Caltech336

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

The campus community biweekly

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Aliens and autographs

Herb Shoebridge

Bestselling author and filmmaker Michael Crichton, the 2003 Michelin Distinguished Visitor Lecturer, generously signed books and answered questions following his talk, "Do Aliens Cause Global Warming?", in Beckman Auditorium last Friday.

Codes, culture clash, and compatibility in corporate mergers

(Adapted from an article by Kim Matsunaga, writer for the Division of the Humanities and Social Sciences)

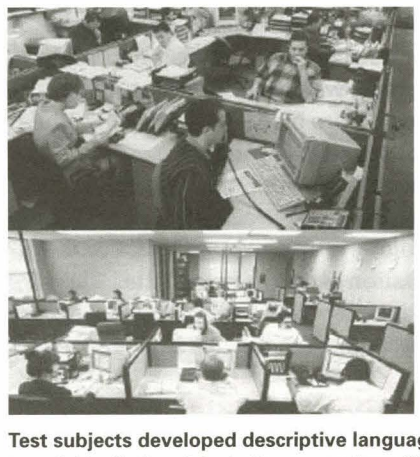
Who can forget the turf of preppies, geeks, and jocks in the school cafeteria? Visible and behavioral cues make it readily apparent who is "in" and who is "out" of a particular crowd, suggesting a structure of distinctive cultures. Companies are similarly driven by culture. Corporate culture may be deliberately expressed through architecture, workplace fashion, institutional structures, jargon, and title nomenclature.

At Caltech, Colin Camerer, Axline Professor of Business Economics, conducts experiments in behavioral economics to demonstrate the measurable influence of corporate culture on companies, and uses this information to predict corporate compatibility in mergers. According to Camerer, the impact of culture in the corporate environment is becoming increasingly important. Effects can be positive, as in the case of Southwest Airlines, whose employees actually accept lower wages than their industry counterparts in order to be part of the upbeat working environment. Cultures that promote risky and aggressive accounting and legal maneuvers, however, can negatively affect company performance, as recently observed at Enron and WorldCom.

Camerer's research approach is one that anthropologists call "functionalist," meaning that he studies a culture by examining the functionality of its various elements, such as how a particular company's culture enhances economic efficiency, or how it resolves problems.

One way to study organizational culture is to create it in the laboratory.

see Corporate culture, page 6



Test subjects developed descriptive languages to quickly distinguish similar-appearing office scenes.

Blood flow found crucial to heart development

In a triumph of bioengineering, Caltech researchers have imaged the blood flow inside the heart of a growing embryonic zebrafish. The results demonstrate for the first time that the action of high-velocity blood flowing over cardiac tissue is an important factor in proper heart development—a result that could have profound implications for future surgical techniques and genetic engineering.

In the January 9 issue of *Nature*, the investigators report on two related advances in their work on *Danio rerio* embryos. First, the team was able to get very-high-resolution video of the tiny beating hearts that are less than the diameter of a human hair. Second, by surgically blocking the hearts' blood flow, they demonstrated that reducing "shear stress"—the friction imposed by a flowing fluid on adjacent cells—causes the growing heart to develop abnormally.

The result is especially important, says colead author Jay Hove, because it shows that more detailed studies of

see Embryos, page 6

At Caltech, Words Matter too

The Words Matter project at Caltech has been in existence for only a year, yet it has already raised awareness on campus of the beauty and value of effective writing.

"We're supporting a range of events designed to raise the awareness of good writing and bring students in contact with prominent authors," said Steven Youra, chair of the Words Matter committee and director of the Hixon Writing Center. On a campus where ideas about theoretical astrophysics make headlines, and molecules rule, words can sometimes get short shrift. The Words Matter project is intended to revise that situation.

The project has three aspects—visiting writers, science writing, and small grants. Distinguished writers are invited to Caltech through the Visiting Writers component. These writers don't simply give a one-shot reading and leave, but instead they stay around for a while. In November, the novelist and poet Seamus Deane spent four days on campus, reading from his work, participating in classes, dining with students, and meeting with faculty. He capped off his visit with a public lecture on politics and culture in his native Ireland.

"Because our students' interests are diverse, we try to select a range of visiting writers to engage different segments

see Words Matter, page 2

Caltech to honor Dodger Lasorda

Tommy Lasorda, longtime manager of the Los Angeles Dodgers and a current senior vice president, will visit Caltech on Friday, February 7, for "An Evening with Tommy Lasorda." The event will feature a conversation between Lasorda and Tommy Hawkins, Dodger vice president of external affairs, and appearances by former general manager Buzzie Bavasi, former Brooklyn Dodger Rod Dedeaux, former Dodgers president Peter O'Malley, and Hall of Famer Sparky Anderson. Jo Lasorda, his wife of 51 years, will also attend.

In his 20 years as manager, Lasorda led the Dodgers to eight division titles and two world championships, making his name synonymous with the baseball franchise. But his association with the team goes back 50 years, during which he worked as scout, coach, manager, and executive. His commitment and love for the Dodgers is so profound that he's said that he "bleeds Dodger Blue."

Lasorda was once a promising pitcher himself. As a 20-year-old southpaw from Norristown, Pennsylvania, he made a splash in 1948 when, as a Schenectady Blue Jay, he struck out 25 Amsterdam Rugmakers during a 15-inning game. That display of pitching prowess was enough to set a professional record (which has since been broken) and raise the eyebrows of more than a few baseball fans.

"An Evening with Tommy Lasorda" is free and open to the public. Every attendee will receive a Tommy Lasorda bobblehead doll as a memento. This event is sponsored by the Caltech Employees Federal Credit Union, the Caltech Management Association, the Caltech Y, and the Los Angeles Dodgers.

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Less cool air this week

The campus will have reduced cooling capabilities this week until approximately Saturday, January 25, while new valves and piping are being installed in the chilled-water system. Because the system affects building cooling, it is important to do the work in winter months when air-conditioning needs are low. For questions or concerns, please contact Reza Ohadi at ext. 6571 or reza.ohadi@caltech.edu.

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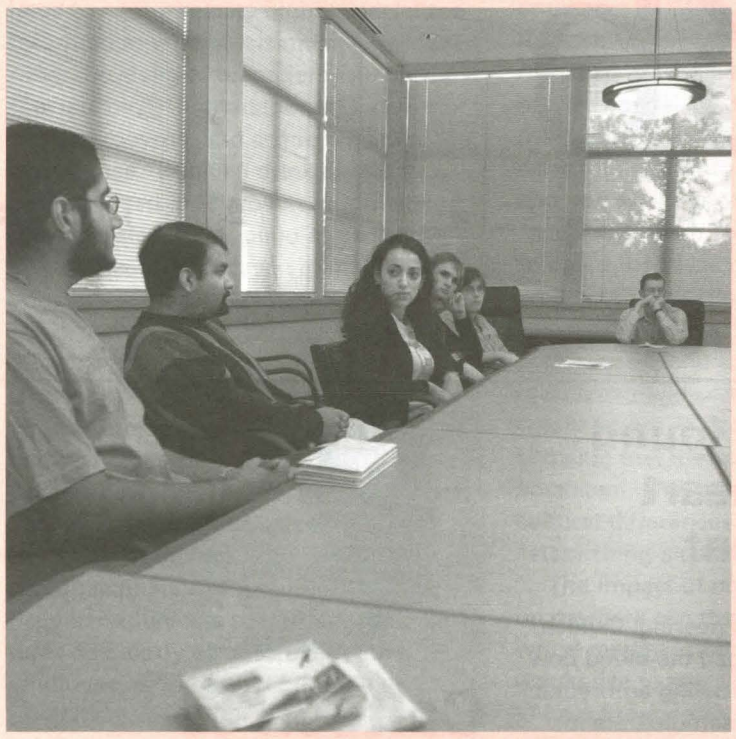
NewsBriefs



Huwaida Arraf (center), a Palestinian-American, and her husband, Adam Shapiro (not pictured), a Jewish-American, spoke at a roundtable discussion preceding their evening lecture, "Eyewitness to Occupied Palestine," on January 8. The event was part of the Social Activism Speaker Series, sponsored by the Caltech Y.

Personals

Welcome to Caltech

December

Victor Acevedo, front office clerk, Athenaeum; **Salvador Avila**, bus person I, Athenaeum; **Mary Brown**, accounts payable processor, Payment Services; **Frina Casugay**, front office clerk, Athenaeum; **David Ciardi**, staff scientist, Interferometry Science Center; **Kavitha Dhandapani**, research assistant I, biology; **Martin Lagang**, custodian, Physical Plant; **Victoria Lieding**, career counselor, Career Development Center; **Luca Matone**, scientist, Laser Interferometer Gravitational-Wave Observatory (LIGO); **Prashant Purohit**, assistant scientist, mechanical engineering; **Mirna Santos**, lab helper B, biology.

January

Alicia Alonzo, research project lead, Caltech Precollege Science Initiative; **Timothy Brooke**, senior scientist, Space Infrared Telescope Facility (SIRTF); **Patty Fallahee**, catering/Avery chef, Dining Services; **Joao Fernandes**, software engineer, high-energy physics; **Claudia Flores**, image segmentor, biology; **Maggie Garrison**, assistant animal lab technician, biology; **J. Bernard Heymann**, structural biology image processing specialist, biology; **Danny Natawidjaja**, assistant scientist, geology and geochemistry; **Brian Oliver**, front office clerk, Athenaeum; **Renato O'Neal**, office assistant, Undergraduate Housing; **Carol St. Jean**, facility operations manager, Office of Laboratory Animal Resources; **Peter Snow**, director, Protein Expression Center, biology; **Jennifer Su**, grants manager, applied physics.

New positions

Hermann Engelhardt became senior research associate in geophysics, emeritus, on November 1. He received his doctorate from the Technical University of Munich in 1974, and he has been a senior research associate at Caltech since 1988.

Retirements

Maureen Savage, an administrative assistant in Development, retired on January 1; she had worked at Caltech for nearly 12 years.

Honors and awards

Matthew Jackson has been named Edie and Lew Wasserman Professor of Economics, effective January 1; this title replaces that of professor of economics. Jackson received his PhD from Stanford in 1988 and joined Caltech as professor of economics in 1997.

Cathy Jurca, associate professor of literature and master of student houses, has had her book *White Diaspora: The Suburb and the Twentieth-Century American Novel* chosen by *Choice* magazine as one of its Outstanding Academic Titles of the past year. *Choice*, which reviews books, electronic products, and Internet sites for academic libraries, selects as the "best in scholarly titles" approximately 10 percent of some 6,600 works reviewed each year. Jurca received her PhD from Johns Hopkins in 1995, the same year she joined Caltech as an assistant professor.

Thomas Palfrey has been named Flintridge Foundation Professor of Economics and Political Science, effective January 1; this title replaces that of professor of economics and political science. Palfrey has been a professor at Caltech since 1986, and he served as executive officer for the social sciences in 2001–02. He received his PhD from Caltech in 1981.

Kip Thorne, Feynman Professor of Theoretical Physics, has been awarded the Robinson Prize in Cosmology by the University of Newcastle, England. He has also received the honorary degree of doctor of humane letters from Claremont Graduate University. A member of the Caltech faculty since 1966, he received his BS from Caltech in 1962 and his PhD from Princeton in 1965.

Barbara Wold, director of the Beckman Institute, has been named Bren Professor of Molecular Biology, effective February 1; this title replaces that of professor of biology. Wold, who received her PhD from Caltech in 1978, has been a faculty member at the Institute since 1981.

Fight cancer—send someone daffodils

Let your employees know they're doing a good job, brighten the day of a special friend or relative, or splurge on yourself with a bouquet of daffodils—and help the American Cancer Society at the same time.

Daffodil Days is an opportunity to join in the fight against cancer and save more lives. The first flowers of spring, daffodils have become the symbol of hope for cancer patients and their families. Dollars raised through the sale of bouquets will support groundbreaking research, patient services and advocacy, and public education that reinforces the importance of early cancer detection and prevention.

Choose from among a bouquet of 10 daffodils ($10); 10 daffodils in a cobalt blue vase ($18); the Vision Bouquet—two bouquets with glass vase ($35); the Spring Arrangement ($60); and the Corporate Arrangement ($110). Or lift the spirits of a cancer patient with an anonymously delivered Gift of Hope Bouquet and vase ($18, $25, $50, or $100).

Orders must be placed with Catherine May (ext. 6502, 401 Beckman Institute, or MC 139-74) by Friday, February 14; make checks payable to American Cancer Society. Flowers will be delivered to campus the week of March 17.

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"Boondocks" creator McGruder to speak

Aaron McGruder, creator of the comic strip "The Boondocks," will discuss issues of race, diversity, and American culture in an upcoming talk, "What's the Color of Funny? Race, Society, and Comic Strips," to take place on Tuesday, February 4. "The Boondocks" combines childhood antics, satire, and a love of hip-hop in the story of a group of African American kids who have been removed from their inner city Chicago home to white suburbia. Oftentimes biting in their commentary, McGruder's reflections on a diverse culture have turned into an entertaining, controversial, and thought-provoking national hit.

Part of Caltech Public Events' Voices of Vision series, the free public lecture will begin at 8 p.m. in Beckman Auditorium. For more information, contact Public Events at 1 (888) 2-CALTECH, (626) 395-4652, or events@caltech.edu, or visit www.events.caltech.edu. Individuals with a disability can call 395-4688 (voice) or 395-3700 (TDD).

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Words Matter, *from page 1*

of the community," Youra said. As an example, he noted that the next writer in residence will be Caltech alumnus Alan Lightman (PhD '74), a theoretical physicist and novelist, science essayist, and member of MIT's graduate science writing program.

The second component of Words Matter, an annual Science Writing Symposium, will take place this year on Monday, February 3, when a group of distinguished science writers will discuss the challenges of communicating complex technical information to general audiences. The moderated panel will include Usha Lee McFarling of the *Los Angeles Times*, Cory Dean of the *New York Times*, and David Goodstein, Caltech's vice provost, Gilloon Distinguished Teaching and Service Professor, and professor of physics and applied physics. The symposium is primarily aimed at Caltech juniors taking the Core 1 Science Writing Requirement, which calls for science papers written in language that general readers would understand.

The third Words Matter component is a small-grants program that supports a variety of literary activities, including readings by lesser-known writers. Last spring, a grant helped defray publication costs of *Totem,* Caltech's arts and literary magazine; this term, Words Matter grants will help sponsor cartoonist Aaron McGruder's February 4 visit and will bring a drama expert to conduct workshops on Shakespearean language and performance for Theater Arts at Caltech. Words Matter also supported an informal dinner-discussion for students with the writer Michael Crichton before his Michelin Distinguished Visitor Lecture on January 17.

"Overall, we hope that Words Matter fosters greater appreciation of writing in all its dimensions," Youra said. For more information about Words Matter, including grant proposals, go to http://www.wordsmatter.caltech.edu/

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Resumania, Career Day offer job resources

Caltech's Resumania and 2003 Career Day are set to help students at all levels, recent grads, and postdocs find that all-important first job. Both events are free and open to the entire Caltech community.

First, prepare for Career Day and on-campus interviews by bringing résumés to Resumania on Wednesday, January 22. Counselors from the Career Development Center will be available on the Olive Walk from 11 a.m. to 2 p.m. to review résumés and make suggestions to improve them.

That done, job seekers should be in great shape for Career Day, taking place in the Brown Gym on Thursday, January 30, from 10:30 a.m. to 2:30 p.m. Attendees can speak with representatives from various companies, gather information, and drop off their résumés in a fun, informal arena. Besides those seeking full-time employment, frosh and sophomores are highly encouraged to attend to familiarize themselves with companies and to explore summer internship opportunities.

Many of the companies confirmed to attend are Career Day regulars such as Aerospace Corporation, IGEN International, JPL, Lawrence Livermore National Laboratory, MIT Lincoln Laboratory, Northrop Grumman Corporation, Oracle Corporation, the Peace Corps, and Raytheon. Some newcomers will also appear: Worldco Financial Services; Space Exploration Technologies; Fair, Isaac and Company, Inc.; and AmCyte, Inc., to name a few.

For more information, contact the Career Development Center at career@caltech.edu.

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January 27–February 2, 2003

M T W T F S S

Monday, January 27

Aeronautics Seminar
101 Guggenheim Lab, Lees-Kubota Lecture Hall, 1 p.m.—"The Microdetonics Facility," Dr. Alan Frank, Lawrence Livermore National Laboratory. Information: www.galcit.caltech.edu/seminars.shtml.

Special Biochemistry Seminar
147 Noyes, Sturdivant Lecture Hall, 2 p.m.—"Application of Small Molecular Probes to the Study of Protease Function," Dr. Matthew Bogyo, department of chemical proteomics, Celera Genomics.

Astronomy Tea Talk
106 Robinson, 4 p.m.—Topic to be announced. Jonathan Lunine, professor of planetary science and of physics, and chair, program in theoretical astrophysics, University of Arizona. Information: www.astro.caltech.edu/~cc/tea_talks.

Computation and Neural Systems Seminar
24 Beckman Labs, 4 p.m.—"Cerebral Hemisphere Regulation of Motivated Behavior," Dr. Larry Swanson, director, NIBS Neuroscience Program, and Appleman Professor of Biological Sciences, USC. Refreshments, 3:45 p.m.

General Biology Seminar
119 Kerckhoff, 4 p.m.—"It's Not Just Sex Anymore," Bruce McEwen, Laboratory of Neuroendocrinology, Rockefeller University.

Geological and Planetary Sciences Seminar
155 Arms, Robert Sharp Lecture Hall, 4 p.m.—"Extinction at the Precambrian-Cambrian Boundary: Trigger for the Cambrian Explosion?", Professor John Grotzinger, department of earth, atmospheric and planetary sciences, MIT. Information: www.gps.caltech.edu.

Inorganic-Electrochemistry Seminar
147 Noyes, Sturdivant Lecture Hall, 4 p.m.—"The Weak-Link Approach to Supramolecular Chemistry," Chad A. Mirkin, Rathmann Professor of Chemistry, and director of the Institute for Nanotechnology, Northwestern University.

Applied and Computational Mathematics Colloquium
101 Guggenheim Lab, Lees-Kubota Lecture Hall, 4:15 p.m.—"Canonical Parameterization of Geometric Surfaces and Applications to Imaging," Shing-Tung Yau, William Casper Graustein Professor, department of mathematics, Harvard University. Refreshments, 3:45 p.m. Information: www.acm.caltech.edu/colloq.shtml.

Tuesday, January 28

Beckman Institute Seminar Series
Beckman Institute Auditorium, 10:30 a.m. to noon—"Adventures with Mass Spectrometry: From Cosmochemistry to Protein Structure Analysis," Jack Beauchamp, Ferkel Professor of Chemistry and principal investigator for the Mass Spectrometry Center, Beckman Institute, Caltech. Refreshments, 10 a.m. Information: www.its.caltech.edu/~bi/seminars.html.

Mechanical Engineering Seminar
206 Thomas, 3 p.m.—"Mesomechanics of Dynamic Behavior of Granular Materials," Vitali Nesterenko, department of mechanical and aerospace engineering, UC San Diego.

Caltech/JPL Association for Gravitational-Wave Research Seminar Series
114 E. Bridge, 4 p.m.—"Progress in Atomic Clocks and Tests of Fundamental Laws," Dr. Lute Maleki, JPL.

Chemical Physics Seminar
147 Noyes, Sturdivant Lecture Hall, 4 p.m.—"Dynamics and Interactions in Molecular Systems Probed with Multidimensional Ultrafast Infrared Vibrational Spectroscopy," Professor Michael Fayer, David Malvane Ehrsam and Edwoard Curtis Franklin Professor of Chemistry, Stanford University.

General Biology Seminar
119 Kerckhoff, 4 p.m.—"Closing in on the Bilaterian Ancestor," Stephan Schneider, Institute of Molecular Biology, University of Oregon.

Wednesday, January 29

Mathematical Physics Seminar
351 Sloan, noon—"Turan Measures on the Unit Circle," Sergey Khrushchev, Atilim University, Ankara, Turkey. Information: www.math.caltech.edu/events/mathphys.html.

Astronomy Colloquium
155 Arms, Robert Sharp Lecture Hall, 4 p.m.—Topic to be announced. Professor Andrea Ghez, department of astronomy, UCLA. Information: www.astro.caltech.edu/~gma/colloquia.html.

Civil Engineering Seminar
206 Thomas, 4 p.m.—"Seismic Response Modification Using Smart Materials," Reginald DesRoches, assistant professor, school of civil and environmental engineering, Georgia Institute of Technology. Refreshments, 210 Thomas, 3:45 p.m.

Dow Lecture in Organic Chemistry
147 Noyes, Sturdivant Lecture Hall, 4 to 5:30 p.m.—"Nanoscale Molecular Architecture: Design and Self-Assembly of Metallacyclic Polygons and Polyhedra via Coordination," Professor Peter J. Stang, department of chemistry, University of Utah.

General Biology Seminar
24 Beckman Labs, 4 p.m.—"The Gene Regulatory Network of the *C. elegans* Mesendoderm," Dr. Morris Maduro, department of molecular, cellular, and developmental biology, UC Santa Barbara.

Information Sciences Seminar Series
74 Jorgensen, 4 p.m.—Topic to be announced. Professor Rene Cruz, department of electrical and computer engineering, UCSD. Information: http://netlab.caltech.edu/seminar/winter03.htm.

Earnest C. Watson Lecture
Beckman Auditorium, 8 p.m.—"Fuel Cells: Powering Progress in the 21st Century," Sossina Haile, associate professor of materials science, 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, January 30

Caltech Library System Presents: Physical Property Data Searching
Sherman Fairchild Library, multimedia conference room, 2 p.m.—Learn about searching for physical property data in both print and online resources. Approximately one hour of formal instruction, immediately followed by optional hands-on practice. Registration: http://library.caltech.edu/learning/form.htm.

Biophysics Lecture Series
153 Noyes, Sturdivant Lecture Hall, 4 p.m.—"Protein Folding Kinetics: A New Twist on the Transition State Idea," Professor Ken A. Dill, department of pharmaceutical chemistry, UC San Francisco. Refreshments, 3:45 p.m.

Caltech Library System Presents: Research Techniques for Core Science Writing Course
Sherman Fairchild Library, multimedia conference room, 4 to 5:30 p.m.—This session, intended primarily for undergraduates working on their Core 1ab (Science Writing) requirement, provides an introduction to the library's resources and services. Registration: http://library.caltech.edu/learning/form.htm.

Geoclub Seminar
151 Arms, Buwalda Room, 4 p.m.—"Molecular Mechanisms of Manganese Oxide Biomineralization," Dr. Bradley Tebo, research biologist and senior lecturer, Scripps Institution of Oceanography.

Information Sciences Seminar Series
74 Jorgensen, 4 p.m.—Topic to be announced. Dr. Ronen Shaltiel, Weizmann Institute of Science, Israel. Information: http://netlab.caltech.edu/seminar/winter03.htm.

Physics Research Conference
201 E. Bridge, 4 p.m.—"Electronics and Mechanics with Single Molecules," Paul L. McEuen, professor of physics, Cornell University. Refreshments, 114 E. Bridge, 3:45 p.m. Information: www.pma.caltech.edu/~physcoll/PhysColl.html.

Sloan-Swartz Center for Theoretical Neurobiology Special Seminar
100 Broad Center, 4 p.m.—"Emergence of Intentions: Parietal Eye Fields in Free Choice," Dr. Shabtai Barash, department of neurobiology, Weizmann Institute of Science, Israel. Refreshments, 3:45 p.m.

Social and Information Sciences Laboratory Seminar Series
25 Baxter, 4 p.m.—Topic to be announced. John Moody, professor of computer science and electrical engineering, Oregon Health and Science University. Refreshments.

Friday, January 31

Chemical Engineering Seminar
106 Spalding Lab, Hartley Memorial Seminar Room, 2 p.m.—Topic to be announced. Dr. Shelley L. Anna, chemical engineering department, Harvard University. Refreshments, 113 Spalding Lab, 3 p.m. Information: www.che.caltech.edu/calendar/seminars.html.

General Biology Seminar
119 Kerckhoff, 2 p.m.—"DNA Double-Strand Break Repair: Looking at Recombination in Living Cells," Professor Rodney Rothstein, department of genetics and development, Columbia University.

Fluid Mechanics Seminar
101 Guggenheim Lab, Lees-Kubota Lecture Hall, 3 p.m.—Topic to be announced. Professor Garry Brown, mechanical and aerospace engineering department, Princeton University. Information: www.galcit.caltech.edu/Seminars/Fluids/CurrentFluids/index.html.

Inorganic-Organometallics Seminar
151 Crellin, 4 p.m.—"Radical Formation and Electron Transfer in Rhenium Modified Azurin," Jeremiah Miller, graduate student in chemistry, Caltech.

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February 3–9, 2003

M T W T F S S

Monday, February 3

Aeronautics Seminar
101 Guggenheim Lab, Lees-Kubota Lecture Hall, 1 p.m.—"Quiet Supersonic Platform: Breaking the Mold," Bart Osborne, AeroTec Solutions. Information: www.galcit.caltech.edu/seminars.shtml.

Geological and Planetary Sciences Seminar
155 Arms, Robert Sharp Lecture Hall, 3 p.m.—"The Cooling of the Earth," Francis Albarède, professor of geochemistry, Ecole Normale Supérieure de Lyon. Information: www.gps.caltech.edu.

Inorganic-Electrochemistry Seminar
147 Noyes, Sturdivant Lecture Hall, 4 p.m.—"Self-Repairing, Self-Buffering Catalysts and Multifunctional Nanostructures Based on Inorganic Clusters," Craig L. Hill, Goodrich C. White Professor, department of chemistry, Emory University.

Applied and Computational Mathematics Colloquium
101 Guggenheim Lab, Lees-Kubota Lecture Hall, 4:15 p.m.—"Two-Quasiconvexity = Quasiconvexity," Professor Irene Fonseca, director of the Center for Nonlinear Analysis, department of mathematical sciences, Carnegie Mellon University. Refreshments, 3:45 p.m.

Tuesday, February 4

Mechanical Engineering Seminar
206 Thomas, 3 p.m.—"The Thermo-Mechanical Behavior of NiTi Shape Memory Alloys," Professor John Shaw, department of aerospace engineering, University of Michigan, Ann Arbor.

Carnegie Observatories Colloquium Series
William T. Golden Auditorium, 813 Santa Barbara Street, 4 p.m.—"Blue Compact Dwarf Galaxies: From the UV to the FIR," Dr. Armando Gil de Paz, Observatories of the Carnegie Institution of Washington and JPL. Refreshments, 3:30 p.m.

Wednesday, February 5

Astronomy Colloquium Kingsley Lecture
155 Arms, Robert Sharp Lecture Hall, 4 p.m.—"The First Billion Years (Numerical Investigations of the Young Universe)," Professor Michael Norman, department of astronomy, University of Illinois at Urbana-Champaign. Information: www.astro.caltech.edu/~gma/colloquia.html.

Environmental Science and Engineering Seminar
142 Keck, 4 p.m.—"Dynamics of the Time-Dependent Thermohaline Circulation," Professor Helen Johnson, University of Victoria. Refreshments, Keck Labs lobby, 3:40 p.m.

Information Sciences Seminar Series
74 Jorgensen, 4 p.m.—Topic to be announced. Professor Armand Makowski, department of electrical engineering, University of Maryland at College Park. Information: netlab.caltech.edu/seminar/winter03.htm.

Thursday, February 6

Caltech Library System Presents: A Quick Review of HUMSS Information Resources
Sherman Fairchild Library, multimedia conference room, 2 p.m.—Review the content and use of subscription databases for the humanities and social sciences. Registration: http://library.caltech.edu/learning/form.htm.

Geoclub Seminar
151 Arms, Buwalda Room, 4 p.m.—"Astrochemical and Geological Causes of Oxygen Isotope Heterogeneity in the Early Solar System," Edward Young, professor of isotope geochemistry, UCLA.

Physics Research Conference
201 E. Bridge, 4 p.m.—"Breeding Proteins," Frances Arnold, Dickinson Professor of Chemical Engineering and Biochemistry, Caltech. Refreshments, 114 E. Bridge, 3:45 p.m. Information: www.pma.caltech.edu/~physcoll/PhysColl.html.

Yuen Fellow in Law and Technology Seminar (A Joint Seminar with the Olin Program in Law and Economics)
25 Baxter, 4 p.m.—Topic to be announced. Richard Epstein, James Parker Hall Distinguished Service Professor of Law, University of Chicago Law School. Refreshments.

Friday, February 7

Condensed Matter Physics Seminar
107 Downs Lab, noon—Topic to be announced. Professor Hans Bozler, department of physics, USC. Information: www.its.caltech.edu/~jpelab/CMP_Seminar_Dates.html.

Fluid Mechanics Seminar
101 Guggenheim Lab, Lees-Kubota Lecture Hall, 3 p.m.—"Wave-Breaking at the Ocean Surface: Fluid Dynamics in Air-Sea Interaction," Professor Ken Melville, Scripps Institution of Oceanography. Information: www.galcit.caltech.edu/Seminars/Fluids/CurrentFluids/index.html.

Inorganic-Organometallics Seminar
151 Crellin, 4 p.m.—"Metallocorroles: Synthesis and Properties in a Model Biological System," Jeremy Weaver, graduate student in chemistry, Caltech.

Mantle to interview Baltimore at JPL

"A Conversation With David Baltimore," an interview by Larry Mantle, host of KPCC's *AirTalk*, is scheduled for Monday, February 3, at JPL's von Karman Auditorium. Presented by the Caltech Management Association, the event will begin at 4:45 p.m. and is free and open to the JPL-Caltech community.

Human cloning? Gene patents? HIV research? Bioterrorism? The future of Caltech and JPL research and exploration? What would you ask David Baltimore if you had the chance to chat with him for an hour? Renowned journalist Mantle will dialogue with Baltimore, discussing topics the president is most passionate about and that are most significant to Caltech and JPL. Some audience questions will be taken, but people are encouraged to submit questions in advance to CMA.Announce@jpl.nasa.gov in order to make the discussion as relevant as possible.

Winner of numerous awards, *AirTalk* was named the best Los Angeles talk show this year by the Los Angeles Press Club and for several years by *New Times Los Angeles*.

For more information, e-mail CMA.Announce@jpl.nasa.gov or call Michael Eastwood at (818) 354-9273.

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CampusEvents

Monday, January 27

Standard First-Aid/CPR Training
Brown Gym classroom, 7:30 a.m. to 5 p.m.—Standard first-aid and CPR training will be offered by Caltech's Safety Office in conjunction with the American Red Cross. Fee: $20 for materials, due in advance. Registration: 395-6727 or safety.training@caltech.edu.

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.

Ballroom Dance Club
Winnett Lounge, 7:30 p.m.—Salsa dancing, taught by a professional instructor. No experience or partner is required. Fee: $6 per class for students, $8 for nonstudents. Refreshments.

Ballroom Dance Club
Winnett Lounge, 9:30 p.m.—Cha-cha dance class, professionally taught, open to beginners and to dancers with more experience. No partner is required. Refreshments. (Fee not determined at time of printing.)

Tuesday, January 28

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: 792-7808 or julia@astro.caltech.edu.

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

Frank Capra Film Festival: *Mr. Smith Goes to Washington*
Beckman Auditorium, 7:30 p.m.—This work by Caltech alumnus Frank Capra (BS 1918) tells the story of a naive man who is appointed to fill a vacancy in the U.S. Senate. His plans promptly collide with political corruption, but he doesn't back down. A panel discussion will follow the film. 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.

Women's Basketball
vs. Whittier College, 7:30 p.m.

Intermediate Jazz Dance Class
Braun Gym, multipurpose room, 9:30 p.m.—Intermediate jazz dance, taught by a professional instructor. No special clothing or shoes are required. Open to all who have a valid gym membership.

Wednesday, January 29

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: 355-3874 or lcklavins@hotmail.com.

Watch Your Back! Back Safety Training
118 Keith Spalding Building, 3 p.m.—This course includes a brief discussion on back anatomy and proper methods and realistic approaches to handling and moving materials. There will be a video presentation and hands-on lifting. Space is limited. Please call 395-6727 or e-mail safety.training@caltech.edu to reserve a place.

Ballroom Dance Club
Winnett Lounge, 7:30 p.m.—West Coast swing, taught by an amateur instructor. No experience or partner is required. Fee: $1 per class. Refreshments.

Men's Basketball
vs. Pomona-Pitzer Colleges, 7:30 p.m.

Thursday, January 30

Career Day
Brown Gymnasium, 10:30 a.m. to 2:30 p.m.—This informal event provides undergraduates, grad students, and postdocs an opportunity to gather information about companies, speak with company representatives, and drop off résumés. This event is open to the entire Caltech community. Freshmen and sophomores are encouraged to attend.

Friday, January 31

Men's Tennis
vs. George Fox University, at Lewis & Clark College, Portland, Oregon, 3:30 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/.

Women's Basketball
at Occidental College, 7:30 p.m.

Caltech Student Chamber Ensembles
Dabney Lounge, 8 p.m.—Caltech students will present the third concert in their winter series of music for small ensembles. Today's program will include string quartets by Haydn and Grieg, and piano duets. Admission is free. A reception will follow the concert.

Saturday, February 1

Swimming and Diving
at Claremont-Mudd-Scripps, 11 a.m.

Men's Tennis
at Willamette College, Salem, Oregon, 12:30 p.m.

Beginning/Intermediate Ballet Class
Braun Gym, multipurpose room, 1 p.m.—A free class taught by experienced members of the Caltech Dance Troupe. All experience levels are invited. The first hour will be beginning/intermediate exercise at the barre, while the last half hour will be an intermediate floor exercise. No special clothing or shoes are required.

Stephen Wolfram Discusses *A New Kind of Science*
Beckman Auditorium, 1 to 4 p.m.—Stephen Wolfram, creator of Mathematica, author of *A New Kind of Science*, and CEO of Wolfram Research, Inc., will describe the ideas and discoveries behind his new book, their implications for various fields of science, and their personal and historical context. A panel discussion and question-and-answer session will follow the lecture. Admission is free. For information about Wolfram's book, go to www.wolframscience.com/qanda.

Baseball
vs. alumni, 2 p.m.

Men's Basketball
vs. University of La Verne, 7:30 p.m.

Caltech Student Chamber Ensembles
Dabney Lounge, 8 p.m.—Caltech students will present the fourth concert in their winter series of music for small ensembles. Today's program will include a string quartet by Beethoven and several baroque selections. Admission is free. A reception will follow the concert.

Sunday, February 2

Men's Tennis
at Lewis & Clark College, 9 a.m.

Lagerstrom Chamber Music Concert
Dabney Lounge, 3:30 p.m.—The Calder Quartet will perform. 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.

Monday, February 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.

Reel Women Series: *Because This is About Love*
Center for Student Services, second floor common space, noon to 1 p.m.—*Because This Is About Love: A Portrait of Gay and Lesbian Marriage* profiles five lesbian and gay couples from multicultural backgrounds, whose members have made a lifelong commitment to each other by going through a marriage ceremony. They tell their own stories of how they met, why they decided to marry, and how their family and friends responded. Bring your lunch. Drinks and dessert provided.

Ballroom Dance Club
Winnett Lounge, 7:30 p.m.—Salsa dancing, taught by a professional instructor. No experience or partner is required. Fee: $6 per class for students, $8 for nonstudents. Refreshments.

Ballroom Dance Class
Winnett Lounge, 9:30 p.m.—Cha-cha dance class, professionally taught, open to beginners and to dancers with more experience. No partner is required. Refreshments. (Fee not determined at time of printing.)

Tuesday, February 4

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: 792-7808 or julia@astro.caltech.edu.

Caltech Science Education Club Meeting
CAPSI House, 287 S. Hill, 5 p.m.—The topic, "Pathways to Certification," will be presented by a panel of representatives from area colleges and universities. They will share information about science teaching and answer questions regarding certification. Fill your stomach and open your mind. Free pizza and beverages. Reservations are required; call 395-3222 or e-mail claire@caltech.edu.

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

Women's Basketball
vs. Pomona-Pitzer Colleges, 7:30 p.m.

Voices of Vision Series
Beckman Auditorium, 8 p.m.—"What's the Color of Funny? Race, Society, and Comic Strips," Aaron McGruder, creator of "The Boondocks" comic strip.

Intermediate Jazz Dance Class
Braun Gym, multipurpose room, 9:30 p.m.—Intermediate jazz dance, taught by a professional instructor. No special clothing or shoes are required. Open to all who have a valid gym membership.

Wednesday, February 5

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: 355-3874 or lcklavins@hotmail.com.

Bloodborne Pathogen Training
118 Keith Spalding Building, 3 p.m.—This course, designed for individuals who are exposed to blood or other potentially infectious agents, presents information on preventing exposure to bloodborne pathogens, including hepatitis B and human immunodeficiency viruses. Requires registration; call 395-6727 or e-mail safety.training@caltech.edu.

Ballroom Dance Club
Winnett Lounge, 7:30 p.m.—West Coast swing, taught by an amateur instructor. No experience or partner is required. Fee: $1 per class. Refreshments.

Men's Basketball
at Occidental College, 7:30 p.m.

Friday, February 7

Men's Tennis
at Whittier College, 2 p.m.

Women's Tennis
vs. Whittier College, 2 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.

Women's Basketball
at Cal Lutheran University, 7:30 p.m.

An Evening with Tommy Lasorda
Beckman Auditorium, 8 p.m.—Tommy Lasorda's many roles in the Dodger organization as a player, scout, coach, manager, and executive have accounted for a 50-year career in America's favorite pastime. Lasorda will be interviewed by Tommy Hawkins, the Dodgers' vice president for communications. This event is free; no tickets are required. A gift of Lasorda memorabilia will be given to every member of the audience. Information: 395-4652, 1 (888) 2CALTECH, or events@caltech.edu. Individuals with a disability: 395-4688 (voice) or 395-3700 (TDD).

Saturday, February 8

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

Swimming and Diving
at Chapman University, 11 a.m.

Beginning/Intermediate Ballet Class
Braun Gym, multipurpose room, 1 p.m.—See Saturday, February 1, for details.

Sunday, February 9

Skeptics Society Lecture
Baxter Lecture Hall, 2 p.m.—"The Life and Death of Planet Earth: How the New Science of Astrobiology Charts the Ultimate Fate of Our World," Professor Peter Ward, department of earth and space sciences, and Professor Donald Brownlee, department of astronomy, University of Washington. Donation is $8 for nonmembers, $5 for members and non-Caltech students. Free to the Caltech/JPL community. Tickets and information: 794-3119 or skepticmag@aol.com. See the Skeptics Society web page at www.skeptic.com.

Men's Basketball
vs. Claremont-Mudd-Scripps, 7:30 p.m.

Princely Players
Beckman Auditorium, 8 p.m.—The eight-member ensemble performs a program of spirituals, work songs, hymns, and songs of freedom. Their selections include songs and poetry from the earliest sources of African American music in this country to the Civil War and the civil rights movement. Tickets and information: 395-4652, 1 (888) 2CALTECH, or events@caltech.edu. Individuals with a disability: 395-4688 (voice) or 395-3700 (TDD).

Corporate culture, *from page 1*

Camerer and his researchers have focused on the communication aspect of "codes"—in particular, slang—because they are easy to synthesize and measure in a lab. Examples of such codes include emergency-room jargon ("stat," "NPO"), used to communicate highly specialized information with precision and conciseness; the slang of teenagers and rappers ("whatever," "fuggedaboutit"); government acronyms; and academic language. The phrase "Does he drink the Kool-Aid?" is used at Microsoft as a measure of corporate loyalty, alluding to the cyanide-laced drink used in the 1978 Jonestown mass suicide.

Camerer's team observes experimental subjects as they create specialized languages in response to simulated situations. Subjects, paired up as "manager" and "employee," are separated by a partition and both are given a set of identical pictures of office scenes. In each round, the manager, who was given a certain sequence of pictures, must verbally communicate the order of the pictures as quickly as possible to the employee, who has a differently arranged set. The study's objective is for subjects to develop a common language to accurately identify pictures in the shortest time possible—resulting in a tacit, shared understanding resembling a simple form of corporate culture.

Like cultural practices, the internal language developed by the subjects is an important source of efficiency and also a source of potential conflict, as players using different codes will choose more slowly. Also, because the language arises through shared experience, it is likely to be idiosyncratic and to differ between "firms," even though each language may be equally efficient. "Good" cultural codes pick out a picture's special features, are brief, and are often memorable. For example, subjects described a certain scene variously as "cubicles," "headphones," and "telemarketers." In another picture, a businessman is gesturing with his hands outstretched. One group called this picture "Macarena," because the gesture resembled a move in the faddish 1990s dance.

Errors in judgment when large corporations merge can be colossal, as in the recent $40 billion loss suffered by culturally polarized Time-Warner and AOL. Quite possibly, market analysts—tightly focused on the additive value of the two company's assets—failed to predict inherent problems in marrying a traditional, vertically structured culture with one of youth, spontaneity, and lateral power distribution.

In one study of how conflicting cultures may cause problems, Camerer and Roberto Weber, of Carnegie Mellon University, conducted 20 rounds of tests on two pairs of subjects, each of whom alternated in the roles of manager and employee. Initially, the time to complete the task averaged 249 seconds, but by round 20 it had decreased to an average of 48 seconds. Next, the pairs were merged. A manager and one employee were retained from the "acquiring" firm, and one employee was kept from the "acquired" firm. The manager then attempted the same task as before, this time communicating with two employees, for 10 rounds. From the last premerger round to the first postmerger round, average completion times increased from 48 seconds to 130 seconds, showing that merging two firms led to persistent decreases in efficiency due to cultural differences and the difficulty of establishing a common language.

The impact of organizational culture on mergers can thus have profound real-world market implications, and Camerer would like to see a kind of test designed to help firms determine whether their cultures are compatible—perhaps avoiding the enormous losses in personnel, down time, and stock value recently seen in corporations formed by culture-blind mergers. The work he and his colleagues have done shows that merely calculating the sum value of merging lucrative companies does not automatically lead to business growth. Human organizations are influenced by human behavior, and cannot be simply and predictably added together.

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Singing women sought

The Arroyo Singers, a Pasadena-based women's chorus now in its 41st season, is currently seeking new members. All women who love to sing are invited to join; no voice training is required. Rehearsals are at 7:15 p.m. each Tuesday in Beckman Auditorium. The group covers a varied repertoire, ranging from medieval chants to patriotic melodies, and is planning a spring concert. For more information, call (323) 256-5332 or (626) 798-5855.

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Embryos, *from page 1*

shear force might be exploited in the treatment of human heart disease. Because diseases such as congestive heart failure constrict blood flow, causing hearts to enlarge, a better understanding of the mechanisms of blood flow might lead to advanced treatments to counteract enlargement.

Also, Hove says, a better understanding of genetic factors involving blood flow in the heart—a future goal of the team's research—could eventually be used in early surgical correction of, or even genetic intervention in, prenatal heart disease.

For the study, Hove, a bioengineer, and Morteza Gharib, Liepmann Professor of Aeronautics and Bioengineering, teamed with postdoctoral scholar Reinhard Köster, the paper's other lead author, and Rosen Professor of Biology Scott Fraser. A specialist on fluid flow, Gharib has worked on heart circulation in the past, and Fraser is a leading authority on imaging cellular development in embryos—making the study an interdisciplinary marriage of engineering, biology, and optics.

"Our research shows that the shape of the heart can be changed during the embryonic stage," says Hove. "The results invite us to consider whether this can be related to the roots of heart failure and heart disease."

The researchers focused on zebrafish because the one-millimeter eggs and the embryos inside are nearly transparent. Adding a special chemical to further block pigment formation, the team was able to perform a noninvasive, in vivo "optical dissection" using confocal microscopy. The technique allows two-dimensional imaging of a layer of tissue; images can also be "stacked" for a three-dimensional reconstruction.

Concentrating on two groups of embryos—one at 36 hours after fertilization and the other at about four days—the team found that interfering with the blood flow, using carefully placed beads, had a profound effect on heart development. When shear force was reduced by 90 percent, the tiny hearts neither formed valves nor "looped" (formed outflow tracks) properly.

Because early embryonic heart development is thought to proceed through several nearly identical stages in all vertebrates, the researchers say the effect should also hold true for humans. In effect, the study demonstrates that shear force should also fundamentally influence the human heart's structural formation.

The team's next step is to attempt to regulate shear-force restriction with new techniques to see how slight variations affect structural development, and to look at how gene expression is involved in embryonic heart development. "What we learn will give us directions to go and questions to ask about other vertebrates, particularly human beings," Hove says.

Graduate students in bioengineering Gabriel Acevedo-Bolton and Arian Forouhar also contributed to the study, which is available at www.nature.com/nature/links/030109/030109-1.html. Movies and figures can be viewed at http://bicsnap1.caltech.edu/heart/start.htm.

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News extras

Pasadena mayor Bill Bogaard presented the annual State of the City address this month in Ramo Auditorium. The Caltech Chamber Singers provided entertainment for the event, which was televised live on KPAS, channel 55, and will replay throughout the month.

Tom Capra, son of film director and Caltech alum Frank Capra (class of 1918), took part in a panel discussion following the showing of *Mr. Deeds Goes to Town*, which began the Frank Capra Film Festival last week.

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