

Caltech builds M.D./Ph.D. programs with UCLA and USC

This article was originally published in the Winter 2015 issue of E&S magazine.

Science and medicine, it would seem, have always gone hand in hand. But for centuries, they were actually two very disparate fields. Identifying a need for “investigators who are well trained in both basic science and clinical research,” the National Institutes of Health (NIH) created the Medical Scientist Training Program (MSTP) in 1964 to help streamline completion of dual medical and doctoral degrees. The purpose of developing this highly competitive M.D./Ph.D. program was to support “the training of students with outstanding credentials and potential who are motivated to undertake careers in biomedical research and academic medicine.”

Recognizing Caltech’s strength in the biological and chemical

sciences, UCLA — which first established an MSTP in 1983 — formed an affiliation with the Institute in 1997 to offer an average of two students the opportunity to perform graduate research at the partner school through the MSTP; Ph.D. thesis work is done at Caltech for UCLA medical students, and when completed they return to UCLA to finish their M.D. studies.

The vast majority of alumni who have completed their postgraduate training are actively involved in biomedical research as physician-scientists at outstanding research institutions across the country. Although the MSTP represented the first formal affiliation between UCLA and Caltech, the success of the combined UCLA-Caltech MSTP spearheaded and served as a model for several other joint efforts that benefit from the complementary strengths of the two institutions, including the Specialized Training

and Advanced Research (STAR) fellowship program for physician-scientists, and the Institute for Molecular Medicine.

A joint program with the University of Southern California soon followed. In 1998, the Kenneth T. and Eileen L. Norris Foundation awarded Caltech funding to support a joint M.D./Ph.D. program with the Keck School of Medicine of USC.

The grant established the Norris Foundation M.D./Ph.D. Scholars Fund, which supports Caltech Ph.D. candidates from Keck. Administered by Caltech in cooperation with USC, the program accepts two students each year. As with the UCLA program, students spend their first two years in medical school, taking preclinical science courses, with summers spent at Caltech gaining exposure to the academic research environment. They then

come to Caltech, spending three to five years on their Ph.D.s before returning to their medical school for the final two clinical years.

The late Caltech biologist Paul Patterson was instrumental in developing the joint degree program. He believed that Caltech graduate students should also have an opportunity to explore their work in a clinical setting.

“Paul showed creativity both in curriculum development, in student mentoring, and in bringing the Caltech faculty together to support a program, which was in collaboration with another major institution,” said Richard Bergman, director of the Cedars-Sinai Diabetes and Obesity Research Institute, who helped Patterson form the initial collaboration with USC. “His contributions in this regard educated several generations of students who, today, continue to make important

contributions to medical science. This was a great legacy of Professor Patterson.”

Additional funding for students in the M.D./Ph.D. programs has come from a provost-directed endowed fund called the W. R. Hearst Endowed Scholarship for M.D./Ph.D. Students; from the Lee-Ramo Life Sciences Fund; and through lab support for medical research from the W. M. Keck Foundation Fund for Discovery in Basic Medical Research. The Division of Biology and Biological Engineering also provides support to students and scholars who are headed for careers in medicine through an endowed fund from the Walter and Sylvia Treadway Foundation.

Since the start of the two M.D./Ph.D. programs, 64 students have been accepted to work toward dual degrees, and 40 have received Ph.D.s from Caltech.

News briefs from around the globe

A brief list of events from the past week, compiled by the editors

Taiwan elects first female president

59-year-old Tsai Ing-wen wins election, vows to prioritize domestic issues [TIME]

US prisoners in Iran freed as part of prisoner swap

4 prisoners freed, 3 now in Germany under U.S. care [CNN]

Eight-year-old donates birthday money to foster kids

\$2000 donated so far in his name, money goes to Together We Rise, which donates bags to foster children in need [CNN]

State of emergency declared in Flint, Michigan

\$5 million in federal funding will be donated to the city, which switched from Detroit water to contaminated Flint River in 2014, causing lead poisoning in dozens [BBC]

US imposes new sanctions on Iran

11 groups allegedly linked to missile program barred from using U.S. banks [BBC]

Six admitted to hospital in failed Phase I drug trial in France

1 dead, 4 left with brain damage in trial conducted in Rennes [CNN]

US forces try to locate missing Americans

3 Americans missing in Baghdad, thought to be kidnapped by militias [BBC]

Arnold and Mabel Beckman Foundation furthers legacy of support with Caltech graduate fellowships

WAYNE LEWIS
Caltech Media Relations

This article was originally published online at caltech.edu.

A \$10 million gift from the Arnold and Mabel Beckman Foundation has created an endowment that will provide year-in, year-out support to graduate students at Caltech. Augmented by \$5 million from the Gordon and Betty Moore Graduate Fellowship Match, the grant establishes the

Beckman-Gray Graduate Student Fellowship Fund at Caltech.

The fellowships honor the foundation’s cofounder Arnold O. Beckman (Ph.D. ’28) and its former chair, Harry B. Gray, who is the Arnold O. Beckman Professor of Chemistry and founding director of the Beckman Institute at Caltech.

Fellowships help attract talent and foster creative ideas according to Thomas F. Rosenbaum, Caltech’s president, holder of the Sonja and

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(From left) Harry B. Gray, Caltech’s Arnold O. Beckman Professor of Chemistry, works with faculty associate Jay R. Winkler.

Photo Courtesy of Philip Channing/Caltech

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Caltech Y Column: Upcoming news and events

CALTECH Y

The Caltech Y Column serves to inform students of upcoming events and volunteer opportunities. The list is compiled by Neera Shah from information given by the Caltech Y and its student leaders.

Founded by students in 1916, the Y was organized to provide extracurricular activities planned and implemented by students as an opportunity to learn leadership skills and discover themselves. More information about the Caltech Y and its programs can be found at <https://caltechy.org>. The office is located at 505 S. Wilson Avenue.

Upcoming Events

1. *Mama Mia* - Caltech Y Explore LA Series

Discount tickets are on sale at the Caltech Y!

Thursday | January 28th | 8:00 PM | Hollywood Pantages Theater | Transportation is NOT provided

Sales begin 12:00 Noon, Thursday, January 14th at the Caltech Y (505 S. Wilson) Orchestra Level Seats Cost: \$45

This offer is for students only; however students purchasing tickets are permitted to purchase tickets for up to one guest each and that guest can be a non-student. There are a limited number of seats available as supplies last. Our seats are better than the ones we normally get! Explore LA is coordinated by the Caltech Y. The Caltech Y is located in the Tyson House 505 South Wilson (Bldg. 128).

Mamma Mia!, inspired by, and set to, the music of one of the most popular pop/dance groups of all time - the Swedish group ABBA features such musical hits as Dancing Queen, Take a Chance on Me, The Winner Takes It All and more. The lively and funny story tells the tale of a young woman about to be married who discovers that any one of three men could be her father. Without telling her mother, she invites all three to the wedding intent on discovering the truth and finding her father in time to be walked down the aisle. The Broadway version closed after a 14-year run making it the eighth longest running show in Broadway history.

2. NBA Basketball - LA Clippers vs. Chicago Bulls - Caltech Y Explore LA Series

Discount tickets are on sale at the Caltech Y!

Sunday | January 31st | 12:30 PM | Staples Center | Transportation is NOT provided

Sales begin 12:00 Noon, next Tuesday, January 19th at the Caltech Y (505 S. Wilson) Cost: \$24

This offer is for students only; however students purchasing tickets are permitted to purchase tickets for up to one guest each and that guest can be a non-student. There are a limited number of seats available as supplies last. Our seats are better than the ones we normally get, so make sure to be at the Y this Thursday! Explore LA is coordinated by the Caltech Y. The Caltech Y is located in the Tyson House 505 South Wilson (Bldg. 128).

Never seen a professional basketball game? Why not check it out when two of the best teams in the NBA clash in one the best arenas right here in downtown LA at the Staples Center. Featuring the likes of Chris Paul, DeAndre Jordan, Blake Griffin and Derrick Rose the game will be a showcase for NBA talent. Join us to cheer on your Los Angeles Clippers as they face off against the Chicago Bulls in a clash of epic proportions.

3. The Politics of Genetic Engineering: A Science Policy Talk with Dr. David Baltimore

Join us for a presentation by Caltech Professor and Emeritus President David Baltimore (pictured below) on the politics of genetic engineering.

David Baltimore Wednesday, January 20th, 4:00 to 5:30 pm

Kerckhoff 119

A dinner will follow for a small group of selected students

Please RSVP by January 18 - encouraged for all attendees and required to be considered for the dinner

More on Professor Baltimore below.

Dr. Baltimore was Chair of the Organizing Committee for the International Summit on Human Gene Editing (December 2015, Washington D.C.), which released a statement calling for i) basic and preclinical research on human or embryonic cells, ii) clinical use of gene editing in somatic (non-reproductive) cells, iii) a ban on clinical use of gene editing in germline (reproductive) cells until safety and efficacy issues are resolved, a broad societal consensus supporting the use of human gene editing is formed, and adequate regulations are put in place, and iv) a need for an ongoing international forum including biomedical scientists as well as social scientists, faith leaders, policymakers, and patients, to continue to discuss the future of human gene editing.

Professor David Baltimore is the Robert Andrews Millikan Professor of Biology and President Emeritus of Caltech. Among his numerous honors are a Nobel Prize in Physiology or Medicine (1975), the National Medal of Science (1999), and the Warren Alpert Foundation Prize (2000). His laboratory currently investigates the functioning of the mammalian immune system and the possibility of using gene transfer methods to increase the effectiveness of the immune system to cancer growth.

4. Caltech Y Leadership Opportunities Info Session

Friday | January 22nd | 12:00 to 1:00 PM | Location TBA

Ever wanted to organize a hiking trip or community service event but didn't know where to start? Come learn about leadership opportunities you can pursue through the Caltech Y! Leaders from the Y Excomm, Y-Outdoors, and SASS (Social Activism Speaker Series) will share their experiences and tell you how you can get involved. To sign up, please visit this link.

5. Rise Tutoring Program

Monday - Thursday | 4:00 - 6:00 PM | Starting January 6th | Winnett

The Caltech Y Rise Program is currently accepting new tutors for the winter term. The Rise Program is an afterschool math and science-focused tutoring program that serves public school students between grades 8 and 12 who are struggling in math and science (receiving a C+ or below in either subject). The tutoring takes place on the Caltech campus Monday-Thursday from 4pm-6pm. Tutors are matched with 1-2 students and will ideally work with the same student for the whole year. Tutors commit to 1-2 days per week for at least 2 terms out of the year. Schedule changes can be accommodated throughout the year. This is a great way to volunteer without having to leave campus. For more information about the program and to apply please visit our website at: https://caltechy.org/programs_services/tutoring/Resources/index.php.

6. Pasadena LEARNS

Friday | 3:00 - 5:00pm | Madison and Jackson Elementary School | Pasadena

Come volunteer at Madison and Jackson Elementary School! We are partnered with the Pasadena LEARNS program and work with their Science Olympiad team or do regular tutoring along with occasional hands-on science experiments. Transportation is provided. For more information and to RSVP, contact vkumar@caltech.edu.

Other Announcements - Beyond the Caltech Y

Volunteer at a Hackathon at Harvard-Westlake

Harvard-Westlake is one of the best high schools in the nation for CS, with a comprehensive CS curriculum and very talented programming students.

However, as high school computer scientists, many students lack coordinated opportunities to develop their skills outside the classroom. Hack HW wants to solve this problem!

Please contact Elaine Reber to volunteer/mentor the students participating in the Hackathon on January 16th and 17th! The volunteers/mentors will help to ensure that students are pursuing realistic projects and have the resources necessary to overcome programming and planning hurdles. The time commitment is 2-3 hours on Saturday and/or Sunday. Contact ereber@caltech.edu for further questions.

Cycle to Prevent Child Abuse Event

Cycle to Prevent Child Abuse Children's Bureau, an organization that works to prevent child abuse throughout Southern California, is hosting an event in Pasadena. Join them for an afternoon of spinning for a cause on

Sunday, January 24th from 12:30 to 2 pm at SoulCycle Pasadena! All riders contribute to Children's Bureau's child abuse prevention programs, while working up a sweat. To reserve a bike, members can visit this link. Each rider's donation of \$50 supports programming that truly changes children's lives. There will also be refreshments and an exciting raffle! It will be an inspiring class, generating energy and support for Children's Bureau's mission.

Volunteer Opportunity for 2016 City of Pasadena Homeless Count and Subpopulation Survey

Volunteer to be a Counter for the 2016 City of Pasadena Homeless Count and Subpopulation Survey! The Count and Survey are integral for tracking homelessness in Pasadena, which in turn inform grants submitted to the federal government for funding of local services. As you may know, Pasadena conducts the count and survey each January, with the upcoming date being Wednesday, January 27, 2016. Help end homelessness in Pasadena by becoming a Counter!

Counters will be sent out in teams of 2-3 in the early morning and late evening from: 6 AM - 8 PM and 8 PM - 10 PM. The same teams will go out both morning and evening.

Each Counter is required to attend an orientation/training meeting.

There will be a choice of two evening orientations which will take place the week prior to the Count - Tuesday, Jan 19 or Monday, Jan 25 from 6:30 - 8:30 PM.

Register by visiting <https://webmail.caltech.edu/webmail/images/blank.png>.

Caltechlive!

EARNEST C. WATSON LECTURE SERIES

WEDNESDAY, JANUARY 20, 2015 / 8 PM

ALGORITHMIC MAGIC: BEHIND THE SCENES OF MODERN COMPUTER SCIENCE

Algorithmic advances are responsible for some of the most remarkable applications of computation today—from search engines and machine learning to error-correcting codes and cryptography. Yet some of the most basic algorithmic questions remain unanswered with far-reaching implications for computer security and beyond. In this talk, Umans will describe how computer scientists identify and abstract these key problems—and how some of these puzzles encapsulate deep questions about the nature of computation itself.



Chris Umans
Professor of Computer Science

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Call campus x 4652 for information

Dealing with academic ineligibility: You flick, you flame, you ash

ANDRE COMELLA
Contributing Writer

At the beginning of last year, Caltech implemented new academic eligibility requirements, increasing the standard for remaining an eligible student and setting more concrete rules for how repeat ineligibilities would be handled. Now, whenever a student fails to pass 33 units or more, that student becomes ineligible, or, as I've heard it called, "flames." After the student's first ineligibility, a dean's approval is required for reinstatement, but the second time, the student is required to take at least two terms leave. This is a description of what happened to me when I flamed third term of the 2014-2015 academic year.

On the second day of my SURF, I got a letter from the Registrar's Office informing me I had become academically ineligible. This was my second ineligibility (my first was first term of the same year). I was told I had five days to move out, and I had lost my SURF. In the span of about four paragraphs, I lost my job, my housing, and my plans for at least the next nine months (and quite possibly much longer). Everything that happened in the next few days was basically Bureaucracy: The Stack. Everywhere I went, I got a new clue for what I was supposed to do next, but it was rarely clear what I should actually be doing or whom I needed to talk to.

The first thing I did was reach out to Dean Green to talk about my ineligibility. It was similar to our talk the first time I flamed; we chatted about what went wrong and what to do going forward. But with so many uncertainties, there were a lot of important questions I didn't think to ask, like how long I'd have card access, or what kinds of classes I could take in my time off, and overall, not much came out of it. It did give me an idea of what to do though. I soon talked to my lab and managed to keep my research position, just now without money from the SURF program, meaning I'd be earning one-third of what I had originally anticipated.

The next step was to talk to Housing and clarify the details of my moving out. Housing told me the email from the registrar was wrong; I did not have to move out in the next few days. Instead, the Registrar's Office would inform Housing that I was no longer a student, and I would then receive an email from Housing. At that point, my five-day countdown would begin.

My last week living in Ricketts, I went to the C-Store and came back to discover my card had been completely deactivated. I was locked out of the place where I currently lived as well as the building I worked in. Apparently, Security had been informed I was no longer a student and immediately deactivated my card without checking with Housing first. Figuring this out required talking to the Deans, the Registrar's office,

Housing and finally, Security. I got Security to restore my card access to the South Hovses for that week, but I was told I had to talk to my building administrator to get card access to my lab again. When the week ended, Security once again removed my card access, even from my lab.

I finally had to move out of Caltech housing, which meant finding somewhere else to live for the rest of the summer. I decided the shame of admitting I'd flamed was outweighed by the reality of my imminent homelessness, and I emailed all of Ricketts, asking for a corner to crash in. I found a place to sleep on some friends' couch off campus, and this is how I lived for the next three months. I woke up in someone's living room, folded up the pull-out couch, and went to work.

Along the way, I started looking into actually having a future, but when I went to look at my records and figure out a plan for graduating, I realized that somewhere along the way I had lost access to Regis, so I could no longer access my transcript or my degree audit — both rather important for deciding whether to stay or transfer. The form for reinstatement even explicitly asks for a degree audit and a schedule for the next several terms. I brought up this issue the first time I had to talk to Dean Green and was told this was a known problem and that something would be done about it. The details changed a bit, but the end result of being locked out remained the same. I similarly lost access to my Bursar's account, but was told I'd have a collection agency sent after me if I didn't pay my bills.

Now consider all this involved people who knew little to nothing about my situation or how to handle it. With each person, I had to explain that I failed a class, that I didn't meet the eligibility standards, and that I was getting kicked out. In dealing with the logistics of getting kicked out, around 20 people were explicitly told I had lost my status as a student. About half of them were people I told directly and in person. Some of them, though, were people I had never heard of, and still haven't spoken to. Each person or office served me in some small way, but none of them understood the scope of what I had to deal with and how crushing every step was. Each time I gave my little speech was a new wave of humiliation to add on top of whatever part of the process I was currently dealing with. To some degree, my flaming was caused by my hubris, thinking I could somehow pull everything together at the last minute, but the experience of flaming has been much more a lesson in humiliation than humility.

Getting locked out was the worst part. It was a such an impersonal way to say, quite clearly, "You are no longer welcome here." There was something so crushing about that moment, about so coldly being told that my

home was no longer a place I had a right to be. There was no warning before this, and when I got my access (temporarily) restored, no apology. At a time when I needed my Hovse, my family, more than ever, the Institute managed to make me feel like that was no longer a community I deserved to be a part of.

When I told my counselor at the Counseling Center that I'd been put on leave, I was immediately asked if I was feeling suicidal. It was a pretty valid question. The stress of doing badly academically had already been wearing me down for a while and was an unpleasant and unwelcome addition to the stresses and problems that caused me to do poorly in the first place. On top of that was the shock and shame of actually flaming and the repeated humiliation of having to tell dozens of people. I also had to cope with the sense of loss that came with losing a job I had been looking forward to and any financial security it provided. With such a bleak present, I could take no solace in a hopeful future. In those first days, I had no form of income (and almost no savings), no ideas for my time off, nowhere to sleep in a week, and no idea where to begin. Since I was no longer a student, I was informed I could no longer use the services of the Counseling Center—I got to go once more.

I want to make clear that these issues, for the most part, are not the fault of the people themselves. I feel such overwhelming gratitude for those who helped me through the news and counseled me on what do next. So many of the people I talked to were extremely understanding and supportive, and I am extremely grateful to them. They extended me as much kindness and leniency as they could, but ultimately, they were bound by the rules of the Institute for which they work. The rules are strict and clearly don't involve much consideration for what academic leave would actually involve, or how it would play out for students.

And as far as supporting students is concerned, the Institute is totally incapable. The one common theme of the whole process is that no one understood the full extent of how the transition worked or what would happen to me.

I am now living in the Boston area, interning at Formlabs, a small company that makes 3-D printers. It's a great experience, and I'm enjoying it quite a bit. But getting to this point took an enormous amount of effort, luck and help from friends — with nothing from the Institute. I've spent, in total, about four months living off the charity of friends. It took about two months to get a job from when I first sent Formlabs my application. Finding a place in the area proved to be rather difficult, and I was paying to stay at Airbnbs until I could move into my apartment in December, which meant paying about 50 percent more than I would have for an apartment. I've moved seven times since the start of the summer, and I'm hoping that I can stay in my apartment until I come back to Tech. So far, the financial costs of trying to set up a new life have totalled to hundreds of dollars, although without such tremendous luck and generosity, that number would've been in the thousands. And all this time, no one from Caltech, as an institution, has made an effort to ease my transition, offer support or check up on my progress. If I come out of this experience better, it will be in spite of—not because of—Caltech's actions.

I could get reinstated as early as the spring, but I intend to take the whole year off. The application itself is its own adventure, and I have no idea what to expect of sitting before UASH. If I were to come back in the spring, it would mean uprooting my life again and returning ill-prepared. I can't get reinstated until the start of spring term (or maybe the end of winter term), which would mean I'd be moving without knowing if

I'd actually be allowed back. I'd be trying to find non-Caltech housing for a couple months at a time when basically no one is moving or getting apartments. And when summer rolls around, I'd likely find myself jobless and maybe homeless again; I'd be ineligible for a SURF because I would not be a registered student until long after the SURF deadline. From the stories I've heard from other students, I could also have a great deal of trouble getting back even basic things students have: card access, a mailbox, etc. The most advice I got from Caltech was to "use my time well." Most of the practical advice I received that actually helped me get to where I am now I got rather accidentally from an incredibly kind and helpful UASH rep.

The message that Caltech sends to students who flame out is pretty clear: they are no longer the Institute's problem or concern. For a place that likes to claim it supports its students, provides them with individual attention, and fosters a sense of community, Caltech does extraordinarily little to help those who are struggling. And once a student does flame out, the Institute seems to cease to care entirely, coldly cutting them off and shoving the student out into the world entirely unprepared. A student who becomes ineligible a second time is put on leave—no questions, no hesitation. A student who becomes ineligible a third time is expelled in much the same way. Are these really the policies of a caring Institute? We have the resources to care about each student who flames as an individual with unique circumstances, so why have we chosen to slap such students with a label of "Not Our Problem" and shove them out the door? Why are we so content to offer them no help when it matters? And when they struggle and fall again, why are we so willing to make their departure so sudden, so painful, and so alienating it burns away all their hope and happiness, leaving them as nothing but ash?

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Looking for something exciting to get involved in this new year?

We are looking for more contributors!

We accept reviews, opinion pieces,
research, news stories, comics and more!

Email tech@caltech.edu with questions.

Humans of Caltech: Meet Norma Alvarez

The California Tech brings you stories of Caltech community members

ALEXANDER HSU
Contributing Writer

What's your full name?
Norma Alvarez

How long have you been working here?
Nine years

What's your favorite part of working here?
Everything: working with the students, the atmosphere.

What do you like about the atmosphere?
Everybody's friendly, smiley.

What is your typical day like?
Mornings, I start at the south kitchen, organizing for lunchtime. Then after that I go back to Chandler, cashier. At 3:30, I go to Avery, bring all the food, organize for dinner.

How about your personal background? Do you have a family?
I have a husband, married for 16 years, and two daughters, 15 and 11.

Where were you born?
Here, in LA.

What's your favorite food?
Enchiladas! My sister makes a home-made sauce.

What's your favorite food that you serve here?
Everything ... I like everything.

What do you like to do for fun?
Take my daughters on walks, hang around with my family.

Anything to share with the students?
They all seem to be pretty cool, I see them every day. They're real cool. :)



Photo Courtesy of Alexander Hsu

Caltech Chamber Music presents the Winter 2016 Concert Series in Dabney Lounge starting on Friday, Jan. 22, at 8:00 p.m.

Caltech Chamber Music, directed by Delores Bing presents the Winter 2016 Concert Series. There will be 28 ensembles featured during 5 different programs, including Baroque trios, string quartets, woodwind quintet, strings and piano, 2 pianos-eight hands, and more. Also performed will be well-known masterpieces (Beethoven: Op. 18, No. 4) to less familiar gems (dances by Robert Schumann's father-in-law, sonata by Bach's pupil Goldberg).

Concert dates are as follows:
EACH CONCERT IS A DIFFERENT PROGRAM with different music and different performers

Friday, Jan. 22, 8 p.m.
Saturday, Jan. 23, 8 p.m.
Friday, Jan. 29, 8 p.m.
Saturday, Jan. 30, 8 p.m.
Sunday, Jan. 31, 3:30 p.m.

All concerts will be held in Dabney Lounge. Admission is free with no tickets required. For complete program information go to <http://music.caltech.edu> one week prior to concerts.

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Caltech defeats Pomona-Pitzer, reclaims SCIAC lead

GOCALTECH.COM
Actual Sports Content Editor

PASADENA, Calif. (Jan. 16, 2016) – In a season of historic achievements, the Caltech men's basketball team added another pair as senior Kc Emezie scored his 1,000th career point in the Beavers' first victory over Pomona-Pitzer Colleges since the legendary Gregg Popovich coached the Sagehens with a 67-58 victory Saturday night.

"We're all really proud of Kc – that's a great accomplishment," Head Coach Dr. Oliver Eslinger said. "I honestly wasn't even thinking about it and I know he wasn't either. Tonight was all about the team effort to get the win, and it's fitting because that's exactly the way he thinks."

With the win, Caltech reclaims sole possession of first place in the SCIAC, improving to 6-8

overall and 4-1 in the SCIAC while Pomona-Pitzer drops to 6-7 (1-4).

"We don't really think about being in first place," Eslinger said. "The guys do a great job of focusing on the next practice, the next opponent, the next opportunity to improve. That's our identity – a total team effort in every win and always looking to get better."

Pomona-Pitzer jumped out to a 7-2 lead and held a seven-point margin at 20-13 midway through the first half, but Caltech made it a one-point game with 4:09 left in the period and entered halftime trailing by five.

The Beavers offense clicked on all cylinders immediately after the break as junior Ricky Galliani hit a quick jumper and three-pointer followed by an and-one play from junior David LeBaron to give Caltech the 32-29 lead just a minute-and-a-half into the



A silly photo caption is really not necessary when our opponents make faces like this.

Photo Courtesy of Michael L. Wong

second stanza. The Sagehens cut the deficit back to one but sophomore David Kawashima drove for a layup and dished to Emezie for another and the five-point lead, after which Caltech never allowed the visitors to pull back within a basket.

Caltech steadily increased the margin to as many as 13 with 57 seconds remaining and sealed the deal thanks to freshman Brent Cahill hitting five of eight free throws in the final minute for the Beavers' last five points.

"I'm really proud of our coaching staff for identifying a couple key adjustments at the half and how perfectly our guys responded to them," Eslinger said. "And to put on that type of display on Alumni Day in front of our former

players who have helped make all this possible, we can look back on a great day of memories with a competitive alumni game followed by an historic win."

Cahill led Caltech with 17 points on 5-for-7 shooting off the bench, with Emezie and LeBaron adding 11 and 10, respectively. Junior Nasser Al-Rayes pulled down 11 rebounds and blocked four shots while chipping in nine points. Kawashima contributed nine points, eight rebounds, two steals and an assist in just 23 minute.

"Brent was impactful tonight," Eslinger said. "The great thing about him is that he just does what we ask him to do, and immediately."

Eslinger and the Beavers will face off against defending tri-champion Chapman University (9-4, 3-2) on Wednesday, Jan. 20 at 7:30 p.m.

Men's fencing boasts star power, tremendous depth

GOCALTECH.COM
Actual Sports Content Editor

PASADENA, Calif. (Jan. 16, 2016) – A pair of individual conference titles to open the season and impressive team performances in all three weapons have Caltech men's fencing eager to open NCAA competition in 2016.

Freshman Qifan Wang has already made his presence known with an 11th-place finish at the elite BladeRunner USFA ROC and gold medal performance in the season-opening IFCSC Open, where he topped B-rated sophomore teammate Ethan Lo before defeating top-ranked Jake Hillard of Arizona State University. An 'A'-rated fencer since 2013, Wang accumulated the highest total points of any cadet in Canada prior to his arrival at Caltech. Lo, meanwhile, just missed qualifying for the NCAA Championships last season after placing fifth in the NCAA West Regional; a rookie at the time, Lo dominated both the eventual champion and third-place finisher by 5-3 and 5-1 scores in pool play but came up a single win short of reaching the direct elimination bracket.

"Qifan has an amazing work ethic and has placed consistently in high in league competition so far this season," Head Coach Carla Corbit said. "With him and Ethan competing right with everyone's top fencers, our epee team could pull out some big wins for us."

Freshman Alex White and Sophomore Spencer Strumwasser will vie for the final starting position on the epee team. Another 'B'-rated fencer, Strumwasser came in last year with significant experience in high school, US Nationals, Junior Olympics and North American Cup competitions. He earned a pair of victories at

last year's West Regional and improved on his rookie-year finish at the BladeRunner by 23 places this past fall. White has already earned a 'C' rating and posted an impressive win percentage in IFCSC competition this fall. He can also fence foil and will likely be afforded an opportunity thanks to the strength and depth in his primary weapon.

Junior Matthew Jin once again fronts the foil team and will captain the entire squad in addition to laying claim to a 'C' rating. Another experienced high school fencer who has competed in the North American Cup and Junior Olympics, Jin has qualified for the West Regional each of his first two years and won the individual IFCSC title in the season-opener. He is joined by junior Keegan Mendonca and Alex Lew, the latter of whom also qualified for the West Regional last season, earning his 'C' rating.

"Matt is a very strong squad leader," Corbit said. "He has been fencing competitively since high school and has even more room for improvement."

While the saber group may not have a rated fencer entering NCAA competition, that may not be the

case for freshmen Julius Oppenheim and Aaron Shih in the weapon and the results could not have been more positive, with the pair responding by winning several bouts which culminated in two wins for the team. Combined with the 6-0 and 5-1 records amassed by the epee and foil squads, that placed Caltech third overall in the conference standings and will be crucial in every NCAA matchup.

"Kai has really taken over leadership of the saber team," Corbit said. "He makes up for a relative lack of experience with his relentlessness and is always pushing himself. Jules and Aaron did great in their first saber competition and even improved throughout the day."

This year's team also boasts tremendous depth, with senior Nima Badizadegan, junior Will Yu and sophomore Jimmy Hamilton capable of stepping right into the lineup for epee, saber, and foil, respectively.

With such impressive individual showings in the IFCSC Open and the team's performance in the first leg of IFCSC competition, Corbit and the Beavers have high expectations for this spring.



Can Wang do it? I assume so, because his uniform says so! ... I'm going to show myself out now.

- <http://gocaltech.com>

Women's fencing set to continue upward ascent

GOCALTECH.COM
Actual Sports Content Editor

PASADENA, Calif. (Jan. 16, 2016) – Following a pair of highly successful seasons and positive indicators in this past fall's conference competition, the Caltech women's fencing team is set to continue its upward ascent as it approaches NCAA competition in 2016.

Three of last year's NCAA West Regional qualifiers return, along with another who qualified the year prior. Junior Christina Meyer boasts the top billing after qualifying in third place in the epee, although she finished just three touches out of the top four which advanced to the direct elimination round. She will be looking to break through after placing fourth the year prior as well. Senior Catherine Pavlov joins Meyer to form a formidable 1-2 punch, having also qualified for the regional competition last year, although she was unable to compete.

"Christina is right on the verge of reaching the NCAA Championships and has competed at the US Nationals and North American Cup, Head Coach Carla Corbit said. "With Christina as our captain and Catherine a good team leader, epee is definitely a strength for us."

Senior Shi En Kim will lead the saber squad after returning from studying abroad last term. Despite fencing for the first time as a freshman, she has qualified for each of the past two regional meets. Senior Emilia Hernandez shoulders the mantle of the foil squad leader after the graduation of Katie Fisher, who teamed with Hernandez last season to lead foil

to a team-high second-place finish in the IFCSC.

Corbit is leaning on several newcomers to fill out the three-fencer lineups in each weapon. Vying for the lone scoring position behind Meyer and Pavlov in epee, graduate student Madeline Lewis and freshman Maia Stiber each enter Caltech with some fencing background but are still short on experience. Stiber can also fence saber if needed, with Mary Giambrone and Claire Goeckner-Wald the only other members on the team who compete in that weapon. Freshmen Jennifer Du and Anne Zhou look to pin down spots behind Hernandez in the foil.

"Emilia is stepping into the role of squad leader in foil and will be good for Jenny and Anne, who have never fenced before," Corbit said.

Having already competed in a pair of conference events during the fall, the squad already has a sense of its capabilities entering NCAA competition. The epee team won two matches while foil claimed one as well, with Hernandez and Meyer each placing third individually in the respective events at the season-opening competition.

"Our epee team is our strongest entering the year with two very good returners, but we also have strong squad leaders in both foil and saber and our freshmen have tons of potential. Corbit said. "It takes about 10 years to really learn a fencing weapon and a lot of our opponents have been fencing most of their lives, but we expect to perform well even with just a year or two of experience."

Caltech will next compete at the Northwestern Duals on Jan. 30-31.

ASCIT Minutes

Meetings are every Wednesday at 4 pm in SAC 13

ASCIT Board of Directors Meeting

Minutes for 13 January 2016. Taken by Sean McKenna.

Officers Present: Nima Badizadegan, Sean McKenna, Catherine Jamshidi, Annie Chen, Kalyn Chang

Call to Order: 4:13 pm

Guests: Chris Dosen

President's Report (Nima):

- Faculty Board Meeting:
- Looking for a \$100-150 million grant for undergraduate financial aid
- "Four year experience" for undergraduates was pressed. Joe Shepard wants to form a committee with students to look at uniting of classes. Faculty board seems to resist lowering the underload requirement from 33 to 27.
- Will be making changes to the bylaws in order to prepare for IHC chair election. More discussion will happen at the next meeting.

Officer's Reports:

- **V.P. of Academic Affairs (ARC Chair: Jay):**
 - Absent
- **V.P. of Non-Academic Affairs (IHC Chair: Cat):**
 - IHC is trying to change some bylaws, and the changes are required to be approved by 7 out of 8 House ExComms.
- **Director of Operations (Sean):**
 - It was my birthday. Everyone sang to me, which was nice.
 - Making a book with transition information from future Board of Directors
- **Treasurer (Kalyn):**
 - Deciding on ASCIT Formal Budget with Annie
- **Social Director (Annie):**
 - Absent
- **Secretary (Phillip):**
 - Absent

If anyone has any questions or concerns about a section of the minutes please email the appropriate officer. We are happy to answer any questions.

Meeting Adjourned: 12:31 pm

REMINDER FROM COUNSELING CENTER:

Meditation Mob

(drop-in mindfulness meditation group)

Meets every Tuesday, 12:00-12:50 p.m.

Bottom floor of Winnett

VICE PROVOST'S OFFICE HOURS

Vice Provost, Chief Diversity Officer and Professor of English, Cindy Weinstein, offers weekly office hours. These hours are an opportunity for undergraduate, graduate students and postdocs to meet and discuss what they'd like pertaining to the Council on Undergraduate Education, Caltech accreditation, the Staff and Faculty Consultation Center, Student-Faculty Programs, the Center for Teaching, Learning and Outreach, the Caltech Diversity Center and the libraries.

There are four appointments per hour, 15 min. each. Sign up the morning of the office hour in 104 Parsons Gates, Vice Provosts' Offices (x6339).

Winter term hours: 12-1 p.m.

Tuesday, Jan. 19

Wednesday, Feb 17

Monday, Jan. 25

Thursday, Feb. 25

Monday, Feb. 1

Wednesday, Mar. 2

Tuesday, Feb. 9

Tuesday, Mar. 8

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Editors-in-Chief
Neera Shah
Nehaly Shah

Page Editors
Jon Cotler
Katherine Guo
Ching-Yun (Chloe) Hsu
Valerie Pietrasz

Contributing Writers
Andre Comella
Alexander Hsu

Contributing Photographers
Michael L. Wong

Circulation Manager
Kit Chinetti

Advisor
Richard Kipling

Caltech 40-58, Pasadena, CA 91125
Contact tech@caltech.edu

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The advertising deadline is 5 p.m. Friday; all advertising should be submitted electronically or as camera-ready art, but *The Tech* can also do simple typesetting and arrangement. All advertising inquiries should be directed to the business manager at tech@caltech.edu. For subscription information, please send mail to "Subscriptions."

New \$10 million grant establishes endowment for Beckman-Gray Graduate Student Fellowship Fund

Continued from page 1

William Davidow Presidential Chair, and professor of physics.

“The Arnold and Mabel Beckman Foundation gives a priceless gift to up-and-coming scientists and engineers at Caltech—the freedom and flexibility they need to follow their curiosity wherever it leads them,” Rosenbaum says. “This powerful gift contributes to our goal of endowing every graduate fellowship at the Institute. We are deeply grateful for the foundation’s philanthropy that so appropriately honors two giants of scientific research and technology, Arnold O. Beckman and Harry B. Gray.”

In keeping with the spirit of a contribution that honors two prominent Caltech chemists, the Beckman-Gray Fellowships carry a preference for certain options within the Division of Chemistry and Chemical Engineering.

“I’m committed to supporting young investigators,” says Gray, who had a voice in shaping the foundation’s gift. “And I’m very much in favor of the president’s vision to endow all the graduate fellows at Caltech. I really believe this will put Caltech at a new level in terms of recruiting graduate students and faculty.”

“This kind of endowed graduate fellowship program will be transformative. I’m hoping lots of people will follow this lead.”

The announcement of the Beckman-Gray Fellowships coincided with a symposium on campus celebrating the 25th anniversary of Caltech’s Beckman Institute, a hub for developing new approaches and technologies that will make possible breakthroughs in chemistry and biology. “Invention and Imagination in the Molecular Sciences: The Shared Legacy of Arnold Beckman and Harry Gray” took place at Caltech’s Ramo Auditorium on November 12 and 13, 2015, timed to honor Gray on his 80th birthday.

Gray, a faculty member at Caltech since 1966, is known for his pioneering work in bioorganic chemistry. His investigations have unearthed fundamental insights into electron transfer in biological processes—a molecular mechanism underlying essential activities of living things such as breathing and photosynthesis. Gray has received the National Medal of Science, the American Chemical Society’s Priestley Medal, the National Academy of Sciences Award in Chemical

Sciences, and the Wolf Prize in Chemistry, among other accolades.

Beckman, who died in 2004 at the age of 104, served as a Caltech faculty member, benefactor, and chair of the Board of Trustees.

An inventor who opened up new possibilities for chemists, he invented the pH meter and the spectrophotometer, which uses visible light to facilitate tasks such as chemical analysis. He founded the company that would become Beckman Instruments while still serving as a faculty member in Caltech’s

Division of Chemistry and Chemical Engineering.

Beckman was a key investor at the beginning of both Silicon Valley and the biotechnology industry. Additionally, he pushed for policy changes that significantly reduced air pollution in Southern California and nationally. He was recognized with such honors as the National Medal of Technology, the National Medal of Science, and the Presidential Citizens

Medal, as well as Caltech’s Distinguished Alumni Award.

Together with his wife, Mabel, he gave generously to advance his alma mater. Campus landmarks commemorating the couple’s giving include the Arnold and Mabel Beckman Laboratory of Chemical Synthesis, the Mabel and Arnold Beckman

The Arnold and Mabel Beckman Foundation has carried on the family’s tradition of philanthropy with programs such as Beckman Young Investigators, Beckman Scholars, and the G. Patricia Beckman Graduate Fellowships at Caltech.

Adds Anne Hultgren, executive director of the Arnold and Mabel Beckman Foundation: “There is no better way to honor Arnold O. Beckman and Harry B. Gray than by continuing their tradition of supporting talented young scholars to reach their full potential. With the additional support from the Gordon and Betty Moore Graduate Fellowship

Match, we are pleased to be able to create this opportunity within the Caltech community.”

The Gordon and Betty Moore Graduate Fellowship Match is available for new gifts and pledges to endow graduate fellowships. For more information about the match and how to support graduate education at Caltech, please contact Jon Paparsenos, executive director of development, at (626) 395-3088 or jpapars@caltech.edu.

“I’m very much in favor of the president’s vision to endow all the graduate fellows at Caltech. I really believe this will put Caltech at a new level in terms of recruiting graduate students and faculty.”

Crossword

1	2	3	4		5	6	7	8	9		10	11	12	13
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Across

- Couch
- Extreme happiness
- Air pollution
- Solemnly declare
- Exhibition of cowboy skills
- Hollow cylindrical shape
- Evil
- Panache
- Moose
- A Titan in Greek mythology
- Scoop
- Deciduous tree
- Less in amount
- Bunch
- Rate of revolution, in short
- Ballet step
- Building containing a surface for skating
- State of decay
- Pour out
- Flexible twig of a willow tree
- Armed conflict
- Shelf
- Bloom
- A high rocky hill
- Length by width
- Value of Roman X
- The latest fashion interest
- Amok

- Force or drive back
- Enemy
- A natural talent
- Extraterrestrial object
- Travel over snow
- Lengthy
- In advance
- A commitment to tell the truth
- Loosen
- Spread substitute for butter
- Redact
- Manner
- Rind

Down

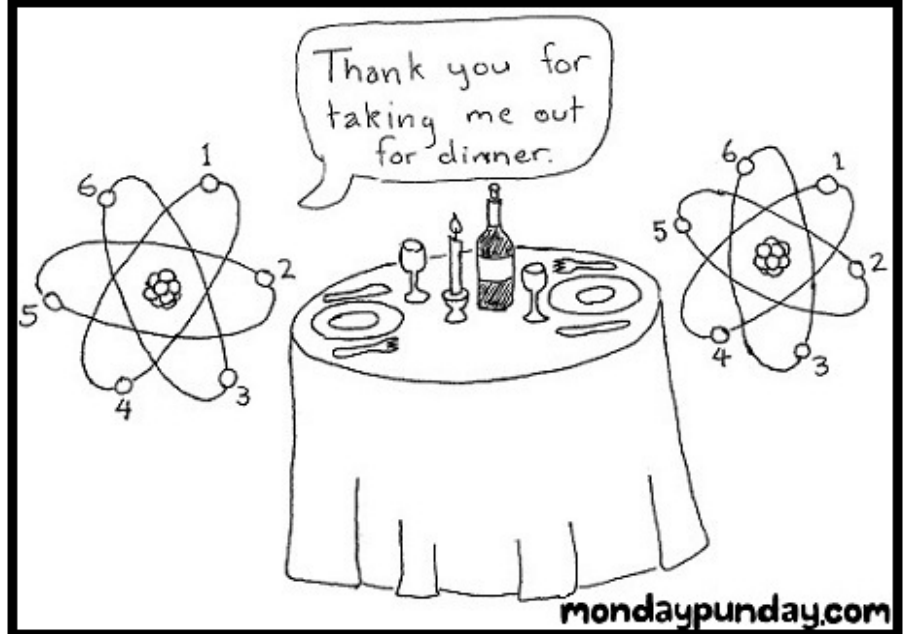
- Equal in amount or value
- Egg-shaped
- People
- The power to cause dread
- Male relative
- Be lazy or idle
- Model of perfection
- Detector
- Drunkard
- Lance
- Moderate
- Mineral
- Hereditary unit
- Immense
- Tier
- Awry
- Married
- Small farm
- Type of thread
- Organization of employees
- Quarrel
- Military chaplain
- Ire
- Cut of meat
- Tasteless by being cheap and vulgar
- Discontinue
- Mention
- Steal
- Music genre
- Sports official
- Polite or respectable
- Memorization by repetition
- Correct
- Of imposing height
- Floating ice mass
- Burden
- Not in favor of
- Moisten or soil
- Commercial transaction
- Leg joint
- Object of worship
- Public transport
- Jump lightly

Fresh Fish

Paige Turner



Monday Punday



This picture represents a common phrase, title, or person.
 Think you know the answer? Take a guess at mondaypunday.com/34

Answers to the current crossword (page 7)

L	E	E	P	E	L	E	S	T	I	T	E	D	I	T	E
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G	O	G	S	M	O	G	S	S	B	L	I	S	S	B	L

-<http://puzzlechoice.com>

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