

## WMW opens doors to undergrads

**HYE JOON LEE**  
Page Editor

STEM can be isolating for women. Especially at Caltech, where the gender gap has historically been large, women can find themselves stranded in the middle of a male-dominated field. Though Caltech has recently spearheaded major efforts to increase female participation in the STEM fields, women still struggle with a variety of unique problems and issues. As women remain vastly underrepresented, creating spaces for open communication and mentorship amongst women in schools, workplaces, and universities is the best practice for keeping women on their paths to a STEM career. 13 years ago, the Women Mentoring Women (WMW) program was created to do just that. The graduate students and post-doctoral scholars who joined the program 13 years ago were often the only woman in

their laboratory. In joining the program, first year graduate student women were paired with upper level graduate student women, and upper level graduate student women were paired with post-doctoral scholar women, and the pairs would get to know each other better throughout the year as they supported each other through their “academic, professional and personal development”.

However, there is oftentimes no support network for undergraduate women. The road to a successful STEM career is winding and full of confusing possibilities – applications, internships, projects, research, et cetera. Thus, the WMW program is opening up mentorship opportunities to undergraduates for the first year in the program’s history. It serves as a network of undergrads, grads, postdocs and staff who can all help you find resources to answer your questions. First and second year undergrads will similarly be paired

with upperclassmen students and upperclassmen with graduate students. Undergrad women will have a lot to gain from a more formalized mentorship. A mentor can develop into your go-to ally, and an ally that will always be an advocate for your success for an entire career. Navigating the STEM field with the help of someone who has similar past experiences can be a major advantage in terms of advice, mentorship, and networking. The WMW program also provides a coffee stipend to encourage the sharing of experiences, ideas and advice.

Applications for the WMW program is due on Sunday, October 16th. Go to <https://diversitycenter.caltech.edu/women/mentoring> for more information. Don’t forget to also check out other programs facilitated by the Diversity center include the Dish and Discuss and the monthly STEMinars!

## Lester Receives “High-Risk, High-Reward” Research Award

Caltech Media Relations

*This article is adapted from a story that was originally published online at [caltech.edu](http://caltech.edu).*

Henry Lester, Bren Professor of Biology and Biological Engineering, has received a Transformative Research Award from the National Institutes of Health (NIH) as part of the NIH’s High-Risk, High-Reward Research (HRHR) program. The Transformative Research Award, established in 2009 and awarded this year to 12 scientists, supports “exceptionally innovative, unconventional, paradigm-shifting research projects that are inherently risky and untested,” according to the NIH press release.

Since he arrived in 1973, Lester has spent his entire professorial career at Caltech. His research now focuses on the actions of drugs on the ion channels, receptors, and transporters of “excitable cells”—cells such as neurons and muscle fibers that use electrical signals. Lester helped to pioneer “inside-out” neuropharmacology, which studies how the interaction of nicotine and nicotine receptors in an organelle called the endoplasmic reticulum leads to the addictive effects of nicotine, and in some cases to neuroprotective effects.

With this award, Lester will study the mechanisms by which certain psychiatric drugs exert their therapeutic effects, as well as how additional addictive drugs such as opioids work. He hypothesizes that these drugs also work “inside-out,” binding first to molecular targets within organelles in cells. He and his group aim to develop genetically encoded fluorescent biosensors to measure drugs within organelles.

“Nicotine has served as a model for neuroscience and pharmacology ever since Columbus’s crew sampled tobacco,” says Lester. “Caltech continues to support our work on the hypothesis that insights from nicotine help to explain psychiatric and addictive drugs, and this grant provides both additional validation and much-needed support.”

Lester has more than 330 publications and nine US patents. He has served as chair of the Caltech faculty and as president of the Biophysical Society. He participates on the California Council for Science and Technology.

This year, the HRHR Program, supported by the NIH’s Common Fund, awarded 88 grants in four categories: 12 Pioneer awards, 48 New Innovator awards, 12 Transformative Research awards, and 16 Early Independence awards.

## News briefs from around the globe

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

### Colombian President donates Nobel earnings

\$925,000 earned by Juan Manuel Santos for reaching peace agreement with FARC goes to victims of 52-year conflict [[BBC](#)]

### Fundraiser earns money for blind can collector

\$30,00 raised for J.B. Kipler, who supports granddaughters by dumpster diving [[BBC](#)]

### U.S. economy creates jobs in September

156,000 new jobs created is slightly less than 180,000 average this year [[BBC](#)]

### U.S. carriers drop Samsung Note 7 and replacements

4% drop in shares attributed to the Note 7’s tendency to catch fire [[BBC](#)]

### Car bomb explodes in southeast Turkey

18 killed, 27 injured by bomb, Kurdistan Workers’ Party is blamed [[TIME](#)]

### Passenger train derails in New York

29 hospitalized by wreck, no deaths reported [[BBC](#)]

### Matthew slams North Carolina

17 killed in four states, thousands still in shelters after the post-tropical cyclone hit the east coast [[CNN](#)]

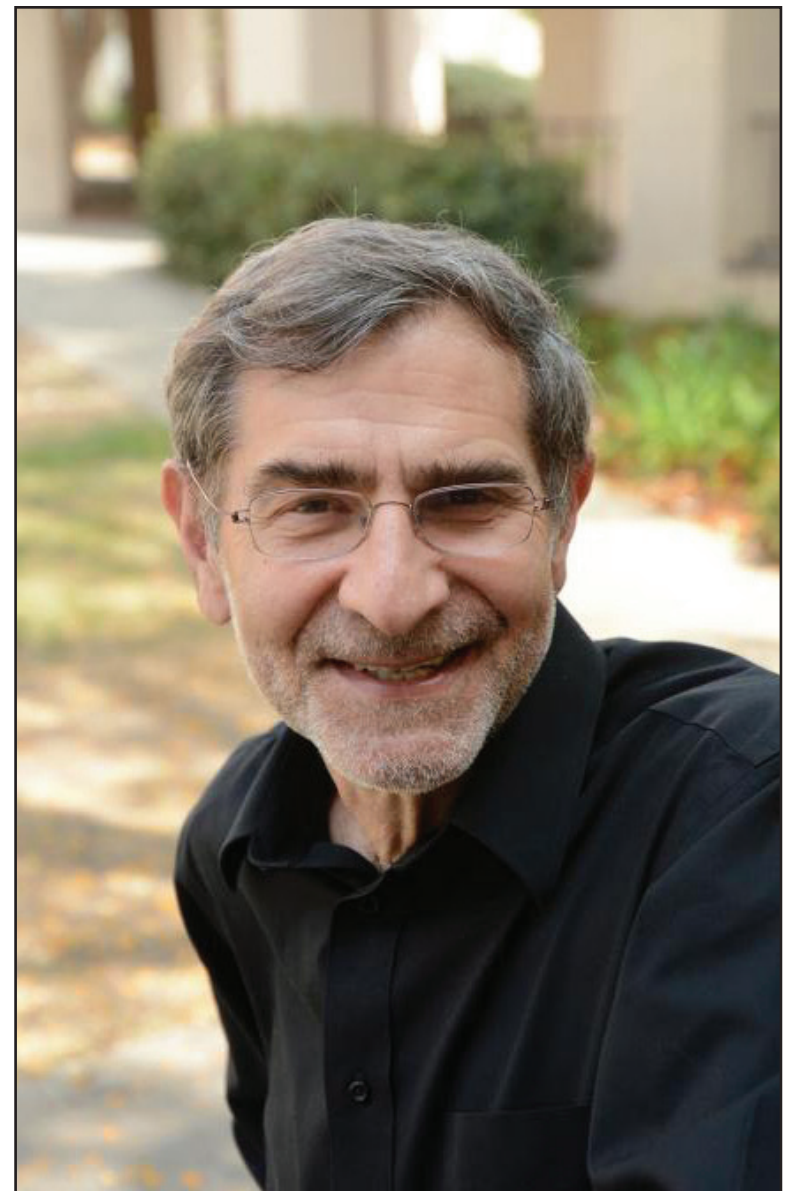


Photo Courtesy of H. Lester

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# Caltech Y Column

## CALTECH Y

The Caltech Y Column serves to inform students of upcoming events and volunteer opportunities. The list is compiled by Katherine Guo 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. The mission of today's Y remains the same—to provide opportunities that will prepare students to become engaged, responsible citizens of the world. The Y seeks to broaden students' worldviews, raise social, ethical, and cultural awareness through teamwork, community engagement, activism, and leadership. 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.

Ongoing and past programs hosted by the Caltech Y:

Alternative Spring Breaks: Peru, Costa Rica, New York, Yosemite, San Diego, San Francisco

Make-A-Difference Day: Hillside Home for Children, LA County Arboretum and Botanic Garden, Children's Hospital Los Angeles (Coachart), Eaton Canyon, Lifeline for Pets

Explore LA: Lakers game, Next to Normal musical, Norton Simon Museum trip

RISE Tutoring program (an afterschool math and science-focused tutoring program that serves public school students between grades 8 and 12)

### Upcoming Events

#### 1. Pasadena LEARNS

Every Friday | 3:00 - 5:00 PM | Madison and Jackson Elementary School

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 [azhai@caltech.edu](mailto:azhai@caltech.edu). Eligible for Federal Work Study.

#### 2. Hathaway Sycamores

Every Wednesday | 5:30 - 8:00 PM | Highland Park

Volunteer at Hathaway Sycamores, a group that supports local underprivileged but motivated high school students. There are a variety of ages and subjects being tutored. The service trip includes about an hour of travel time and 1.5 hours of tutoring.

Transportation is included. For more info and to RSVP email Sherwood Richers at [srichers@tapir.caltech.edu](mailto:srichers@tapir.caltech.edu). Eligible for Federal Work Study.

#### 3. The Caltech Y Social Activism Speaker Series (SASS) presents Labor Market and the Wage Floor: A Minimum Wage Policy Panel Discussion

Wednesday | October 12th | 12:00 - 1:30 PM | Avery Library

Recently, California and New York both passed bills setting the state minimum wage to \$15/hr. The city of Pasadena also passed similar legislation locally. Interestingly, differing opinions on the issue of raising minimum wage do not necessarily follow party lines. Prominent Republicans and Democrats fall on both sides of the argument. Please join us for lunch and an in-depth panel discussion featuring: Andy Wilson, Pasadena City Council Member; Daniel Flaming, Economic Roundtable President; Abel Ramirez, CEO of El Portal and former GM of Caltech's Athenaeum; and Pablo Alvarado, National Day Laborer Organizing Network Executive Director. Made possible with funding from the George Housner Fund.

Lunch will be served. Spaces are limited (Preference given to those who can stay for the entire talk). RSVP Required: <https://goo.gl/forms/2nqOgwchGwfuyxd12>

#### 4. Union Station Adult Center

Saturday | October 15th | 5:15 - 9:15 PM | Pasadena

Prepare and serve dinner to the residents at Union Station Adult Center in Pasadena. Food and materials are provided. The Adult Center provides shelter, meals and supportive services for more than 150 homeless men and women each year. For more info and to RSVP email [aychen@caltech.edu](mailto:aychen@caltech.edu).

### Beyond the Y

#### 1. SEPAC - Science and Engineering Policy at Caltech presents A Discussion with Dr. Elizabeth Bodine-Baron with RAND Corporation

Friday | October 14th | 9:00 - 10:00 AM | Gates Annex Library

Join SEPAC (Science and Engineering Policy at Caltech) for a discussion with Dr. Elizabeth Bodine-Baron. Elizabeth is a Caltech alum now working at RAND Corporation, a non-profit institution that helps improve policy and decision-making through research and analysis. Join us for a discussion on science policy, alternative careers, cybersecurity, and more!

## Caltechlive!

OCT SAT 15  
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Elizabeth Bodine-Baron is an engineer at the RAND Corporation specializing in complex networks and systems. Her research interests include network analysis and modeling for both domestic and national security issues. Recent work has included improving the Air Force's acquisition policy related to cybersecurity, studying the impact of cyber attacks on defense systems, and social network analysis for national security, intelligence, and health applications. She has recently led several projects involving social media for policy analysis, from using Twitter data to identify ISIS support and opposition networks to developing best practices for social media analysis. Prior to joining RAND, her research focused on the role of social networks in various engineering and economics problems, such as

distributed search, matching markets, epidemic spread, and vaccination behavior. Bodine-Baron received a B.S. in electrical engineering and a B.A. in liberal arts from the University of Texas at Austin in 2006, and a Ph.D. in electrical engineering from Caltech in 2012.

#### 2. American Red Cross Caltech Blood Drive

October 10th and 12th | Caltech

The American Red Cross is holding a Blood Drive on the following days at Caltech:

Monday, October 10th (8:00 AM - 8:00 PM)

Wednesday, October 12th (12:00 - 6:00 PM)

The Blood Mobile will be parked by the Chandler Café. To schedule an appointment log on to [www.redcrossblood.org](http://www.redcrossblood.org) enter sponsor code: CALTECH



## The Engelmann Oak

**BADE UZGIL**  
Contributing Writer

The juxtaposition of ancient and modern architectures sharing the same city skyline, of past and present generations sharing a row on the Gold Line, of, in general, the simultaneity of the “old” and the “new”... can, at times, produce a jarring, overtly ironic effect that robs a scene of any lasting meaning. The Engelmann Oak, however, in front of Dabney Hall and behind Hale’s bust on Caltech’s campus blends seamlessly with the young crop of roses framing Millikan pond and the bright-colored backpacks passing by. Rusty iron pillars cradle the weight of four hundred years without begging anyone’s attention.

Arms outstretched, the oak wordlessly welcomes, consoles, embraces, cheers on the quad’s more transient occupants, who ebb rhythmically with the academic cycle, or, like me, flicker in and flicker out of view stochastically. To an assembly of foliage — a canopy of unblinking eyes — the passage of centuries may have rendered it all, in fact, into a random walk, somehow equalizing in this process Catholic missionaries with Math 1A students, picnicking rancheros with lunching Techers, unnamed earth with fenced-off soil. Undoubtedly, this steadfast gaze has also merited a view of rhythms invisible to other sets of (blinking) eyes. On so many of my walks through the quad — and on at least one occasion, a minute-long standing meditation — I and perhaps others, unwittingly or with some degree of focused intent, have sought from the oak this perspective, which the humble and generous professor never denied.

My reverence for its long history, however, nearly imparted an aura of permanence upon the oak, or, more accurately, succeeded in imparting an aura of permanence until our roles suddenly reversed and the aura shattered, dropping somewhere in a bed of mulch. The tree is now fading into transience as I stand watching across Millikan pond. I desperately search for a spot of green amid the brownish murk of hundreds of lowered eyelids. Instead, the Engelmann offers, in its characteristic silence, a final lesson in impermanence, which, emanating from the

heart of an institution where the “old” is forever discarded in pursuit of the “new,” echoes loudly off Hale’s oxidizing head.

**LORI DAJOSE**  
Caltech Media Relations

*This article is adapted from a story that was originally published online at caltech.edu.*

Since 2008, the Caltech–City of Hope Biomedical Research Initiative has brought together resources and expertise from the two institutions. Funded by Caltech, City of Hope, and private donors, the initiative provides seed grants to accelerate the development of basic scientific research and its translation into biomedical applications. On September 27, 2016, researchers, doctors, donors, and faculty gathered at the Argyros Auditorium at City of Hope to celebrate this partnership and hear about some of the latest discoveries to come from the collaboration.

“When institutions like ours [are] dedicated to a pursuit of knowledge, and to the practical application of that knowledge to the benefit of patients and families around the world, we can do profound things together,” said Robert Stone, president and chief executive officer of City of Hope, in his opening remarks.

“The partnership with City of Hope is very special. It’s one that’s deep and can have profound impact,” said Caltech president Thomas Rosenbaum, the Sonja and William Davidow Presidential Chair and professor of physics. “Contributing to the improvement of the human condition is something that a biologist or a chemist or a physicist or an engineer at the bench thinks about when they’re doing their experiments. If they find something that they can grab onto, and they have a partner who knows how to translate that, then the combination is formidable and will improve people’s lives for generations to come.”

The symposium featured speakers from two collaborations made possible by the 2014 round of funding.

## Partners in innovation

### Perfecting Personalized Therapy

*Viviana Gradinaru: assistant professor of biology and Heritage Principal Investigator*  
*Mei Kong: associate professor in the Department of Cancer Biology at the Beckman Research Institute of City of Hope*

Cancerous cells are characterized by their rapid growth, and they need the nutrient glutamine to sustain this growth and survive. However, cancer cells that are buried in the center of tumors with very little access to nutrients are actually extremely difficult to kill. Kong theorized that, instead of starving in a low-glutamine environment, these core cells were actually mutating into “super-cells” with drug resistance. She proposed that glutamine plays a central role in gene regulation and that the lack of glutamine leads to more spontaneous mutations, and thus drug-resistant cancer cells.

Kong teamed up with Caltech assistant professor Viviana Gradinaru to find a way to see the distribution of glutamine molecules throughout a tumor and to see if decreased glutamine levels changes gene regulation.

Gradinaru had previously developed a technique to render opaque tissues, such as the brain, completely transparent (a process called clearing) while chemically labeling particular cells in order to create 3-D models of organs and bones. By applying this clearing technique to melanoma tumor samples, the team was able to show that low-glutamine environments did indeed lead to gene deregulation, which leads to drug resistance.

### Your Future is Calling

*Mory Gharib: director, Graduate Aerospace Laboratories, Hans W. Liepmann Professor of Aeronautics and Bioinspired Engineering*

*Saro Armenian: associate professor, Department of Population Sciences; director, Childhood Cancer Survivorship Program, Beckman Research Institute of City of Hope*

Although the survival rates for patients with childhood cancer are increasing (80–90 percent of diagnosed patients survive), people who have had childhood cancer unfortunately are at greater risk for health complications later in life, such as heart failure. Former cancer patients must

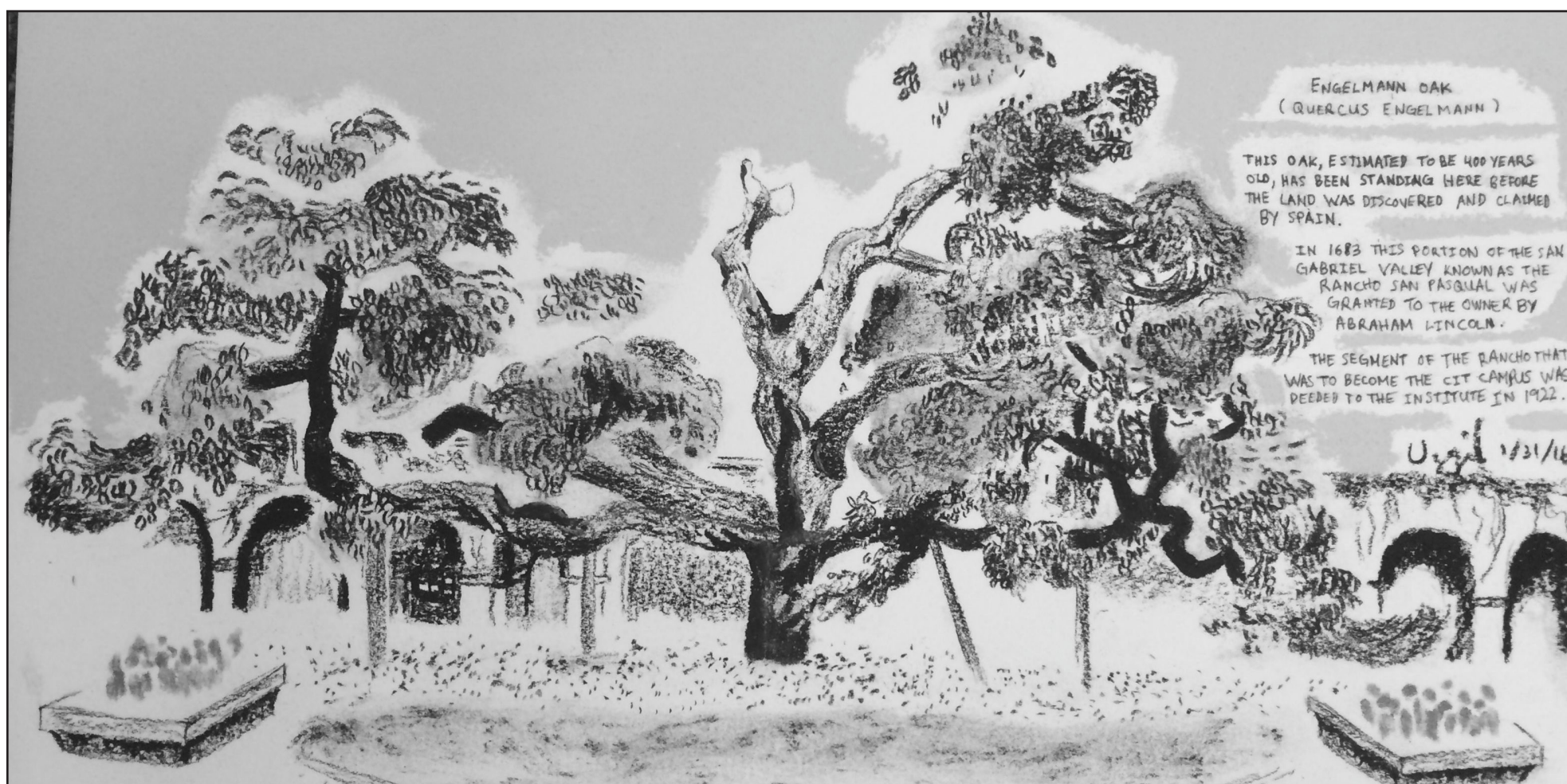
undergo regular screenings and monitoring for these additional health problems, which can be expensive and time-consuming.

One important measure of heart health is the so-called ejection fraction, the fraction of blood that is ejected from the heart with each heartbeat. A healthy heart will have an ejection fraction around 64 percent; too low or too high of an ejection fraction indicates health problems. Gharib, who is a faculty member in Caltech’s department of medical engineering within the Division of Engineering and Applied Science, wanted to find a way to measure the ejection fraction using the theory that the human body can be modeled as a “wave field”—with each pump of blood, the heart sends vibrations throughout the body that can be modeled as oscillating waves.

When the heart is pumping, the aortic valve (the valve that blood passes through on its way to the rest of the body) is either open or closed. When it is closed, the heart is sealed from the rest of the body (a “decoupled system”) and when the aortic valve is open, the heart and the body are one, “coupled” system. Gharib used mathematical models of these two systems to calculate a so-called intrinsic frequency characterizing each, which he then used to compute the ejection fraction.

The next step was to develop a way to measure these intrinsic frequencies in a noninvasive way that patients could do on their own in order to check their general heart health. Gharib, Armenian, and their groups designed a small piece of hardware that can connect to an iPhone and calculate a patient’s ejection fraction—for less than \$8. The device, called Vivio, gives comparable results to a cardiac magnetic resonance imaging, the gold standard in the medical industry for measuring heart health.

Both Gradinaru and Gharib’s projects were part of the 2014 round of funding. Seven Biomedical Research Initiative teams, including Gharib’s and teams led by Mikhail Shapiro, Alexei Aravin, Joel Burdick, Andre Hoelz, Mitch Guttman, and Linda Hsieh-Wilson, received support in the 2016 round of funding.





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## Feist records sixth double figure save game

**GOCALTECH.COM**  
Actual Sports Content Editor

CLAREMONT, Calif. (Oct. 3, 2016) – Senior J.D. Feist racked up his sixth game of double-figure saves as Caltech men's soccer held Claremont-Mudd-Scripps Colleges scoreless in the first half before falling, 3-0, on the road Monday night.

Feist single-handedly kept CMS off the board in the first

half, stopping eight successive shots while the Caltech offense generated a single shot at the other end, which sophomore Tristan Née put on frame to force a save. Feist made a ninth straight save before CMS popped in a pair of close-range goals in a two-minute span from the 66th-68th minutes. The Stags added an insurance strike in the 77th minute.



JD tries to will the ball to his hand while flying.

Photo Courtesy of Michael Wong

## Rookie trio fuels volleyball win over Mills

**GOCALTECH.COM**  
Actual Sports Content Editor

Pasadena, Calif. (Oct. 7, 2016) - The freshman trio of Alexa Lauinger, Lauren Li and Ellie Walker turned it up in their first-ever Orange Out to fuel Caltech volleyball to a sweep over Mills College on Friday night.

Lauinger recorded her sixth double-double of the season, racking up 12 kills and 16 digs to go with four service aces, while Li smacked a team-season-high 18 kills on a career-best .500 hitting percentage and just missed her own double-double with nine digs. Walker was instrumental to the success of both her classmates, setting for a career-high 36 assists over the three-set match.

The match began slowly for both teams as four of the first five combined points were scored on errors. The foes traded points throughout the set, with the Beavers finally taking their first lead midway through at 13-12. Caltech extended the lead to three before a three-point Mills run immediately erased the margin, but the Beavers responded with six of the next eight points to surge ahead by four at 23-19. With their backs against the wall, the Cyclones clawed back to a 23-23 tie on a kill, two errors and an ace. Head Coach Tom Gardner called a timeout to settle his team and the raucous crowd showed the Beavers their support, culminating in consecutive Mills errors to hand the set to the hosts.

The Beavers started the next set with another three attacking errors in the first five points to trail 4-1, but would finally find their stride to hit above .450 the rest of the way. Feeding off the crowd's energy, Caltech went on to score six straight points to take the lead at 7-4 and never looked back, going on to dominate the set, 25-12. Fueled by the momentum and with their first 2-0 match lead of the season, the Beavers scored another six unanswered points to open the third. Caltech extended the margin throughout the set, with Mills summoning one final rally to fight off three match points before Li closed it out with her 18th kill of the night.



The volleyball team performs a rain dance for the drought in California.

-<http://gocaltech.com>

## Water polo nabs first consecutive NCAA wins in 30 years

**GOCALTECH.COM**  
Actual Sports Content Editor

CLAREMONT, Calif. (Oct. 8, 2016) – Caltech men's water polo recorded its first consecutive victories over NCAA opponents in 30 years with wins against Penn St.-Behrend and McKendree University at the Gary Troyer Tournament on Friday.

### **Caltech 15, PS-Behrend 7**

The Beavers jumped out to a 3-0 lead in the tournament opener and increased it to 7-1 by halftime as sophomore Shaurya Gilani made 13 saves. The Lions staged a rally in the third quarter, edging the Beavers 5-4, but never challenged the lead as Caltech recovered to post a 4-1 advantage in the fourth for the decisive victory.

Gilani finished with a career-high 25 saves for a phenomenal .781 save percentage. Senior Chris Bradley and sophomore Charles Ross each tallied five goals, while freshman Bradley Justice dished out three assists.

### **Caltech 13, McKendree 12**

The Beavers' second game began entirely different, with McKendree surging ahead 4-1 after the first quarter and building up a seemingly insurmountable



A wild Shaurya appears out of nowhere.

11-5 lead late in the third quarter. With 1:39 left on the clock, Head Coach Jon Bonafede called his final timeout of the game and it proved a masterstroke. Ross netted on the Beavers' next two possessions and Bradley fired home a buzzer-beater to make it three straight, halving the deficit at the last break.

McKendree settled down to hold back the furious rally for the first couple minutes of the fourth quarter, but senior Connor Lee broke through again with 5:45 on the clock to pull Caltech within two. The Bearcats briefly extended the margin back to three, but the Caltech surge could not be stopped as the Beavers scored on their next four consecutive

possessions, with Ross netting the eventual game-winner at the 2:29 mark. Gilani and the defense were impenetrable over the final minutes to seal the historic win.

Bradley finished with seven goals, two steals, two field blocks and one assist while Ross notched another hat trick and Lee netted twice. Justice, Lee, Ross and sophomore Eshan Govil all

assisted on a pair of goals apiece while Gilani totaled 14 saves.

### **Caltech 6, Conn. College 14**

The Beavers did not fare as well on Day Two of the tournament, falling into a 5-1 hole in the first game and never quite recovering. Another Bradley hat trick was not enough to overcome a six-goal halftime deficit at 9-3, while Ross scored two more goals with an assist and three drawn exclusions and Gilani made another 14 saves.

### **Caltech 3, Pomona-Pitzer 13**

The host Sagehens burst out to a 5-1 lead after the first quarter and extended the margin to seven by halftime. Justice took over in goal for the second half and made five saves while allowing just four goals after Gilani stopped 10 shots over the first half, but Pomona-Pitzer would hang on for the clear victory.

Head Coach Jon Bonafede and his squad host LA Trade Tech (8-15) in a battle of the Beavers for the next Orange Out on Thursday, Oct. 13 at 5 p.m.

Photo Courtesy of Michael Wong



# ASCIT Minutes

Meetings are every week in SAC 13

## ASCIT Board of Directors Meeting

Minutes for 5 October 2016. Taken by Alice Zhai.

**Officers Present:** Tim Liu, Sakthi Vetrivel, Kalyng Chang, Alice Zhai

**Call to Order:** 12:07 pm

### Officer's Reports:

#### V.P. of Academic Affairs (ARC Chair: Tim):

- Article written in the Tech about changes made by the ARC
- Most option chairs found for student faculty meeting
- Faculty board meeting next week

#### V.P. of Non-Academic Affairs (IHC Chair: Bobby):

- Absent

#### Director of Operations (Sakthi):

- Need to set up meeting for club funding
- Club Fair is Wednesday, October 5th

#### Treasurer (Kalyng):

- Reconsider getting bagels and donuts from CDS

#### Social Director (Robin):

- Absent

#### Secretary (Alice):

- Will set up an agenda for meeting with Joe Shepherd on Friday, October 7th

Election for ASCIT president is on October 10<sup>th</sup>.

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:** 12:20pm

## The California Tech

### Editors-in-Chief

Jon Cotler  
Katherine Guo

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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](mailto:tech@caltech.edu). For subscription information, please send mail to "Subscriptions."

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Email [tech@caltech.edu](mailto:tech@caltech.edu) with questions.

# Join the Meditation Mob!

Tuesdays, 12:00 - 12:50

Want to learn more about mindfulness meditation? It's a great way to improve your attention and to become more grounded in the present moment.

There's no religious component. We use secular, evidence-based meditation techniques.

We meet in the small room just off the lounge in Winnett. All students are welcome, from total beginners to more experienced meditators.

Mailing list and MP3 archive:  
[counseling.caltech.edu/students/meditation](http://counseling.caltech.edu/students/meditation)



## Katherine rants: why flossing matters

**KATHERINE GUO**  
Editor-in-Chief

Oftentimes, when I nag my friends with invasive questions about their lifestyles, like whether or not they floss, I am disappointed. This because they usually say “no”, followed by “we get it, you floss regularly.” And I say “Actually, I floss every day.” Anyway, the point is I think everyone could use a reminder that flossing every day is incredibly good for your teeth, and it doesn’t even take that long, and no, Jimmy Hamilton, using a

Waterpik is not enough, despite what the advertisements say.

The most common complaint I hear about flossing is that it hurts. Well, the reason it hurts is because your gums are crying for help because your teeth are covered in bacterial plaque, especially in the nooks and crannies that you don’t get with brushing. If you let it sit it’ll become tartar, which is a hard yellow crust. Basically, letting plaque harden and spread in the aforementioned nooks and crannies between your teeth and between the tooth and gum makes your gums puffy and sensitive,

gives you bad breath, and at worst, you’ll get gum disease and your teeth will fall out.

How to making flossing more fun? Well, first of all, it’s an easy way to procrastinate for another two-ish minutes. Another way is to not use cheap floss that is super thick and hurts you. I personally prefer “Oral-B Glide Pro-Health Clinical Protection...Floss”, which now I realize sounds a bit off. Besides that, it’s a good floss that is thin and ribbon-like so it doesn’t tear your mouth apart. If you really don’t want to use both of your hands, you can buy a pack of those

flossers that looks like a claw with a piece of floss strung through. I know that this isn’t really making it more fun, but I promise that if you floss consistently for even two weeks, any pain or bleeding will reduce dramatically or even go away.

If you have a permanent retainer bolting your bottom front teeth together, you can’t really floss those normally. But wait! You can use a floss threader to weave the floss under the retainer wire and get at them! However, it is at this point that I get lazy, and I admit I don’t really like to do this because

it’s a lot more of a hassle, but I do really want to have teeth when I’m senile. At least I’ll have that going for me.

Honestly, the best part of flossing is how clean and pure your teeth feel afterward. It’s like a juice cleanse for just your teeth, and it only takes a minute or two. You truly do not realize how much gunk you have between your teeth until you floss it out. Your breath will be better, and your teeth will be whiter, your father will come back into your life and want to be a family again...flossing is pretty great.

## Crossword

### Across

- 1. Ness
- 5. Inundated
- 10. Written leave of absence
- 14. Hooter
- 15. Travesty
- 16. Notion
- 17. Desiccated
- 18. Test
- 19. Leave out
- 20. Bend forward
- 22. Part of the hand
- 23. Three squared
- 24. Squash plant
- 26. Erase
- 28. Cramp
- 31. Golf accessory
- 32. Roofing material
- 35. A sheltered and secluded place
- 37. Flare up
- 41. Playing card
- 42. Simple crane
- 44. Large expanse of water
- 45. Migratory aquatic birds
- 47. Narrate
- 48. Leguminous plant
- 49. Colony insect
- 51. Not fresh

- 53. Swallow
- 56. Roof of the mouth
- 60. Lacking warmth
- 61. Large military dining room
- 64. Stateroom
- 65. Not in favor of
- 66. Creek
- 68. Tincture
- 69. Slant
- 70. Dodge
- 71. Boundary of a surface
- 72. Ancient stringed instrument
- 73. Refund
- 74. Cervid

### Down

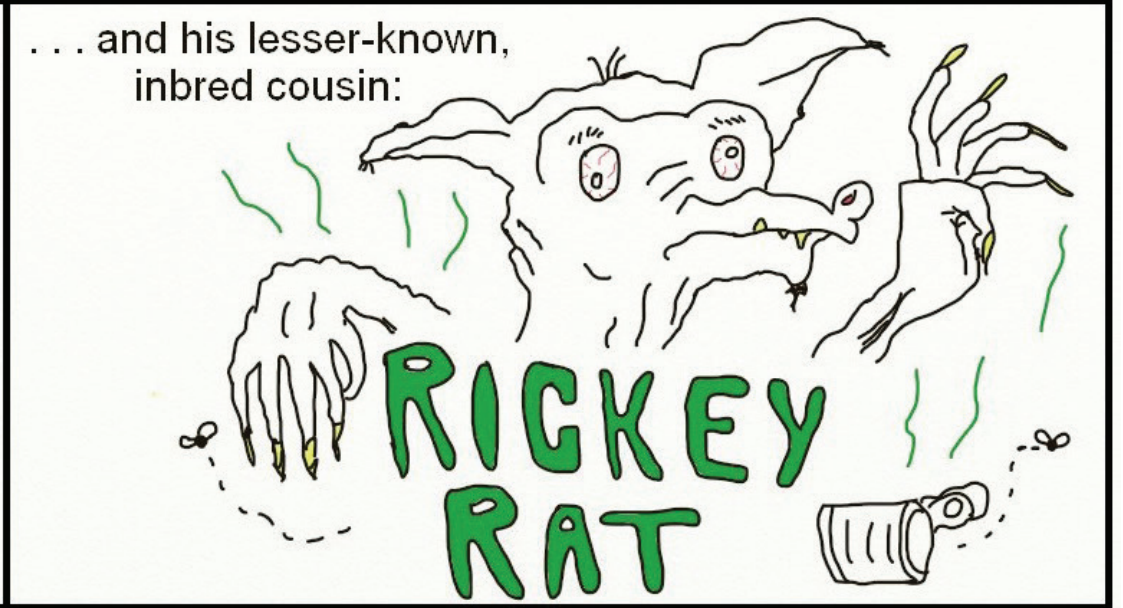
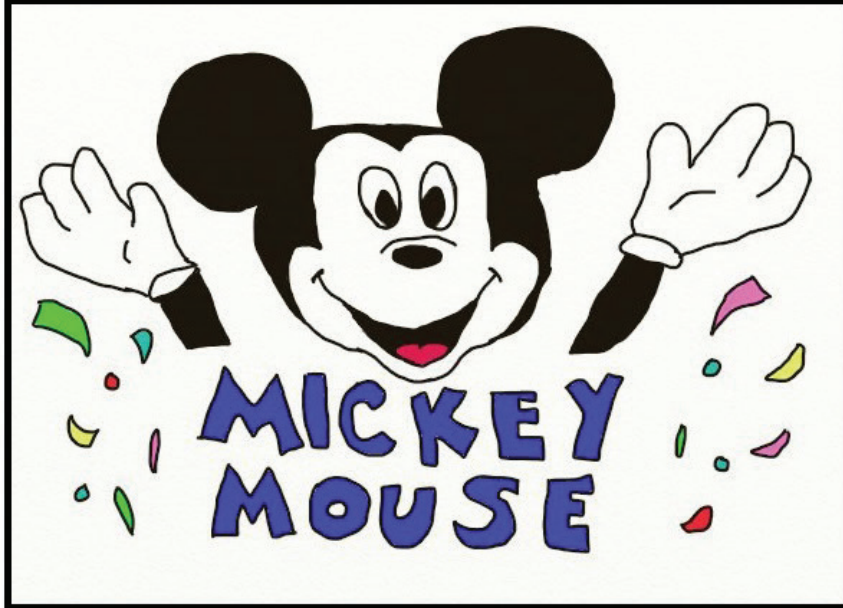
- 1. Abyss
- 2. Major artery
- 3. Earlier in time
- 4. Give support or approval to
- 5. Astern
- 6. Buckle
- 7. Song
- 8. Burn caused by hot liquid or steam
- 9. Protective headgear
- 10. Trailblazer
- 11. Let in
- 12. French river
- 13. Satisfy

- 21. Music genre
- 25. A gradual decline
- 27. Edible plant
- 29. Kind
- 30. Conventions of a group
- 32. Label
- 33. Frozen water
- 34. The sheltered side
- 36. Tartan skirt
- 38. Employ
- 39. Small vegetable
- 40. Bronze
- 42. A surface depression
- 43. Applaud
- 46. Small fatty fish
- 48. Tardy
- 50. Wood, cut and prepared
- 52. Used in varnishes and sealing wax
- 53. Currency
- 54. Part of a church
- 55. Boldness
- 57. Dwell
- 58. Undertone
- 59. Go in
- 60. A telephone connection
- 62. Cleansing agent
- 63. Soft drink
- 67. Tonality

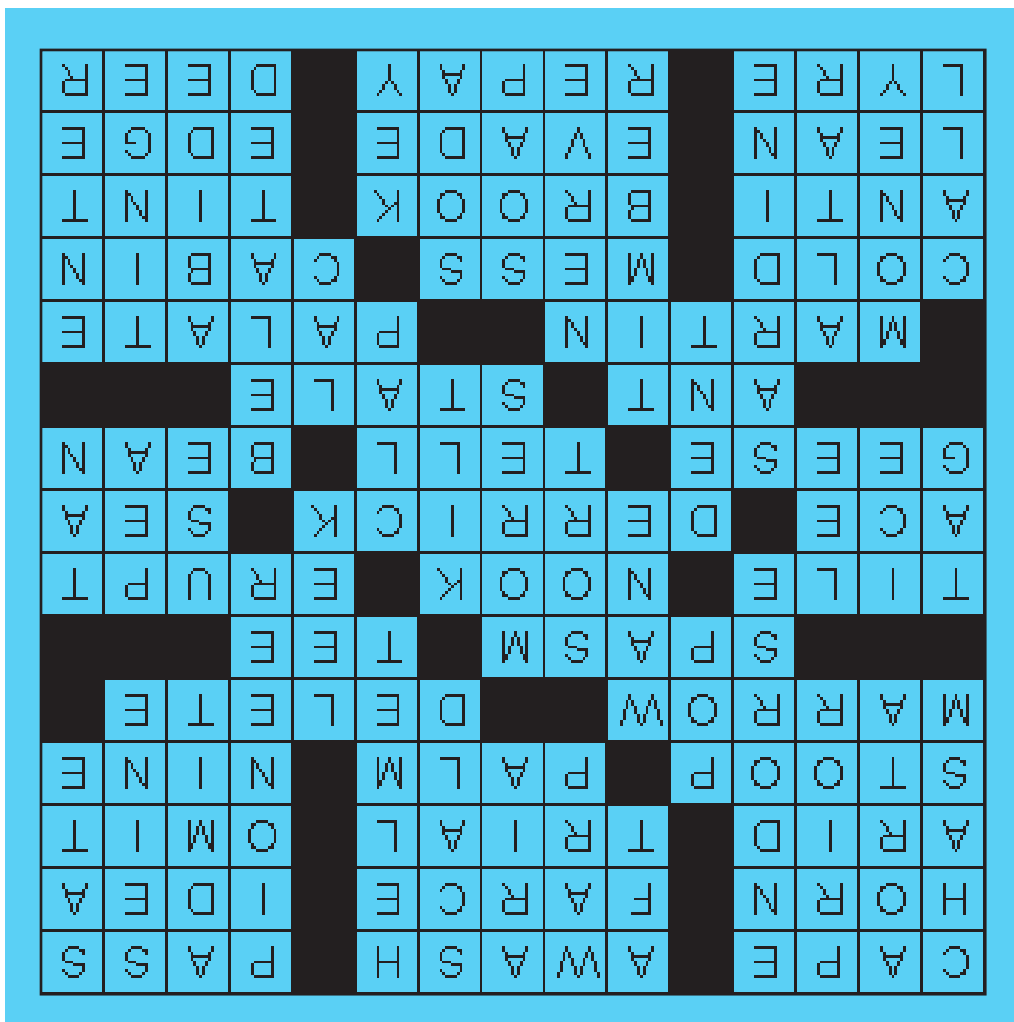
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Familial Relations

Slava, Nina, Lazarina

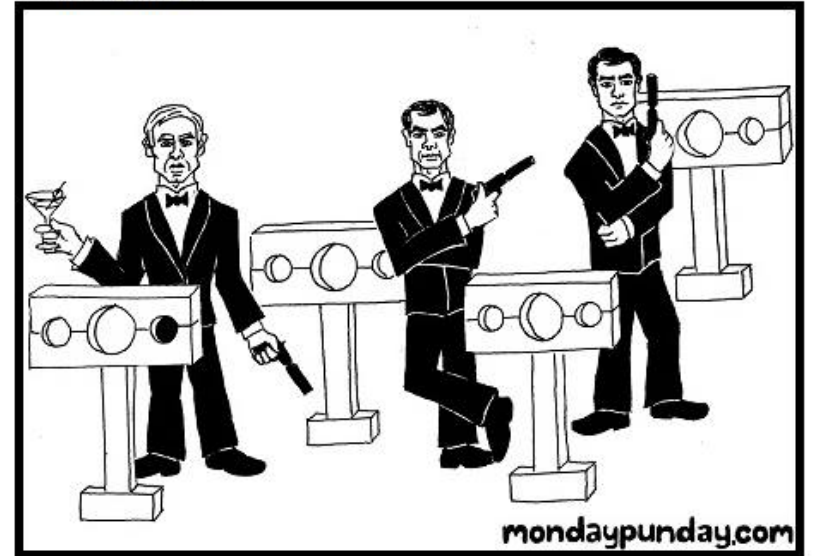


Answers to current crossword (pg 7)



-http://puzzlechoice.com

Monday Punday



This picture represents a common phrase, title, or person.

Think you know the answer? Take a guess at [mondaypunday.com/159](http://mondaypunday.com/159)

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