



D. Korta/The California Tech

Jonathan So '05 looks on as Humanities Professor Cathy Jurca lays answers questions posed by concerned students during the Humanities and Social Sciences session of the SFC last Wednesday.

## Touching on Full Slate of Issues, SFC Leaves Students Satisfied

By JENNY IOFINOVA and ARTHI SRINIVASAN

This past Wednesday students rejoiced as classes were cancelled for the Student-Faculty Conference. The SFC consisted of presentations by committees that spanned all the departments as well as two dealing with broader concerns: the Core Curriculum and the Student Morale and Workload committees. After the members of each committee spent several months conducting surveys and collecting input from students, faculty, and the administration, each committee presented their findings and held a subsequent question-and-answer session. Overall, the organizers seemed satisfied with the reception their work received.

The first committee to present their findings was the Core Curriculum Committee, chaired by Kathryn Hsu '03. The committee met to determine whether core as it is now is appropriate for all the majors represented at Caltech, and presented arguments for special remedial sections of chemistry and biology, CS 1 and CS 11, and the Core 1 writing requirement. They decided not to pursue topics which would require more than 10 weeks to change, such as whether the math and physics requirements were appropriate for all majors.

Hsu commented, "I was surprised about the lack of response about Core 1ab, particularly the proposed change to turn it into a one term course; preliminary polling done by ASCIT's Academic and Research Committee (ARC) has indicated that most students are in favor of this change." Regarding the discussion on creating special chemistry and biology sections, she said, "I felt that the push for special remedial sections was well received, particularly in chemistry, which I was pleased about."

The Electrical Engineering, Electrical and Computer Engineering and Computer Science committee was chaired by Jim Pugh '03. Notably, the faculty present on the committee outlined the proposed requirements for the forthcoming CS major, as well as confirmed plans to abandon ECE as an un-

dergraduate major, proposing that interested students should instead major in EE and/or CS. Pugh remarked, "I thought that people didn't seem to disagree much with the findings presented, or at least didn't voice their disagreement." He expressed some concern with the clarity of the presentation, stating, "I'm hoping that the written publication of our findings will clarify things." He further noted that some problems can only be discussed by students and changes must come from the administration. Pugh commented, "In these cases, we can only recommend things to be done, and hope our suggestions are taken."

During the presentation by the Student Morale and Workload Committee, a desire was expressed that more departments be run like

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## Turn From 'Docility' Evident Amidst Faculty Turnout 'Highest in History'

By MATTHEW WALKER

"Where have they gone?" asked President David Baltimore about Caltech's trademark pranks during Wednesday's Student Faculty Conference. Well, if they were gone, the pranks are back, as Dr. Baltimore found Friday when he arrived at his office to find that the entrance had been walled over with a sign reading "Due to budget cuts: President and Provost Offices have been moved." Only a small file cabinet for a desk remained. If all the questions posed at the Conference are answered this quickly, it will certainly be considered a

success.

In an exciting day of presentations and discussion, the Student Faculty Conference addressed many issues, with committees focusing on all options as well as Core Curriculum and Workload and Student Morale. Each committee had spent months collecting comments and conducting surveys in their respective focus areas, culminating in the presentation of a wide array of student opinions regarding academics at the Conference. Suggestions were then presented to solve the problems that were found.

The two major sessions of the day were the Core Curriculum and

Workload and Student Morale committees, which met in the morning. Major concerns included whether the administration understood student stress and if there was a subtle attempt to pacify students by attacking house traditions. Two proposals that were met with support were Institute sponsored sessions on how to teach for professors and the addition of a Dean of Undergraduate Studies. Both President Baltimore and Provost Steve Koonin stood to voice their and the administration's support for the new position.

Members of the administration who attended the conference were generally happy with the outcome. Associate Dean Barbara Green complimented the student presentations and added that there were "more faculty than in history." Dr. Koonin commented that the conference was "more productive

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## Cultural Show, Food Fair Celebrate Broad Diversity

By TAMMY MA

Caltech's International Week, which took place April 13th-18th was wrapped up last Friday with the Annual International Food Fair and Cultural Show.

The festivities, which took place in the Avery Courtyard, began at 4 pm with 17 Caltech student clubs hosting tables loaded with cuisines. Moving from table to table, those present were transported to a variety of different cultures and cuisines, and were treated to delicious aromas. Among the clubs present were the Swedish Club, the Korean Student Association, the Association of Romanians at Caltech, the Caltech C, the Turkish Student Association, the Singaporean Society, and Club Latino.

For just three dollars, the hungry attendee was able to sample such foods as Zenzai, Mici, Tourtiere, Crepes, Ba Bao Fan, and Kimbab. The German Club was serving German bread, which they described as harder than normal bread, with more grains; landjaeger, an air dried German salami; leberkaese, a sausage; liver pate, and potato salad. Peter Oelschlaeger, a postdoc working behind the German Club

table, described German food as being more unhealthy because there are more fats, but at the same time most of it is homemade, and therefore has less preservatives.

Over at the Organization of Associated Students from the Indian Subcontinent table, the hungry student could try Pulao, rice with mixed vegetables and one of the main staples of the Indian people. Curry with chickpeas, a crowd favorite, was also being served. Harish Bhat, a third year graduate student, and vice president of the OASIS club, described a chickpea flour snack cake as something "you can't get in a lot of restaurants, only homemade. It derives from Gujarat, one of the western states. Usually, it is a snack people have in the afternoon with tea." The last cuisine dished up at this booth was Thandal, an almond flavored milk drink that is popular in the summer because of its cooling effect.

While the attendees ate, they were treated to a rock/punk band that sang in Chinese! Said Corinna Zygorakis '06 of the event, "The food is really diverse, really interesting, really good. The entertainment

## JPL SCIENTIST DETAILS NEW DATA ON MARS

TERRAIN BROUGHT TO LIGHT

By JON FOSTER

The moon, science assures us, is not made of cheese. Mars, on the other hand, is. The north is composed of cottage cheese, while the south is covered with giant plains of swiss cheese.

The true explanation is less interesting. Water ice mixed with dust in the north produces a texture that looks like cottage cheese, and CO<sub>2</sub> ice subliming off the south causes the swiss-cheese effect. Even with a mundane explanation, the pictures remain just as tantalizing.

These, and a huge number of other alien terrain features, are brought to us courtesy of the Mars Global Surveyor (MGS), which has been in orbit around Mars since 1997. It boasts the distinction of having

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Members of The Caltech C perform a traditional Chinese dance in full costume. They were one of ten cultural performances at Friday's International Week Culture Show.

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# Committees Present Findings, Plans At Annual Student-Faculty Meeting

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the Geology and Planetary Sciences division, which exerts a lot of effort on fostering communication between the students and the faculty. Planetary Science major Jenny Fisher '05 was very content with her department. The department held four option meetings, which, according to Fisher, "gave us a chance to talk about issues in the department and get both student and professor feedback." She commented on the general satisfaction of GPS students with the department, attributing this to both its smaller size and to the fact that students are taken to lunch at the Athenaeum by the division chair and by various faculty to listen to student concerns in a more informal way.

Fisher chaired the Geology and Planetary Science Committee. The committee addressed scheduling conflicts, as well as improvements for Ge 109 and restructuring the curriculum for Ge 11 abc, a required sequence for Geology majors. Regarding the Ge 11 sequence, Fisher commented, "Because of the mixed reaction regarding changes in the 11 sequence, it is unlikely that we will propose anything drastic; however, we will certainly be proposing some change. More drastic changes will be discussed, with the caveat that a substantial fraction of students are not in favor, and that any change should be thoroughly investigated."

The committee on the E&AS option, chaired by Jessie Kneeland '03, discussed problems pertaining to the concentrations of ESE, CNS, CE and MS, as well as the E&AS option on a broader level. Kneeland commented that the E&AS survey had over 100 respondents, although far fewer actually attended the committee's presentation at the student faculty conference. She further noted that the committee "sparked some productive discussion regarding the reevaluation of the E&AS program, and it was particularly apparent that student and faculty perceptions of the E&AS option vary quite a bit." She added that "the involvement of students in the faculty committee to reevaluate the E&AS degree program could be the single most important thing that comes out of the work of this SFC committee."

Sarah Hendrickson '03, who chaired the ME/Aero committee, was also very pleased with her committee's work and its reception by the student body. According to her, "Most students seemed enthusiastic about the recommendations and many students have personally communicated to me their satisfaction with the committee's findings. The response by the faculty was a great deal more subdued, but still positive." She also noted that her committee was fortunate

in that there was a large number of faculty in attendance at the presentation. She also commented on her committee's work, noting that "a good deal of the comments at the conference focused on problems with one particular class (AM35). Although the class itself may have some problems, I think the discussion stemmed from the underlying poor state of teaching at Caltech."

Abel Bourbois '03, who chaired the Math/ACM committee, talked about the potential difficulties in enforcing some of his committee's recommendations. Many of the faculty and students expressed desires were for more faculty and more TA's for classes like MA 5, 108, and 109. According to Bourbois, there is currently insufficient funding to implement this change. He noted, however, that the department has gone a long way with such positive changes as implementing the MA 5 requirement for ACM majors.

Elizabeth Felnagle '03, who chaired the Humanities and Social Sciences Committee, expressed satisfaction with the presentation of the committee at the conference. "I think students appreciated our honest attempt to present the division in a fair light, without glossing over problems that we all know are there. Consequently, our findings were well-received, as were our recommendations for improving the HSS curriculum," she commented. Like many others, Felnagle expressed a desire for her committee's recommendations to travel up the chain towards implementation, although several proposed changes have already been implemented, including the search for more Psychology professors and the rewording of the catalog to make graduation requirements clearer. "I'm optimistic that many of the issues raised at this year's conference will be resolved long before next year's conference rolls around," she said.

The main organizer of the SFC was Basit Khan '03. As last year's ARC chair, he has been working for many months on the conference, and saw many improvements over last year's conference. He cited the fact that all of the committees, both department-specific, and the core curriculum and student morale committees, were formed well in advance and therefore had enough time to get sufficient student and faculty feedback, and investigate the issues in considerable depth.

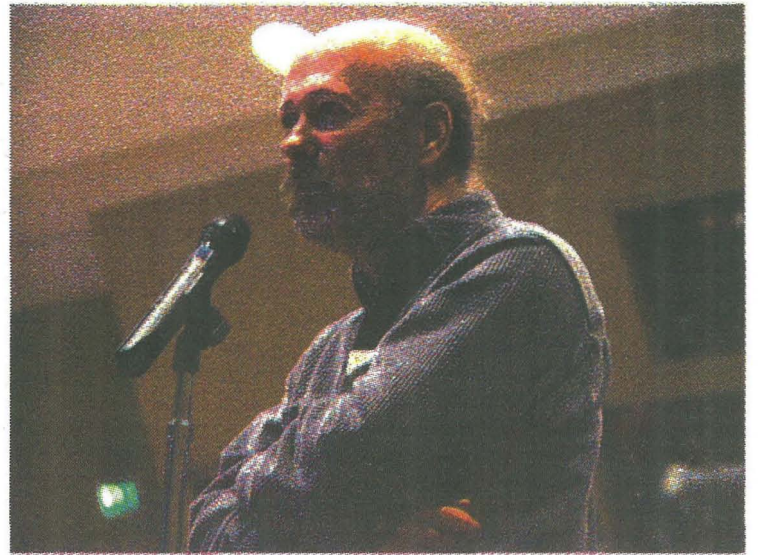
Khan commented, "The committees have since been able to make very concrete recommendations on several fronts and a clear roadmap has been laid out to continue their work through the ARC and other student bodies." He further noted that many of the changes discussed, such as the removal of CS 1 as

a prerequisite for CS 11, have already been implemented. "I am certain that one will see many more [changes] in the coming year," Khan said.

Most people involved with this year's conference agreed with Khan in noting a significant improvement over last year's conference, both in the way the committees were run, and in avoiding unforeseen administrative difficulties like those that were incurred last year. Ted Jou '03, the former ASCIT president, attributed this year's success to more planning and experience, commenting, "This year, we were able to start much earlier and use our prior experience to organize a conference that ran much more smoothly and was able to produce more concrete results."

He also commented that last year's conference was overly ambitious, but this year, each committee focused on more specific issues, allowing the committees to create change. He remarked that picking a focused theme for each student faculty conference focuses the committee's work, allowing more to get done. Asked about his wishes for next year, Jou replied, "If I were to pick a theme for the 2004 SFC, I would pick 'The Honor System.' Honor Code issues also came up during the Student Morale portion of this year's conference and is a recurring theme in surveys about student life."

Overall, the student faculty conference was seen as a success by both the members of the committee, as well as the students and faculty who attended. However, the difficult work of implementing the changes that each committee discussed still remains.



D. Kortal/The California Tech

Many who attended the SFC felt it had been a success and was a step in the right direction towards more open communication.

## Alumni Awards Honor Five Caltech Graduates

By JILL PERRY

An author, an inventor, an astronomer, a Mars researcher, and a computer pioneer will all be honored at the California Institute of Technology Distinguished Alumni Awards at 11 a.m. May 17 in Beckman Auditorium on the Caltech campus.

The Distinguished Alumni Award is the highest honor the Institute bestows upon an alumnus/a. It is in recognition of extraordinary achievement by Caltech graduates in business, community, and professional life. Nominations are made by a faculty and alumni committee and confirmed by the Board of Trustees. This award was initiated as a part of Caltech's 75th anniversary celebration in 1966.

The awards are presented at a ceremony during Caltech's Alumni Seminar Day. This annual event includes a variety of lectures and

presentations to alumni and friends by Caltech faculty, researchers, and students.

The Distinguished Alumni are Fernando J. Corbat '97 (B.S. '50, physics), James Edward Gunn (Ph.D. '66, astronomy and physics), Michael W. Hunkapiller (Ph.D. '74, chemistry), Alan Lightman (M.S. '73, Ph.D. '74, physics), and Michael Malin (Ph.D. '76, planetary science and geology).

Corbat is a professor emeritus in the electrical engineering and computer science department at MIT. He is known for his pioneering work on the design and development of multiple-access computer systems. He led the development of the Multiplexed Information and Computing Service (Multics), the precursor to today's Internet.

James Edward Gunn is the Eugene Higgins Professor of Astronomy at Princeton University Observatory. He was a deputy principal investigator on the Wide Field/Planetary Camera on the Hubble Space Telescope, served as the associate director of the Apache Point Observatory, and is a MacArthur Fellow.

Michael W. Hunkapiller is a senior vice president of Applera Corporation and president of Applied Biosystems Group. He was an inventor of the DNA Sequencer, the technology developed at Caltech that allowed the Human Genome Project to map and sequence the 3 billion base pairs of human DNA. He has also pioneered the development of automated systems for the analysis, synthesis, and

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Vice Provost Steven Koonin addresses issues about workload and student morale at last Wednesday's Student Faculty Conference. He feels that solutions need to be considered during this time of tension.

## Admin. Lauds 'Substance, Productivity' of Conference

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and substantive" than the last Student Faculty Conference. Vice President of Student Affairs Margo Marshak happily noted that it was "wonderful to get positive feedback from students on ideas considered by the administration," specifically remarking with pleasure on the student support for the Dean of Undergraduate Studies. Ms. Marshak added that many of the workload issues could be solved with the addition of this post.

Dr. Baltimore responded to student concerns by first declaring that "nobody wants a docile student body." Applauding organizers on their efforts, he went on to agree with many students that the size of the typical Caltech workload needs

to be examined, and that he would "love to see from the students a proposal for how you would like to live [their] lives."

Dr. Koonin added that "We should be considering solutions especially during this time of tension," referring to recent hostilities between students and the administration. The comment underscored the agreement between both parties that the problems need solving and that the Student Faculty Conference will be successful only if its recommendations are taken seriously. Health Educator Jane Curtis accentuated the point saying, "The important thing is to follow up on the conference."



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O.J. Carlton '03 poses a question during the Student Workload and Morale session of the SFC.

### The California Tech

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VOLUME CIV, NUMBER 23

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## Student Morale on the 'Fire Hoses of Hell'

### Dean Examines the Love-hate Relationship With the Caltech Workload

By JEAN-PAUL REVEL

Walking arm in arm...

For the last few months a recurring subject of conversation all over campus has been the planning for the Student Faculty Conference. Organizing Committees met, questionnaires were prepared, the data analyzed, committees met again, presentations were put together, committees met once again to review the material, all at an increasing pace as the date approached and so also rose the level of anxiety about how it would all come out, how good a turnout there would be, how much would be achieved.

Well, as most of you know, at least I hope most of you know, the date has come and the conference was held and it is now a few days after, when you read this. All went well, although it is too early to tell what sort of lasting legacy will come out of the conference. From my perspective, however, the tone of the conference, the words of the speakers, the attitude of the interlocutors, the level of the discussion, the civility of the encounters, all were good illustrations of how exchanges of ideas should take place. Impugning hidden aims, believing in antagonistic motives does not help to develop the confidence needed for progress to be made. Lashing out in cutting tones may gain a partisan audience but will not garner respect and facilitate discussions. To allow exploration of different points of view, it is necessary to show appropriate deference for the other person.

Now the true work begins, to fix what has been found wanting, to improve what has been found adequate. Some of the committees will not disband, even though the remnants of the lunchtime barbecue have been carried away by those among the ants who were not trampled by the hungry hordes of conference participants enjoying their al fresco. There is a feeling

of relief in the air, a release, a hope. So far as I know it has not happened yet, but as someone at the conference suggested, ASCIT President Tom Fletcher and Institute President Baltimore may some day walk out arm in arm. It is crucial to remember we are, all of us, striving to improve Caltech and the Caltech experience for our students.

One problem, of course, is that, what would make a better Caltech differs depending where you stand and what and to whom your responsibilities. What will make a better Caltech also depends on the time frame for achieving the lofty goal. The Administration needs to deal with the now, and also peer many years into the future, whereas the students' time frame is at most four years. What might be good for right now may not be appropriate for the next 20 years. And even if one could identify methods for solving all problems, one still needs to have the means to do so, and that's a major restraint on the best of intentions.

One of the central issues discussed at the Student/Faculty conference was the workload. We are known for a workload, which it turns out, can be insane, not just can be, is, is insane. It is so huge that it has been said to sometimes get in the way of learning, with too little time for things to sink in.

Of course, the prospect of being exposed to a fire hose of information, to be snowed under by tons of homework does not faze the incoming students. They have been queens and kings of their high schools. The prospect of lots of work does not scare anyone applying to Tech. They have reason to think they can take the challenge. This year the admitted class has mean SATs up in the 780s for Math (779 for Math on the SAT I and 787 for Math IIc) with other tests to match.

And that's how it has been for a long time. With such formidable prowess who should fear the hose?

Besides there is also a frisson of pride in being able to boast, well maybe not boast, but at least carry proudly a workload from hell. I quote from Jane Greenham's presentation at the Conference: "Huge workload, not much time to do anything fun. But this is what we came here for isn't it?"

Perhaps it is because that's what one hears about in the Dean's Office, but I had the impression that there was a lot of dissatisfaction with academics. So I was surprised that, in spite of all the grouching about professors who care little about teaching undergraduates, 70% of respondents to a survey undertaken by the Morale and Workload Committee were positive about their academic experience. 45% being somewhat and 25% very satisfied with their Caltech experience, and nearly 70% reporting that teaching was fair to good. I quote (ibid.) "It REALLY varies by the class; some are excellent in terms of content, teaching, workload, etc. Some are really bad. So it averages out..."

Of course those results, assuming that the respondents are like a random sample, mean that a third of the students are none too happy, and there needs to be some serious attention paid to undergraduate teaching. As reported in Judy Goodstein's book on "Millikan's School," Hale, one of the movers behind the transformation of the Throop Institute into Caltech, told the Trustees that they should not try to teach everything but should concentrate on doing "some one thing extremely well." It is advice that is often repeated when discussing the research done in the various divisions. Something needs to be done to make sure that we follow the same precepts in teaching. I hope this year's SF Conference will help to refocus efforts to make Caltech the very best in every way.

A bientot

## EARTH DAY



P. Dormiani/The California Tech

Students and Pasadena residents celebrate Earth Day at the annual Earth Day Fair. The event, held last Friday outside the Red Door Cafe, featured food, T-shirts, live music, and many booths set up by Caltech clubs and local environmentally-friendly organizations.

## Health Educator Update: Health Fair, Food Service

By JANE CURTIS

I hope the students, staff and faculty enjoyed the Health & WorkLife Fair last Friday. I continue to receive feedback from students that they would like to have more health screenings (and more massage chairs) next year. Also, lots of folks like the climbing wall and band. All of this feedback will be shared with the other Planning Committee members.

As always, if you have more comments, leave them on the health board outside my office. I was pleased to see students attend the Student-Faculty Conference last Wednesday.

As a member of the Student Morale and Workload Committee, I will continue to focus my efforts on campus food service. I appreciate Natalia Deligne's comment - please

give feedback to your respective house food representative now while the Board menu is being revised. Take a few minutes and help create solutions to concerns you have that directly impact your Caltech experience. The more feedback we receive, the greater the chance of providing the types of food you want.

I have received some feedback on my health board about the types of programs you would like to see next year, but invite more students to stop by and give me additional input as I continue to plan for next year's programs.

Again, my drop-in counseling hours are on Monday from two to three p.m., Tuesday from nine to 10 a.m. and Thursday afternoon from four to six p.m.

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# Making the Big Decision: Advice for the Prefrosh

By TED JOU

At the Student-Faculty Conference last week, there was a lot of talk about admissions and in particular, I heard many students lament that Caltech wasn't exactly what they expected when they decided to enroll here. This week, prefrosh will come to campus, and perhaps some of them will pick up this newspaper. If you're a prefrosh, this article is for you. I'm going to try to help you decide whether or not Caltech is for you.

First off, you need to understand one thing: The Caltech undergraduate experience is not a stepping-stone to a six-figure salary or a Nobel Prize. Being an undergraduate at Caltech is not training for the future, it is learning for the sake of learning and living in a truly unique community for four years.

Coming to Caltech means living a particular way of life. Matriculating here is committing to an honor code, a house system, and a series of core academic requirements. If all you want is a sure path to a PhD, contacts to help you form a startup, or an easy road towards medical school, do not come to Caltech. However, if you're looking to study science, math, or engineering at the highest levels for the next four years, you've found the right place.

A rewarding college experience will not be served to you on a silver platter. No matter where you go, you will have to choose your own extracurricular activities, build your own relationships with professors, and define your own career path. You are an exceptional student and with a little bit of personal initiative, you should be happy and successful at any school.

Caltech likes to tout several exceptional qualities: 3-to-1 student/faculty ratio, the highest percentage of graduates going on to earn PhD's, and a whimsical student life characterized by pranks and traditions. None of these factors should matter to you, because you're not going to meet faculty, earn a PhD, or pull any pranks without doing the legwork yourself. Put time into

those things at another school, and you will get similar results.

There are probably some other factors drawing you to Caltech: perhaps the weather, the tuition, or the U.S News Ranking. Weather changes sometimes, tuition goes up, and rankings go down, so I would not put too much stock in those things either.

There may also be a few things turning you away from Caltech: limited breadth in humanities and social sciences, the male/female ratio, or the insane workload. If you talk with science majors at other schools, you'll find out that Caltech students actually take more humanities than they do. The male/female ratio is an easy scapegoat, but the truth is, science nerds don't get much play at any university. As for the insane workload, I'm not going to sugarcoat it—if you don't want to work hard, you should go to your state university and major in letters and sciences.

All of these other factors just complicate the question and it is foolish to weigh your college options in terms of imprecise statistics or fleeting impressions. There's really only one thing you have to ask yourself: Do you love science? If you do, then you'll find that Caltech provides unparalleled opportunities for you to challenge yourself in the classroom and in the lab. No matter what little problems may arise during your time here, the science will make it all worth it.

If you don't love science, you'll spend four bitter years working and complaining, and you might even start saying things like, "The house social life is the only good thing about Caltech." You'll meet some of these people on campus, but keep in mind that people who praise the Caltech social life are probably crazy. Once you're here, there will be plenty of extracurricular opportunities and even some that are unique to Caltech, but please don't make your choice on those grounds. Come to Caltech for the science, and for no other reason.

be \$4,000 greater than previously anticipated. She will put the ASCIT Budget online soon. Interhouse funding has also been increased. Houses will now be allowed to request \$500 instead of \$200. On another note, the BoD allotted \$500 to fund large-scale pranks. Any students who want to request funding should contact the BoD.

7. The current nominations for ARC are as follows: Kim Pependorf for ARC Secretary, Vincent Auyeung for Rep-At-Large, and Greta Jo for Rep-At-Large. Vote: 6-0-0, approved.  
8. The BoD also needs to order donuts for Prefrosh Weekend. Meeting adjourned at 11:42 pm.

Respectfully Submitted,  
Anna Sczaniecka  
ASCIT Secretary

**Attention all undergraduate students on financial aid:** The last date to request any change to your 2002-03 financial aid award is Monday, May 19, 2003. Requests for 2002-03 changes made after May 19, will not be considered. Please contact the Financial Aid Office at extension 6280 if you have any questions. NOTE: graduating seniors must request any change by May 5, 2003.

**Summer Work Study:** Information and applications for 2003 Summer Work Study are available in the Financial Aid Office. If you are interested in Summer Work Study, please submit the required application as soon as possible, but no later than June 2, 2003. Your entire financial aid application must be complete by June 2nd in order to be considered for Summer Work Study. If awarded, the work study funding will begin July 1st.

Signups for the following **student**

# A Coming Season of Dilated Time, Mysteries of Graduation

By TOM FLETCHER

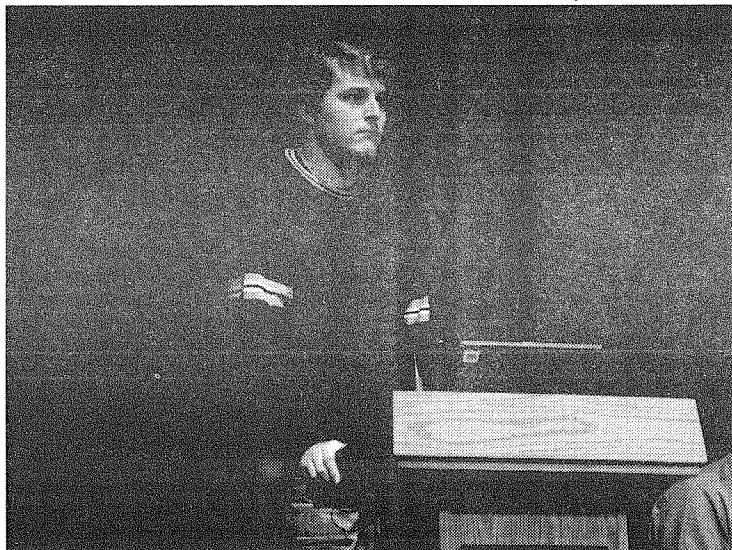
Welcome Prefrosh!

You may notice the Caltech student body is more jubilant this week. Prefrosh Week[end] tends to lighten the atmosphere. Prefrosh, we're happy to have you here and glad to be your hosts. From reading some of your sheets, I know that most of you want to attend classes and meet professors, but let me assure you that the most important part of your Caltech education is going to be the students you spend your time with. The professors will give you your work and your letters of recommendation, but they will change every term. The food will be forgotten as soon as you eat it. However, the people that work with you, that drive to the beach with you at midnight, that spot you at Canter's when you're broke and need some home-cooking, these are the people that will be with you your whole life. I know you've probably heard all those words before and maybe they aren't true at the end of high school, but I think they are true in college.

My point is simple. It doesn't matter how big the textbook selection is at the library. It doesn't matter how many spaghetti sauces the kitchens have. The only thing that matters is whether you like the people here. Can you connect with them? Will you work with them an entire night to finish a problem set? Will you go camping with them over spring break? Please ask yourselves these questions when you meet your fellow prefrosh and the upperclassmen here. Then, and only then, decide which school to go to next year.

## Whom Did I Meet This Week?

The student-faculty conference



D. Korta/The California Tech

**Tom Fletcher elucidates his opinions at last week's Student-Faculty Conference.**

**faculty committees** will be posted next Monday, April 21st outside SAC 33:

1. Freshman Admissions (six members and two alternates). 2. Grievances (two members and two alternates). 3. Scholarships and Financial Aid (two members and two alternates). 4. UASH (four members and two alternates). 5. Upperclass Admissions (two members and one alternate). 6. Student Housing (one member and two alternates). 7. Health Committee (one member and one alternate). 8. Athletics and PE (two members and two alternates). 9. Foreign Students (one member and one alternate). 10. Parking (one member and one alternate). 11. Computer Advisory (one member and one alternate). 12. Matriculation Committee (three members and one alternate). Signups will come down at 5 PM on Monday, April 28th. All candidates will be required to interview with the IHC the week of the 28th. Please contact jeremyp@its.caltech.edu if you have any questions.

On behalf of the Institute's on-going commitment to diversity, a committee

was everyone's major concern this past week; prefrosh: read up on it throughout this issue. I saw most of you there - thank you for coming. I think the faculty that attended were impressed with how well the ARC put it together. I'm glad that President Baltimore got a hint of the message: he showed up for a little over two hours more than he had said he would earlier, and for that, I thank him. I am disappointed he got away too early for me to skip off with him, but I'll make sure it happens sometime this year ;-).

I did get a chance to hang out with *We Are Scientists* after their show. I was a bit skeptical when I first heard they were coming to play, but I was blown away by their show. It was not just quality acoustic rock, it was hilarious - between songs, we were treated to send-ups of J. Lo and Nelly, as well as stories about the band's history. Yes, one of them was a scientist! He has an engineering degree from Harvey Mudd. We were so impressed, we've tentatively invited them back for first term next year. They agreed that they would love to, but it may have been the calzookie—prefrosh: try one in the Coffeehouse, ask an upperclassman to take you there—that did all the convincing.

Unfortunately, both my meetings with Margo Marshak were cancelled this week. We'll be discussing how to implement suggestions from the conference later this week.

Tom Mannion let the ASCIT BoD use his house for the budget meeting; thank you Tom. It was valuable to have him around to advise us, and we set our budget for the entire year. Clubs, you should already have been notified or will be shortly about your funding. What other highlights are there in the budget?

## We Have Money to Give You

There are a number of items in the budget of particular interest to everyone. Interhouse parties are now being funded at the level of \$500 per party. I'm personally hoping this will make our parties even more exciting. Multihouse events are now being funded at \$100 per event, per house that requests money. So, a two house event gets \$200. This is basically how it is now, but the details of it are a little different: on the plus side, a three-house event (haven't seen these before really!) would get \$300, but the total number of possible multihouse events is diminished. To use a hypothetical example, a "fashion show" would by default only receive \$100, but could receive up to \$700 if other houses decide to pitch in and help throw it. We considered this change to be acceptable since only a few events happen each term, but that they could be improved by extra money.

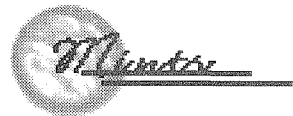
There is also a \$500 pranks budget to be had! If you have a good prank idea, present it to the ASCIT BoD, and we'll decide if it is meritorious enough to pay for. Now that commencement is coming up, get thinking seniors! You could have up to \$500 to wreak havoc!

We've also set up a number of slush funds, to give us flexibility throughout the year. If you have ideas for how ASCIT could spend its money to improve student life, let us know! There is \$4000 for future social events and over \$1,000 for clubs with new ideas. Now, please don't be worried if the slush funds have names like DRUGS or CANCUN. Those are highly technical acronyms that the IRS makes us use.

## Moment of Zen

For prefrosh with an abundant amount of time to do nothing when they go home, and for seniors in the same boat, I'd like to recommend *Mysteries of Pittsburg*, the first book published by Michael Chabon. It's about a senior graduating from college and the turns his life takes in that time of transition. It's a fun, light read that I think does a good job of getting at the whirlwind nature of those last few months before you make a big change in your life, especially things you never would have considered doing before. So, to both the prefrosh and the seniors: check it out, read it, and go have fun like you've never had before (there's a good excerpt at [Amazon.com](http://www.amazon.com), the title is from it).

Peace,  
Tom Fletcher  
ASCIT President  
P.S.: Coachella this weekend!  
Go to the desert! You too prefrosh!  
<http://www.goldenvoice.com/coachella/>



## ASCIT Minutes

April 16th, 2003, 10:55 PM, SAC 33

Present: Joanna Cohen, Tom Fletcher, Kim Hiscox, Kathryn Hsu, Jeremy Pitts, Anna Sczaniecka, & Corinna Zygourakis. Absent: Galen Loram & Andrea Vasconcellos. Guests: Ted Jou

### Agenda

1. Call to Order  
2. Over the next week the BoD will send out Club Notification Letters.

They will inform clubs of ASCIT funding as well as suggest other possible sources of revenue.

3. Jonathan Dama emailed the BoD with the Development Team nominations, which include William Coulter '05, Mikolaj Slomka '05, Evan Murphy '06, and Michael Turk '06. Vote: 6-0-0, approved.

4. Sign-ups for the Quality of Student Life Committee, the Dean of Undergraduate Studies Committee, and the Institute Size Committee will come down on Friday, April 18th at 5 pm. Candidates will be interviewed on Tuesday, April 22nd and/or Wednesday, April 23rd. Sign-ups for a host of IHC-appointed committees go up on Monday, April 21st. Ted Jou also presented the BoD with a Guide to Outside Committee Representatives.  
5. *We are Scientists* was a big hit and they are going to return in the fall. Kim is going to visit the seven houses over the next two weeks in order to find out what social events students are interested in. She is also busy organizing the ASCIT formal and planning a few "top secret" campus wide events.  
6. Joanna says that the budget may

has been formed to initiate discussion and increase awareness about the value and meaning of diversity at Caltech. In order to capture the many different voices represented on campus, we will be providing multiple ways for individuals to provide us with feedback. We will be using this information to write a more inclusive **Diversity Statement for Caltech**. We will be holding focus groups during the month of May, and encourage you to sign up to be a part of this important discussion. If you are interested in participating, please provide the following information and email it back to [machang@caltech.edu](mailto:machang@caltech.edu) by May 6..

Name, Email, Phone Extension. Mark with an "X" the category you belong to: Faculty \_\_ Undergraduate Student \_\_ Graduate Student \_\_ Postdoctoral Scholar/Researcher \_\_ Staff \_\_ Mark with an "X" any preference you might have for a specialized focus group. If you do not have a preference you will be invited to join a general focus group: Undergraduate Male \_\_ Graduate Male \_\_ Female (Undergraduate &

Graduate) \_\_ Multicultural Students (African American, Latino, Native American, Pacific Islander, and International) \_\_ Asian American Community \_\_ International Community \_\_ Lesbian, Gay, Bisexual and Transgender Community (Gay Pride) \_\_

### Women's Center Events

Women's Wellness Series: Preparing for Child Birth; Date: April 23, 2003; Time: 12:00pm - 1:00pm; Location: Avery Library, bldg. 99; Space is limited and RSVP is needed. Brown bag lunches will be provided. For more information or to register, please contact the Women's Center at 395-3221 or by email at [wcenter@studaff.caltech.edu](mailto:wcenter@studaff.caltech.edu)  
Traveling Safety Workshop; Tuesday, May 13, 12:00p.m.-1:00p.m.; This class is designed to help travelers recognize safe and unsafe traveling habits and behaviors, while also providing some self defense tactics.

**Folk Music Society.** Sparky & Rhonda Rucker, from Maryville, Tennessee, sing and play guitar and

*Continued on Page 5, Column 1*



Continued from Page 4, Column 5

harmonica and banjo. Their play Appalachian music, old-time blues, slave songs, Civil War music, gospel, work songs. Sparky is a fine singer, and this will be a great opportunity to hear some blues-drenched music from an African American perspective. The concert is at 8:00 p.m. on Saturday, May 10 in Dabney Hall Lounge. You can get tickets in advance (\$5 for students) at the ticket office, or at the door. Or contact [rmayreis@earthlink.net](mailto:rmayreis@earthlink.net)

**Library Classes.** The following sessions are approximately one hour of formal instruction in the Sherman Fairchild Library Multimedia Conference Room (Room 328). Walk-ins are welcome for the Electronic Theses session.

Tuesday, April 22, 12 p.m.: "Quick Review for Electronic Theses"  
Thursday, April 24, 2 p.m.: "Web of Science for Science and Engineering"

You may register for these and other upcoming classes at [library.caltech.edu/learning](http://library.caltech.edu/learning). For further information, please contact Kathleen McGregor at x6713 or [kathleen@library.caltech.edu](mailto:kathleen@library.caltech.edu).

The Mathematics Department is pleased to announce two categories of prizes to be offered to Caltech undergraduates.

**The E.T. Bell Undergraduate Mathematics Research Prize.** A cash prize of \$500 will be awarded for the best original mathematics paper written by a Caltech Junior or Senior. Contestants for the Bell prize must be nominated by a faculty member familiar with their work. Students who wish to be considered for this prize should contact a member of the Mathematics faculty prior to the end of the second term to discuss the nature of the research. If the entry is sufficiently worthy, the faculty member will nominate the contestant and act as sponsor. Each student is entitled to only one entry. All contestants nominated must submit their papers in final form to their faculty sponsors by May 2. A faculty committee will then judge the papers and announce its decision before the end of the third term. The name of the winner (or winners) will appear in the commencement program.

**The Morgan Ward Competition.** Any Caltech freshman or sophomore may enter. An entry may be individual (submitted by one student) or joint (submitted by a group of two or more students). Each student is entitled to at most three entries, of which two may be individual. An entry is to consist of a mathematical problem, together with a solution or significant contribution toward a solution. The problem may have any source, but this source should be stated in the entry. The entries may be judged on the basis of the nature of the problem, originality and elegance of the solution. Any outside references used should be indicated. Entries from each contestant or group must be placed in an envelope and delivered to the Mathematics Office, 253 Sloan, by May 2. The names of the contestant, or the names of all participants in the case of a joint entry, must be written on the envelope only, not on the entry. The Judging Committee will consist of three undergraduates. The judges will select a group of finalists and submit their entries to the mathematics department faculty who will make awards to the winners. Prizes will ordinarily be awarded for the two to four best entries, the value of each prize being \$75. Prizes for individual entries will be limited to one to a contestant and no group may receive more than one prize.

**The Aero Association of Caltech/JPL Spring General Membership Meeting** will be held in 114 E. Bridge on April 23, 7:30 pm and will feature guest speaker Dan Wolfe from Wolfe Air Aviation. Pasadena-based Wolfe Air Aviation specializes in aerial cinematography and has won numerous Academy and Emmy awards for work on films such as HBO's "Band of Brothers" and Schwarzenegger's "True Lies." For more information about the meeting or how to join the Aero Association and learn to fly, please contact Elaine Ou ([ou@caltech.edu](mailto:ou@caltech.edu)).

# DILBERT® by Scott Adams

SO TED HAS BEEN TRAINING YOU FOR THE PAST SIX MONTHS.

BASED ON YOUR WORK, I'D SAY HE'S PLAYING THE WORLD'S LONGEST PRACTICAL JOKE ON YOU.

SOMETIMES THERE'S A FINE LINE BETWEEN CRIMINALLY ABUSIVE BEHAVIOR AND FUN.

YOU'RE CREATING A HOSTILE WORK ENVIRONMENT.

IT'S LIKE THERE'S CONTINUOUS PRESSURE ON ME TO WORK.

BUT I'M ONLY ONE PERSON; I CAN'T WORK AND DRINK COFFEE!

I'M CUTTING YOU BACK TO FORTY CUPS A DAY.

WALLY, I'M SENDING YOU TO A COFFEE REHAB PROGRAM.

GAAA!!!

THEY'LL GET YOU DOWN TO FORTY CUPS A DAY.

NOT DOUBLE DIGITS!!!

YOU MONSTER!!! I WON'T SURVIVE!!! IF YOU'RE LUCKY.

HOW'S YOUR FRENCH COMING ALONG?

EXCUSE ME?

I ASKED HOW YOUR FRENCH HOMEWORK WAS COMING ALONG.

EXCUSE ME?

PAIGE, DON'T YOU START THIS NON-SENSE, ALSO.

MY FREEDOM IS COMING ALONG FINE.

COFFEE REHAB

NO SODA, NO TEA, NO CHOCOLATE.

YOU'RE ALLOWED ONE PIECE OF LUGGAGE AND YOU HAVE TO CARRY IT YOURSELF.

I MIGHT WANT TO TAKE A LOOK INSIDE THAT BAG.

CHECK OUT THIS COOL GAME I RENTED.

YOU ROLL THIS BALL-LIKE THING TOWARD THESE 10 PIN-LIKE THINGS TO SEE HOW MANY YOU CAN KNOCK OVER.

IT'S TOUGH, BECAUSE IF YOUR AIM IS OFF, YOU END UP IN THESE GUTTER-LIKE THINGS. WANT TO TRY? IT'S FUN.

REMEMBER LAST MONTH WHEN I WANTED TO TAKE YOU BOWLING?

ICK. DON'T REMIND ME.

COFFEE REHAB

STATE YOUR NAME AND HOW LONG YOU'VE BEEN WITHOUT COFFEE.

I AM GOING TO RIP OFF YOUR LITTLE BEARD AND BEAT YOU TO DEATH WITH IT.

DON'T PANIC... WAIT... WAIT... AND THEN I'LL... UM... ZZZZZZZ ZZZZZ ZZZ.

WALLY, CONGRATULATIONS ON FINISHING THE COFFEE REHAB PROGRAM.

OUR RECIDIVISM RATE ISN'T TOO HOT. OUR CRITICS BLAME OUR LOCATION.

WHO'S SLEEPING IN OUR VATT?

STARBUCKS WORLD HEADQUARTERS

WHAT ARE YOU DOING?

BURNING CDS.

I'M PROTESTING THE RECORDING INDUSTRY'S GESTAPO-LIKE POLICING OF THE WAY WE USE MUSIC.

LISTEN UP, RAA! MY SISTER PAID FOR THESE BACKSYNC BOYS CDS, AND I'LL BURN THEM IF I WANT TO!

I THINK THEY'RE TALKING ABOUT COPYING.

LET ME PLAY DUMB JUST THIS ONCE.

OUR BREAKTHROUGH CAME WHEN WE DISTRIBUTED THE PROCESSOR LOAD.

IT'S ABOUT TIME THAT YOU TOOK MY ADVICE! HALLELUJAH! GOOD FOR YOU!

IF LASER POINTERS WERE LIGHT SABERS, YOU'D BE LOOKING FOR YOUR TORSO.

HA HA! YOU'RE USING MY JOKE! GOOD ONE!

ZUCCHINI... CARROTS... SPINACH...

IT'S NOT FAIR.

WHY CAN'T THEY INVENT PIZZA SEEDS??

HA HA.

# FoxTrot by Bill Amend

SWEETIE, YOU KNOW HOW I ALWAYS TOLD YOU MY BACHELOR PARTY WAS REALLY BORING?

THAT MY FRIENDS AND I SAT AROUND AND TOLD STORIES AND THAT WAS THE EXTENT OF IT?

IT'S BEEN 20 YEARS-- WHY ARE YOU BRINGING THIS UP NOW?

WELL, SEE, I SORTA SAVED A SOUVENIR--

HAPPY EASTER, EVERYBODY!

I THINK THIS NEW TOOTHPASTE MIGHT WHITEN YOUR TEETH TOO MUCH.

I'LL GET YOU A PEN.

HOW'S YOUR FRENCH COMING ALONG?

EXCUSE ME?

I ASKED HOW YOUR FRENCH HOMEWORK WAS COMING ALONG.

EXCUSE ME?

PAIGE, DON'T YOU START THIS NON-SENSE, ALSO.

MY FREEDOM IS COMING ALONG FINE.

CHECK OUT THIS COOL GAME I RENTED.

YOU ROLL THIS BALL-LIKE THING TOWARD THESE 10 PIN-LIKE THINGS TO SEE HOW MANY YOU CAN KNOCK OVER.

IT'S TOUGH, BECAUSE IF YOUR AIM IS OFF, YOU END UP IN THESE GUTTER-LIKE THINGS. WANT TO TRY? IT'S FUN.

REMEMBER LAST MONTH WHEN I WANTED TO TAKE YOU BOWLING?

ICK. DON'T REMIND ME.

MOM! PAIGE CALLED ME A BABY!

PUNISH HER! PUNISH HER!

PAIGE ISN'T EVEN HOME.

SHE DID IT 10 YEARS AGO.

YOU WERE A BABY!

DON'T YOU START, TOO.

WHAT ARE YOU DOING?

BURNING CDS.

I'M PROTESTING THE RECORDING INDUSTRY'S GESTAPO-LIKE POLICING OF THE WAY WE USE MUSIC.

LISTEN UP, RAA! MY SISTER PAID FOR THESE BACKSYNC BOYS CDS, AND I'LL BURN THEM IF I WANT TO!

I THINK THEY'RE TALKING ABOUT COPYING.

LET ME PLAY DUMB JUST THIS ONCE.

ZUCCHINI... CARROTS... SPINACH...

IT'S NOT FAIR.

WHY CAN'T THEY INVENT PIZZA SEEDS??

HA HA.

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The Fannie and John HERTZ FOUNDATION takes great pleasure in announcing its Fall 2003 Fellowship Awards.

**Ms. Kimberly Beatty**  
Graduate Student in Chemistry at California Institute of Technology and  
**Mr. Paul Choi**  
Graduating in Chemistry from California Institute of Technology

are two of 16 Hertz Foundation Fellows chosen from a field of 597 applicants to receive a five year, \$200,000 Graduate Fellowship Award in Applied Physical Sciences. The Hertz Foundation would like to extend its congratulations to California Institute of Technology for attracting these Fellows to their undergraduate and graduate programs.

See [www.hertzfoundation.org](http://www.hertzfoundation.org) for more details.

## The Arena: 'Provoking, Titillating' Epic Of Triumph Over Insurmountable Odds

By LIBIN ZHANG

*The Arena* (DVD) is a thought-provoking and titillating epic

The ASCIT Video Library, located in the Coffeehouse, is a veritable treasure trove of movies for the Bored Caltech Student, containing such light hearted and comedic fare like *Monty Python and the Holy Grail* (1975) and *Britney Spears Live From Las Vegas* (2001). Those interested in more cerebral and epic movies can enjoy the classic *Lawrence of Arabia* (1962), the Shakespeare-based *Titus* (1999), and many others. While most of the serious epic films are well known, hidden in the diverse collection is a must-see example of Western filmmaking of the highest caliber.

*The Arena* (2001) is the story of the triumph of unlikely heroines over seemingly insurmountable odds. Roman ruler Julius Caesar had tamed the northern land of Dorostorum, and 'honors' his loyal commander Timarchus by appointing him governor of the area. Timarchus, who originally wished for a quiet retirement in Rome, realizes that he has been de facto exiled and grows bitter and frustrated. A year later, seeking to impress the natives with the glory of Rome and to cure his boredom and bloodlust, the sadistic governor stages a series of gladiatorial combats. Disappointed with the male gladiators and impressed at how the female slaves behaved in a catfight, he forces the fiery Druid maiden Bodicia (Lisa Dergan, Playboy Playmate of the Month for July 1998), the exotic slave girl Jessemina (Karen McDougal, Playboy Playmate of the Year 1998), and others to battle for their lives in the arena. Which gladiatrix shall triumph, and will Timarchus's bloody rule ever come to an end? This action-adventure-drama masterpiece keeps us guessing, and rewards us with an unexpected plot twist or two.

Although *The Arena* was filmed in Russia, was directed by the acclaimed Russian director Timur Bekmambetov, and has an excellent supporting cast of native actors and actresses, the English dialogue is superb and should be no problem for American audiences. The female leads act better than expected, especially considering that the movie is the feature acting debut for Dergan and McDougal. The two ladies inject real emotion into the characters and make their transition from slave to warrior perfectly natural. Bekmambetov uses unusual camera shots, inspired by rock videos and

Euro art house films, to great effect; he never shows the same shot for over a minute. The legendary director Roger Corman produced the classic version of *The Arena* (starring the famous Pam Grier) in 1973, and produced this remake to make the story more approachable for modern audiences. Roger Corman also directed such timeless and diverse action-adventure movies as *Women in Cages*, *The Big Bird Cage*, *Caged Heat*, and so on.

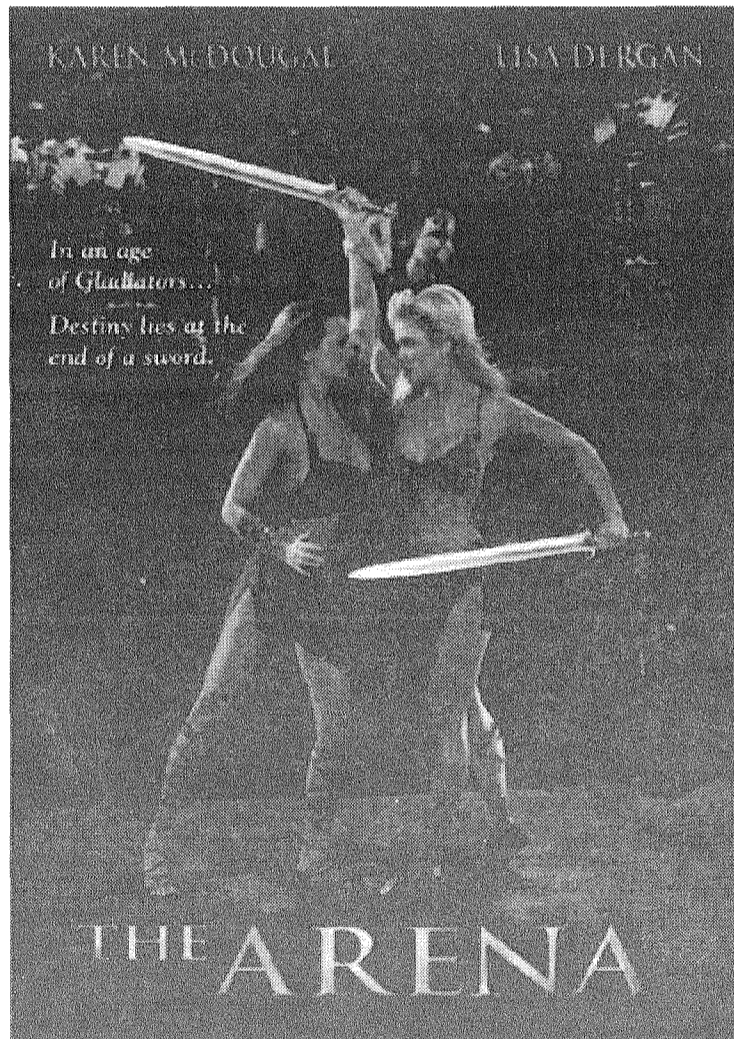
The film is rated R and may not be suitable for all viewers. I highly recommend viewer discretion, especially during the scenes where the gladiators hack at each other or when the lead actresses undress and expose themselves. Newcomer Alexsei Osipov, starring as the gladiator Flavius, never wears a shirt, shamelessly exposing his rippling muscles and chest. *The Arena* should not be viewed by students offended by the sight of the male or female nipple.

There is a romantic subplot for the rare person not impressed by blood, gore, sex, or scantily-clad women. A doomed romance between the slave-trainer Septimus and one of

his gladiatrix-slaves brought tears to my eyes as the final inevitable outcome came crashing head on with an appropriately heroic musical score.

*The Arena* has its share of historical inaccuracies and dramatizations, but not as much as that other gladiator movie released in 2000. *The Arena* teaches that a rebellion in the northern barbarian lands eventually led to Rome's downfall, which is much more realistic than Commodus being killed by a vengeful general. Russell Crowe may look cute to female viewers, but male viewers do not have anything sexy to look at during most of the film's 155 minute running time. *The Arena* is mercifully shorter and visually appeals to members of both genders. It is a truly great film that can be appreciated by everyone.

If you have nothing better to do and prefer English-speaking movies released in the last ten years, but have already seen most of them in the ASCIT Video Library, feel free to give this entertaining direct-to-video release a try. It will be an unforgettable experience.



Courtesy of L. Zhang

The DVD cover of the *Arena* is slightly misleading. The combatants used shorter swords.

## Giant Planar Hall Effect Huge Step in Spintronics

By MARK WHEELER

Physicists from the California Institute of Technology and the University of California at Santa Barbara have announced a basic discovery in magnetic semiconductors that could result in a new generation of devices for sensors and memory applications and perhaps, ultimately, quantum computation.

The new phenomenon, called the giant planar Hall effect, has to do with what happens when the spins of current-carrying electrons are manipulated. For several years scientists have been engaged in exploiting electron spin for the creation of a new generation of electronic devices -- hence the term "spintronics" -- and the Caltech-UCSB breakthrough offers a new route to realizing such devices.

The term "spintronics" is used instead of "electronics" because the technology is based on a new paradigm, says Caltech physics professor Michael Roukes. Rather than merely using an electric current to make them work, spintronic devices will also rely on the magnetic orientation (or spin) of the electrons themselves. "In regular semiconductors, the spin freedom of the electrical current carriers does not play a role," says Roukes. "But in the magnetic semiconductors we've studied, the spin polarization -- that is, the magnetism -- of electrical current carriers is highly ordered. Consequently, it can act as an important factor in determining the current flow in the electrical devices."

In the naturally unpolarized state, there is no particular order between one electron's spin and its neighbor's. If the spins are aligned, the result can be a change in resistance to current flow. Such changes in resistance have long been known for metals, but the current research is the first time that semiconductor material has been constructed in such a way that spin-charge interaction is manifested as a very dramatic change in resistivity.

The Caltech-UCSB team managed to accomplish this by carefully preparing a ferromagnetic semiconductor material made of gallium manganese arsenide (GaMnAs). The widely-used current technology employs sandwiched magnetic metal structures used for magnetic storage.

"You have much more freedom with semiconductors than metals for two reasons," Roukes explains. "First, semiconductor material can be made compatible with the mainstream of semiconductor electronics; and second, there are certain phenomena in semiconductors that have no analogies in metals."

Practical applications of spintronics will likely include new paradigms in information storage, due to the superiority of such semiconductor materials to the currently available dynamic random access memory (or DRAM) chips. This is because the semiconductor spintronics would be "nonvolatile," meaning that once the spins were aligned, the system would be as robust as a metal bar that has been permanently magnetized.

The spintronics semiconductors

could also conceivably be used in magnetic logic to replace transistors as switches in certain applications. In other words, spin alignment would be used as a logic gate for faster circuits with lower energy usage.

Finally, the technology could possibly be improved so that the quantum states of the spins themselves might be used for logic gates in future quantum computers. Several research teams have quantum logic gates, but the setup is the size of an entire laboratory, rather than at chip scale, and therefore still unsuitable for device integration. By contrast, a spintronics-based device might be constructed as a solid-state system that could be integrated into microchips.

A full description of the Caltech-UCSB team's work appeared in the March 14 issue of *Physical Review Letters* [Tang et al, Vol 90, 107201 (2003)]. The article is available by subscription, but the main site can be accessed at <http://prl.aps.org/>. This discovery is also featured in the "News and Views" section of the forthcoming issue of *Nature Materials*.

## FIVE HONORED ALUMNI ACCEPT HOUSE PLAQUE

Continued from Page 2, Column 5

purification of proteins, peptides, and nucleic acids. These systems are key components of modern molecular biology research laboratories as well as the cornerstone of such applications as forensic DNA typing.

Alan Lightman is a physicist, novelist, and educator. After receiving his Ph.D. in theoretical physics, he taught astronomy and physics at Harvard. In 1989 he went to MIT with a joint appointment in physics and the humanities. His scientific research has been in the area of relativity and astrophysics. He is the author of a dozen books, the most recent being the novels *The Diagnosis*, *Good Benito*, *Einstein's Dreams*, and the forthcoming *Reunion*, which will be available in July. In 1996, Lightman won the Gemant Prize of the American Institute of Physics for linking science with the humanities.

Michael Malin is president and chief scientist of Malin Space Science Systems, Inc., of San Diego. He is principal investigator on the Mars Global Surveyor Orbiter Camera and of the Mars Color Imager/Context Camera investigation on the Mars Reconnaissance Orbiter to be launched in 2005. His recent research has focused on photogeological studies of Mars and the application of insights gained from terrestrial field work on eolian, fluvial, and mass movement phenomena.

The five recipients receive a medallion and a framed calligraphy certificate, and their names are placed on a plaque at the Caltech Alumni House.

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# Question of the Week

To prefrash and current students alike: is Caltech the place for you?

## NEW RECORDS LIGHT MIXED SPORTS WEEK

### SUCCESS IN TRACK, MEN'S TENNIS

Becher, Jordan, Ward  
Set New PRs In  
San Diego

By BRENTON REGER

Athlete of the Week

This week's athlete of the week is Tamara Becher '04 from track and field. Becher jumped up on the top-ten 2003 SCIAAC marks this weekend. Her time of 4:53 puts her up to number two in the conference in the 1500, just three seconds behind the number-one girl. This time bested her previous PR by 10 seconds. She is also on the list for the 400-meter and 800-meter.

#### Track & Field

The track team traveled to San Diego State to compete in the Cal-Nevada Championships. Tamara Becher had a 10 second PR in the 1500. She ran 4:53.89. Stuart Ward had a PR in both the 200 (23.78) and 400 (51.98) and Scott Jordan had a PR in the 400H (61.55). Helen Tai ran the 100 H (17.08) and 400H (72.12) while Sina Yeganeh ran the 200 (24.19) and 400 (53.76).

#### Women's Water Polo

Caltech ..... 6  
HAYWARD ..... 12

Caltech had a tough time against Cal State Hayward last week dropping the game 6-12. One of the big highlights in the game was by Rachel Thessin, a senior from Virginia, with 13 saves on the day.

#### Men's Baseball

Caltech ..... 0  
POMONA-PITZER ..... 28

Caltech ..... 1  
POMONA-PITZER ..... 16

Caltech ..... 0  
POMONA-PITZER ..... 17

#### Men's Golf

Caltech ..... 359  
WHITTIER ..... 329

#### Men's Tennis

CALTECH ..... 4  
Whittier ..... 3

Caltech ..... 0  
REDLANDS ..... 7

#### Women's Tennis

Caltech ..... 0  
WHITTIER ..... 9

# Astronomers Provide Census of Extreme Galaxies

By ROBERT TINDOL

New distance measurements from faraway galaxies further strengthen the view that the strongest burst of star formation in the universe occurred about two billion years after the Big Bang.

Reporting in the April 17 issue of the journal *Nature*, California Institute of Technology astronomers Scott Chapman and Andrew Blain, along with their United Kingdom colleagues Ian Smail and Rob Ivison, provide the redshifts of 10 extremely distant galaxies which strongly suggest that the most luminous galaxies ever detected were produced over a rather short period of time.

Astronomers have long known that certain galaxies can be seen about a billion years after the Big Bang, but a relatively recent discovery of a type of extremely luminous galaxy—one that is very faint in visible light, but much brighter at longer wavelengths—is the key to the new results.

This type of galaxy was first found in 1997 using a new and much more sensitive camera for observing at submillimeter wavelengths (longer than the wavelengths of visible light that allows us to see, but somewhat shorter than radio waves). The camera was attached to the James Clerk Maxwell Telescope (JCMT), on Mauna Kea in Hawaii.

Submillimeter radiation is produced by warm galactic "dust"—micron-sized solid particles similar to diesel soot that are interspersed between the stars in galaxies. Based on their unusual spectra, experts have thought it possible that these "submillimeter galaxies" could be found even closer in time to the Big Bang.

Because the JCMT cannot see details of the sky that are as fine as details seen by telescopes operating at visible and radio wavelengths, and because the submillimeter galaxies are very faint, researchers have had a hard time determining the precise locations of the submillimeter galaxies and measuring their distances. Without an accurate distance, it is difficult to tell how much energy such galaxies produce; and with no idea of how powerful they are, it is uncertain how important such galaxies are in the universe.

The new results combine the work of several instruments, including the Very Large Array in New Mexico (the world's most sensitive radio telescope), and one of the 10-meter telescopes at the W. M.

Keck Observatory on Mauna Kea, which are the world's largest optical telescopes. These instruments first pinpointed the position of the submillimeter galaxies, and then measured their distances. Today's article in *Nature* reports the first 10 distances obtained.

The Keck telescope found the faint spectral signature of radiation that is emitted, at a single ultraviolet wavelength of 0.1215 micrometers, by hydrogen gas excited by either a large number of hot, young stars or by the energy released as matter spirals into a black hole at the core of a galaxy. The radiation is detected at a longer, redder wavelength, having been Doppler shifted by the rapid expansion of the universe while the light has been traveling to Earth.

All 10 of the submillimeter galaxies that were detected emitted the light that we see today when the universe was less than half its present age. The most distant produced its light only two billion years after the Big Bang 12 billion years ago. Thus, the submillimeter galaxies are now confirmed to be the most luminous type of galaxies in the universe, several hundred times more luminous than our Milky Way, and 10 trillion times more luminous than the sun.

It is likely that the formation of such extreme objects had to wait for a certain size of a galaxy to grow from an initially almost uniform universe and to become enriched with carbon, silicon, and oxygen from the first stars. The time

when the submillimeter galaxies shone brightly can also provide information about how the sizes and makeup of galaxies developed at earlier times.

By detecting these galaxies, the Caltech astronomers have provided an accurate census of the most extreme galaxies in the universe at the peak of their activity and witnessed the most dramatic period of star buildup yet seen in the Milky Way and nearby galaxies. Now that their distances are known accurately, other measurements can be made to investigate the details of their power source, and to find out what galaxies will result when their intense bursts of activity come to an end.

# Art Meets Science in NEURO Display

By AMEERA CHOWDHURY

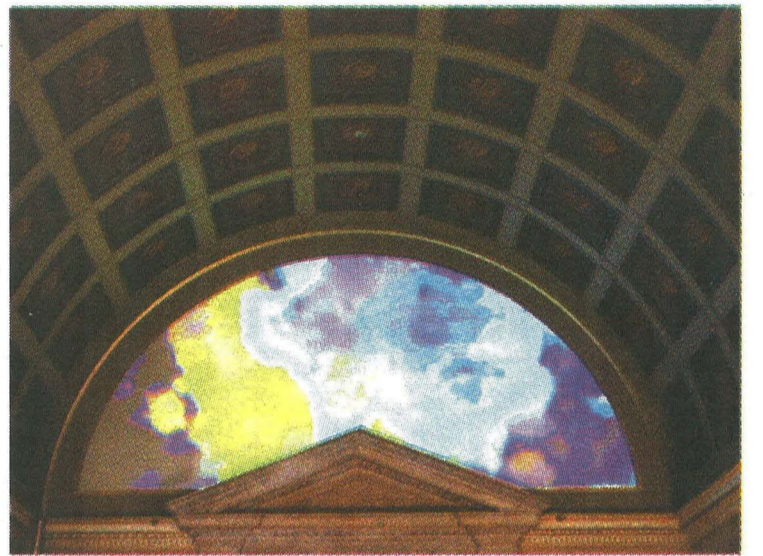
NEURO, an art-meets-science exhibit produced by Caltech and Art Center, invites the viewer to see with "different eyes." Six California artists collaborated with scientists from Caltech's Center for Neuronormorphic Systems Engineering (CNSE) to create pieces investigating the art of perception.

Some works such as *Body Electric* and *Infiltrate* literally ask "what is it like to be a fish?" Another project, *perpetual perceptual (about a rose)*, challenge a viewer to see without directly looking. *CHEESE* uses computers to recognize sincere smiles, and *SCIANCE* explores popular perceptions of science and scientists.

These five pieces are on display from April 15 to June 29 at Art Center's Alyce deRoulet Williamson Gallery. The last work, *Einstein's Dilemma*, is installed in Caltech's Atheneum lobby.

At the heart of NEURO is the belief that art and science can inspire each other. Consequently, the projects comprising NEURO draw heavily from both subjects.

For example, artist Jennifer Bronson's *perpetual perceptual (about a rose)* was inspired by Gertrude Stein's line "a rose is a rose is a rose" but utilizes electrical devices such as lightsticks and a visual phenomenon called "retinal painting," which is studied in Caltech professor Shinsuke Shimojo's lab. Just as Stein described objects without naming them, Bronson's lightsticks emit words that describe a rose, which is absent from the space. Looking directly at the rapidly pulsating lightsticks, however, will likely cause epileptic



D. Korta/The California Tech

Pieces such as this one, which investigate the art of perception are part of the NEURO exhibit currently on display at the Art Center and at the Atheneum.

seizures. Instead, one must walk past the lightsticks and perceive the ethereally floating words through peripheral vision. Retinal painting fills in the missing parts of the fragmented image.

All the artworks eschew the traditional paintbrush and canvas for unusual materials such as computers and software custom made by CNSE scientists. *Infiltrate*, developed by Caltech's Pietro Perona and artist Ken Goldberg, employs sophisticated tracking and graphics systems to give the participant a view from the proverbial fishbowl. Cameras and computers monitor the motions of a gold Koi fish and three white carp swimming placidly in a fish tank. A graphics program then uses the tracking data to generate real time animations of the fish bowl from the

gold fish's perspective. The frames, which are projected onto a screen behind the tank, depict each fish in a mathematically accurate position. Both the tracking and the graphics were technical challenges, but the end result allows the viewer to see like a fish.

NEURO is partially funded by the National Science Foundation (NSF) as a public outreach program that must accompany the CNSE's major grant. Traditionally, NSF outreach money has been spent on developing educational material for schools. However, bored with the usual programs, CNSE director Pietro Perona proposed NEURO as an innovative alternative. Other NSF-funded groups on campus are, consequently, experimenting with similar projects.



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Emcees Ruxandra Paun '06 and Andres De La Escosura '06 entertain the audience with jokes and ethnic information before each act at Friday's International Cultural Show in Avery Courtyard.

## Caltech's International Week Brings Campus Together With Films, Food

*Continued from Page 1, Column 2* is fun. More undergrads should definitely come!"

Following the Food Fair was the Cultural Show, which offered colorful and artistic performances deriving from all ends of the globe. Flags from many countries circled the Avery Courtyard, adding to the cheerful mood. Performances included a south Indian classical dance, with three dancers in bells, bangles, and colorful stain outfits. They were followed by Serina Diniega '03, who performed a Hawaiian dance. The Caltech C filled the courtyard with beautiful music on the Zither, and later performed a classic Chinese dance, complete with costumes with flowing sleeves and shiny tassels. The audience was also treated to a Thai dance, an acoustic guitar performance and a Pakistani/Indian dance. The Caltech C wrapped up the afternoon with a fashion show, with girls in beautiful traditional cheung sam (long dresses) strutting down the catwalk.

The event was coordinated by Iram Parveen Bilal '04 and Lisa Wang '04. Commented Bilal on the work that went into the event, "Lisa and I had to contact clubs campus wide and ask them if they wanted to participate. From then onwards it was pretty much helping them choose events, how long their performances would be and just coordinating them, in addition to other details like emcees and sound and music." Their hard work apparently paid off when over 500 people

showed up to an event at which they expected only 350.

And on what she hoped the Culture Show communicated to the public, Bilal answered "that the world is very colorful and there is more than just annoying politics to it. That the people affected by day-to-day wars, are in actuality just ready to enjoy the little, pleasant parts of life!"

The Food Fair and Culture Show was just one of a number of International Week events which took place this last week. Among them was the International Film Festival. A few of the films shown include *Buena Vista Social Club* (1998), directed by Wim Wenders; *My Neighbor Totoro* (1988), directed by Hayao Miyazaki; *E pericoloso sporgersi* (1993), directed by Nae Caranfil; *To Live* (1994), directed by Zhang Yimou; *Where is the Friend's Home? (Khaneh-Ye Doust Kojast?)* (1989), directed by Abbas Kiarostami; *Joint Security Area* (2000), directed by Park Chan-Wook; *Do Aankhen barah haath* (1957), directed by Rajaram Vankudre Shantaram and *My Wife Is An Actress* (2001), directed by Yvan Attal. These films covered such substantial issues as prison reform, sexual orientation, communism, Cultural Revolution, and sacrifice for a friend.

Lunch time presentations graced the week. On Monday, Aziz Faye preformed a Traditional West African Dance from Senegal. On Wednesday, there was a lively mix of South American music performed

by Alturas. Thursday's lunch event was slightly more somber, with an Intercultural Discussion on The Impact of War.

A highlight of International Week was the luncheon with California State Assembly George Nakano at the Athenaeum on Tuesday, who spoke of his experiences in internment camps during World War II, and how he's balancing his past with his current responsibilities during a time when the "War on Terrorism" is impating many of the policies being debated at the local, state and national level.

Caltech's International Week was a huge success in bringing together a campus full of diversity.



Members of one of a number of Caltech's ethnic clubs serves food at the Friday's International Food Fair.

## JPL Scientist Martin Lays Out Mars Data, Imaging On Possibility of ET Life

*Continued from Page 1, Column 5*

returned more data than all other Mars missions combined.

As part of the von Kármán lecture series, Terry Martin, a JPL Research Scientist, gave two presentations on MGS this past week. The April 17 lecture took place at the von Kármán auditorium at JPL, while the April 18 talk was at the Vosloh Forum at Pasadena City College.

Data from each of the wide array of instruments onboard MGS were on display. The Thermal Emission Spectrometer measured the albedo of the planet and also its thermal inertia, or how well the surface holds heat. This later measurement is an excellent way of extracting surface particle size, since dust loses heat very well, while larger blocks of rock retain heat. MGS has made a detailed gravity map of Mars, using its own orbital information to calculate deviations from orbit around a spherical object.

Although Mars lacks the global magnetic field present on the earth, it does have localized fields. Some places appear to have magnetic fields frozen into the surface—possibly a glimpse at an earlier era in which Mars was magnetically active. Magnetics also allowed scientists to locate an anomalously strong hematite concentration in Sinus Meridiani. This odd concentration of minerals may have formed under water, and scientists were intrigued enough to designate the area as the landing site for the second Mars Exploration Rover due to be launched in a month or two.

The surface of Mars contains many wonders, but the atmosphere is also a bizarre and dynamic place. Dust devils, giant dust fronts sweeping down from the north, wa-

ter ice clouds, and a jet stream are just some of the features MGS has discovered or studied in great detail. MGS has been in orbit long enough to get several years worth of data on the dust content, temperature, pressure, circulation, and water vapor content of the atmosphere. Scientists have recognized several recurring patterns: seasonal dust storms at the equator, and annual flows of water vapor from the poles to lower latitudes.

But the most famous data collected by MGS, and "everybody's favorite" according to Martin, is the high-resolution imaging. Written description is completely unable to capture all the nuances the alien surface of Mars has to offer. Martin simply showed slide after slide of odd geology, occasionally pointing out features which completely befuddled geologists. Among the pictures Martin showed were huge layered outcrops, "a sedimentologist's dream," dunes in intricate geometric patterns, gully/channel systems which look so tantalizingly like stream beds, evidence of massive flows, boulders scattered in odd patterns, "rafts" of ice which should belong on Europa not Mars, and of course, two types of cheese.

The infamous "face on Mars," first seen by Viking made an appearance. MGS' image is a lot sharper and less human, more cat-like if you let your eyes wander. The shaded side of the face has a cracked look to it that had led some scientists to speculate that it is snow, protected from evaporation by the shade and a covering of dust. Martin noted that there was a lot of this sort of terrain at moderate latitudes, hinting at a possible source of water.

This brings us to the final, inevitable section of Martin's talk: the possibility of life on Mars, which, in his words, "is partly why we go and do all these things." There is not large, "galumphing" life on Mars, and three landers now have failed to detect small-scale life or any hint of organics in the soil.

And yet we cannot give up hope, and perhaps it is too soon. Martin points out that we have not been to the most interesting places. Gullies might offer the best protection for life near the surface, and the huge sedimentary layers would offer the best chance to find fossils, but both are dangerous locations to land spacecraft.

Upcoming missions will get closer to these regions. The European Beagle missions and NASA's Mars Exploration Rovers will be followed in 2007 by the Mars Scout Mission, the Mars Science Lander in 2009, and a sample return mission in the next decade. Maybe one day we will be able to definitively talk about life on Mars. Until that day, at least it will have plenty of cheese to eat.

## Fencers Place Second In Cal. USFA Tournament

By ABRAHAM KUO

The Caltech Fencing Club continued its strong performance in Southern California USFA tournaments, with Serina Diniega '03 taking second in women's saber at the '02-'03 Division I National Qualifiers. The women's saber team of Serina Diniega, Margot Kimura '05, and Vanessa Heckman '06 kicked off their Pacific Coast Championship circuit with a home tournament at Pasadena's Victory Park April 13.

In the NCAA, the women's saber squad took first place in the Intercollegiate Fencing Conference of Southern California, beating out UCLA, USC, UC San Diego, UC Irvine, CS Fullerton, and UC Santa Barbara.

The team of captain Serina Diniega, Margot Kimura, Vanessa Heckman, Meredith Wiseman '06,

and Gwendolyn Ong '05 posted a 10-2 record, winning 71 of their 108 individual bouts. Season highlights included 6-3 and 5-4 wins over UCLA, two 6-3 wins over USC and a 5-4 win over UC San Diego at Westerns.

The conference championship marks the fourth year of Caltech's women's saber program, and the graduation of its last original starter, Diniega, after losing the other two original starters the previous year due to graduation, Elisa Chan '02, and injury, Minta Akin, '03.

The future of the program looks promising, however, with Kimura posting a 9-3 record against conference rivals to end the season after being injured for the first half, and Heckman posting a 25-11 season record.

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