

## Alumni remember milestone for undergraduate women

**BEN TOMLIN**  
Caltech Alumni Association

*In 1970 Caltech opened its doors for the first time to undergraduate women. This year, Caltech celebrates the graduation of those pioneers, who went on to forge new paths across science, technology, and engineering.*

*Jacqueline Barton, the Arthur and Marian Hanisch Memorial Professor of Chemistry and chair of the Division of Chemistry and Chemical Engineering, speaks with five alumnae who were among the first women to graduate from the Institute about their time at Caltech, their experiences in the decades that followed, and the role of women in the sciences today.*

### THE PANEL

(Moderator) **Jacqueline Barton** - Arthur and Marian Hanisch Memorial Professor of Chemistry; Chair of the Division of Chemistry and Chemical Engineering

**Sharon Long** (BS '73) - Professor of Biological Sciences, Stanford University

**Rhonda L. MacDonald** (BS '74) - Former Director of Structures and Mechanisms Products, Northrop Grumman Aerospace Systems

**Louise Kirkbride** (BS '75, MS '76) - Cofounder of CADRI and Answer Systems

**Lauretta Carroll** (BS '77) - CEO, Practice Today

**Suzanne Shea** (BS '79) - Cofounder and Executive Vice President, Praxis Engineers

*Barton: First of all, let me say that it's an honor to speak with you all. Each of you was part of a class of pioneers. I'm curious to know why you chose Caltech, knowing that it had only just begun to accept women.*

**MacDonald:** I was interested in math and wanted to attend a school where I could try some engineering courses, I was attracted to Caltech for the same reasons many are—its reputation for excellence in science and engineering, its small size, and its excellent faculty-to-student ratio. My high school guidance counselor actually tried to

cancel my interview with a Caltech professor because, he said, "You will be going to Smith College." I told him that I was interested in engineering and that I would be going forward with the Caltech interview.

**Long:** I loved science as a child; I collected rocks and minerals and especially enjoyed chemistry. I first read about Caltech in Reader's Digest and fell in love with its culture and tradition of pranks. I just thought, "What a creative, imaginative, and interesting place."

**Kirkbride:** Once I heard that Caltech was the hardest school to get in to, it was irresistible. Harry Gray [Arnold O. Beckman Professor of Chemistry] actually interviewed me. You usually think of scientists being so stuffy—but I couldn't imagine a more engaging, dynamic person. After I met him, I would have crawled over broken glass to get to Caltech.

**Shea:** My mother first tried to dissuade me, warning me that I was heading in a direction where there would not be very many women, which would be tough. I said: "I know. I think it's going to be part of my job in life—to be one of the first women in these fields." When I made my choice, she was very proud of me attending Caltech, and extremely supportive.

**Carroll:** I was a product of the Los Angeles public school system in 1972, when it was really in disarray and we joked that it was a feat just to graduate without a criminal record. I had my sights set higher. To be placed at Caltech was a real achievement, of which I'm very proud.

*Barton: So when you arrived at Caltech, did you feel different? Were you aware of being the first women on campus?*

**Kirkbride:** You were certainly aware that this was a momentous change for Caltech, yes. Most of the campus was very supportive, but there were some rough edges—some professors, including my first advisor, who voiced their opposition.

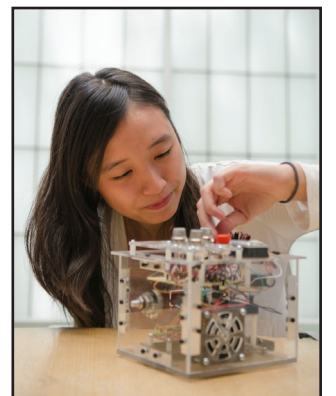
**Long:** You heard some rumblings that people considered it an experiment—and that if the experiment didn't work, they would just "undo it." But these changes were happening at many campuses, and we knew there really was no going back.

**Carroll:** My first advisor said, "Well, Carroll, you know you have to pass A Ma 95 [now ACM 95/100]," in such a way that I knew he doubted that I would. I found that unfortunate, but in a strange way, it made me stronger. I became absolutely determined to do the work—and I did very well.

*Barton: Despite some of the doubts and opposition, each of you stayed and stuck it out. What drove you?*

**Kirkbride:** You had to expect some of that resistance. But at the top, the Institute was completely committed to and accepting of us. [Former Caltech President] Harold Brown was very supportive, and his help meant a great deal. Carver Mead [Gordon and Betty Moore Professor of Engineering and Applied Science, Emeritus] was just tremendous.

*Continued on page 2*



(Top) Jen Karolewski (bottom from left to right) Amarise Little, and Sandra Fang continue the legacy of women at Caltech today.

Photos Courtesy of Stephanie Diani, Lance Hayashida, and Ben Tomlin

## Caltech alumni to visit for Reunion Weekend

**NEERA SHAH**  
Editor-in-Chief

The Caltech Alumni Association (CAA) will hold its annual Reunion Weekend on May 15-18, featuring the 77th annual Seminar Day on May 17. The general session of Seminar Day will feature keynote speaker Carver Mead (BS '56, MS '57, PhD '60), the Gordon and Betty Moore Professor Emeritus of Engineering and Applied Science, and the presentation of the 2014 Distinguished Alumni Awards. All students are invited to attend the event.

There are only about 23,000 Caltech alums, but a great portion of these have made countless contributions to science. Associate Director of Alumni Relations and Communications Ben Tomlin said, "The tremendous impact that our alumni have in the world is disproportionate to the relatively small number of graduates." Caltech honors a select group of graduates as Distinguished Alumni every year on Seminar Day, which is one of the main events of Reunion Weekend.

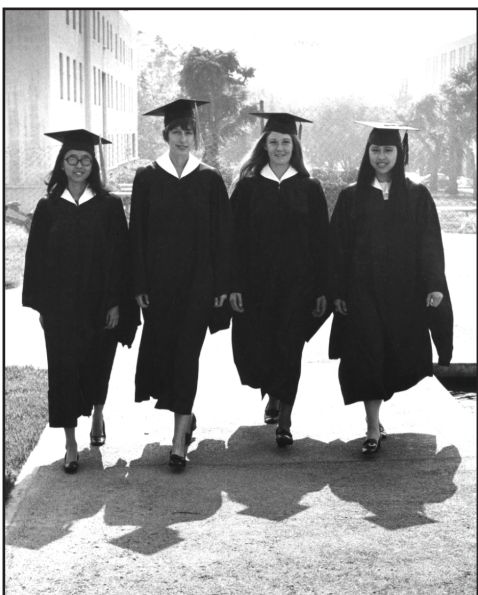
In addition to holding Reunion Weekend every year and various events around the world where alumni can reconnect with each other, the CAA has been working on projects that will "connect current students with alumni. Current CAA Executive Board President Heather Dean (BS '00, MS '00) said, "We know that many students want to keep in touch with their fellow alumni and to hear what they or those at Caltech are doing.

We would like to help provide opportunities for that, as well as career and networking support."

Among the new projects is the launch of a LinkedIn chat group for alumni and current students to interact. Members of the group commit that they will accept questions from students regarding career advice, recommendations, etc. Executive Director of the CAA Alexandra Tobeck added, "We have an accomplished and willing community that is relatively easy to connect with, which helps us build a strong alumni network. Current students should take advantage of this – the alumni want to support and cheer you on! Of course, students should also remember to be thoughtful as they reach out to the alumni" (to give the alumni context of the students' interests and their career goals).

One of the recent developments that has already been implemented is "Play Dough," which encourages alumni all around the world to stay in touch with each other. This program was put in place last year and allows alumni to be reimbursed (up to \$500) to organize a new alumni event. Who doesn't like free food and good company, right?

*All current Caltech students are encouraged to attend select events and meet alumni throughout Reunion Weekend. For more information on Seminar Day, please see page 7. Complete information on Reunion Weekend can be found at <http://www.alumni.caltech.edu/reunion-weekend>.*



Flora Wu, Stephanie Charles, Sharon Long, and Deborah Chung (all '73) were the first women to earn undergraduate degrees at Caltech.

Photos Courtesy of E&S 1973

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# Caltech Y Column

PHOEBE ANN  
Contributing Writer

## UPCOMING EVENTS

### 1. India: A Cultural Trip - Student Presentation - Info Meeting

Tuesday | May 13th | 12:00 - 1:00 PM | Caltech Y | Lunch Provided | RSVP required Undergraduates Only

The Caltech Y, in partnership with the Caltech SURF Program, and hosted by the Indian Institute of Technology in Gandhinagar (IITGN), coordinated a 10-day trip to Ahmedabad, India called India ki Khoj - In Search of India. The program promoted an understanding and appreciation for India through lectures and field trip led by IITGN Faculty and local experts. Caltech undergrads got a glimpse into Indian culture, history, philosophy, and society as they learned more about the emerging world power that is India. Join us as some of the student participants, Klavdia Zemlianova and Bianca Lepe, share some of what they learned and took away from this amazing experience.

Thinking about going on the Caltech Y India Cultural Trip this year? Learn more about the program and itinerary and get your questions answered.

### 2. Abhaya "The Fearless" A Classical Indian Dance Performance

Sunday | May 18th | 3:00 - 5:00 PM | Ramo Auditorium | Tickets: Free with Caltech ID \$10 Non-Caltech

To promote the cause of human trafficking, The Caltech Y and Kalalayam Dance Company have collaborated to present Abhaya "The Fearless" A Classical Indian Dance Performance hosted by Janani Mandayam Comar, the Caltech Y Advocating Change Together (ACT) Award recipient.

In a world plagued by poverty, drugs, and war, economists say that the solution to our problems lies in the hands of those that we have most neglected: women. They may make up 70% of the world's poorest, but they are definitely more than 50% of the world's brightest. Join us in exploring the powerful essence of female divinity in Hindu culture and philosophy and celebrating those who manifest their inner strength daily. More Info & Tickets.

### 3. Caltech Y India Cultural Trip

December 13th - 23rd, 2014 | Cost: \$950 | Applications Due Tuesday, May 20th by 5:00 PM

The Caltech Y, in partnership with the SURF Program and IIT Gandhinagar (IITGN) in India, is coordinating a trip to Ahmedabad, India. Join us for an exciting trip as we explore India as an emerging nation and its potential role as a global leader in the context of its history and culture. The Caltech group will be hosted by IITGN and discussions and trips will be led by IITGN faculty.

The trip is open to undergraduate students only - sorry no graduate students. Applications can be found on the Caltech Y website and are due by 5 pm, Tuesday, May 20th. Questions may be directed to [caltechy@caltech.edu](mailto:caltechy@caltech.edu). Space is limited.

### 4. Memorial Day Weekend Camping Trip

Sunday May 25th - Monday, May 26th | Bandido Campground | Cost: \$20

Start off the summer camping season with the Caltech Y Outdoor Adventures group this Memorial Day weekend. We will spend the weekend in the center of the San Gabriel Mountains, camping at the Bandido Campground and hiking the nearby trails. No previous camping experience is required! The cost of the trip is \$20 and includes transportation, meals, and use of the Caltech Y camping gear. We will leave for the campground in the morning on Sunday, May 25 and return in the afternoon on Monday, May 26. Monday is Memorial Day and a Caltech holiday, so you don't need to worry about missing class. Sign up in person at the Caltech Y starting Wednesday, May 7th. Spaces are limited, so sign up early! If you have any questions, email Jeremy Sandler [atjsandler@caltech.edu](mailto:atjsandler@caltech.edu).

### 5a. Pasadena LEARNS

Every 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 [vvkumar@caltech.edu](mailto:vvkumar@caltech.edu).

### 5b. Hathaway Sycamores

Every Saturday | 1:30-4:30pm | Highland Park

Volunteer at Hathaway-Sycamores, a group that supports local underprivileged but motivated high school students. Some of the subjects being tutored are AP Chemistry, AP Physics, and AP Calculus. The service trip includes about an hour of travel time and 2 hours of tutoring. Transportation is included. For more info and to RSVP Email Josie Kishi [atjkishi@caltech.edu](mailto:atjkishi@caltech.edu) or Ted Xiao [atgxiao89@caltech.edu](mailto:atgxiao89@caltech.edu). Please note that work study is no longer be offered for this service trip.

If you have any questions, feel free to contact the Caltech Y at (626) 395-6163 or [caltechy@caltech.edu](mailto:caltechy@caltech.edu) or drop by a weekly meeting at the Caltech Y (505 S. Wilson).

Go to <http://caltechy.org/lists/> to self-subscribe to announcement lists for upcoming events and sign-up information. For a student's perspective, feel free to contact Phoebe Ann at [phoebe.ann2@gmail.com](mailto:phoebe.ann2@gmail.com).

# Female Techers celebrated

Continued from page 1

He was the reason I got out of astrophysics and into electrical engineering.

**Long:** I agree—there were so many who supported us. I remember Elsa Garmire, who was a research associate in physics. She helped to organize a series on women in science, bringing in outside speakers such as [the Columbia physicist and winner of the Wolf Prize] Chien-Shiung Wu. That was so important and is to Caltech's credit.

**Barton:** Were there other mentors who helped you?

**Shea:** Robert Cannon [then chair of Engineering and Applied Science], was hugely supportive. He was very interested in advances in undergraduate education at the time and so was enthusiastic about finding ways to have more women at Caltech. I really benefited from that.

**MacDonald:** Rolf Sabersky [Professor of Mechanical Engineering, Emeritus] was my undergraduate advisor at Caltech. He was there for me through thick and thin. When my mother had to sell her business due to her poor health, we weren't sure how we would pay for Caltech. He stood ready to help in any way needed so that I could continue.

**Barton:** What were some of the early experiences and challenges you faced as women once you went out into the professional world?

**Carroll:** I went into a very small group at Hughes Aircraft that was filled with nothing but Caltech graduates—so it was just like being on campus. It was a very special and supportive environment.

**MacDonald:** My first job was in structural engineering in the petrochemical industry, at a company where I was the first woman engineer. I had to buck some silly company dress codes—women had to wear dresses—which were impractical for visiting job sites and steel fabricators. At one time, my salary significantly lagged behind those of my male peers. I provided my supervisor with current salary data and said that I expected the inequity to be rectified or I would have to seek employment elsewhere. The adjustment to my salary was made, and I never faced inequitable compensation again.

**Carroll:** Wow. You were lucky. That didn't happen for everyone.

**Kirkbride:** I went to work in aerospace. I remember a lead engineer said he "simply wouldn't work with a woman." I just sat there in his room cooling my heels. A lot of this sounds outrageous today—but that's the way the world was. I didn't necessarily feel that people were evil; they were products of their time. You just had to push on.

**Shea:** I completely agree. The fact that some people wouldn't work with me led me to start my own company with a colleague, combining my expertise in

computer and controls with his in the energy field. We created our own work environment and set our own standards for professionalism.

**Barton:** I've noticed confidence is often a big issue for the many young women who come through my lab. Did Caltech help you to achieve more confidence? Did it help to have the Caltech imprimatur?

**Kirkbride:** I certainly think so. I took one year off to work for the Burroughs Corporation in Santa Barbara, where I learned just how highly my peer engineers regarded Caltech. When you're inside the Caltech bubble, you don't understand how respected the Institute is. It opened so many doors. It just put to bed any questions about my competence.

**Carroll:** The way I look at it: If someone finds out you went to Caltech, their opinion of you changes. If they don't know about Caltech—then your opinion of them changes.

**Barton:** Many people say that "Caltech teaches you how to think." Do you agree?

**Long:** Absolutely! Caltech gave



Patricia Tressel (BS '74) examines circuitry with Carver Mead (BS '56, MS '57, PhD '60).

Photos Courtesy of E&S 1973

me a foundation in how to think through problems. If a question is important enough, then I have both the hunger and the confidence to go back to fundamental principles and solve it.

**Barton:** What is your sense of where women are today in science and engineering?

**Kirkbride:** Statistically, Caltech still lags a bit behind our peer institutions in the number of applications from women. But when you look nationally, studies indicate that once women are admitted to college, they graduate with a higher rate than the men do. We need to persuade more talented and ambitious young women to consider Caltech.

**Carroll:** Personally, given my background, I would like to see more women of color at Caltech. I think we could do better there: Because if we're interested in raising women, then we want to see all women succeed and flourish—both at Caltech and in science as a whole.

**MacDonald:** Beyond Caltech—I'd say women have made inroads in a number of scientific areas. But in many other fields such as mechanical, electrical, and aeronautical engineering, women still represent only a small percentage of the number of contributors. I'd love to see more women take on the technical challenges in these exciting industries.

**Barton:** How do you maintain your connections and your involvement with Caltech?

**MacDonald:** There are numerous opportunities to stay connected and involved with Caltech. I've been heavily involved through the Caltech Alumni Association, the Caltech Associates, Caltech's Gnomes, and the Caltech Y. It gives me great pleasure to support an undergraduate scholarship, since I greatly appreciate the financial aid that Caltech made available to me during my undergraduate years.

**Kirkbride:** I now serve as a trustee. Caltech was a formative experience for me, and I'm grateful for the leadership of those who pushed the Institute to open its doors to women, making it possible for me to attend. I think it's important to stay involved and help shape Caltech for future generations.

**Barton:** Would you recommend Caltech to aspiring female scientists and engineers?

**Carroll:** Oh, absolutely. One hundred percent.

**Long:** The knowledge and content that you get from any school or major is going to be of some use, but its usefulness will vary. Caltech teaches you the courage and discipline to work through things you don't know. That endures a lifetime.

**Shea:** That's true. The ability to tackle new problems, break things down, start from first principles, apply what you've learned to different disciplines—it's incredibly powerful and was one of the greatest things that I got from Caltech.

**Kirkbride:** A Caltech degree ends all discussion about whether you're competent or not. Period. If you are interested in science and engineering, I don't think you can do any better.

## WOMEN AT CALTECH TODAY

"I chose Caltech because I wanted to be surrounded by the most brilliant people of my generation... and I find myself in the most interesting and fascinating discussions about ideas I've never considered." -Ellora Sarkar (BS '16)

"At Caltech, I am not a merely a "female scientist." When I walk through the doors of the lab, I leave my gender, race, and sexuality behind. The experiments don't care who is running them, so why should anyone else? I am a scientist first." -Jen Karolewski (BS '15)

"Caltech has always been my dream school. There is a great amount of mutual respect. The faculty trusts you to be mature. You can be yourself and pursue your own passions." -Sandra Fang (BS '14)

"I came to Caltech to be challenged academically. To my surprise, I have also been challenged to be an activist, promote good relationships with others, and thoroughly enjoy everything I do." -Amarise Little (BS '16)

DISCOVER THE IMPACT OF CALTECH'S ALUMNI.  
GLIMPSE WHAT COULD BE YOUR FUTURE.

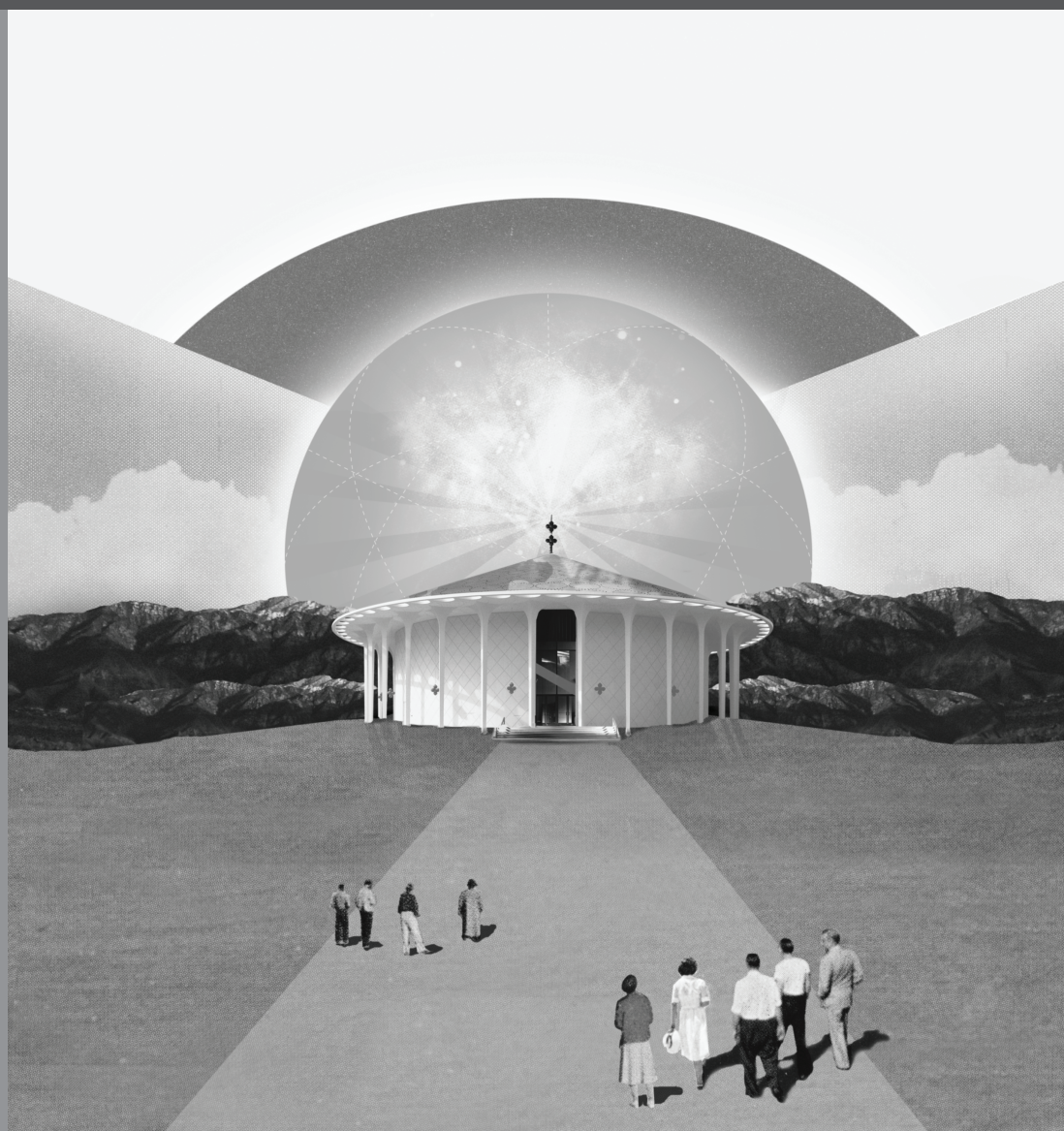


invites Students to

The 77<sup>th</sup> Annual  
**SEMINAR  
DAY**

Saturday, May 17

General Session  
11:00am – 12:30pm  
Beckman Auditorium  
*Students Admitted Free*



## FEATURING



### THE DISTINGUISHED ALUMNI AWARDS

Caltech recognizes six of its graduates with the highest honor the Institute bestows upon its alumni. This year's recipients highlight the breadth of fields in which Caltech graduates have gone on to become leaders—ranging from cosmology to higher education, and from aerospace to biomedicine.

- James S.W. Wong (PhD '65)
- Mary Baker (MS '67, PhD '72)
- Paul J. Steinhardt (BS '74)
- Richard K. Miller (PhD '76)
- Richard H. Scheller (PhD '80)
- David E. Chavez (BS '96)



### KEYNOTE SPEAKER CARVER A. MEAD

(BS '56, MS '57, PhD '60)  
*Gordon and Betty Moore  
Professor of Engineering and  
Applied Science, Emeritus*

Widely regarded as one of the fathers of the modern computer age, Carver Mead has been one of the most influential thinkers and pioneers in silicon technology. Mead famously gave Moore's Law its name and has been instrumental in making sure it held true since. His work has propelled the entire semiconductor industry and enabled the vast array of computing devices that permeate our everyday lives.

“At Seminar Day, I felt like I had a glimpse of what the future might hold for me, and the rest of us, in terms of passion and discovery. I came away inspired to chase the science that I love.”

Lori Dajose (BS '15)  
The California Tech, 2013

**Students admitted free.**  
[alumni.caltech.edu/seminar-day](http://alumni.caltech.edu/seminar-day)

## Iggy Azalea redefines classic in album, *The New Classic*

**MONICA ENLOW**  
Editor-in-Chief

After listening to Iggy Azalea's new album upwards of twenty times, one thing is obvious: she had no money and no family when she was sixteen in the middle of Miami. Iggy Azalea hails from across the pond, from Mullumbimby, New South Wales, and originally began her career as a model in Miami. After some time back and forth across the big blue, she eventually began to dabble in the art of freestyling. Her success boomed after her first song "Pu\$\$y" went viral on YouTube. Her debut album "The New Classic," showcases the artist's strong attitude. "The New Classic" fully embodies Iggy's style of being both ratchet and classy simultaneously. These songs are meant to empower the listener to fight for their dreams, go after a lover (or bite their head off), and define themselves on their own terms. Her album is not so fresh that it deviates from traditional struggles

frequently mentioned in hip-hop albums (see: "Started From the Bottom," by Drake). Iggy lets everyone know that she started from the bottom and that she "Don't Need Y'all." She is a strong and independent woman who just wants to let everyone know that. Iggy co-wrote every song on the album which is inspiring to know she is not selling out for the sake of making it big. I have heard some people say that she wants too much to sound like her mentor, T.I., but honestly, her vibe is great, her songs are catchy... who cares?

Iggy's album has three distinct types of songs: songs about empowered women, songs about her making it big, and songs about making your life whatever you want it to be.

First, empowered women. Her song "Goddess" can make anyone want to put on their lipstick and



-<http://www.aceshowbiz.com/>

conquer a country. I find this song inspiring during the grueling minutes I spend on the treadmill. "Lord, let me know if you got us," is a play on goddess, which is in all fairness, clever. Her ability to intertwine her listeners as goddesses, saying that one man can't stop them, and still reaching up to a god for support is beautiful.

that they are proud of that fact. Iggy doesn't shy away from saying she's going to be his "fourth finger left hand chick," because she is confident in her abilities. Iggy is not basic.

The next group of songs is "Dolla dolla bills, y'all." Among these songs is Iggy's hit single "Fancy,"

"Black Widow" takes a different turn, however. Her best friend, Rita Ora, provides the anticipation chorus in preparation for Iggy's verses. It's a great break-up song, if anyone is in the market for one of those right now. Next on the list is "New B\*\*\*\*." There are very few artists that could get away with acknowledging that they are the other woman and

featuring Charli XCX. She's "in the fast lane, from LA to Tokyo." This section also features "100," because who doesn't love Benjamin Franklin and being perfect? We also know to "walk a mile in [those] Louboutins, but they don't wear these [shoes] where" Iggy is from. Her famous line, "No money, no family, 16 in the middle of Miami," aims to place the reader in her shoes when she first began her journey to stardom.

Then come the songs about how you can live like Iggy. "Change Your Life," featuring her mentor T.I., is a catchy, upbeat dance number that she released before her album. In "Impossible is Nothing," she reaches out to any younger listeners who may be struggling to reach their full potential. People should appreciate that she would rather have diamonds than love.

All in all, Iggy lets her listeners know that being basic is less than ideal. Be ratchet like the guy sleeping next to the girl with no shoes on and keep it super cl\$\$\$y.

### Calendar of events for the week of May 13- May 19, 2014

TUES. 5-13	WED. 5-14	THURS. 5-15	FRI. 5-16	SAT. 5-17	SUN. 5-18	MON. 5-19
Go to bed, frosh. 12pm - Semana Latina Keynote Speaker, Avery Library	Go to bed, frosh. 9:30am - Student Shop Safety Training, Student Shop 12pm - Cuban Dance Exhibition, Red Door 8pm - Paul Muldoon Poetry Reading, Beckman Institute Auditorium	Go to bed, frosh. 12pm - Cesar Castro and Cambalache Musical Performance, Red Door 12pm - Getting Organized Before a Family Health Crisis, Winnett Lounge	Go to bed, frosh. 12pm - Aztec Dance Exhibition, Red Door 8pm - Caltech/Oxy Orchestra and Chamber Singers concert, Ramo	I guess you don't have to go to bed frosh. 4pm - MACH 33 Play Reading, Hameetman Auditorium 8pm - Caltech/Oxy Orchestra and Chamber Singers concert, Ramo	Go to bed, frosh. 3pm - Abhaya (The Fearless): A Classical Indian Dance Performance, Ramo	Go to bed, frosh. Just a bunch of seminars. Check the master calendar if you are really interested. <i>The Tech</i> comes out!

If you have an event that you would like put on the calendar please email [tech@caltech.edu](mailto:tech@caltech.edu)

## Brad/Chad Couture: everything you need to know about sunglasses

**BRAD CHATTERGOON**  
Contributing Writer

Hey guys and girls. It's week 7! I can just about smell the summer break coming on... which unfortunately means my work ethic is beginning to tank. With the turn of seasons also comes a solid increase in sunlight, both in intensity and duration. In light of that (see what I did there?) I've elected to write an article on sunglasses to help you not get swindled by the sunglass hut sales clerk who tells you that every pair you try on looks awesome. So let's get to it.

The first thing that you should know about picking a pair of sunglasses is that different styles are better suited for different face shapes. Faces usually fall into one of the following categories: round, square, oval, oblong, diamond, or heart. A Google search will quickly tell you what kind of shape you have. In general oval faces are "ideal" in a sense that the type of sunglass frame that works well

with your face will be the kind that helps approximate it to an oval shape, which means that oval faces can pull off any kind of frame. Next let's take a look at the kinds of frames that are out there.

**The Aviator:** This is probably best known as the frame that Tom Cruise wore in top gun. That was no coincidence. This frame was designed for pilots, particularly jet plane pilots, to protect their eyes from the sun while in the air and is made out of metal. This is a classic frame that is still extremely popular today. The Ray-Ban brand is the most popular.

**The Wayfarer:** This is another classic frame, again popularized by the Ray-Ban brand. The wayfarer is the classic cool look (think James Dean) and looks well with most face types. The classic color is gloss black but nowadays there are lots of spins on the design including matte, different colors pairings of front and side frame, and even different designs such as folding. Ray-Ban also recently updated the design for the first time since the

1950's into the "New Wayfarer" (pictured) that features a slightly smaller lens size.

**Shield:** These are so named for the massive lenses that provide a "shield" from the sun. This frame can be a bit obnoxious but do serve a purpose if you are spending long days in the sun. Because they are so large, smaller faces should do well to avoid them.

**Wrap-around:** Wrap-arounds are athletic frames, usually flexible in nature to accommodate impact. As these are athletic frames they do give the appearance of athleticism but if paired with, say, a business suit the athletic appearance does not fit. My advice is to stick wearing these at sporting events or when participating in activities.

**Square/Rectangular:** These types of frame shapes work well with faces that have some roundedness to them. The contrasting angles in the quadrilateral shape work add some sharpness to a rounded or oval face.

Now that I've described some of the common frame types, here is a



Photo Courtesy of Brad Chattergoon

listing of which frames work with the various face shapes.

**Round:** Rectangle/square, wrap-around, and shield.

**Square:** Aviators.

**Oval:** Any really but wayfarers are a particularly good choice.

**Oblong:** Wayfarers, Shield, Square/Rectangle, Wrap.

**Diamond:** Rounded frames such as Wayfarers.

**Heart:** Aviator, Shield.

Hope this helps you keep those baby blues, warm browns, or bright greens in working condition.

## Men's tennis finish out 2014 with convincing victory

GOCALTECH.COM

THOUSAND OAKS, CA - The Caltech men's tennis completed one of their most successful seasons in recent memory by wiping out Occidental 7-2 on Saturday afternoon at the SCIAC Championships

The victory over their nearest league rival put an exclamation point on a season and the career of two players. Caltech finishes the year with six wins; it's the most wins the program has accomplished since the 2006 season.

It is the programs first win over a SCIAC foe since beating La Verne at the end of the 2009 season. The victory snapped a 45-match losing skid against league opponents.

"It feels great to end the season by beating our crosstown rivals, Occidental. Four years of hard work really paid off and this season was one for the ages," said senior captain Devashish Joshi. "The win at the end was definitely a cherry on top of the icing. I'm

extremely proud of the hard work and dedication that the team and coaches put in this season. It's been a pleasure representing Caltech for the past four years and I'll relish my memories for years to come."

Saturday's match started in Caltech's favor and the Beavers never let go of the momentum. Caltech took the No. 1 and No. 3 doubles matches as the duos of Ruthwick and Sathwick Pathireddy and Luka Mernik and Joshi cruised to their wins.

The Beavers rolled into the singles play with confidence. The Pathireddy twins both won their matches as Ruthwick posted a

hard fought three-set win at the No. 2 slot while Sathwick won in straight sets as the No. 3 singles player. Sathwick ends his year with



Devashish Joshi stares longingly at Luka Mernik wondering where on earth his beard went.

-gocaltech.com

11 singles wins; the second most in a single season in Beaver history.

Rushikesh Joshi rebounded from an opening set loss with a vengeance. After falling 6-1 in the opening frame, the sophomore won 12 of the final 13 games to win at the No. 4 position. Morgan Leby won his team leading 12th singles match of the year with a 6-1, 6-3 victory at the fifth singles spot.

The clinching team point came in an appropriate spot as senior Luka Mernik dispatched of Jack Streeter 6-3, 6-2 at the sixth singles slot.

Caltech 7, Occidental 2

## Eric Martin and Paige Logan compete at Occidental invitational

GOCALTECH.COM

LOS ANGELES - A week after their all-conference performances at the SCIAC Championships, Paige Logan and Eric Martin competed against a stacked field at the Occidental Invitational on Saturday afternoon.

The competitors were from all NCAA Divisions, NAIA Schools as well as unattached athletes. All told there were approximately 1,000 individuals competing.

Logan tested her abilities in the shot put and hammer throws. Her best effort in the shot put came on her third of four attempts with a toss of 38' 9 1/2". During the

hammer throw she placed second among all NCAA Division III competitors (out of seven) when she recorded a throw of 138'2" on her second of four throws.

The 800 meter race featured eight heats as 78 athletes competed in the half-mile event. Martin ran the second fastest time of his career as he crossed the finish line in 1:54.51. It was the fourth best time out from the nine individual who hail from an NCAA Division III school.

Next week a handful of Beaver athletes will travel to the Redlands last chance meet on Thursday and Friday



Eric Martin swallowed a fly. It's a good thing protein helps with the gains.

-gocaltech.com

## Sports Photo of the Week



Shalini Majumdar would have gotten that field block...if only she hadn't sneezed.

-gocaltech.com

## Kitto headed back to NCAA championships

GO CALTECH

INDIANAPOLIS, IN - For the second straight season Rebekah Kitto has been selected to participate at the season ending NCAA tennis championships.

The senior is one of just 32 student-athletes who will compete in the singles competition beginning on May 22 at the Bizsantz Family Tennis Center in Claremont, California hosted by the ClaremontMuddScripps Colleges. The selection of individuals for the championships are based on win-loss record, strength of schedule, and eligibility and availability of student-athletes.

The native of Jacksonville, Florida posted nine wins in her 15 matches dual matches this season. She was the Beavers primary No. 1 singles player. Kitto posted a straight sets win over Andrea



Rebekah Kitto never ceases to amaze us with her grace and determination. Such grace. Very determination. Wow.

-gocaltech.com

Hammer (Chapman) who was also selected for the prestigious national event.

A three-time first-team SCIAC selection, she joins former Beaver student-athlete Laura Decker (Fencing) as the only female Caltech student-athletes to compete in back-to-back NCAA Championship event. Kitto was the first alternative

from the west region for the 2012 championships.

Kitto holds the school record for most dual match wins in a career (53) and single season (19).

The draw for the individual championship will be done by the women's tennis committee and will be released on the last day of the team championship (May 21).

# ASCIT Minutes

## ASCIT Board of Directors Meeting

Minutes for 6 May 2014. Taken by Sean McKenna

**Officers Present:** Zach Rivkin, Catherine Jamshidi, Malvika Verma, Nima Badizadegan, Connor Rosen, Connie Hsueh, Monica Enlow, Patrick Nikong, Michelle Tang, Annie Chen, Sean McKenna

**Guests:** Esther Du, Margaret Lee, Elliott Simon

**Call to Order:** 10:06 pm

### President's Report (Zach / Cat):

- All new BoD members have gone through transition.
- New BoD transition dinner will not be held on May 12<sup>th</sup>. Installations will occur at lunch on that day. Sean will coordinate a time later in the term for the transition dinner.
- ASCIT Movie Night: the 11th seems to be the only day that will work for everyone
  - We're aiming to see a 4:00 showing of Spiderman
- There is an upcoming Faculty Board Meeting on May 12<sup>th</sup>.
- The BoD has been invited to participate in Alumni Weekend events.

### Officer's Reports:

- **V.P. of Academic Affairs (ARC Chair: Malvika / Nima):**
  - Signups for the appointment of ARC Representative at-large went up today. They will be taken down on May 16<sup>th</sup>. Interviews will occur on May 25<sup>th</sup>.
  - Committee appointment signups will be posted next week. They'll be taken down on May 23<sup>rd</sup>. Interviews will occur on May 25<sup>th</sup>.
  - ACM 95 Update: ARC learned that the instructor had received very little information about what to do, such as how many midterms to give. The ARC will write a guide for new instructors for them to understand the academic conventions and expectations for courses.
  - The survey will be posted to donut this week about Bi 1. The ARC would like to identify what students want out of an "Introduction to Biology" course, and get more information on why students substitute upper-level Biology courses for Bi 1.
- **V.P. of Non-Academic Affairs (IHC Chair: Connor):**
  - The IHC's transition retreat went well.
  - The IHC met with incoming Dean Dabiri to improve the prefrash interest sheet. They would like to include more questions in order to get more useful information from students, and they'll clarify who will be viewing the results.
  - Remodeling is coming to Chandler this summer. CDS will be seeking student input, especially through food reps. The remodel this summer will mainly concern the kitchens and food preparation areas. Further renovations of the public seating area will come later. Chouse will probably permanently move to renovated Chandler when the Winnett/Hameetman renovations occur.
  - The tentative meal schedule is in place for rotation. No day of rotation will have two meals.
  - Students are being trained in how to maintain the ugcs mailing list, which was down earlier in the week.
- **Director of Operations (Connie):**
  - Netflix is now available in the ASCIT Screening Room: A reminder that rooms in the SAC can be reserved on donut at <http://donut.caltech.edu/rooms/bookroom.php>
  - After the email forwarded to undergrads today about yoga, we wondered "Is ASCIT responsible for the content of emails we forward to the student body?" The new BoD will decide if a resolution is needed concerning guidelines for forwarding emails.
- **Treasurer (Patrick):**
  - Monica and Patrick are working on catching up on receipts. They hope to be finished by Thursday night at midnight.
  - Patrick is now trained fully on reimbursements, so he should be ready to accommodate reimbursement requests.
- **Social Director (Michelle / Annie):**
  - Spring formal is happening on Friday, May 9<sup>th</sup>. Ticket sales were extended to Monday and Tuesday to accommodate extra waiver needs. Buses will leave at 6:45. ASCIT lights will be used
  - ASCIT Movie Night will occur on Sunday. Tom Mannion, Michelle, and Annie will work with the theatre to plan a Sunday matinee.
  - Annie is looking into the possibility of a Six Flags social event. She's looking at feasibility and financial options. She tentatively suggested June 1<sup>st</sup> and cost of \$30 for students.
- **Secretary (Cat / Sean):**
  - Cat and I are working on the transition of the position.
  - I'll be scheduling the BoD transition dinner and updating the ASCIT board on the Olive Walk

### Additional Reports:

- **IH Athman (Esther):**
  - Field day has been scrapped for third term because of calendar conflicts with end of term events. Tentatively moved to first term of next year.

**Meeting Adjourned:** 10:55 pm

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.

## News briefs from around the globe

Need to know <100 words about the world this week

### Sudanese reach peace deal

5-month conflict between President Kiir and rebel leader Riek Machar ends in truce [BBC]

### Arkansas strikes gay marriage ban

6th state to do so, Arkansas court declares gay marriage ban unconstitutional [TIME]

### US helps abducted girls in Nigeria

6 US military advisors sent to Nigeria to help rescue 276 girls abducted from boarding school by terror group [CNN]

### Wyoming rejects standards

1st state to reject new K-12 science standards is WY, mainly because of global warming components [TIME]

### Strong earthquake hits Mexico

6.4-magnitude earthquake struck only 190 miles from Mexico city [BBC]

### Drones found to be from North Korea

3 drones confirmed by South Korean defense officials to be from North Korea [CNN]

### Another World Cup worker killed in Brazil

32-year old worker killed by electrocution at World Cup stadium, 8th worker to die during construction [BBC]

## Counseling Center Announcement:

In response to student feedback, we're changing the format of the Tuesday night Skills Group offered by the Counseling Center. Feel free to drop by the Health Education office (CSS rm248) on Tuesday nights between 7:30-10:30 to have a one-on-one conversation about mindfulness and to learn about some of the skills available to manage emotions more effectively and have better relationships.

Students are welcome to drop by to talk about whatever they'd like too! For more information call x3100 or visit [counseling.caltech.edu](http://counseling.caltech.edu)

## Editors' Note

Hello Caltech!

In case you haven't noticed, we have made some changes to *The Tech*.

We will be sending out a survey soon to gauge your opinion on the new changes, and to figure out what you want to see in *The Tech*.

Thanks for reading!

Yours truly,  
*The Tech*  
Editorial Staff



## The California Tech

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The advertising deadline is 5 PM 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](mailto:tech@caltech.edu). For subscription information, please send mail to "Subscriptions."

## Off-campus BoC Rep (1 candidate)

Ankit Kumar is running for Off-Campus BoC Rep, but did not submit a candidate statement or photo to *The Tech*.

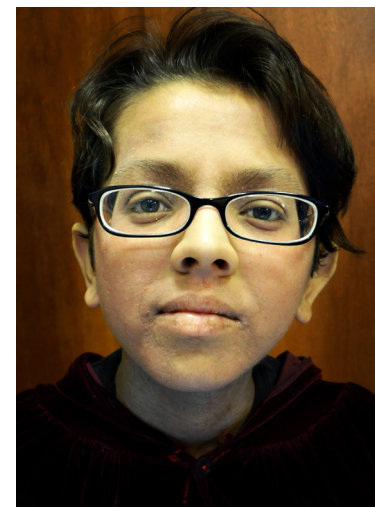
Remember to cast your vote in the elections for Off-campus CRC and BoC Reps!

## Off-campus CRC Rep (1 candidate)

**BIANCA AVALANI**  
Off-campus CRC Rep Candidate

As a member of the Caltech community, I find that the Honor Code is an integral part of my life here both in academic matters and those outside academics. Caltech trains students to become the highest level of scientists and engineers in the real world, and to do that we must treat other members of our various communities with the highest respect and not take advantage of them, just as professional scientists

would. The academic side of ethical behavior is often mentioned, but the personal and social side is equally important yet less visible. In matters such as possible hazing, coercion, and security breaches, ethical concerns are just as much in play. Thus, as a CRC rep, I would like to do my part in making sure that through upholding our Honor Code, the best interests and opinions of students and faculty are present in mind while Caltech's dedication to dignified conduct and unwavering ethics is wholly unbroken.



### Crossword

1	2	3	4		5	6	7	8		9	10	11	12	
13					14				15		16			
17					18						19			
20				21		22				23				
			24		25		26							
	27	28				29			30		31	32	33	34
35				36			37	38		39				
40			41		42				43		44			
45				46		47				48		49		
50					51			52			53			
				54		55	56		57					
	58	59	60					61		62		63	64	65
66					67				68		69			
70					71						72			
73						74					75			

-puzzlechoice.com

#### Across

- Flip of a coin
- Particle
- Battery contact
- Musical instrument
- Mark indicating insertion into a text
- Malevolence
- Inclination
- Selected as the best
- Ego
- Text of a song
- Observance
- Globe
- Solitary
- Leave the tracks
- Type of footwear
- A small drink
- Garish
- Life form before metamorphosis
- Affirm
- Single mast sailing vessel
- Deep hollow sound
- Relating to the vicinity
- Allowed by official rules
- Brim
- Cultural
- Antique
- Zeal
- Sense organ
- Festival

#### Down

- Fee for use of roads or bridges
- Comply
- Rise upward into the air
- Higher in rank
- Playing card
- Fine grained mineral
- Projecting bay window
- French subway system
- Currency of Cuba
- Kitchen appliance
- Plant with pendulous flowers
- Fairy
- Between 12 and 20
- Steep rugged rock
- Repast
- Preconception
- Piece of turf
- Unit of geological time

- Period of calm weather
- Seize suddenly
- Comical in an odd or whimsical manner
- Steer clear from
- Source of illumination
- Occasion for buying at reduced prices
- Female mammal
- System of exercises
- Pale
- Knight's attendant in medieval times
- Security interest
- Foliage
- Ascend
- Fruit
- Obviate
- The lowest point of anything
- Set of laws
- Having the skills to do things well
- Used in 13 Across to produce a tone
- A narrow way or road
- Small ball with a hole through the middle
- Give temporarily
- Jittery
- Movable cover
- On the sheltered side

## ARC and CTLO to collaborate on guide for new instructors

**KAYANE DINGILIAN**  
ARC Representative

As Caltech students, we are aware that our undergraduate education has a unique atmosphere; the Honor Code heavily influences both our actions and our professors' decisions in course structure and execution. Our small student-to-faculty ratio helps shape classes better towards our needs, and long-valued traditions like Ditch Day are respected. We tend to take for granted that professors know all of the above, but in the case of new faculty, it may be a much different situation.

In the wake of a series of course changes in ACM95c, the Academics and Research Committee (ARC) and the Center for Teaching, Learning, and Outreach (CTLO) are collaborating to write a short guidebook for new instructors on what to expect when teaching at Caltech. I met with Melissa Dabiri, Assistant Director of the CTLO, to discuss the details of the development of this guidebook.

"The CTLO strives to assist new instructors to make their transition to Caltech as smooth as possible," she begins. "We hope that working with the ARC to provide a wiki of pertinent resources will help with this."

To be completed during the summer, the guidebook will contain such resources as "sample Caltech syllabi, example Honor Code and collaboration policy language, directions to establish a course Moodle site," and other key points of teaching at Caltech. I have listed the important points below, written in the context of changes that occurred in ACM95c:

- One of the most crucial aspects of a class, regardless of its structure or content, is obtaining live feedback from the students – implementation of the ombuds program. I spoke to Adam Neumann in the first week of class, then the head TA, who let me create and manage the ombuds program. As a group of eight, we met a few weeks later with the current head

TA, Jerry Cruz, who eagerly took down our opinions and spoke with Dr. Rizza to implement important changes into the course.

- The instructor needs to teach what the students are expected to learn from the class, and should be open to receiving feedback. ACM95c is traditionally taught as Partial Differential Equations and their applications, and is also an important core prerequisite for the engineering classes.

We spent the first two and a half weeks learning vector and tensor operation. During the ombuds meeting, we addressed this as the most important issue in the class – which was implemented starting the following lecture.

- Both Caltech students and faculty follow the Honor Code. As a new instructor, Dr. Rizza was more accustomed to other schools' exam systems and had assigned both an in-class and take-home portion for every exam planned for the class. After the ombuds meeting with Jerry, we were able to cancel the in-class portion of the final.

- Courses at Caltech have one midterm or several quizzes, taking a net total of around 4 hours. There are also weekly homework assignments. At many other universities, classes contain two midterms and a series of very short homework assignments that may or may not count towards the class grade.

Dr. Rizza has structured ACM95c such that there are four homework sets, two midterms, and a final. To keep the class fair for those who relied on the second midterm boosting their grade, ACM95c will not be able to switch back to standard Caltech structure, but this is a key aspect of the class to keep in mind for future years.

- Problem sets should not be due in the morning – for the large core/almost core classes like ACM95c, they should be due in the afternoon. ACM95a and ACM95b had their homework due dates from 4-5 pm, allowing for students to complete and turn in their homework in a timely manner and still attend classes. ACM95c

sets were originally due at 10:00 AM, and I met with Adam after the completion of the first problem set to change the due time to 4 pm.

The ARC and CTLO are working on collecting feedback from the new faculty as well – what they would have liked to know before starting to teach, how to arrange their courses, what to expect from students, etc. The ARC and CTLO have also collaborated to revive and update the Course Capture website – [classes.caltech.edu](http://classes.caltech.edu).

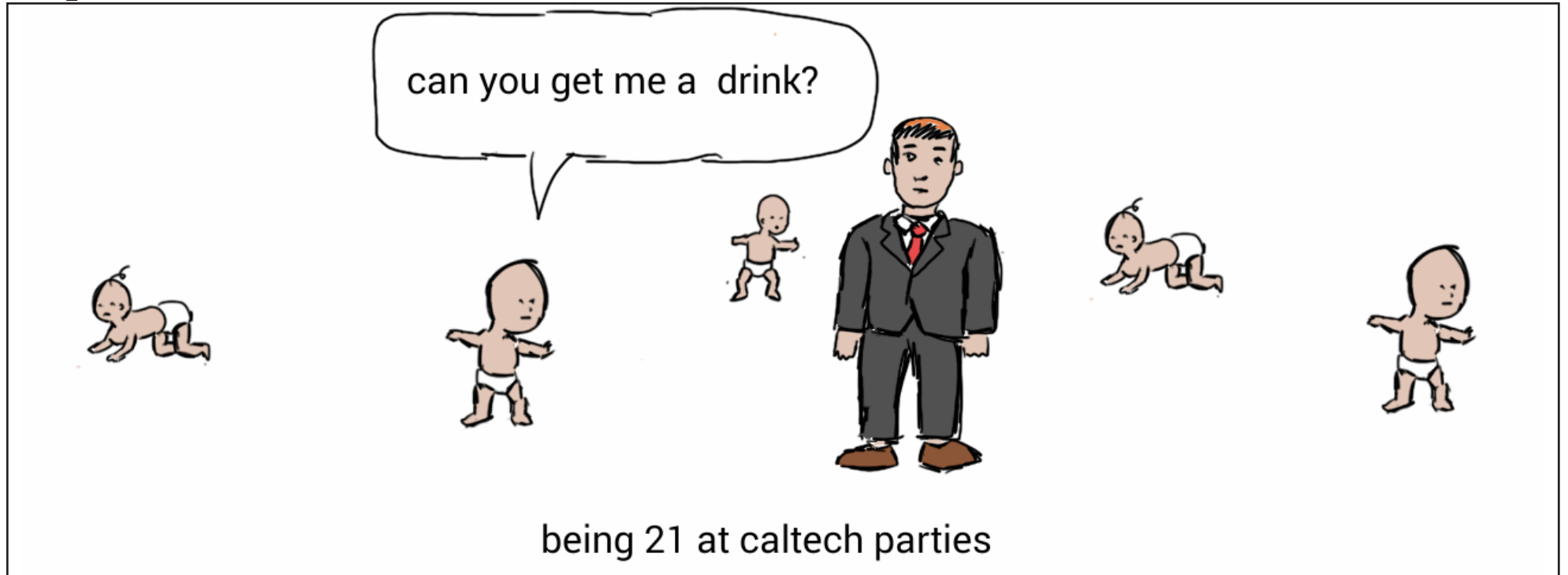
"We're excited about continuing to create and distribute materials that are helpful to instructors at all levels at Caltech," Dabiri states.

In writing a set of guidelines, either in the form of a small booklet or a wiki online, we hope to make the transition of new faculty to the Caltech atmosphere a smooth and successful one.

If you have any questions, please direct them to Kayané Dingilian at [kdingili@caltech.edu](mailto:kdingili@caltech.edu) or Melissa Dabiri at [mdabiri@caltech.edu](mailto:mdabiri@caltech.edu).

## Acquired Taste

Dr. Z



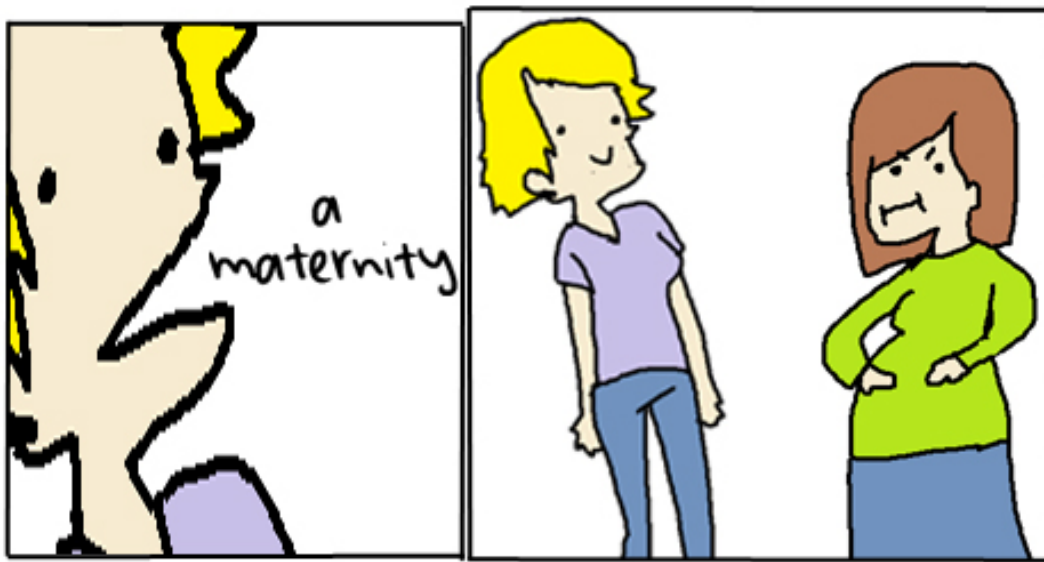
## Happy Late Mother's Day!

Liz Lawler



## Sudoku

			2					5
9		6			3		4	
	2			1		9		
		3		6			5	
	5		9			7		8
4					1			
	7					6		
			3	4				
		5						1



The California  
Tech

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### Answers to last week's Sudoku

3	9	1	8	7	6	2	5	4
5	7	6	4	1	2	9	8	3
8	2	4	3	9	5	7	1	6
1	4	9	5	3	8	6	2	7
6	5	3	7	2	9	1	4	8
2	8	7	1	6	4	5	3	9
4	1	8	6	5	7	3	9	2
9	6	5	2	8	3	4	7	1
7	3	2	9	4	1	8	6	5

### Answers to last week's crossword

S	C	O	P	E		H	A	M		G	E	L	I	D
W	O	M	A	N		E	W	E		E	V	A	D	E
A	D	E	P	T		E	E	L		N	E	W	E	L
G	E	N	E	R	A	L		E	T	E	R	N	A	L
			R	A	P		L	E	I					
S	P	A		P	A	C	E		C	U	S	T	O	M
T	O	S			R	A	N	T			T	A	P	E
A	L	T	O		T	R	I	A	L		A	B	E	T
R	A	I	D		T	E	L	L		G	O	R	E	
E	R	R	A	T	A		N	E	A	T		O	A	R
					G	U	T		M	A	P			
M	A	T	A	D	O	R		H	A	B	I	T	A	T
E	V	O	K	E		B	O	A		L	A	U	G	H
E	E	R	I	E		A	W	L		E	N	S	U	E
T	R	E	N	D		N	E	E		T	O	K	E	N