

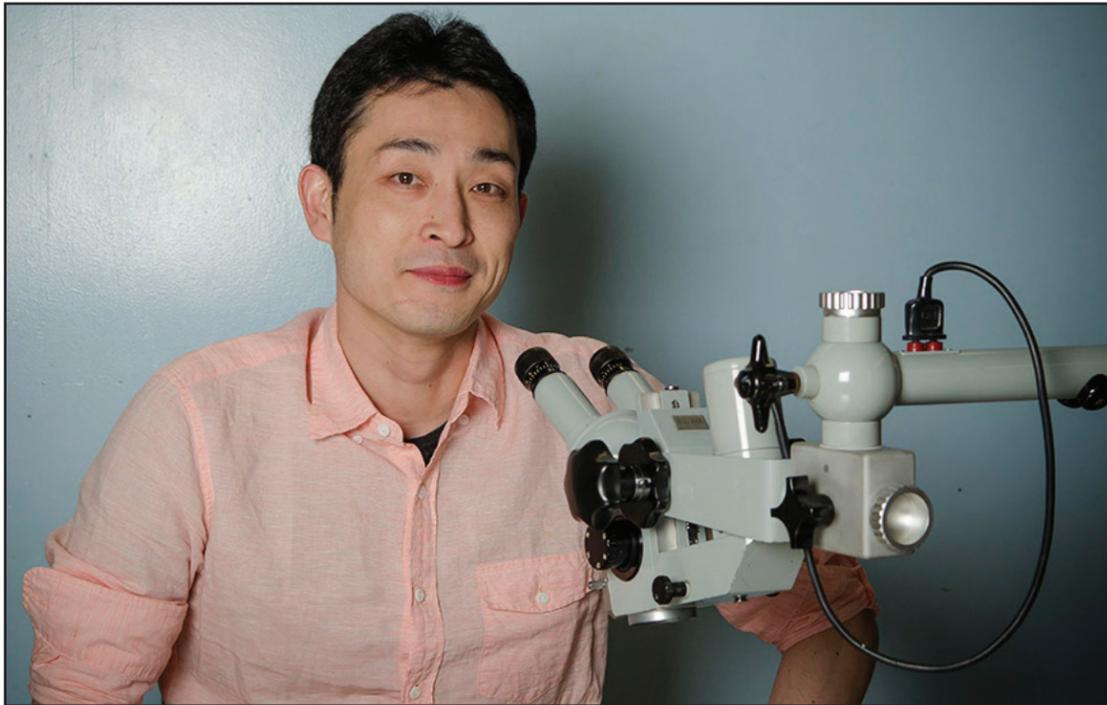
## Assistant Professor Yuki Oka awarded Mallinckrodt Grant

NEHALY SHAH  
Editor-in-Chief

*This article was originally published online at caltech.edu.*

Yuki Oka, an assistant professor of biology, has been awarded a grant from the Edward Mallinckrodt, Jr. Foundation, given to “support early stage investigators engaged in biomedical research that has the potential to significantly advance the understanding, diagnosis, or treatment of disease,” according to the foundation website. The grant will provide \$60,000 per year for three years.

“I’m thrilled by being selected for the 2015 Mallinckrodt Grant,” said Oka, whose lab uses thirst and water-drinking behavior as a simple model system to study how the brain monitors internal water balance and generates signals that drive appetitive behaviors. The long-term goal of the work is to understand how the brain integrates information about the



Yuki Oka will receive \$60,000 per year for three years from the Edward Mallinckrodt, Jr. Foundation.

Photo Courtesy of Lance Hayashida/Caltech

internal body state and external homeostasis (a state of internal sensory information to maintain equilibrium). The research, Oka

said, will provide a framework for studying the mechanisms that

govern innate behaviors such as eating and drinking. Currently, an estimated 30 million people in the U.S. suffer from appetite disorders including polydipsia and bulimia, characterized by excessive water and food intake, respectively. Identifying neural circuits underlying appetite may offer insights into safe treatments for associated disorders.

Oka received his Ph.D. from the University of Tokyo and was a postdoctoral researcher at University of California, San Diego and Columbia University before joining the Caltech faculty in 2014. He was named a Searle Scholar in April 2015.

Past Mallinckrodt grantees from Caltech include Sarkis Mazmanian, Luis B. and Nelly Soux Professor of Microbiology; David Prober, assistant professor of biology; Mitchell Guttman, assistant professor of biology; and Viviana Gradinaru, assistant professor of biology and biological engineering.

### News briefs from around the globe

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

#### Retired army captain to receive medal of honor

2 suicide bombers ambushed Captain Groberg’s platoon, but Gorberg’s efforts prevented “catastroph[ic]” damage [CNN]

#### New ban on public smoking presented by Department of Housing and Urban Development

25-foot minimum distance from public housing could be in place by 2017 [BBC]

#### Mormons plan “mass resignation” in response to new church rules

1,000 members to resign over new rules regarding homosexuality [BBC]

#### Earthquake off of Japan’s coast triggers small tsunami

7.0-magnitude quake reportedly caused no injuries or major damage [BBC]

#### Protests break out at college campuses across the country

100s of students at Mizzou, Yale, other schools protest against racial injustice [TIME]

#### Boston Marathon bombing “victim” admits to fraud

\$40,000 received from public agencies over fabricated injuries [CNN]

#### France devastated by numerous coordinated terror strikes

153 killed, many more injured after gunfire, bombing strikes Paris, Saint-Denis [CNN]

## Caltech hosts two-day astronomy symposium

DOUGLAS SMITH  
Caltech Media Relations

*This article was originally published online at caltech.edu.*



Scores of baby stars shrouded by dust are revealed in this infrared image of the star-forming region NGC 2174, as seen by NASA’s Spitzer Space Telescope. Found in the constellation Orion, NGC 2174 is located around 6,400 light-years away.

Photo Courtesy of NASA/JPL-Caltech

Fifty years ago, a group of Caltech physicists brought infrared light — then an underappreciated region of the electromagnetic spectrum—to the forefront of astrophysics. Infrared astronomy holds the keys to our cosmic origins, revealing how planets, stars and even the earliest galaxies formed. It may even enable us

to discover Earth-like planets orbiting other stars.

The clouds of dust and gas from which stars and planets form — and the newborn solar systems themselves — are too cold to be seen in visible light. However, the heat they do emit shows up in the infrared, the shortest wavelengths of which are just slightly longer than the red light we do see. The earliest galaxies would be visible if they were closer to us in space and time; instead, the expanding

universe has stretched their light so that the wavelengths are shifted down into the infrared. However, most of this light never reaches earthbound telescopes, as Earth’s atmosphere absorbs most infrared waves very efficiently.

Two next-generation space telescopes, the James Webb Space Telescope, which is

*Continued on page 3*

IN THIS  
ISSUE

NEWS | PAGE 2  
MANY NEW OPPOR-  
TUNITIES OFFERED  
BY CALTECH Y

FEATURE | PAGE 3  
INTERNAT’L CITIZENS  
STAND IN SOLIDAR-  
ITY WITH FRANCE

FEATURE | PAGE 4  
OASIS HOLDS ANNUAL  
DIWALI CULTURAL  
SHOW

SPORTS | PAGE 5  
MEN’S BASKETBALL  
SCORES VICTORY  
AGAINST OXY

# Caltech Y Column: Upcoming events and volunteer opportunities

## CALTECH Y

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

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

### Upcoming Events

#### 1. Civil Rights, Civic Equality, and Religious Liberty

David Cruz - Professor of law, USC Gould School

Tuesday, Nov. 17 | 11:45 AM to 1:30 PM | Beckman Institute Auditorium

Lunch Provided | RSVP Required: <http://goo.gl/forms/lvx6SL2gjs>

The recent Supreme Court decision in *Obergefell v. Hodges* extended the fundamental right to marry to same-sex couples, citing the Due Process Clause and Equal Protection Clause of the Fourteenth Amendment. This decision was met with opposition from conservative religious groups and individuals such as Rowan County clerk Kim Davis. Claiming that the Supreme Court decision infringed on her First Amendment rights to freedom of religious expression, Davis refused to issue marriage licenses to same-sex couples. Similar arguments against gay marriage have been made by many others.

Join us for a lunch discussion with David Cruz, Professor of Law at the USC Gould School of Law. He will provide context on how civil liberties, civic equality, and religious liberty are protected by the Constitution of the United States, with a focus on same-sex marriage. As election season kicks off, it is important to gain a correct understanding of the laws behind topics that are certain to be raised by both parties.

Professor David Cruz is a constitutional law expert focusing on civil rights and equality issues, including equal marriage rights for same-sex couples. He specializes in discrimination law and the rights of lesbian, gay, bisexual and transgender persons.

Before joining the USC Law faculty in 1996, Prof. Cruz was a Bristow Fellow in the Office of the Solicitor General in Washington, D.C. He also clerked for The Honorable Edward R. Becker, Circuit Judge of the United States Court of Appeals for the Third Circuit. He is past chair of the AALS Section on Sexual Orientation and Gender Identity Issues and co-president of ILGLaw, the International Lesbian, Gay, Bi, Trans, and Intersex Law Association. Prof. Cruz graduated from the University of California, Irvine, and earned his master's degree from Stanford University. He is a graduate of New York University School of Law, where he was managing editor of New York University Law Review.

#### 2. Beauty and the Beast - The Musical

Sunday, Nov. 22 | 6:30 pm | Hollywood Pantages Theater

Transportation is NOT provided | Cost: \$22 | Tickets on sale at the Caltech Y (505 S. Wilson)

DISNEY'S BEAUTY AND THE BEAST features the animated film's Academy Award-winning score with music by Alan Menken and lyrics by the late Howard Ashman, with additional songs with music

by Alan Menken and lyrics by Tim Rice. The book is written by Linda Woolverton.

DISNEY'S BEAUTY AND THE BEAST is the classic story of Belle, a young woman in a provincial town, and the Beast, who is really a young prince trapped in a spell placed by an enchantress. If the Beast can learn to love and be loved, the curse will end and he will be transformed to his former self. But time is running out. If the Beast does not learn his lesson soon, he and his household will be doomed for all eternity.

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

#### 3. Hike Satawiwa to Tri-Peaks

Sunday | Nov. 22 | 8:00 AM to 6:30 PM

The Caltech Y Outdoors group will hike to Tri-Peaks in the Santa Monica Mountains. A hike that passes through grasslands, burned chaparral, pleasant grottoes, and rocky hills, the hike is 9.9 miles and gains 2,500 feet. It's a strenuous hike, getting to the top involves some scrambling but is well worth the effort. There's an interesting set of caves and slot canyons at the end to explore as well as a view of the Pacific. We will leave the Caltech Y at 8:00am and return at around 6-6:30pm depending on our pace and traffic. To sign up, fill out the form at the below: <http://goo.gl/forms/VgZSNsaHs2>.

If you have questions, email Jeremy Brouillet at [jbrouill@caltech.edu](mailto:jbrouill@caltech.edu)

#### 4a. Pasadena LEARNS

Fridays | 3:00 - 5:00pm | Pasadena

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

#### 4b. Hathaway Sycamores

Wednesdays | 5:30-8:00pm | 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.

#### 5a. Breaking Through

Pasadena Playhouse | Now Until Nov. 22 | Tickets 20% Off

Tickets can be purchased using your unique 20% discount code, CTY20, from now through 11/22/2015 and 10% will go back to the Caltech Y. For more info visit: <http://www.pasadenaplayhouse.org/box-office/mainstage/breaking-through.html>

A World Premiere Musical, Breaking Through is told through the eyes of a young, talented singer/songwriter, as she tries to navigate the treacherous shark-filled waters of the music business. She embarks on a compelling journey to find her way back to her authentic self and in the process rediscovers the music that truly makes her alive. Breaking Through features a score by Emmy award-winning songwriter and producer Cliff Downs (The Voice, American Idol, ), and Katie Kahanovitz (Girls Night Out Pop Radio), with a book by Kirsten Guenther (Mrs. Sharp, 2008 Richard Rodgers Award-winner; the upcoming Benny and Joon).

#### 5b. Peter Pan and Tinker Bell

Dec. 9th-Jan. 3rd | Tickets 20% Off

Tickets can be purchased using your unique 20% discount code, CTY20, from now through 1/3/2016 and 10% will go back to the Caltech Y. For more info visit: <http://www.pasadenaplayhouse.org/box-office/mainstage/peter-pan-and-tinkerbell-a-pirates-christmas.html>

Peter Pan and Tinker Bell - A Pirates Christmas is the latest Holiday Spectacular presented by Lythgoe Family Productions in the style of the traditional British Panto. Tinkerbell, Wendy and Peter Pan embark on a wild quest to foil the pirates plot to kidnap Peter for Captain Hook's Christmas present in this flying, singing, swashbuckling adventure. Featuring comedy, magic, dancers from So You Think You Can Dance, and contemporary music from Taylor Swift to the Bee Gees, a Panto is interactive holiday fun for all ages.

#### 6. Amazon Smile

Support the Caltech Y every time you shop on AmazonSmile

Black Friday is fast approaching and you can support the Caltech Y while you do your holiday shopping. When you shop at AmazonSmile, Amazon donates 0.5% of the purchase price to Caltech Y. Bookmark the link <http://smile.amazon.com/ch/95-1684790> and support us every time you shop.

#### Other Announcements - Beyond the Caltech Y

##### Open Mic Night for Syria

Wednesday, Nov. 18 | 10:00 PM - 1:00 AM

Due to the Syrian Civil War and ensuing violence and chaos, millions of Syrians

have fled their homeland to seek a better life. Refugees currently are seeking asylum in the European Union by the hundreds of thousands and on neighboring Middle Eastern countries by the millions. The UN and EU are currently attempting to accommodate this massive exodus of innocents, but are spread thin. We at Caltech can help.

The Open Mic for Syria is a Caltech, student-based initiative to raise funds for Syrian refugees and to raise awareness for the refugee crisis. By gathering students and faculty around a non-house affiliated Open Mic Night, we can raise awareness and funds for the hundreds of thousands of refugees. So please join us at the Student Coffee House (Chouse) on Wednesday, November 18th from 10 to 1 for a free night of music and fundraising. All students and faculty are welcomed to come, and also play music. Sign-ups to play will be available at the event, but there are no guarantees on instruments being provided (but amps, mics, and electrical equipment will).

Throughout the event there will be tables with volunteers present where anyone can place down donations for the refugees.

Donation Tables Thursday, November 12th through Wednesday, Nov. 18 11:30 a.m. to 12:30 p.m.

In addition to Open Mic Night you can also give throughout the week at our donation tables. So if you cannot make it to the event then you will also have the chance to help by donating at tables in front of Chandler.

All donations will be given to the UNHCR to assist them with their efforts. If you have any questions, please contact the event coordinator at [jpalomin@caltech.edu](mailto:jpalomin@caltech.edu).

## Caltech live!

## EARNEST C. WATSON LECTURE SERIES

WEDNESDAY, December 2, 2015 / 8 PM

### "COMPLEX QUANTUM COSMOS: Science Puzzles and Technology Solutions"



**Maria Spiropulu**  
Professor of Physics

The ATLAS and Compact Muon Solenoid experiments at the Large Hadron Collider are some of the most complex experimental physics instruments currently in existence. In this lecture, Spiropulu will discuss why the discovery of the Higgs boson is a major milestone in our understanding of the universe. She will also share the profound implications of its properties and elaborate on how the Higgs boson and new emerging puzzles associated with it connect to future discovery.

Free Admission

Caltech's Beckman Auditorium  
[www.events.caltech.edu](http://www.events.caltech.edu)



Call campus x 4652 for information

## New telescopes to further infrared astronomy research

*Continued from page 1*

slated to launch in October 2018 to replace the Hubble Space Telescope, and the Wide-Field Infrared Survey Telescope (WFIRST), which has been named a top priority for the next decade in astronomy and is being studied for launch in the mid-2020s, will be carrying forward work begun by the Infrared Astronomical Satellite (IRAS) mission in the 1980s — work in which Caltech’s self-styled “Infrared Army” played a major role.

On Nov. 2 and 3, Caltech hosted a two-day symposium in honor of the Army’s three founders — the late Gerry Neugebauer (Ph.D. ’60), Caltech’s Robert Andrews Millikan Professor of Physics, Emeritus; Tom Soifer (B.S. ’68), the Harold Brown Professor of Physics and director of the Spitzer Science Center, which operates NASA’s current orbiting infrared observatory, the Spitzer Space Telescope; and Keith Matthews (B.S. ’62), chief instrument scientist for Palomar Observatory, who by his own estimation has built “scores” of instruments for the 5-meter Hale telescope at Palomar and the twin 10-meter telescopes at the W. M. Keck Observatory atop Mauna Kea, Hawaii.

Matthews’ hardware output is rivaled by the rate at which Neugebauer’s and Soifer’s research groups have spun off infrared programs at other institutions. “I’ve got a group of grad students from the ’70s and ’80s, and a group from the ’90s. I’m trying to sample as many epochs as I can in two days,” said organizer Lee Armus, who arrived at Caltech as a postdoc of Soifer’s in 1992.

Neugebauer earned his doctorate in 1960 under Caltech physics professor Robert Lee Walker, who had codesigned Caltech’s synchrotron — the most powerful machine of its kind in its day, capable of revving up an electron to a billion volts of energy. In those days, experimental physicists built and operated their own equipment — and thus understood it inside and out. Neugebauer brought this hands-on approach to the U.S. Army at Caltech’s Jet Propulsion Lab, where he designed and operated the infrared radiometer for Mariner 2’s successful flyby of Venus.

When Neugebauer returned to campus in 1962, he and fellow physics professor Robert Leighton (B.S. ’41, Ph.D. ’47) set about making the 62-inch-diameter mirror for the world’s first purpose-built infrared telescope. (It is now in the Smithsonian.) Over the next

few years, they and a team of undergraduates and graduate students used the instrument to scan the entire sky — or as much as could be seen from the summit of Mount Wilson overlooking Pasadena. The Two-Micron Sky Survey’s final catalog, published in 1969, inventoried some 5,000 point-like objects, many of which were previously undiscovered cool red stars or stars enshrouded in obscuring clouds of gas and dust that the stars had ejected as they entered the later stages of their life.

Other invisible objects also cropped up. In 1965, Neugebauer’s first graduate student, Eric Becklin (Ph.D. ’68) discovered something in the Orion Nebula that, in the infrared, was as bright as the brightest visible star, except it had no visible counterpart. Follow-up work with the 200-inch Hale Telescope at Palomar revealed that this point of infrared light had faint “wings,” about 15 times larger than its diameter, extending to its east and west — a feature unlike any ever seen before. The Orion Nebula was known to be at most a few million years old and was presumed to be a stellar nursery. The object Becklin detected was the first protostar to be caught in its shell of potentially planet-forming dust. Becklin would later pioneer high-altitude infrared astronomy aboard specially modified jet aircraft.

In the 1970s Neugebauer and Soifer became part of the science team for IRAS, a collaboration among the United States, England, and the Netherlands. Launched in 1983, IRAS surveyed more than 95 percent of the sky. The data were made available to the entire scientific community as

soon as they were processed—a first for NASA — leading to the creation of Caltech’s Infrared Processing and Analysis Center to curate and distribute it.

IRA got the field of infrared astronomy off the ground. “Astronomers could trust our catalogs,” Soifer said. “Every source was real. We gained the respect of the astronomical community because they could take some other telescope and point it at our coordinates, and they’d find really interesting objects to explore with millimeter telescopes, radio telescopes, optical telescopes.”

Matthews “started working in cosmic rays in 1959 with Professor of Physics [Eugene] ‘Bud’ Cowan [Ph.D. ’48],” and still sees himself as a physicist. “I do anything that has technique to it,” he said. In addition to helping design the infrared aspects of the Keck 10-meter telescopes, he built the observatory’s Near-Infrared Camera, the first instrument to be mounted on the telescope.

In the early 1990s Andrea Ghez (M.S. ’89, Ph.D. ’93), one of Neugebauer’s last graduate students, used this instrument and a technique called “speckle interferometry” to measure the positions of stars close to the galactic center. Ghez now uses the telescopes as the founder and director of UCLA’s Galactic Center Group. Nearly two decades’ worth of measurements, mostly using the second-generation Near-Infrared Camera for the Keck II telescope built by Matthews, have allowed her to derive radial velocities of stars as they orbit that still-elusive black hole. Thanks to her work, however, the mass of our galaxy’s black hole is now precisely known, making it a little less mysterious.

## Solidarity

SEAN MCKENNA  
Contributing Writer

*Definition (dictionary.com):* union or fellowship arising from common responsibilities and interests, as between members of a group or between classes, peoples, etc.

*Modern Usage:* The people of the United States stand in solidarity with France.

*Modern Interpretation:* The unfortunate realities of the 21st century were made painfully obvious by the attack in Paris this weekend. Sadly, we live in an era where our membership in a free society comes with targets on our backs. Liberty and peace were stolen from the free society of France by men who were guided by nothing more than hatred. Every day that terrorists are left alone, this hatred grows stronger as they fill political vacuums with extremist rhetoric. So, if the Islamic State turns out to be responsible for

the crime, as they claim, then the only adequate response will be to resolve the Syrian crisis. France, the United States, NATO and all global citizens who value liberty and peace must see that the civil war in Syria can do nothing but cause pain. Syrians feel the obvious pains of war and civil strife, and now Europe has felt the scourge of terror. Left unaddressed, it is only a matter of time before the Islamic State becomes strong enough to affect the Western Hemisphere as well. Stable democracy everywhere, especially in Syria, must be achieved. For America, isolation is no longer an option. We must learn from mistakes that were made in Afghanistan and Iraq instead of using failures in those wars as an excuse to isolate ourselves from Syria. Let us embrace our responsibility to respond forcefully in order to preserve the blessings of liberty and peace. Let us stand in solidarity with France.



-<http://commons.wikimedia.org/>

**ellen's** 626.441.4415  
SILKSCREENING EMBROIDERY & PROMOTIONAL PRODUCTS  
1500 MISSION ST. SOUTH PASADENA  
WWW.ELLENSSILKSCREENING.COM

**Show Off Your School Pride !!!**  
**T-Shirts, Sweats, Caps, and over 250,000 promotional items to grab their attention!**



**Bring your student I.D. to receive one FREE large setup (a \$25 Value)**

## OASIS hosts annual Diwali Night, cultural showcase



Undergraduates Ellora Sarkar, Meghana Pagadala, Anjali Premkumar and Tara Shankar perform a candle dance.



Caltech Dhamaka celebrates Diwali, the Indian festival of lights, with radiant energy.



Graduate student Chandru Dhandapani, one of the two MCs for the Diwali show, showcases creative flavors of "Twinkle Twinkle Little Star" from different Indian states.

Photos Courtesy of Ching-Yun (Chloe) Hsu

You chose one of the most trusted institutions in **SCIENCE**.



Now choose one of the most trusted institutions in **FINANCE**.



When you want unsurpassed stability, integrity and value for your money, Caltech Employees Federal Credit Union offers an honest alternative. There are no gimmicks. No annual fees. No harsh penalties.

Just some of the lowest lending rates and highest savings rates in the nation... and a state-of-the-art eBranch for easy, convenient online and/or mobile access to your account. We're the overwhelming choice for financial services among the entire Caltech family. If you haven't yet joined, call or visit us online or in person today. You belong here.



<sup>62</sup> Smarter <sup>16</sup> Solutions. <sup>59</sup> Proven <sup>75</sup> Results.

**Campus Office** 515 S.Wilson Ave. (physical address) • **Campus ATMs** Winnett Center & Keith Spalding Building  
626/395-6300 • 800/592-3328 • [www.cefcu.org](http://www.cefcu.org)

Must qualify for CEFCU membership to join. Minimum \$5 deposit and one-time \$5 membership fee due upon opening any CEFCU account. Federally insured by NCUA.

# LeBaron breaks out in men's basketball win at Oxy

**GOCALTECH.COM**  
Actual Sports Content Editor

LOS ANGELES (Nov. 14, 2015) – Junior David LeBaron shocked Occidental College with a career-high 25-point breakout as the Caltech men's basketball team claimed the 110 Freeway Rivalry trophy, 86-77, on Saturday night.



*If I could make this photo larger without it being incredibly pixelated, I would. 'Cause David LeBaron is awesome.*

-<http://gocaltech.com>

The Beavers took an early lead and, after a halftime tie, blew the game open in a decisive victory to start the 2015-16 season 1-0, while the Tigers open at 0-1.

"To be 1-0 is a terrific feeling – it shows that what we've worked on in practice for just a month translated straight to the game," Head Coach Dr. Oliver Eslinger said. "Conditioning and shooting were two of our points of emphasis

this preseason, and you saw them on full display tonight. Defensively, we did our jobs too. Our staff did a tremendous job of anticipating what we would see despite not having a full scouting report."

Caltech outshot Oxy 54-43 percent from the field and 48-33 percent from beyond the arc while also outrebounding the Tigers, 37-32, and crushing the hosts in the paint, 38-20. Caltech's most recent victory against a SCIAC foe in their own gym is thought to have been 35 years

ago, in 1979-80, when the Beavers toppled legendary NBA coach Gregg Popovich's Pomona-Pitzer in 1979-80.

The Beavers came to play intending to build on last year's three SCIAC wins, jumping out to a 5-0 lead on a LeBaron layup and trey from junior Lawrence Lee, both courtesy of assists by junior Nasser Al-Rayes. Oxy junior Andrew Johnson fought through multiple apparent muscle strains to put up 20 points in 26 minutes, including the Tigers' first eight points, but Al-Rayes connected with Lee on a reverse baseline layup and LeBaron on a backdoor cut to

put Caltech up 9-4 before LeBaron went off for a three-pointer and fast break layup on his own steal, which preceded 2014-15 leading scorer senior Ke Emezie creating back-to-back layups for the 19-11 lead at 11:48.

Oxy clawed back into the mix as Caltech suffered a near-four-minute scoring drought, allowing the Tigers to pull within two at 21-19 with 6:38 remaining in the half. At that point, freshman Brent Cahill stepped up, hitting a floater on yet another Al-Rayes assist.

Johnson earned a trip to the charity stripe after an Oxy trey with a chance to take the lead and made good for the home crowd, but Caltech responded with back-to-back treys from Cahill and Lee, punctuated by Emezie making a trip to the line and converting both free throws for the 31-27 advantage.

That would be the Beavers' final tally of the half, however, as the Tigers tied things up at 32-32 at the

break on a controversial buzzer-beating tip-in which, according to the play-by-play, came after the horn had sounded.

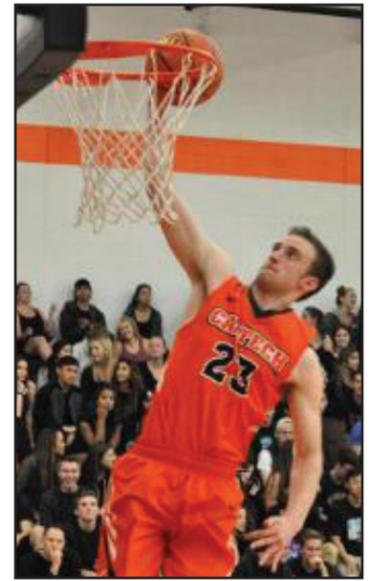
LeBaron kicked off the second half with a jumper and junior Ricky Galliani followed with his first three of the evening to put Caltech back ahead, 37-34. Just one minute later, he tacked on another to give the Beavers a 40-37 lead which they would never relinquish. Caltech extended the lead to as much as 16 with eight minutes remaining in the game, but Oxy never truly threatened to rally as the Beavers offense could not be contained and the defense executed its gameplan to perfection.

"We had a heck of a crowd tonight," Eslinger said. "I looked up from the bench and saw our whole section packed – at an away game – and rivaling Oxy's supporters."

LeBaron led Caltech with 25 points – more than double his previous career high – while Galliani added 17 points and a team-high nine rebounds and Al-Rayes dished out nine assists to go with seven points and rebounds. Emezie chipped in 15 points on an efficient 6-of-8 shooting and added six boards.

"Dave has been leading us in practice, has worked his tail off and literally seized the opportunity tonight and commanded our team as we expected from our lead guard," Eslinger said. "He played with a heck of a lot of confidence

and no hesitation. Dave and Ricky were both locked in defensively and doing everything right on offense. Ricky's shot was so smooth and calm, I thought every one of them would go in. Finally, Brent was the spark we needed, especially off the



*Not only is Brent Cahill a really cool building on campus, but he's a great basketball player as well.*

-<http://gocaltech.com>

bench. He made a high impact in his first collegiate game, including some key plays, particularly that steal in the second half that led to the free throws to get us back ahead by double figures."

Eslinger and the Beavers will look to record their first 2-0 start vs. NCAA opponents since 1946-47 as they head up to No. 3 Whitworth University on Friday, Nov. 20.

## Bhagavathi qualifies for NCAA Championship second straight year

**GOCALTECH.COM**  
Actual Sports Content Editor

CLAREMONT, Calif. (Nov. 14, 2015) – Senior Aditya Bhagavathi qualified for the NCAA Championships for the second straight year as the Caltech men's and women's cross country teams competed at the NCAA West Regional Championships in Claremont, Calif. on Saturday.

Bhagavathi placed 13th overall to earn the final individual qualification berth from the West region, beating out the next competitor by just over a second. He placed 139th with a program-record 25:34.7 at last year's Championships in Mason, Ohio.

"Cross country is an unforgiving sport and outcomes can be unpredictable – for Aditya to qualify for his second NCAA championship in a row is a tremendous accomplishment," Head Coach Ben Raphelson said.

The veteran led the men's team – fresh off its first regional ranking in program history – to a 14th-place finish and sixth among SCIAC schools despite a pair of regular scorers dropping out of

the race due to illness and injury, respectively. Placing ahead of five regional opponents marked another program first for Caltech in the regional's largest field in history.

"Our seniors really carried the day for us," Raphelson said. "They can all be proud of how they closed out the season and their careers. I couldn't be happier for Mark Lorden. He delivered with the best time of his career and contributed critical points to the team score. It's everything you hope for at the end of a cross country career."

The women's team matched its 2014 place of 18th among 19 teams, defeating Mills College by 68 points even with a significant scorer unable to finish the race due to injury.

"It was nice to see Michelle put illness behind her and run her fastest 6km to date," Raphelson said. "The seniors have made a lasting impact on both programs. We'll be counting on our younger runners to build on what they've established."

Bhagavathi will head to the NCAA Championships on Saturday, Nov. 21 at the Lake Breeze Golf Club in Winneconne, Wis.

## Lu, Yu victorious in home opener against Redlands

**GOCALTECH.COM**  
Actual Sports Content Editor

PASADENA, Calif. (Nov. 7, 2015) – Freshman Dylan Lu and senior Kevin Yu won individual events for the Caltech men's swimming and diving team in the Beavers' home opener against the University of Redlands on Saturday morning.

Just as they did to open last season, the Beavers put Redlands on notice with a victory in the 200 Medley Relay with a team of sophomore Hanzhi Lin, freshman Adam Dai, Yu and freshman Jonathan Willett. Freshmen Aadyot Bhatnagar and David Gunby picked up points in the 200 Free with time drops of almost one second and two seconds, respectively.

Lu and Lin then went 2-3 in the 100 Back, with Lu shaving nearly half a second but just getting out-touched after a late challenge and Lin coming out on the other end in the battle for third with a near two-second drop helping him edge out a Redlands swimmer by half a second. Yu and Dai matched their feat in the 100 Breast at 1:03.77 and 1:04.88, with Dai in particular stepping up to knock off almost two seconds from his time last week. In the 200 Fly, freshman Henry Steiner went toe-to-toe with Redlands' SCIAC Championships finalist Eric Bugna, leading after the first 50 before steadily falling further back to still record a 2:03.14.



*Now, I might not know much about sports, but I don't think these swimmers are supposed to be sleeping in the pool. But, please, correct me if I'm wrong.*

-<http://gocaltech.com>

Willett then narrowly missed out on a victory in the 50 Free as a pair of Bulldogs both touched the wall at 22.53 to Willett's 22.64.

Steiner and Willett took second and third in the 100 Free, clocking a 50.01 and 50.53, respectively. Lu then rocked the 200 Back, jumping out to the lead at the start and never relinquishing it on his way to a 1.5-second victory in 1:58.25 – just over half a second shy of the program record. Dai and Lin placed second and fourth, respectively, in the 200 Breast, Yu and Steiner claiming the top two spots in the 100 Fly, cruising their way to times of 53.96 and 54.03. In between, Gunby chopped off 10 seconds in

the 500 Free and freshman Alexander Reeves shaved 23 seconds off his season-opening time two weeks prior.

Sophomore Alexander Bourzutschky earned four points for a second-place finish on the 3-meter board, which was contested at the start of the meet, with a season-best score of 139.10. Lu and Lin closed out the individual events with a 2-3 finish in the 200 IM.

Head Coach Jack Leavitt and the Beavers will buckle down for some tough training over the next month leading up to a home meet against Cal Lutheran University on Saturday, Dec. 12 at 10:30 a.m.

# ASCIT Minutes

## ASCIT Board of Directors Meeting

Minutes for 10 November 2015. Taken by Phillip.

**Officers Present:** Robin Brown, Sean McKenna, Phillip An, Cat Jamshidi

**Call to Order:** 12:04 pm

**Guests:** Chris Dosen

### President's Report (Nima):

- Midnight donuts are next Wednesday night

### Officer's Reports:

- **V.P. of Academic Affairs (ARC Chair: Jay):**

- Absent

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

- Completed tour of Pomona and Claremont regarding new Bectel residence
- Students involved are currently IHC, off-campus representatives and a house representative
- Frosh Admissions – smaller number of faculty have signed up

- **Director of Operations (Sean):**

- None

- **Treasurer (Kalyn):**

- Absent

- **Social Director (Robin):**

- Be a Kid Day will happen during February or late March
- ASCIT Movie night will be 11/20/15

- **Secretary (Phillip):**

- Club Funding Decisions have been sent out. If you have any questions, feel free to contact me

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

**Meeting Adjourned:** 12:31 pm

## The Caltech-Occidental Concert Band, directed by William Bing Annual Fall Concert Series Friday, Nov. 20 and Saturday, Nov. 21

The concert on Friday, Nov. 20 is in Thorne Hall at 7:30 p.m. at Occidental College in Eagle Rock. The concert on Saturday, Nov. 21 is at 8:00 p.m., in Ramo Auditorium, on the Caltech campus in Pasadena. Both concerts are free and open to the public. No tickets are required, but early arrival is recommended to get a good seat, especially for the Caltech concert.

This concert will feature the four professional coaches of the ensemble.

Lynne Snyder will perform Viktor's Tale by John Williams from the movie "The Terminal." Gabriel and Leighanna Sears will perform "Tubby the Tubba." Scott Babcock will perform the Concerto for Tympani" by Alexander Tcherepnin. Hye Sung Choe will perform the Chaminade "Flute Concerto."

The band will also perform music by Bartok, Robert Jager and John McKay. Armenian Dances by Alfred Reed will complete the program.

For further information, please contact Caltech Performing and Visual Arts at 626 395-3295 or visit [bands.caltech.edu](http://bands.caltech.edu).

## VICE PROVOST'S OFFICE HOURS

Vice Provost, Chief Diversity Officer and Professor of English, Cindy Weinstein, offers weekly office hours beginning Thursday, Oct. 15, in Room 104 Parsons Gates. She views these hours as an opportunity for undergraduates, graduate students and postdocs to meet and discuss whatever you'd like to talk about. Professor Weinstein oversees the Council on Undergraduate Education, Caltech accreditation, the Staff and Faculty Consultation Center, Student-Faculty Programs, the Center for Teaching, Learning and Outreach, the Caltech Diversity Center and the libraries.

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

*Fall Term Hours:*

Thursday, Nov. 19, 12pm-1pm    Tuesday, Dec. 1, 12pm-1pm  
Monday, Nov. 23, 12pm-1pm    Wednesday, Dec. 9, 12pm-1pm

## REMINDER FROM COUNSELING CENTER:

### *Meditation Mob*

(drop-in mindfulness meditation group)  
Meets every Tuesday, 12:00-12:50 p.m.  
Bottom floor of Winnett

# Caltech Public Events Hiring Ushers

**Flexible hours.  
No experience needed.  
Outgoing Personality.**

**Pay Rate:**

**\$15 per hour**

**Caltech Students  
only!!**

**Contact: Adam Jacobo  
626.395.5907  
[ajacobo@caltech.edu](mailto:ajacobo@caltech.edu)**

## *The California Tech*

### Editors-in-Chief

Neera Shah  
Nehaly Shah

### Page Editors

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

### Contributing Writers

Sean McKenna

### Circulation Manager

Kit Chinetti

### Advisor

Richard Kipling

Caltech 40-58, Pasadena, CA 91125  
Contact [tech@caltech.edu](mailto:tech@caltech.edu)

*The Tech* is published weekly except during vacation and examination periods by the Associated Students of the California Institute of Technology, Inc. The opinions expressed herein are strictly those of the authors and advertisers.

Letters and submissions are welcome; e-mail submissions to [tech@caltech.edu](mailto:tech@caltech.edu) as plain-text attachments, including the author's name, by Friday of the week before publication. *The Tech* does accept anonymous contributions under special circumstances. The editors reserve the right to edit and abridge all submissions for any reason. All written work remains property of its author.

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."

## Senior athlete spotlight: Running with Aditya Bhagavathi

**GOCALTECH.COM**  
Sports Content Editor

Bouncing from the Midwest to the East Coast to California, plus running 60 miles per week, senior Aditya Bhagavathi is often on the go—and swiftly. He currently holds Caltech school records in the 8K (approximately 5-mile) cross-country event and the 5000-meter (approximately 3-mile) track event. Additionally, Bhagavathi was named to the Capital One Academic All-America Men's Track & Field/Cross Country Division III second team, an honor that no other Beaver athlete has ever received.

We recently sat down with Bhagavathi, a computer science major, to talk about balancing a running career with the academic marathon of being a Caltech undergraduate.

### What was life like before Caltech?

My family was on the move a lot. I came to the U.S. when I was eight, having lived in India and Toronto before that. Then I spent five years in Michigan, three in Indiana, and my final year of high school in New Jersey, before moving out to California for Caltech.

I guess you could say I started out "on the streets," playing basketball in Michigan and just running to stay fit. I committed to running competitively in high school and I just never stopped.

### How would you describe your Caltech experience?

Caltech has been a lot about discovering myself. For example, I discovered computer science during my freshman year. I really love math, and I realized that computer science is like a marriage of mathematics and tangible, real-world applications. Every time I meet someone new, every time I have a new research experience or internship, I feel like new directions are opened up.

I especially appreciate the professors, who not only are brilliant and teach well, but also emphasize the practical, global impact of what we learn. This really inspired me to go into industry, and I got internships at Google and Goldman Sachs. Each step along the way I picked up something new — about problem solving, about business, about industry.

### How have you managed to balance the rigor of Caltech with athletics?

It hasn't been easy. There have been many times when I've felt overwhelmed . . . I'm feeling a little overwhelmed right now, even! Having to graduate soon, and wanting to leave a good legacy with the team . . . it's a lot. There



-http://gocaltech.com

were times when I just went into machine-mode, working all the time, and I had to sacrifice a lot of other things in my life. Now, I'm trying to have more of a balance, making sure to leave time to hang out with my friends. The way I see it, Caltech is 30 percent about the education, and 70 percent about the people that I get to meet every day. These people — friends, teammates, coaches, professors — they keep me going.

### Do you have a favorite moment or race?

My favorite moment was last year when we went to Oregon for

the cross-country regionals race. But it wasn't during the race — it was actually the night before. We were all sitting in a motel room, it was chilly and snowing outside, mid-November, and there was this electric feel of Steve Prefontaine in the air — "Pre" was a distance-running idol, born and raised in Oregon, who held every American outdoor track record between 2,000 and 10,000 meters until he died in an accident in 1975.

So here we are, getting ready for the biggest, most important race of the season, and I knew I wasn't going to sleep. So we each went around and verbalized what this

season meant to us, why we were going to go out the next day and try our hardest. The essence of what everybody said was this: we were each running not just for ourselves, but for each other. Every person who runs a little bit faster, or tries a little harder, or pushes himself a little farther, was doing it together with everyone else.

That kind of band-of-brothers mentality is really what I'm trying to instill in the team as captain this year.

### What are your plans after Caltech?

Well, I know running will always be a part of my life. Professionally, my plans are in development right now. I'm hoping to work in management consulting — a field where companies hire you to solve a problem, and you cycle through cases working with people and traveling a lot. I've picked up a lot of problem-solving skills from my research, as well as leadership and interpersonal skills from internships and cross-country. I'm hoping to live in Chicago — I lived there for a couple of summers, and I just absolutely love that city. It's glamorous and exciting but not that expensive. And I imagine I'll be running quite a bit there.

## 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						76				77				

-http://puzzlechoice.com

### Across

1. A collection of facts
5. Long narrative poem
9. Celestial body
13. Graphic symbol
14. Medium of communication
16. Currency of France
17. Mixture of smoke and fog
18. Particular environment or walk of life
19. Adjoin
20. Serf
22. Sail a zigzag course
23. Renown
24. Sanguine
26. Polynesian dance
28. Cuban dance
33. Relating to principles of right or wrong
36. Veneration
37. Uniform projections on a gear
39. Frozen
41. Cultivate by growing
43. Solid chemical element
45. Frost
46. Giant
48. Ashen
50. Container
51. Hurlled
53. Rapidity

55. At the peak
57. Golf peg
58. Thin strip of wood or metal
61. Small stream
64. Cattle farm
68. Apiece
69. A news story reported first
71. Unaccompanied
72. Reverberation
73. Body
74. Ellipse
75. Intense or sharp
76. Trial
77. Part of the neck

### Down

1. Particular item of prepared food
2. The highest point of something
3. Implement
4. Domestic breed of goat
5. Epoch
6. Component
7. Notion
8. Something that is easy to do
9. Mariner
10. Brass instrument
11. Starch resembling sago
12. Memorization by repetition
15. Loose fiber obtained

- from unravelling old ropes
21. Portable shelter
25. Consider
27. Captain's journal
28. Handle of a tool or weapon
29. Look forward to
30. Mooring
31. Bobbin
32. Garret
34. Legal excuse
35. Boundary
38. Possess
40. Abnegate
42. Long distance race
44. Rhythmicity
47. Mesh
49. Cervid
52. Least favorable outcome
54. Rationality
56. Looped edging
58. Look for
59. Decorative woven fabric
60. Dull pain
62. Traditional knowledge
63. Result of expenditure in excess of income
65. Type of star
66. Applaud
67. One playing period in golf
70. Cooking vessel

