



VOLUME CXX NUMBER 24

PASADENA, CALIFORNIA

TECH@CALTECH.EDU

MAY 8, 2017

Caltech Y Hosts World Fest 2017



Photos Courtesy of Claire Goeckner-Wald

IN THIS ISSUE

NEWS | PAGE 4
CALTECH CHEMICAL
ENGINEERS EXPLAINS
OXYGEN MYSTERY

NEWS | PAGE 4
EARTHQUAKES CAN
CAUSE FAULTS TO
OPEN AND SNAP
SHUT

SPORTS | PAGE 5
KRASNOPEROV
NAMED ALL-SCIAC
AS A ROOKIE

SPORTS | PAGE 5
WOMEN'S TENNIS WINS OPENING
ROUND IN SCIAC
TOURNAMENT

ANNOUNCEMENTS

THE CALIFORNIA TECH

Caltech Y Column

CALTECH Y

Upcoming Events

Caltech Y India Cultural Trip - Applications Available Now

December 9 - 19, 2017 | Cost: \$950 | Applications Due Thursday, May 18th

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 at http://caltechy.org/programs_services/areas/India/index.php and are due by Thursday, May 18th. Questions may be directed to caltechy@caltech.edu. Space is limited.

Kids Reading to Succeed

Saturday | May 6th | 8:30 - 11:00 AM | 500 E. Villa Street & Jackson Elementary

Kids Reading to Succeed (KRS) works with the youth of Pasadena to encourage a love of reading and to improve literacy skills. The first hour (9:00 to 10:00) focuses on individualized and targeted reading, in which a volunteer is paired with a student who is encouraged to read aloud from a book chosen from the KRS library. Volunteers consistently ask questions of the students to gauge reading comprehension. The second hour of our program (10:00 to 11:00) is the interactive and fun presentation based on the monthly theme.

For more info and to RSVP go to <http://www.kidsreadingtosucceed.org/p/get-involved.html>. Eligible for Federal Work Study. Contact Kavya Sreedhar at ksreedha@caltech.edu for questions.

Caltech Y Photo Contest

Deadline May 10th

The Caltech Y Photo Contest is on again! If you have participated in a Caltech Y program and are a current student, submit your photos for a chance to win. We're giving a \$100 prize to the winner of each of the five photo contest categories. The 5 categories come from the Caltech Y pillars of:

- Perspective
- Adventure
- Service
- Civic Engagement
- Leadership

Photos should demonstrate the pillar in action. Photos of people are preferred, but exceptional scenic pictures will also be accepted. After the deadline, we select the finalists, upload them to our Facebook page, and our fans vote for their favorites to determine the winners. Winners will be announced on June 1st.

The Caltech Y Social Activism Speaker Series Presents:

Bridging the Divide: Effective Political Communication in a Polarized World, A talk by Prof. Robb Willer, Professor of Sociology at Stanford

Friday | May 12th | 12:00 - 1:30 PM | Location: TBD | Lunch is provided, spaces are limited

RSVP Required: <https://goo.gl/forms/eSNopwBkx4AeUmEY2>

There will be a break for people with 1 pm classes to leave

There will also be a smaller group session from 3-4pm which will give people more of a chance to interact directly with Prof. Willer and ask him in depth questions. Please indicate on the RSVP if you'd like to attend this. Spaces are limited and priority will be given to students.

The Caltech Y Social Activism Speaker Series is hosting the second event in its Bridging the Divide series with Robb Willer, professor of sociology at Stanford.

Attitude polarization and intergroup antagonism threaten democratic processes in a number of ways. Though political animosity in the U.S. has reached record levels, research on the social psychology of American politics suggests techniques for effective political communication and action. In particular, moral arguments - carefully crafted fit to the values of a given audience - offer one path to political persuasion and coalition formation. Prof. Willer will present his work on these topics and take your questions.

Caltech Y Explore LA Series

Horseback Riding in Griffith Park

Saturday | May 20th | 9:45 - 11:15 AM | \$20 for 1 Hour Ride | Transportation is NOT provided | Spaces are limited | Sign up at the Caltech Y (payment required at sign up)

Join us for an exciting morning ride in the beautiful Griffith Park. We will be riding horses from Circle K Ranch. Beginners and seasoned riders are welcome, as there are horses to meet every skill level. Our group will meet at Circle K Ranch (914 S. Mariposa St, Burbank, CA 91506) at 9:45 and should be back on campus around 11:15 AM.

Spaces are limited. Those who wish to receive a spot will be expected to visit the Caltech Y to sign up and make payment (\$20) by the end of business hours, Thursday, May 18th (as space allows).

Caltech Y Explore LA Series

Museum of Ice Cream

Saturday | June 3rd | 6:30 - 7:30 PM | Cost: \$25 | Transportation provided

The Museum of Ice Cream has come to LA! Come see a dessert wonderland with interactive exhibits, like a pool of sprinkles, a giant banana split made from 10,000 bananas, and a melted popsicle jungle. With admission you also get two scoops of curated ice creams from local creameries, and also some mochi ice cream samples!

Tickets are limited, email kguo@caltech.edu if interested. Please also indicate if you are willing to drive.

Hathaway Sycamores

Every Wednesday | 6:00 - 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. Eligible for Federal Work Study.

Pasadena LEARNS

Every Friday | 3:00 - 5:00 PM | 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

Caltechlive!

**EARNEST C.
WATSON
LECTURE SERIES**

Wednesday, May 10, 2017 • 8 PM

WHAT COLUMBUS DISCOVERED



**Nicolas Wey-Gomez, Professor of History
Caltech Division of Humanities and Social Sciences**

The voyages of Christopher Columbus have inspired heated debate over the true nature of his Indies enterprise. Wey-Gomez will explore some of the facts and fiction surrounding Columbus's geographical surveys.

Public Lecture • Free Admission • Free Parking
Caltech's Beckman Auditorium
www.events.caltech.edu • 626.395.4652



RSVP, contact azhai@caltech.edu. Eligible for Federal Work Study.

are looking to see if any Caltech members would be interested in participating in their newly created LA program. Today's Entrepreneurial Leaders Support BUILD. Website: <https://build.org/about-us/>.

Contact their Community Engagement Manager, Kiana Alzate, kalzate@build.org for more information.

PUSD Innovation Exposition seeking judges

Your help is needed for the Pasadena Unified School District's Innovation Exposition help on Friday, May 12th. This is not your typical science fair! The exposition has 6 categories that students can compete in. They are: Scientific Inquiry, Reverse Engineering, Environmental Innovation, Invention, Science Fiction and 3D Printing Challenge. They are in desperate need of judges for 5 of the 6 categories. This is where your expertise is required. The most valuable part of this competition is having the students interact with and answer questions from STEM experts about their projects. You can learn more about the event and see student excitement for STEM by viewing this video. They anticipate that this will be our biggest year yet! Judging occurs from 8:30 am to 12:00 pm (at the latest). You can volunteer for part or all of that time. If you are interested please sign up at gopusd.com/innovationexpo

Beyond the Y

BUILD seeking volunteers

Businesses United in Investing Lending and Development (BUILD) is a nationally recognized nonprofit that uses the highly engaging experience of launching a business through entrepreneurship and experiential learning to connect with students at risk of dropping out of high school.

BUILD is looking for volunteers to help high school students develop business ideas. They are interested in finding motivated volunteers that could help with science and engineering and how those topics could be applied to entrepreneurial endeavors. They

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**VICE PROVOST'S
OFFICE HOURS**

Vice Provost, Chief Diversity Officer, and Professor of English Cindy Weinstein holds regular office hours as an opportunity for undergraduate students, graduate students, and postdocs to meet for discussions 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 Caltech Libraries.

There are four 15-minute appointments available per office hour. Sign up in the Office of the Vice Provost, Parsons-Gates room 104, ext. 6339 or by sending an email to dlewis@caltech.edu. We look forward to hearing from you!

Student Office Hours for Spring Term 2017:

5/9/17 Tuesday 11:00 a.m.-12:00 p.m.
5/17/17 Wednesday 11:00 a.m.-12:00 p.m.
5/24/17 Wednesday 11:00 a.m.-12:00 p.m.
5/31/17 Wednesday 11:00 a.m.-12:00 p.m.
6/8/17 Thursday 11:00 a.m.-12:00 p.m.



SPARK

- Learn tools for coping with procrastination and work avoidance.
- Learn practical, behavioral strategies for responding differently to old habits.
- Respond differently to unhelpful thoughts like "I can just get up early and do this tomorrow."
- Optional text-based reminder system to keep the lessons fresh in the week after the workshop is over.

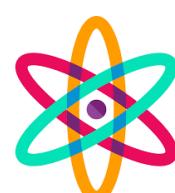
A 1-hour workshop offered 2 times this term:

Section 1: Friday, April 28th, 12:00 - 1:00

Section 2: Wednesday, May 17th, 4:00 - 5:00

Location: 229 Sherman Fairchild Library

More information: counseling.caltech.edu



CATALYST

A 3-workshop series offered twice this term. Pre-screening is required - call the counseling center's front desk at (626) 395-8331 for more information.

- Learn how stress affects you, and make a personalized stress response profile.
- Learn tools for being with stressful and difficult emotional experiences when you can't easily change them.
- Get a clearer sense of your moment-to-moment experiences.
- Learn how to separate from unhelpful patterns of thinking.
- Get a clearer sense of what's important to you, and how you can make choices in line with that.

Section 1: Wednesdays 4:00 - 5:00, April 19, April 26, and May 3rd

Section 2: Mondays 4:00 - 5:00, May 8, May 15, and May 22nd

Location: 229 Sherman Fairchild Library

Caltech Chemical Engineer Explains Oxygen Mystery on Comets

Whitney Clavin
Caltech Media Relations

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

A Caltech chemical engineer who normally develops new ways to fabricate microprocessors in computers has figured out how to explain a nagging mystery in space—why comets expel oxygen gas, the same gas we humans breathe.

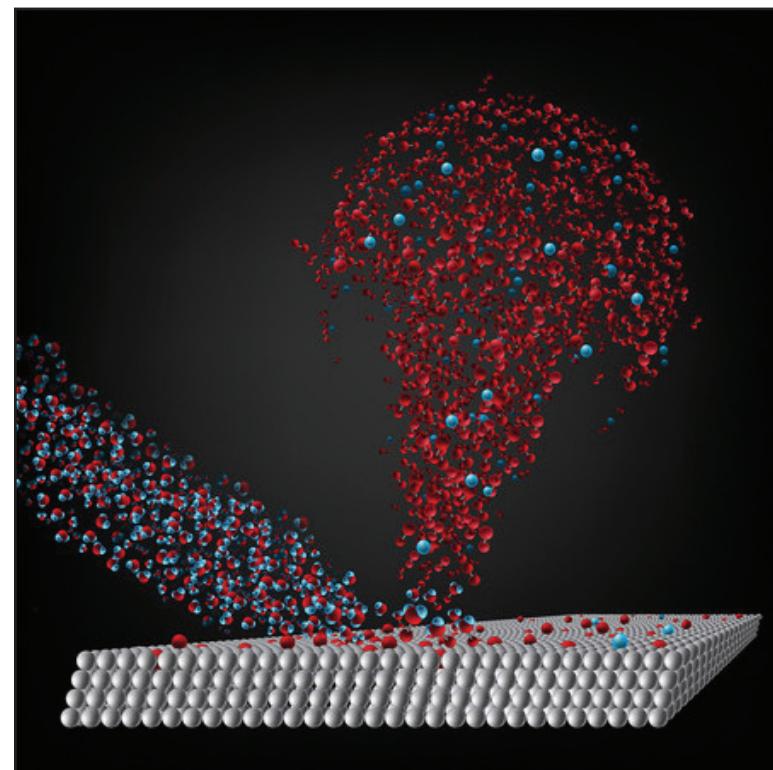
The discovery that comets produce oxygen gas—also referred to as molecular oxygen or O₂—was announced in 2015 by researchers studying the comet 67P/Churyumov–Gerasimenko with the European Space Agency’s Rosetta spacecraft. The mission unexpectedly found abundant levels of molecular oxygen in the comet’s atmosphere. Molecular oxygen in space is highly unstable, as oxygen prefers to pair up with hydrogen to make water, or carbon to make carbon dioxide. Indeed, O₂ has only been detected twice before in space in star-forming nebulas.

Scientists have proposed that the molecular oxygen on comet 67P/Churyumov–Gerasimenko might have thawed from its surface after having been frozen inside the comet since the dawn of the solar system 4.6 billion years ago. But questions persist because some scientists say the oxygen should have reacted with other chemicals over all that time.

A professor of chemical engineering at Caltech, Konstantinos P. Giapis, began looking at the Rosetta data because the chemical reactions happening on the comet’s surface were similar to those he has been performing in the lab for the past 20 years. Giapis studies chemical reactions involving high-speed charged atoms, or ions, colliding with semiconductor surfaces as a

means to create faster computer chips and larger digital memories for computers and phones.

“I started to take an interest in space and was looking for places where ions would be accelerated against surfaces,” says Giapis. “After looking at measurements made on Rosetta’s comet, in particular regarding the energies of the water molecules hitting the comet, it all clicked. What I’ve been



Konstantinos Giapis has shown how molecular oxygen may be produced on the surface of comets using lab experiments. He and his postdoctoral scholar Yunxi Yao fired high-speed water molecules (left) at oxidized silicon and iron surfaces, observing the production of a plume that included molecular oxygen. Oxygen atoms are red, and hydrogen, blue. Giapis says similar conditions exist on the comet 67P/Churyumov–Gerasimenko, where the European Space Agency’s Rosetta mission detected molecular oxygen.

Photo Courtesy of Caltech

studying for years is happening right here on this comet.”

In a new *Nature Communications* study, Giapis and his co-author, postdoctoral scholar Yunxi Yao, demonstrate in the lab how the comet could be producing oxygen. Basically, water vapor molecules stream off the comet as the cosmic body is heated by the sun. The water molecules become ionized, or charged, by ultraviolet light from the sun, and then the sun’s wind blows the ionized water molecules back toward the comet. When the water molecules hit the comet’s surface, which contains oxygen bound in materials such as rust and sand, the molecules pick up another oxygen atom from the surface and O₂ is formed.

In other words, the new research implies that the molecular oxygen found by Rosetta need not be primordial after all but may be produced in real time on the comet.

“We have shown experimentally that it is possible to form molecular oxygen dynamically on the surface of materials similar to those found on the comet,” says Yao.

“We had no idea when we built our laboratory setups that they would end up applying to the astrophysics of comets,” says Giapis. “This original chemistry mechanism is based on the seldom-considered class of Eley-Rideal reactions, which occur when fast-moving molecules, water in this case, collide with surfaces and extract atoms residing there, forming new molecules. All

necessary conditions for such reactions exist on comet 67P.”

Other astrophysical bodies, such as planets beyond our solar system, or exoplanets, might also produce molecular oxygen with a similar “abiotic” mechanism—without the need for life. This may influence how researchers search for signs of life on exoplanets in the future.

“Oxygen is an important molecule, which is very elusive in interstellar space,” says astronomer Paul Goldsmith of JPL, which is managed by Caltech for NASA. Goldsmith is the NASA project scientist for the European Space Agency’s Herschel mission, which made the first confirmed detection of molecular oxygen in space in 2011. “This production mechanism studied in Professor Giapis’s laboratory could be operating in a range of environments and shows the important connection between laboratory studies and astrochemistry.”

The *Nature Communications* paper, titled “Dynamic molecular oxygen production in cometary comae,” was funded by the National Science Foundation/Department of Energy Partnership for Basic Plasma Science and Engineering.

Earthquakes Can Make Thrust Faults Open Violently and Snap Shut

Robert Perkins
Caltech Media Relations

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

It is a common trope in disaster movies: an earthquake strikes, causing the ground to rip open and swallow people and cars whole. The gaping earth might make for cinematic drama, but earthquake scientists have long held that it does not happen.

Except, it can, according to new experimental research from Caltech.

The work, appearing in the journal *Nature* on May 1, shows how the earth can split open—and then quickly close back up—during earthquakes along thrust faults.

Thrust faults have been the site of some of the world’s largest quakes, such as the 2011 Tohoku earthquake off the coast of Japan, which damaged the Fukushima nuclear power plant. They occur in weak areas of the earth’s crust where one slab of rock compresses against another, sliding up and over it during an earthquake.

A team of engineers and scientists from Caltech and École normale supérieure (ENS) in Paris have discovered that fast ruptures propagating up toward the earth’s surface along a thrust fault can

cause one side of a fault to twist away from the other, opening up a gap of up to a few meters that then snaps shut.

Thrust fault earthquakes generally occur when two slabs of rock press against one another, and pressure overcomes the friction holding them in place. It has long been assumed that, at shallow depths, the plates would just slide against one another for a short distance, without opening.

However, researchers investigating the Tohoku earthquake found that not only did the fault slip at shallow depths, it did so by up to 50 meters in some places.

That huge motion, which occurred just offshore, triggered a tsunami that caused damage to facilities along the coast of Japan, including at the Fukushima Daiichi Nuclear Power Plant.

In the *Nature* paper, the team hypothesizes that the Tohoku earthquake rupture propagated up the fault and—once it neared the surface—caused one slab of rock to twist away from another, opening a gap and momentarily removing any friction between the two walls. This allowed the fault to slip 50 meters.

That opening of the fault was supposed to be impossible.

“This is actually built into most computer models of earthquakes right now. The models have been programmed in a way that dictates that the walls of the fault cannot separate from one another,” says Ares Rosakis, Theodore von Kármán Professor of Aeronautics and Mechanical Engineering at Caltech and one of the senior authors of the *Nature* paper.

“The findings demonstrate the value of experimentation and observation. Computer models can only be as realistic as their built-in assumptions allow them to be.”

The international team discovered the twisting phenomenon by simulating an earthquake in a Caltech facility that has been unofficially dubbed the “Seismological Wind Tunnel.” The facility started as a collaboration between Rosakis, an engineer studying how materials fail, and Hiroo Kanamori, a seismologist exploring the physics of earthquakes and a coauthor of the *Nature* study. “The Caltech research environment helped us a great deal to have close collaboration across different scientific disciplines,” Kanamori said. “We seismologists have benefited a great deal from collaboration with Professor Rosakis’s group, because it is

often very difficult to perform experiments to test our ideas in seismology.”

At the facility, researchers use advanced high-speed optical diagnostic tools to study how earthquake ruptures occur. To simulate a thrust fault earthquake in the lab, the researchers first cut in half a transparent block of plastic that has mechanical properties similar to that of rock. They then put the broken pieces back together under pressure, simulating the tectonic load of a fault line. Next, they place a small nickel-chromium wire fuse at the location where they want the epicenter of the quake to be. When they set off the fuse, the friction at the fuse’s location is reduced,

allowing a very fast rupture to propagate up the miniature fault. The material is photoelastic, meaning that it visually shows through light interference as it travels in the clear material—the propagation of stress waves. The simulated quake is recorded using high-speed cameras and the resulting motion is captured by laser velocimeters (particle speed sensors).

“This is a great example of collaboration between seismologists, tectonists and engineers. And, not to put too

fine a point on it, US/French collaboration,” says Harsha Bhat, coauthor of the paper and a research scientist at ENS. Bhat was previously a postdoctoral researcher at Caltech.

The team was surprised to see that, as the rupture hit the surface, the fault twisted open and then snapped shut. Subsequent computer simulations—with models that were modified to remove the artificial rules against the fault opening—confirmed what the team observed experimentally: one slab can twist violently away from the other. This can happen both on land and on underwater thrust faults, meaning that this mechanism has the potential to change our understanding of how tsunamis are generated.

The paper is titled “Experimental evidence that thrust earthquake ruptures might open faults.” The lead author is Vahe Gabuchian (MS ‘08, PhD ‘15), a former PhD student at Caltech’s Graduate Aerospace Laboratories (GALCIT), and coauthors include Raúl Madariaga of ENS. This research was funded by the National Science Foundation.

Women's tennis hosting SCIAC Championships

GOCALTECH.COM
Actual Sports Content Editor

PASADENA (May 3, 2017) – The No. 39 Caltech women's tennis team has become the first in department history to earn the right to host a first-round match in the SCIAC Championships. The #4 seed Beavers will host #5 California Lutheran University this Friday, May 5 at 3 p.m.

The Beavers have compiled what would be the first winning record over SCIAC play in program history at 4-3, while the Regals enter the tournament at 3-4 by virtue of Caltech's 7-2 win on Mar. 3. The victory marked the first over a nationally ranked opponent in program history, one which Caltech followed up with a second just eight days later, edging Hardin-Simmons University, 6-3.

Caltech has been strongest at #2-5 singles and #1-2 doubles, with every single player posting a .500 or better record in SCIAC singles competition. Sophomore Kana Moriyama has locked down the top spot in the lineup, where she went 4-3, a record which freshman Angelica Zhou

and junior Erin Wang matched playing primarily #3 and #5 singles, respectively. Sophomore Julia Reisler went 4-2 across #2 and #3 singles, while rookie Alexandra Bodrova posted a 3-2 mark at #4. Senior Sophia Chen and juniors Sarah Cai and Vinci Chen combined to go 7-3 mainly at courts #5 and #6 in a lineup that proved formidable at all six spots. A recent shakeup in doubles has seen the Beavers go 7-2 over their past three SCIAC matchups, leaving no easy points for opponents at any court.

CLU, which has only limited statistics publicly available, boasts a singles lineup with little variance between any position, although their top doubles team has gone just 1-5 overall this season while the #2 pairing of Gianna Cupo and Sarah Seeman was undefeated through four matches together. Both have moved down in the lineup since last season, when Cupo went 8-6 overall at #1 singles and Seeman was 8-6 at #2. In the Beavers' victory over the Regals, Caltech rallied after losing #2 and #3 doubles to sweep all six singles matches in straight sets.



TBH this is the most zen tennis photo I've ever seen.

-gocaltech.com

Bodrova, Chen fuel SCIAC opening round win

PASADENA (May 5, 2017) – Freshman Alexandra Bodrova earned the clinching point for No. 39 Caltech women's tennis in the opening round of the SCIAC Championships.

Bodrova and senior Sophia Chen each won both their singles and doubles matches, with the duo pairing up in doubles for the fourth time this spring. Their 8-6 victory at #3 was followed closely by an 8-2 win at #1 by sophomore Julia Reisler and freshman Angelica Zhou. CLU won the final four games of the remaining doubles match to avoid the sweep, but considering that the Beavers had won just one doubles match before sweeping singles in their 7-2

victory over the Regals earlier this year, momentum was squarely on Caltech's side.

The Beavers took the first set at five courts before Chen and junior Erin Wang closed out victories at courts #6 and #5, respectively. Zhou fought back from her first-set defeat to force a third at #2 while Reisler and Bodrova each fell behind their opponents early in the second set, but Bodrova quickly rallied and won the final three games to clinch the match.

Due to impending inclement weather, the SCIAC officially announced a series of changes to the tournament this weekend. All matches will be played to decision, which left Caltech with the 5-1 victory.



Shoot lazer beams out of my eyes at the ball, or hit it normally...that is the question.

-gocaltech.com

Krasnoperov All-SCIAC as rookie at Championships

GOCALTECH.COM
Actual Sports Content Editor

CLAREMONT, Calif. (Apr. 29, 2017) – Freshman Tim Krasnoperov made the podium with a third-place finish in the discus and the Caltech women's track & field team earned its first point at the SCIAC Championships since 2014 at Pomona-Pitzer Colleges this weekend.

The rookie opened the event with the second-furthest throw in the field and added nearly another meter on his penultimate attempt, but was passed by a classmate from Claremont-Mudd-Scripps Colleges who launched a throw more than two meters further than his opening mark. With one final attempt remaining and the podium already sewn up, Krasnoperov gave the final throw everything he had, but it went just wide right for a sector foul. Still an All-Conference honoree, he went on to place 11th in the hammer throw later that day and 10th in both the shot put and javelin, in which he made his third program Top-10 list with a throw of 150 feet, one inch to rank seventh.

Sophomore Michelle Marasigan scored the two points for the women's team thanks to her seventh-place finish in the 800-meter run. Having qualified for the finals in the eighth and final spot, albeit 2.5 seconds clear of ninth, she ended up in a two-woman battle behind the main pack and held on to double her projected point total. The 1.5-second



My OCD is having a field day with this photo. It's neither centered on the podium nor our lil Beaver.

-gocaltech.com

drop moved her up to fifth on the program's all-time list and just two seconds shy of the record.

The majority of the team either recorded a season-best time or improve on their preliminary seeding over the weekend, with a select few also cracking or moving up the program Top-10 lists. Freshman Sam Blazes rode a strong opening in the 3,000m steeplechase to a 10th-place finish

display that saw him nearly average his 5k PR at twice the distance.

Rookie Nicole Feng enjoyed the largest time drops of the weekend in the 800m and 1500m (seven seconds), while the men's mid-distance freshmen turned in exceptional performances. Tommy Alford recorded his first sub-2:00 800m time at 1:59.64, while Tanner Moore and Simon Ricci traded seeds in the 1500m at 15th and 16th, respectively, with Moore shaving a whopping four seconds to clock a 4:07.81. Junior Chris Haack also trimmed a little over a second from his 1500m time.

Seniors Lucy Chen and Alison Lui benefitted significantly from wind assistance in the sprints in recording personal bests, dropping .12 and .32, respectively, in the 100-meter dash along with .04 and .29 in the 200m. Junior Alex Bourzutschky and freshman Alex Lettenberger received no such assistance but still shaved .31 and .59, respectively, in the 200m. Sophomore Muskaan Goyal improved her best mark in the hammer, discus and javelin and classmate Rohan Choudhury capped the meet's first day with a 10-th-place finish in the 10k, having led the second pack of runners through the opening few laps before fading after the midway point.

Head Coach Ben Raphelson and a select few Beavers will continue to train over the next few weeks to compete in a handful of Last-Chance invitationals with an eye toward

and 14-second time drop, debuting at ninth in program history at 10:18.14. Classmate Alexa Lauinger continued her upward trajectory with a nine-foot improvement in the hammer throw, moving up a spot to fifth all-time at 92 feet, seven inches, and added two feet to her best javelin mark. Sophomore Michael Hashe also debuted with the eighth-fastest 10k of any Beaver in a superlative

ANNOUNCEMENTS

THE CALIFORNIA TECH

Join the Meditation Mob!

Tuesdays, 12:00 - 12:50



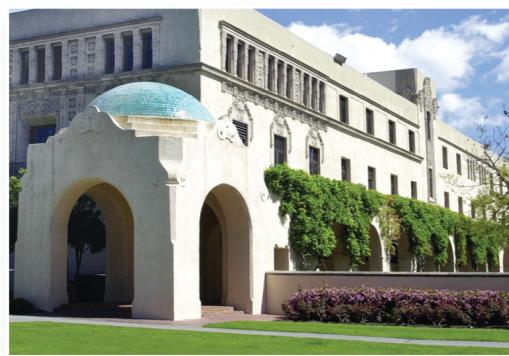
Want to learn more about mindfulness meditation? It's a great way to improve your attention and to become more grounded in the present moment.

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

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ASCIT Minutes

Meetings are every week in SAC 13

ASCIT Board of Directors Meeting

Minutes for 28 April 2017. Taken by Alice Zhai.

Officers Present: Andrew Montequin, Tim Liu, Sakthi Vetrivel, Kalyn Chang, Alice Zhai

Guests: Sara Adams, Sarah Crucilla, Vincent Park

Call to Order: 12:18pm

President's Report (Andrew):

- Meeting with Rachael and Joe Shepherd about Bechtel town hall meeting Monday, May 1

Officer's Reports:

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

- ASCIT teaching award nominations will be up until next week
- Writing a survey about academic advising and how students use it to see whether people find it helpful
- Met with math department about rearranging the curriculum
- Course capture is happening - people will start recording lectures
- Appointing student reps on student faculty board committees

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

- Absent

Director of Operations (Sakthi):

- Got proofs for '15-'16 yearbooks - actual copies will be distributed soon
- Looking into getting an ASCIT laptop

Treasurer (Kalyn):

- Multihouse funding pairs for this term are Fleming/Lloyd, Page/Avery, Blacker/Ricketts, and Dabney/Ruddock - none of the funds have been used yet
- Filing ASCIT's tax return
- Vincent Park pitched for funding for Chester wine tasting

Social Director (Robin):

- ASCIT Movie Night is on Friday, May 3

Secretary (Alice):

- Nothing to report

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: 12:49pm

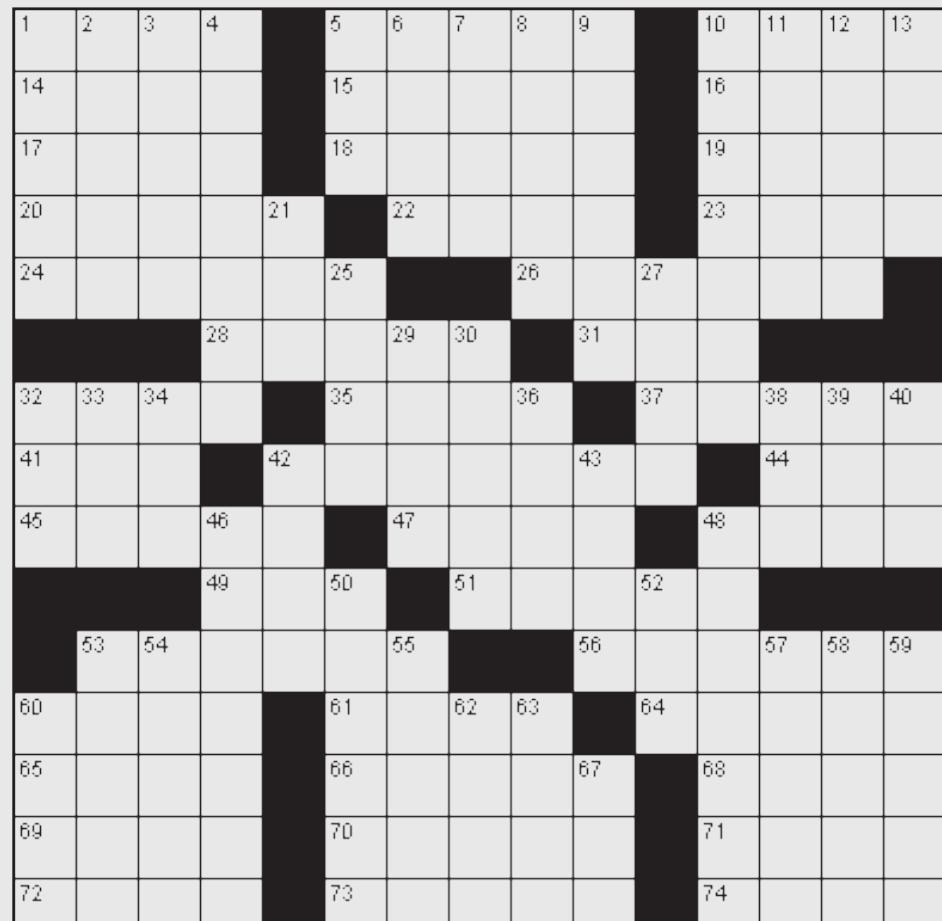
Crossword

Across

1. Freshwater fish
5. Cramp
10. Uncommon
14. From a great distance
15. Spotted horse or pony
16. Comply with
17. Travel by horse
18. Part of a church
19. Finishing line of a foot race
20. Hobo
22. Fabric used to dress wounds
23. Purposes
24. Soap opera
26. Weedy annual grass
28. Fleet
31. Man or boy
32. Affection
35. Injure or wound seriously
37. Massive tropical tree
41. Female sheep
42. Related
44. Wonderment
45. Part of a flower
47. Small pond
48. Friendly nation
49. Fuel
51. Direct the course
53. Arachnid
56. Arid land

Down

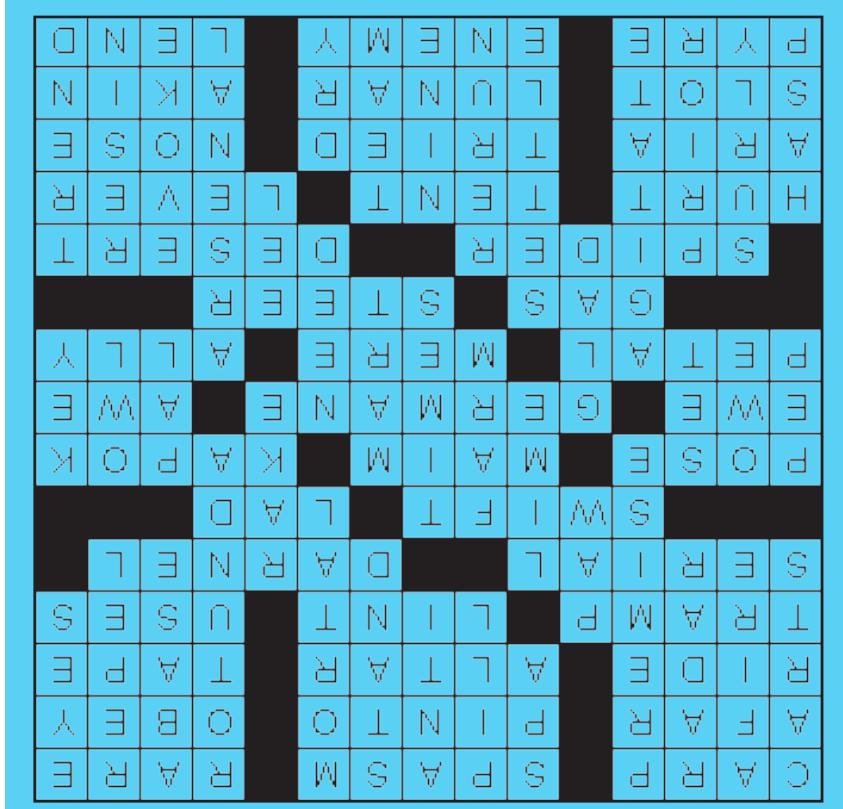
60. Mental or physical pain
61. Portable shelter
64. Flat metal tumbler in a lock
65. Song for solo voice
66. Attempted
68. Proboscis
69. Space for inserting a coin
70. Relating to the moon
71. Similar
72. Heaped wood used in a funeral rite
73. Foe
74. Give temporarily
29. Cultivate by growing
30. Multiplied by
32. Liveliness and energy
33. Be in debt
34. Unit of play in tennis
36. Marketplace
38. Buddy
39. Nocturnal bird
40. Tonality
42. Happy
43. Require
46. Foment
48. Store of arms and ammunition
50. Resolve
52. Snakelike fish
53. Inclined to anger with overtones of menace
54. Earlier in time
55. Broadcast again
57. Conjure up
58. Organic compound
59. Tendency to change
60. Fastener for a door or lid
62. Square root of eighty-one
63. Squad
67. Desiccated



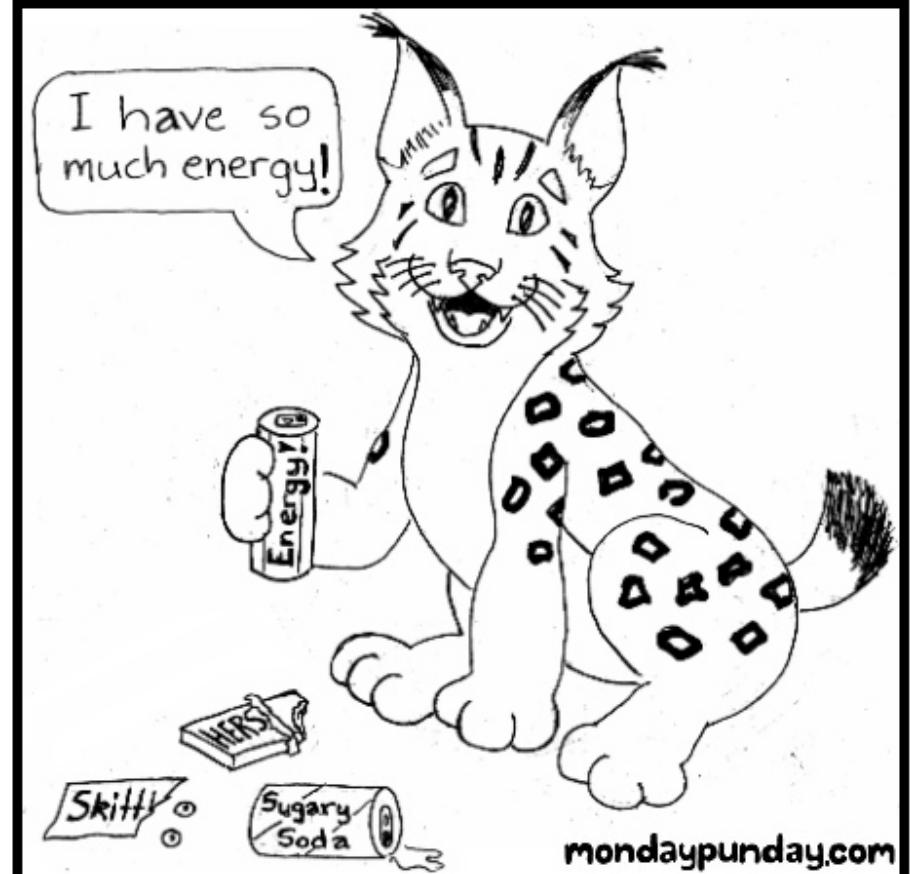
HUMOR

THE CALIFORNIA TECH

Answers to current crossword (pg 7)

[-http://puzzlechoice.com](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/217*The California Tech***Editors-in-Chief**Jon Cotler
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Richard KiplingCaltech 40-58, Pasadena, CA 91125
Contact tech@caltech.edu

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