

# The California Tech

Volume CVII, Number 3 Pasadena, California OCTOBER 10, 2005

By ADAM CRAIG

Primm, Nevada, October 8, 2005, around 11:30AM Alice, the 2005 Sportsmobile 4WD successor to last year's Bob, had completed 8.3 miles of grueling desert driving, easily avoiding obstacles and handily navigating the tortuous course. Team Caltech's dedicated band of scruffy-chinned CS, ME, EE, and CDS students had taken great pains to strengthen and refine Alice's path-following module in order to avoid a repeat of last year's mishap, in which Bob strayed off course, plowed through a barbed wire fence, then entangled his rear axle in another segment of the barbed wire fence upon reentry. But tragedy struck when, a mere 124 miles from victory, Alice passed under a power line, which interfered with the GPS reception. Computing from the mangled signal that she had gone astray, Alice veered to the right, heading at full speed for the edge of the corridor. If the obstacle avoidance software detected the concrete barriers lining the road, it was to little avail, as the high-priority directive to return

to what Alice had erroneously computed to be the track sent her crashing through the barricade, crushing concrete blocks under her robust Ford E350 frame and swiftly mounting the sand berm beyond them. For a few breathless moments, it looked as if the reporters gathered in the press stands would be next to share the concrete blocks' fate, as the wayward robot truck barreled toward the huddled media masses. But the quick reflexes of the staff at the DARPA command center averted catastrophe by guiding their fingers to the emergency remote disable switch, bringing Alice to a grinding halt before she could plow through the startled crowd. Even though the DARPA Grand Challenge is over, Alice, the product of two-and-a-half years of data gathering, algorithm and circuit design, coding, debugging, soldering, wire crimping, drilling, bolting, welding, and meetings that routinely ran an hour or so late, will continue her service to Caltech as a testbed for future robotics research.



Alice plows through several concrete barriers after experiencing a GPS error.

# Robot Runs Baltimore to Retire as Caltech President

By JILL PERRY

David Baltimore, the seventh president of the California Institute of Technology, will retire on June 30, 2006, after nearly nine years in the post. He will remain at the Institute, where he intends to focus on his scientific work and teaching.

"This is not a decision that I have made easily," Baltimore announced to the Caltech trustees, faculty, staff, and students, "but I am convinced that the interests of the Institute will be best served by a presidential transition at this particular time in its history. By next summer we will be well along in the process of implementing our plans to strengthen the financial foundation of the Institute. Although our \$1.4 billion campaign is not scheduled for completion until the end of 2007, we have made remarkable progress, and successful attainment of its audacious goals will remain my highest priority. As these important endeavors near their final stages, it will be time for the Institute to once again turn to the future, guided most effectively by the revitalizing vision and leadership of a new president."

He has agreed to remain in the position until a successor is named.

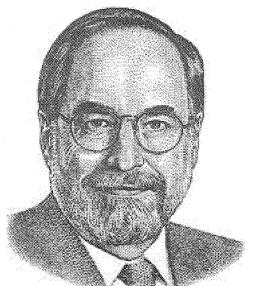
"David Baltimore's articulate advocacy of the Institute's mission has played a huge role in raising the public's awareness of Caltech as a unique national treasure. Our task ahead is to find our next president to carry

this vision of excellence into the future," said Kent Kresa, the chairman of the Caltech Board of Trustees.

Baltimore, 67, assumed the presidency on October 15, 1997. His tenure saw many significant events at Caltech. Early on, he oversaw the completion of a fund-raising initiative for the biological sciences, marked by the construction and dedication of the Broad Center for the Biological Sciences. He launched the current

\$1.4 billion capital campaign, which has included receipt of the largest gift to higher education, \$600 million from Gordon and Betty Moore and the Gordon and Betty Moore Foundation. The campaign still has two years to run, but has already raised almost \$1.1 billion. An important aspect of Caltech is its stewardship of the Jet Propulsion Laboratory, supported by NASA. Baltimore's presidency has seen many spectacular JPL successes, notably the Mars Exploration Rovers, as well as the appointment of a new director, Dr. Charles Elachi.

"David Baltimore will go down in history as not only a great scientist, but also as one of the great presidents of Caltech," said Eli Broad, a trustee of, and major donor to, the Institute. "It is rare to find someone of his



intelligence, integrity, and leadership who can relate so well to people both within and outside the world of science. It was David who inspired Edye and me to become interested in science. We had no background in the field, but he made us feel comfortable. We are fortunate that he will continue his research at Caltech."

Other events during his term have been Caltech's acquisition of the former St. Luke Medical Center in northeast Pasadena; the funding of the design-development phase of the Thirty Meter Telescope; and the establishment of the Information Science and Technology (IST) initiative. Baltimore championed contemporary architecture, chosing James Freed of Pei,

Continued on Page 8, Column 1

## Japanese Scientists Shoot Giant Squid

Deep beneath the ocean's surface lurks a slimy, tentacled beast, a monster known to oldtime sailors and three-year-olds alike. Dozens of grasping suckers adorn a forest of slippery tentacles, and in the center of each sucker lies a tooth to slit the skin of anything unlucky enough to fall within the monster's grasp. A black beak clacks greedily from the base of the writhing tentacles while eyes the size of dinner plates stare blankly out into the salty darkness of the sea.

Such was the beast two Japanese scientists captured alive on film for the first time, as reported a week ago in the Proceedings of the Royal Society B.

Many have tried in vain to photograph a live giant squid, and most marine biologists assumed the first pictures would come through a lucky accident.

In spite of this prevailing nonchalance, several small groups of researchers embarked on their own expeditions, hoping to catch Architeuthis, the giant squid, in action. Tsunemi Kubodera of the Natural Science Museum in Tokyo and Kyoichi Mori of the Ogasawara Whale Watching Association headed one such group, and, one cold morning in the North Pacific Ocean, their efforts paid off when a squid took the bait.

Their trap was elegantly simple. A long-line dangling below the boat held the necessary equipment. A depth recorder and camera hung above a weighted jig, a nest of hooks and weights to steady the line, and below that drifted the bait, a common Japanese squid and some chopped shrimp.

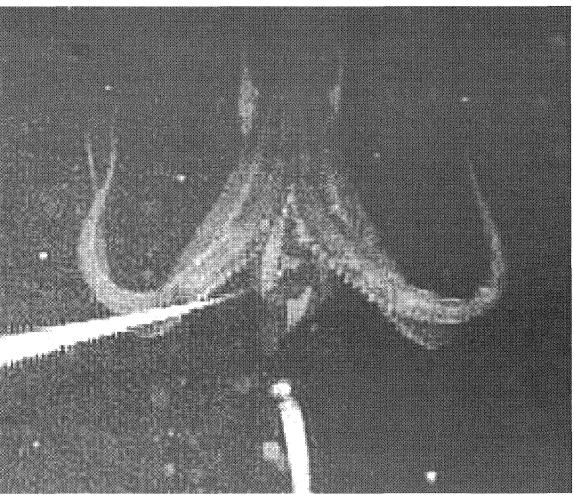
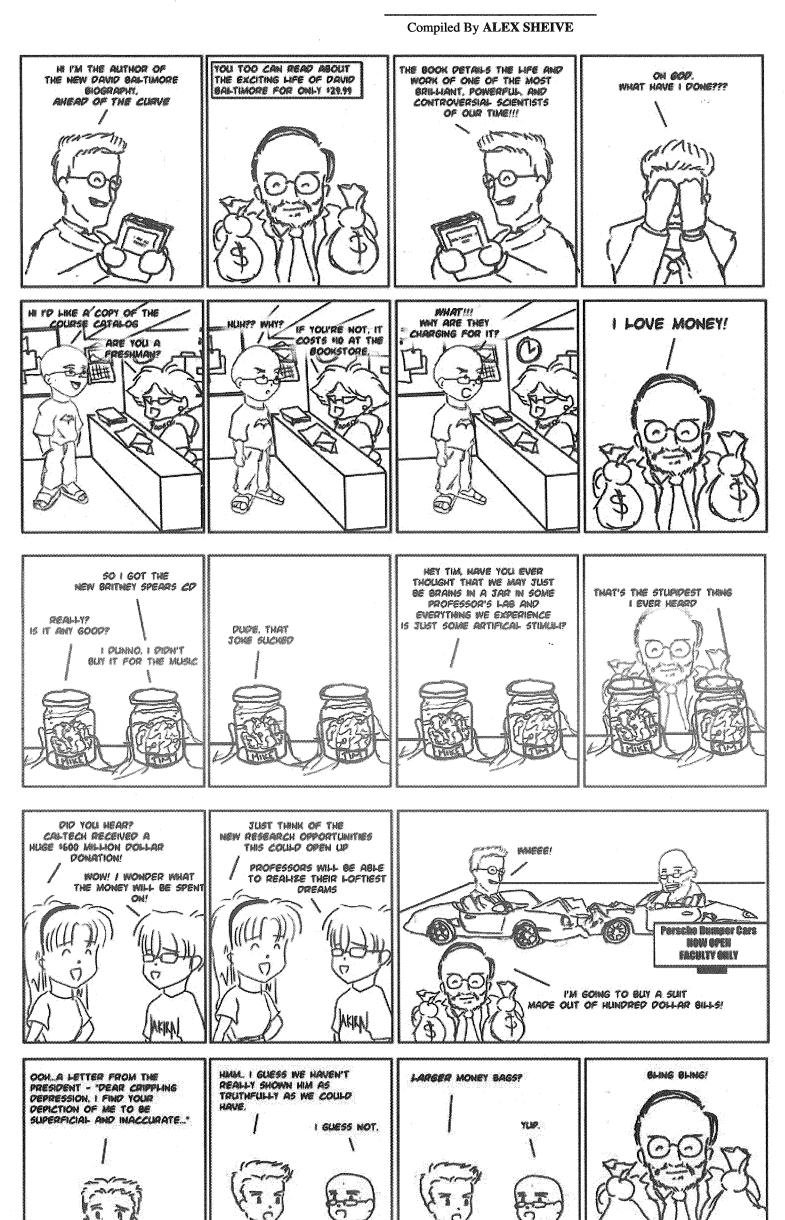


Photo courtesy of nationalgeographic.com

A live giant squid (roughly 25 feet long) attacks a baited fishing line 2,950 feet beneath the North Pacific Ocean in Japanese waters.

Continued on Page 8, Column 4

# The Crippling Impression of David Baltimore



He may have only been drawn once, but David Baltimore appeared in more Crippling Depression comics than any other real person, save the authors. The comic's portrayal of Baltimore as the evil mastermind of the administration represented the underlying student need to put a single face behind the looming concerns over shrinking freedoms and increasing costs.

It is follows naturally that Balitmore's retirement has elicited cries of joy from the student body. Still, few students could name a reason to dislike him, save the fact that he holds very large bags of money or maybe that he looks like the bad guy from X-Men 2.

One of the most influential biologists alive today had to put up with being called "D-Balls" or with screams of "NERD!" when he rode his Segway around campus. To remind our readers of the humor and absurdity of the situation, I have reprinted the Depressions Crippling that featured our soon-tobe-former President, save for one, which required context.

The wicked witch is dead. Quick, someone get his shoes! Those look expensive.



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# Beck: Guero (2005)

By CINDY KO

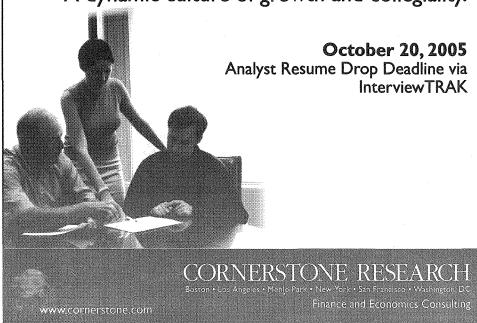
Beck Hansen has outdone himself. After starting a family and a three-year gap since his last album, he has come out with one of his most poignant records to date. Many critics had their beef with Sea Change (2002) being too depressing and melancholy for his technopop reputation. Fans and critics hoped that he would stop being so depressed, but it didn't seem to make any difference. Beck showed up at Coachella Music Festival 2004 as a surprise guest, playing an all-acoustic set with none of his signature jangly, hyper tunes. Around the same time, he recorded the despondent track, "Everybody's Gotta Learn Sometime" for the film Eternal Sunshine of the Spotless Mind (2004). By this time, most peo-

ple had figured that the days of Mellow Gold and Midnight Vultures were long gone and Sad Beck was here to stay. But then again, how easy is it to pin down Beck Hansen? He has the extraordinary talent of being able to experiment with new ideas and motifs, changing his style considerably from album to album. And he has proven so. Since the days of Sea Change, Beck morphed

into a new beast-- wild and energetic, sounding better than ever. Guero, which is a slang term in Spanish that refers to a blonde or fair-haired person, is upbeat and exciting, with catchy radio singles like, "E-Pro." Truth be told, any one of the tracks could easily be a hit single or a dance club staple. Beck returns to his techno dance roots and playfully raps in Spanish while keeping his beats steady and true. Guero is a crowd pleaser from beginning to end, making it clear that Beck is a magician, doing what he does best. A tour of the US followed the release of this album this summer, and I was lucky enough to see him in concert with tourmates, Le Tigre. I was blown away by his performance; if there's anything better than listening to Guero, it's listening to Beck perform it live. Despite his guero exterior, the man has moves. He never quit through an hour and a half long set, keeping the crowd excited and engaged. At one point, his band had their dinner out onstage while Beck played a short acoustic set. Immediately afterward, his band joined him on the next song, playing percussion and rhythm on their utensils and dinnerware. It was pretty amazing. By far, one of the most memorable performances I have ever seen. Beck's wealth of talent and ongoing creativity is what makes him an already legendary musician of his time. The only thing I have left to say about Beck can be summed up in two words--"Hell, yes."

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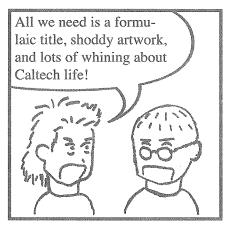
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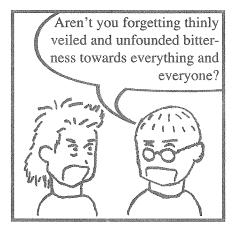
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#### Adjective Noun By Asian Student X



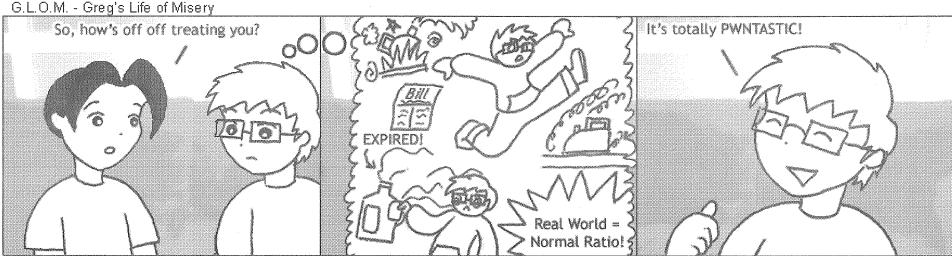




Oh, and make sure the comic isn't actually as entertaining or funny as Crippling Depression<sup>©</sup>...

By Ben Olsen

[Layout editor's note: Thank you Ben Olsen]



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By Nathan Lau

		1	2	3	4		5	6	7	
CROSSWORD BY Cliff Chang	8						9			10
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	23	24				25		26		
	27						28			
	29					30				
		31				32				

#### Across

- 1. Tide
- 5. Segment of a play
- 8. A laundry cycle
- 9. Famous Armstrong
- 11. Boy Scouts do this on the left
- 13. Vigor's cousin
- 14. With NaCl
- 15. Begged
- 17. \_\_\_ polloi
- 18. Record
- 20. CIT courtship ritual
- 23. Machine with 2 pulleys
- 26. Aisle saying
- 27. An experienced car?
- 29. Look, in Seville
- 30. Borscht base
- 31. Mogul Turner
- 32. Purple root

#### Down

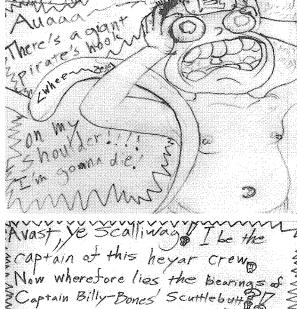
- 1. Cicero's nothing
- 2. Porcelain china alternative
- 3. Question
- 4. Goes number 1
- 5. Not digital
- 6. 10 cc
- 7. Big name in detergent
- 8. Invitation acronym
- 10. Trip-giver
- 12. a sound of scoffing
- 16. Thingamajig
- 19. Obtained
- 21. Shelley's "
- the West Wind"
- 22. Trailer park?
- 23. Equip
- 24. Spring 2005 RF victim
- 25. Owing money (with
- 28. Red or Black

Answers on facing page

#### We Like Coquettish

Kalitech Bread Life

by Adam Craig



Answer me afore I keel-haulyer



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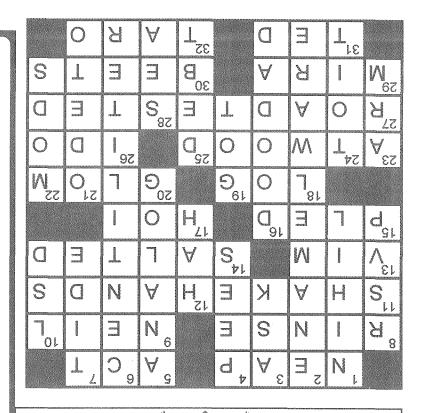
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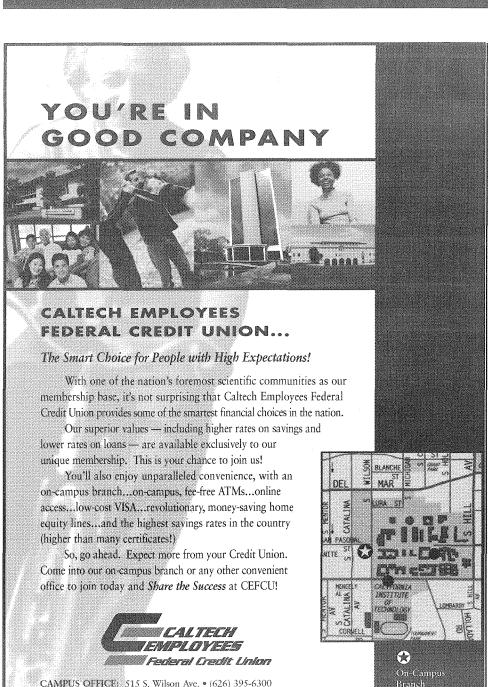




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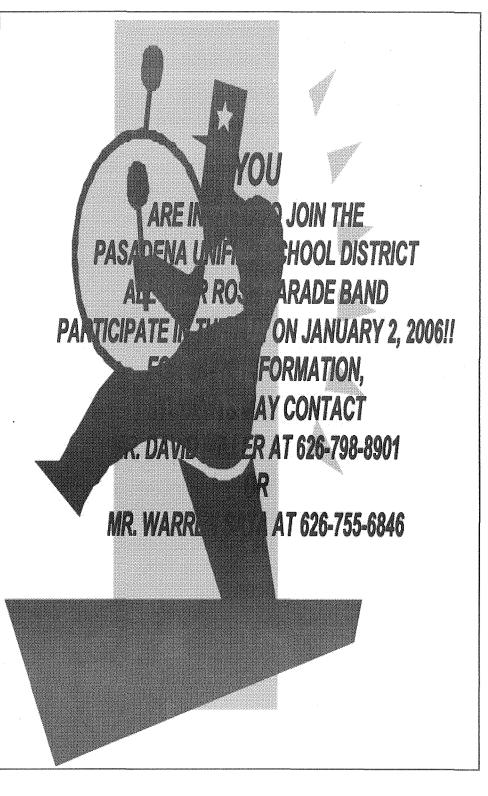


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#### Irrational Exuberance









pretty happy though.

zouen@caltech.edu

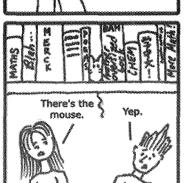
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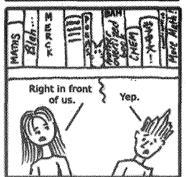
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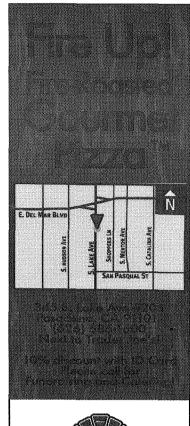
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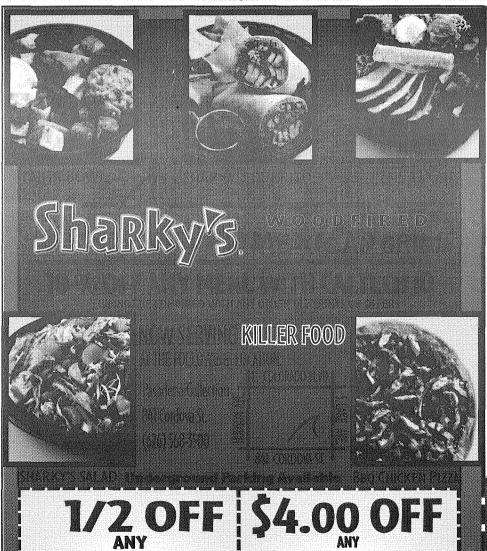


Today's Irrational Exuberance was inspired by actual events. The mouse was not harmed and eventually left the room. We think. The resident cat seemed



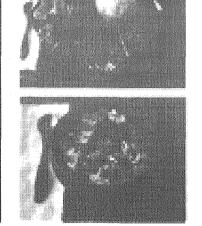






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## Baltimore Steps Down

Continued from Page 1

Cobb, Freed for the Broad Center, Thom Mayne of Morphosis for the new Cahill Center for Astronomy and Astrophysics, and Rem Koolhaas for the new Walter and Leonore Annenberg Center for Information Science and Technology. The latter two buildings are still in the design phase. Baltimore worked toward increasing diversity at Caltech, particularly by bringing more women into administrative roles. He also was concerned about the quality of undergraduate life, appointing the first full-time vice president for student affairs and starting a \$3 million fund for enhancing student life. During the last year, an important activity for him has been his membership on the Independent Citizens Oversight Committee for the California stem cell initiative.

"David Baltimore is an incisive and articulate leader who has strengthened Caltech's core commitments to excellence in research and teaching and has led several initiatives that have ensured promising avenues of research can be pursued at the Institute," said Paul Jennings, Caltech's provost. In a written announcement to the campus and its trustees, Baltimore said, "It has been a privilege to serve as president of Caltech and a pleasure to work with the dedicated and remarkable Caltech faculty, staff, students, trustees, and alumni. The administration in place at Caltech is an extraordinary group, and I will retire with full confidence in their abilities to effect a smooth transition. During my time in the president's office, I have worked to keep Caltech the unique and highly effective university that was imagined into existence by George Ellery Hale almost 100 years ago. Its dedication to excellence has been undiminished, requiring that it continually be in flux, reaching for the altering frontiers of knowledge. The great gift from Gordon and Betty Moore has provided the resources for maintaining our momentum and was truly a defining event of my time as Caltech's president."

Baltimore will remain at Caltech as a professor of biology. In June he was awarded a grant of \$13.9 million by the Grand Challenges in Global Health initiative for his proposal "Engineering Immunity Against HIV and Other Dangerous Pathogens," which promises to address the challenge of creating immunological methods to deal with chronic diseases. This grant was awarded by the Bill & Melinda Gates Foundation.

"David has been a wonderful Caltech president," said Caltech faculty chair Henry Lester, the Bren Professor of Biology. "His energy, articulate intelligence, and vision have resulted in a stronger, more interesting, and more diverse Caltech. Speaking also as a Caltech biologist, I'm delighted that he will remain on campus to contribute to our research and teaching programs."

Baltimore, who received a Nobel Prize for his work on the genetic mechanisms of vi-

ruses in 1975 at the age of 37, has contributed widely to the understanding of cancer, AIDS, and the molecular basis of the immune response. He has continued to operate his research lab while president and has announced many important findings while at Caltech, including establishing a new methodology to help fight cancer, developing a new gene therapy that is highly effective in preventing HIV from infecting individual cells in the immune system, and creating a new methodology for producing transgenic mice. He has also joined with others in proposing a new global effort to create an HIV vaccine. He received the National Medal of Science in 1999 from President Bill Clinton and the Warren Alpert Foundation Scientific Prize in 2001 for pioneering work leading to cancer therapy.

Not only has Baltimore been prolific in writing about his findings in scientific journals, but he also raised Caltech's visibility by contributing opinion pieces to general interest media on such subjects as the value of stem cell research, the unnecessary public panic that arose during the SARS epidemic, science research under the Bush administration, and maintaining the scientific workforce in the U.S.

"Throughout my years as a Caltech trustee, I have been repeatedly impressed by David's skill at communicating the importance of Caltech to a wide range of constituencies, from the scientific community to potential donors to readers of daily newspapers," said Kresa, the chairman of the Caltech Board of Trustees.

Baltimore has several outstanding administrative and public policy achievements to his credit. In the mid-1970s, he played an important role in creating a consensus on national science policy regarding recombinant DNA research. He served as founding director of the Whitehead Institute for Biomedical Research at MIT from 1982 until 1990, and was president of Rockefeller University in 1990-91. An early advocate of federal AIDS research, he cochaired the 1986 National Academy of Sciences mittee on a National Strategy for AIDS and was appointed in 1996 to head the National Institutes of Health AIDS Vaccine Research Committee.

Feynman Professor and Professor of Theoretical Physics Kip Thorne, who chaired the faculty search committee that selected Baltimore, feels Baltimore has accomplished what the search committee hoped he would. "We attracted David to Caltech to provide leadership in a period of change-changing relations to the federal government, changing ties to the private sector, and a growth in biological sciences at Caltechwhile maintaining our traditional strengths. He has led us through this superbly well, and has been a remarkable intellectual force on campus. His presidential shoes will be hard to fill, but I'm tremendously pleased he will remain as a professor, liberated to contribute more strongly to the intellectual life of the Caltech community," Thorne said.

Walter Weisman, trustee chairman of the Caltech capital campaign, has worked closely with Baltimore since its kickoff in 2002, and is pleased with the impact Baltimore has had. "David Baltimore has made an enormous contribution to our campaign success. I am delighted that he will continue to assist the Institute with the campaign as he moves to full-time research. His legacy at Caltech will be felt for years to come, thanks in no small part to his fund-raising achievements as president of the Institute."

Gordon Moore-a Caltech alumnus who was trustee chairman when Baltimore was hiredsaid, "David's leadership over the last nine years has significantly strengthened Caltech in many important ways. His impact will be felt for decades."

Ben Rosen, also an alumnus and former trustee chairman, said, "During his years of leadership at Caltech, David Baltimore elevated the already considerable reputation and strengths of the Institute. The faculty is stronger than it has ever been. The students are smarter, more diverse, and better rounded. The facilities have been substantially augmented to meet the growing needs of leading-edge research. JPL has achieved triumph after triumph. And the ambitious capital campaign that began during his period in office, and led by his energetic fund-raising skills, will assure that future Caltech needs are met and our goals achieved. Sometime next year, David will begin doing research full time in his biology lab, and a new president will lead Caltech. But because David will remain on campus, we'll still be lucky enough to share with him his myriad interests outside of science, a small sample of which would include art, fly-fishing, music, architecture, travel, literature, and politics."

Caltech's Board of Trustees will immediately initiate the search process for a new president

Baltimore is the seventh person to lead "modern day" Caltech, his predecessors being James A. B. Scherer, Robert A. Millikan, Lee A. Du-Bridge, Harold Brown, Marvin L. Goldberger, and Thomas E. Everhart.

### Did You See that Squid? Yeah, it was pretty big...

Continued from Page 1

One year ago on September 30, a giant squid caught sight of the long-line and snatched at the bait, but instead of a meal it got a surprise when one of its two eighteen-foot tentacles caught on the jig. The giant squid remained stuck to the line for a surprising four hours, allowing Kubodera and Mori to take over five hundred and fifty pictures of the uncommon animal, but the squid finally managed to free itself when its tentacle snapped in two. The giant squid escaped into the ocean, leaving behind both physical and photographic evidence of its visit.

The severed tentacle was still whipping around when Mori and Kubodera hauled it on board the deck of their boat. In its last motive moments, the suckers grasped the ship's deck and Kubodera's hand. "It wasn't as strong as I expected. It felt sticky," he told a BBC source.

On news sites across the web, the pictures of the giant squid delighted squid fans and casual fish-watchers alike, recalling Jules Verne's 20,000 Leagues Under the Sea and perhaps a mythical tale or two. But what do Mori and Kubodera's fellow marine biologists think of their success?

"I think it's wonderful that we've finally got a picture of a living giant squid. I thought it would only be a matter of time before someone got pictures of Architeuthis," Richard Ellis, a research associate at the American Museum of Natural History, told a National Geographic source. Many others share Ellis' opinion. The roughly fifty sightings of the giant squid and handful of bodies that have washed up on beaches around the world this century lead most scientists to assume photographic evidence of a living squid to be inevitable. Nevertheless, for scientists who have spent nearly a decade searching for Architeuthis, the news is a relief.

But these pictures do not close the book on the mysteries of the giant, squishy, ocean-going predators, for the colossal squid, cousin to the giant squid, is still out in the murky depths, awaiting photography. Whereas the largest giant squids measure about fifty-five feet, nobody knows how large the colossal squid can grow, although estimates range from fifty to seventy feet long. Whatever the length, scientists agree that the colossal squid is certainly larger in weight and size than the giant squid, making it a far more formidable preda-

By this time next year, we may be watching "Beak" instead of "Jaws." [editor's note: a *Jaws*style movie about a giant squid, called *the Beast*, does already exist.]

For more information about giant squid, please see the following resources: http://news.nationalgeographic.com/news/2005/09/0927\_050927\_giant\_squid.html http://archives.cnn.com/2002/TECH/science/07/22/australia.squid/ http://www.cnn.com/2005/WORLD/asiapcf/09/27/japan.squid.ap/index.html http://news.nationalgeographic.com/news/2003/04/0423\_030423\_seamonsters.html http://www.tonmo.com/science/public/giantsquidfacts.php http://news.bbc.co.uk/2/hi/science/nature/4288772.stm http://www.usforacle.com/vnews/display.v/ART/2004/02/16/4030cf82b1581

# Caltech NCAA Athletics Brings the Action Close to Home

The following althletic events will take place at Caltech's facilities this week. Come out and support your Beavers!

Men's Water Polo vs. Whittier Fri. 10/15 @ 11am

Men's Soccer vs. Pomona-Pitzer Wed. 10/12 @ 4pm

Women's Volleyball vs. La Sierra Tue. 10/11 @ 7:30 pm

For more information, go to www.athletics.caltech.edu

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