is coordinating monetary donations to go to various victim-aid and social-justice organizations. Donations are being accepted at the Y office and the Caltech Bookstore throughout the day, and at donation tables along the Olive Walk and near the Red Door Café and the Keith Spalding Building. The Y welcomes employees who can volunteer to staff a table, particularly during orientation week, when many students are busy; contact the Y at ext. 6163 to sign up. Checks can be made out to the Caltech Y and designated for one of several organizations.

What Caltech did this summer



Clockwise from top left: 1) Staff members Scott Robbins of Catering and Don Thomas of Central Plant help themselves to plates of the al fresco cuisine at the Fun in the Sun Summer BBQ and Music Festival. The weekly barbecue and street fair featured food, live music, and items for sale from local crafts people. 2) Staff members from the carpentry shop stand with Susan Davis, division administrator, in an office they built over the summer. The craftsmen converted Baxter Hall's Judy Library into a wing containing 14 Humanities and Social Sciences faculty and staff offices. The 4,060-square-foot space was completed in early September. 3) Elliott Andrews, an administrator with Engineering and Applied Sciences, checks out a 1947 Cadillac convertible coup during the Classic Car Club of America's SoCal Region show, held on campus July 14. Andrews was an organizer of the event. 4) Christopher Boxe, left, a graduate student in environmental engineering and science, helps high schoolers in the Young Engineering and Science Students program build a windmill atop the Keck student services building. 5) Mrs. and Dr. Nicholas Begovich, Caltech class of 1943, stand next to the cherry red 1960 Aston Martin Zagato they used to fund a Charitable Remainder Annuity Trust, of which Caltech is a remainder beneficiary. The couple sold the car in July for approximately \$1 million.



Students and staff meet at the Caltech Y to plan a campus response to the tragic events of September 11. In addition to caring for victims and their families, plans will include networking with other universities and organizations on issues of peace, justice, and the United States' response to terrorism.

Parking registration continues

The registration period for Caltech parking continues through September 28. All cars anticipated to be parked on campus should be registered, including license-plate information.

Campus community members with access to a computer are encouraged to register online at the campus parking Web site, www.atc.caltech.edu/CIT_Parking/home.htm. Click on the Online Vehicle Registration Form link and follow the log-in instructions outlined on the main page. A printable Adobe Acrobat version of the registration form is also available at the Web site.

Those without computer access can submit paper versions of the registration form to the Parking Office at mail code 2-83. The office will also have registration centers in the lobbies of Ramo and Beckman Auditoriums on September 20, and in the Beckman Auditorium lobby September 24 to 28. Registration locations will be open from 8:30 a.m. to 4:30 p.m. Campus affiliates who are not Caltech employees or students will need to register by paper form.

Once the registration process is completed, employees will be assigned a permit number and a placard, which must be hung from the rearview mirror of any car parked on campus. Employees may register any number of vehicles, but will receive only one placard. Placards will be distributed from September 24 to 28.

In conjunction with the new process, Caltech's parking regulations have been revised and can be viewed online at the campus parking Web site. Paper copies can also be requested from the Parking Office. Enforcement of campus parking regulations, including the need to display a valid placard, will begin October 1. Cars without placards or other Caltech permits after that date will be ticketed.

For assistance with the online registration form or the Web site, contact the ATC CARE Help Desk at ext. 5555 or atccare@caltech.edu. For other questions about the registration process or parking on campus, call the Parking Office at ext. 8877.

In other parking news, a new surface parking lot is planned for the east side of Holliston Street, on the site where the Recycling Center has until now been located. The lot will accommodate approximately 90 cars and is slated to be ready for use by the beginning of October.

Due to the parking lot construction, the Recycling Center will be temporarily closed to the public. Once the new Pasadena Fire Station #34 facility opens at the corner of Holliston and Del Mar, the Recycling Center will be relocated to the vacated temporary fire-station site on Del Mar between Wilson and Michigan, and

should be open for operation by January.

Campus recycling will continue during the center's closure through normal custodial operations. In addition, a number of recycling bins have been relocated to the west side of Central Engineering Services (building 85) for campus community use only. For personal recycling needs, a list of local recycling centers can be found online at www.1800cleanup.org or by calling ext. 4181.

Vomit Comet, from page 1

This glass is fabricated from the heavy-metal fluoride family rather than the silica-based material currently used in fiber-optic glass. "The advantage of ZBLAN over silica-based fiber is that it is many times less absorptive," said Englund.

Besides telecommunications, the benefits of ZBLAN could be applied to a wide range of fields. For instance, it can be used to create a small, inexpensive laser for use in electrodynamics, communications, and medicine; such lasers are currently very costly.

The difficulty with producing ZBLAN is that, if it is created under the presence of gravity, it crystallizes—destroying its unique optical properties. The Caltech team's mission is to produce microspheres under the different gravity conditions provided by the KC-135's parabolic trajectory.

The team's experiment comprised three parts. First, before leaving for Johnson Space Center the team made three sets of microspheres at Caltech and JPL. On the plane, the microspheres were reproduced under the differing gravitational conditions. Finally, the team brought back the microspheres created on the KC-135 for lab analysis.

Each team in the flight program must also participate in a community project. The four Caltech students will be presenting their experiments at a number of Southern California elementary and high schools.

Eley, Englund, Ferguson, and Jewell were at Johnson Space Center from August 22 to September 1. The program pays for the training and the cost of the KC-135 flight, but the team had to raise money for equipment, transportation to and from Houston, and accommodations. Most of the costs were covered by Caltech and JPL.

More photos are available online at http://pr.caltech.edu/media/Press_Releases/PR12179.html.

Political biology, from page 1

couples use this form of reproductive assistance for some types of infertility. Thus many embryos are made and stored frozen, and many of these are ultimately discarded after the couple has the children they want. This provides a ready source of starting material for making embryonic stem cell lines.

Cloning is shorthand for deriving a fertilized egg by killing the egg's own nucleus and then implanting into the egg the nucleus from an adult cell. An embryo derived from such a union is genetically identical to the adult who donated the nucleus and thus a clone of that adult. The idea of human clones has produced outrage among politicians and the public, even though no one has ever made such a clone and in actuality identical twins are clones in just this sense. If the method was safe, and it isn't, it might be valuable to couples with certain types of infertility or inherited-genetic-disease issues.

Where cloning and embryonic stem cells interact is when embryos derived by cloning are used for making stem cells. There is good reason to want to do this—the stem cells would be the perfect source of organs for the adult who donated the original nucleus, because there would be no danger of immune rejection of the cells by the recipient. This is called therapeutic cloning to differentiate it from reproductive cloning, which might be used to make a whole person by cloning.

I am not aware of any work today at Caltech involving human embryonic stem cells, or of any attempts at human cloning. However, the issues are ones that concern all biologists because of a common interest in seeing that new capabilities reach the public as new therapies.

With that background, we can describe the events of the summer. Congress first got into the cloning issue. The public seemed so incensed by the idea of cloning that the House passed a bill banning it. However, the bill was drafted by absolutists who lumped therapeutic cloning and reproductive cloning together in the ban. The Senate has not acted and the slim Democratic majority may be reluctant to act, so possibly no bill will come to the president for signature. If it comes, he seems sure to sign it. Losing the opportunity to make embryos to order is no problem at the moment, but putting a ban into law would make reversing it in the future very difficult.

The president—who was responding to calls, mainly from religious groups and conservative anti-abortionists, to ban the research—took on the stem cell issue. He agonized publicly over his decision for weeks, listened to many opinions, including that of the Pope, and announced his

decision in prime time on television. He gave a surprisingly learned discourse on the issues before making a Solomonic decision to allow the government to fund work on cells that already exist, but not the derivation or study of new stem cell lines. He did not listen to those in opposition who argued that adult stem cells might be able to replace embryonic ones.

Predictably, the conservatives argued that his decision was immoral, and the liberals argued that it was insufficient. Although I think that limiting research in this way is bad, I believe that Bush's decision was realistic and is not the last word. If the research community can show that there is actual as opposed to theoretical benefit to be derived from human stem cells, but that the limiting factor is the need for new cell lines, I would think that Bush—or the next president—and Congress would be under enormous pressure from patients and their advocates to relax the prohibitions.

So this has been a momentous summer for biomedical research. In the 1970s, when recombinant DNA research was first invented, there was a push for legislation to limit the purview of the work or even to ban it. The research community fought these efforts successfully and argued that it could police itself. The issues were mainly about safety, so the moral considerations in the debates were muted. This summer morality has been the key issue. Even in the cloning discussions, where safety is a huge concern (in animals, cloning produces mainly poorly formed offspring), the moral issues have been the main ones. We still don't have signed legislation, and maybe we can avoid it, but there is no question that the research community has now developed capabilities that many people consider inappropriate human activities. People's moral decisions change over time, and practical considerations often outweigh moral ones when a new technology provides proven benefits. So I expect this to be a changing landscape. But as physicists discovered years ago, powerful sciences develop controversial capabilities. Now, the biological research community—never mind university administrators—is going to have to take an ever-more-public role to explain and defend their proposed activities.

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