BEYOND

THE BIG T YEARBOOK 2017
VOLUME 96
CALIFORNIA INSTITUTE OF TECHNOLOGY
PASADENA, CA

BRITTANY PERCIN
COMMENCEMENT
MUSIC
JD FEIST
TENNIS
NASSER AL-RAYES
PREFROSH WEEKEND

MACARTHUR FELLOWS
FOOD
PLANET NINE
FIELD TRIPS
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PIONEER DISCOVERY

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COURAGE MEMORY

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1. FIRE AT WILL Glittering over the Gene Pool, fireworks light up the night after Caltech's annual carnival at the beginning of fall term. **2. DRIVE** Freshman Alec Andrews [20] dribbles down the court, pursued closely by players from visiting Chapman University. Andrews went on to make a career high nine assists in this game that the Beavers won 64–52. **3. BELT IT OUT** Undergrad Jake Mattinson [19], grad Giuliana Viglione, alumnus Casey Handmer, and researcher David Hodge rehearse for the Spring production of Steven Sondheim's *Company*. The theater program brings together people from all corners of the Caltech community onstage.

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A yearbook isn't just a book. It's memory. It's fireworks on the first day of the first term. It's records broken on the court and in the lab. It's a fossil of who we are today to be discovered by who we will be decades from now. And who we are is extraordinary.

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1. TRUE GRIT Sophie Walton [20] broke the Caltech record for the 5k in her freshman season on the Beavers cross country team. **2. THE GREAT WALL** Diving head first, John David "JD" Feist [17] broke personal and NCAA records in saves to cap his senior season with the Beavers. (See page 24.) **3. POWER FANS** Clad in matching orange-out shirts, Caltech fans stand for the National Anthem before a basketball game in Braun Gym. **4. SPLASHING AT SUNSET** Connor Lee [17] leaves a wake as he dribbles the ball in a Beavers water polo game. **5. CATCH ME IF YOU CAN** With defense hot on her trail, freshman Grace Peng [20] drives towards the hoop in a preseason game against Illinois Tech. **6. SWEET VICTORY** Literally jumping for joy, Sakthi Vetrival [19] can't contain her excitement after a win with her volleyball teammates.

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Caltech students **Pioneer**. We break records, challenge preconceptions, and blaze new trails through uncharted territory.

GEOLOGIST BY DAY, MUSICIAN BY NIGHT
Professor Paul Asimow's hands are a blur as he conducts the Caltech Occidental Concert Band at a performance in Ramo Auditorium in November 2016.

We are explorers of the mind, pushing the limits of

YOUR TURN TO SHINE Music roars and lights flare in the Ricketts courtyard at the first Open Mic Night of the school year. Every term, students showcase their musical skills (or sometimes, for comedic effect, intentional lack thereof) in an event that always promises a good time.

what is possible and seeking new horizons of **Discovery**.

ART IS ALIVE! Graduate student Alistair Hayden stands in front of the art installation in Chandler during the Art Gallery Opening Night Gala on November 29, 2016. Hayden founded the GSC Arts Committee this year and organized a campus-wide competition hoping to bring attention to arts on campus.

FOLLOWING TRADITION A standing tradition at Caltech, the Lloyd Christmas Tree appears on Millikan Library every year to mark the beginning of the holiday season. Equally traditional is Blacker House's annual prank on the Lloyd tree—in 2016, a Santa hat emblazoned with the House's signature "β."

But while we might have big brains and big achievements, we are also defined by our **Courage**. We stand up for each other, our traditions, and ourselves.

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1. A STORM'S A BREWIN' The last light of sunset washes over Beckman Auditorium, affectionately known as the "Wedding Cake" among students. Beginning with commencement, the iconic building hosted many of Caltech's most important events and a number of dynamic speakers throughout the year. **2. ROCK SCIENTIST** Professor Konstantin Batygin took up astrophysics as a backup in case his band, The Seventh Season, didn't make it. Batygin is still waiting for his big break. **3. ACE IN THE HOLE** Known for having a good time just as much as it is for excellent research, Caltech's Geology and Planetary Science division hires magician Johnny Ace Palmer every year for their annual start-of-fall picnic.

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Pioneer. **Discovery**. **Courage**. This book is a tribute to these words, this trilogy of

ideas that define us as Caltech students and took this year **Beyond**.

PIONEER

WORDS **ZIYAN MO**
DESIGN **MICHAEL WONG**

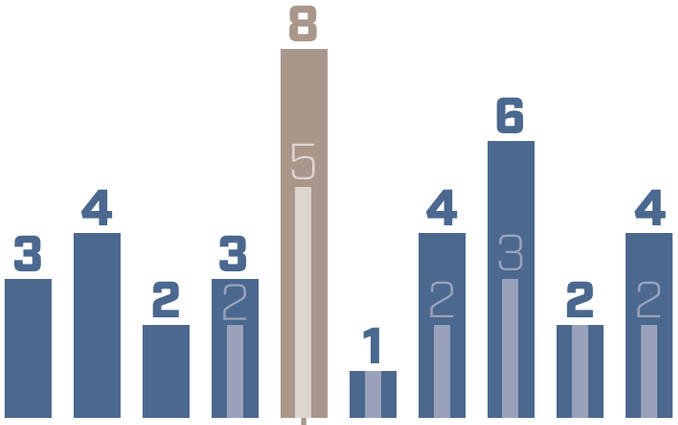
SPLISH SPLASH

RIGHT BEFORE BRITTANY PERCIN [19] jumps into the water, she huddles and smack talks with her fellow teammates. Instead of thinking about winning, Percin tries to relax herself before the race. "I don't really get super focused on needing to win the race, because it stresses me out." It's almost her event. The referee calls everyone to take their mark. There is a beep, and everyone dives into the water. The moment she touches the water, Percin shoots off like a rocket. She is best known for her free style, having broken several records. That is not the only stroke she is good at; she also has several butterfly records, too. It is the now the final lap. Percin speeds towards the end, cheered on by her friends and teammates. With a final kick, she reaches for the touchpad. The crowd goes wild. It's a brand-new record for Caltech.

In her freshman year, Percin set seven individual program records—something extraordinary for Caltech sports. She also became the first woman from Caltech to claim a Southern California Intercollegiate Athletic Conference (SCIAC) title for winning the 200-yard free style at the SCIAC Swimming and Diving Championships. Percin broke records again this year as a sophomore; she shattered her own record of the 100-yard freestyle with a staggering 53.29 seconds. "I'm happy I broke my own record, and hope to

JUST KEEP SWIMMING Percin makes waves with her powerful butterfly stroke in a swim meet hosed at Caltech this winter. She made her top time on the 100 fly against Occidental with a time of 1:00.50.

ETHAN PROVONOST



TURNING THE TIDE

ALTHOUGH SHE'S WIDELY KNOWN in water polo for her offensive prowess, scoring a team-high 46 goals in 2017, Brittany Percin is also a defensive salwart, leading the Lady Beavers with 57 steals. The next most prolific player only had 18 goals and 19 steals. Percin recorded a season-high eight steals in a 21–6 home loss against La Verne on April 5, while simultaneously contributing five goals, her season-high against a conference opponent. The bar chart to the left shows Percin's goals and steals over the 10 conference games of 2017.

GOALS **STEALS**

keep dropping the mark over the next couple years, or even getting some faster swimmers in to Caltech to race for a new record." Other than setting records for Caltech's Swimming and Diving team, Percin is also on Caltech's water polo team, and in May of 2016, Percin was also named a Division III All-America Honorable Mention by the Association of Collegiate Water Polo Coaches.

Percin started swimming before she could walk. She loves being in the water and grew up in the alpine lakes of Tahoe. Even during off-season, she still goes into the water every few days. In fact, in the study intensive environment of Caltech, practice for her is relaxing. "It's so nice to forget about all my work for two hours and just mentally relax in the water." She believes that it is extremely important to have fun while practicing; she loves cheering on teammates and putting in the work. Her highlight of the day, however, comes after practice. It's always fun to run across the pool on kickboards and to play other games. For next year, she hopes to win a meet as a team and to lower their relay records. Of course, Percin is also excited to see new faces on the team and to improve together with them. When asked about how she felt about this year, she said, "This year was awesome to have some new faces on the team. I feel like we're really coming together as a team and getting along very well."

THINGS ARE LOOKING UP Percin looks to catch a ball thrown from a teammate. Quick, accurate passes are essential for scoring in water polo games, as they allow the offensive team to get the defending goalie out of position to block shots.

BRACE FOR IMPACT Winding up for a shot, Percin angles towards the cage looking to score. Percin's viciously strong shots earned her 46 goals this season, an all-team high.

SMOOTH MOVES Gliding, or moving while holding the ball without swimming, is an important skill for water polo players that allows them to reposition themselves quickly and still remain poised for a shot. Here, Percin glides towards the goal, poised to pop up and shoot.

MELTING UNDER LONG, BLACK robes on a sweltering 95 ºF day couldn't dour the mood on Friday, June 16, 2017, as Caltech's latest batch of graduates prepared to embark on the next chapters of their lives. They had poured their blood and tears—and now one last morning of sweat—into their prestigious degrees, which was consummated in a handshake and a shining diploma given to them by President Thomas Rosenbaum. The President urged the Class of 2017 to go forth and change the world not just with the knowledge they gained at Caltech, but also with a fearlessness to tackle any problem, big or small.

The Commencement speaker, Dr. Mae Jemison, outlined a number of important problems that the graduates will face once they disperse beyond the Caltech bubble. Jemison, who is a NASA astronaut and medical doctor, also serves as the leader of the 100 Year Starship organization, a program working to develop interstellar capabilities within the next century. Her speech made it evident that she was not only acquainted with the technical challenges of space travel but the social challenges of life on Earth. Jemison was the first woman of color to go to space, and though she is immensely successful, her journey has been one of overcoming obstacles. She reminded the graduates that they, too, have powerful stories to tell, and that there is still a long way to go: "You all overcame so much to get here today—learning to speak, learning to walk, surviving in a society that values the right to have guns more than the right to food, water, and healthcare."

How will we continue to break barriers and make progress as a society? It starts at the individual level. Jemison's parting advice to the graduates was to "live deeply and look up"—a simple message that encouraged everyone in the audience to stay grounded in their work while relentlessly pursing a better future. There is never a time as important as now, and never a time as motivational as tomorrow. This sentiment struck the perfect resonance. It was graduation, after all—a moment of reflection and celebration, defined by ascent.

1. THIS ONE'S FOR FACEBOOK Family members proudly photograph their graduates as they pose with their houses on Millikan Bridge. **2. PATIENCE IS A VIRTUE** Kevin Chen [17] waits in line to begin the procession. **3. PRESIDENTIAL APPROVAL** President Rosenbaum flashes his signature grin as he hands diplomas to each member of the Class of 2017. **4. YOU DID IT!** Anjali Premkumar [17] whoops and cheers for her friend. **5. WELCOME TO THE FUTURE** Lindsey Whitesides [17]—as a newly minted Caltech graduate—steps off the stage and back into the crowd. **6. LIVE LONG AND PROSPER** Peter Gao [G6] flashes the Vulcan salute upon his hooding. **7. LIKE ANTS** Graduates march two-by-two to the sound of the Caltech band. **8. GETTING LEI'D** Edgar Martinez [17] receives a congratulatory lei.

LIVE DEEPLY & LOOK UP NASA astronaut Dr. Mae Jemison delivers the 2017 Caltech Commencement speech, encouraging students to find their passions and never lose sight of their dreams.

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REPORTING FOR DUTY

BEFORE PROF. GROTZINGER left the podium where he had proudly announced 2017's PhDs in the Division of Geological and Planetary Sciences, he had to get one last word in. "Also, a shoutout to Jessica Watkins, a Caltech postdoc, who was selected to the latest class of NASA astronauts!"

Prior to Caltech, Watkins went to Stanford for undergrad and earned a PhD from UCLA. But she was no stranger to Pasadena, having participated in several NASA internships at JPL during her PhD program.

Watkins came to Caltech in 2015 as a specialist in Mars geology. During her postdoc in the GPS Division, she collaborated on the Mars Science Laboratory rover, *Curiosity*, participating in daily planning of rover activities and investigating the geologic history of Gale crater, Mars.

While at Caltech, Watkins served as the assistant coach for the women's basketball team. She is an extraordinary athlete herself, having played rugby for Stanford and the U.S. national team.

Prof. Grotzinger recalled Watkins approaching him about coming to Caltech. "Wouldn't you rather play in the Olympics?" he asked. "No," replied Watkins, "I want to be an astronaut." "Sure," Grotzinger thought, "that's what they all say."

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BLAST OFF

WORDS **MICHAEL WONG**
PHOTOS **MICHAEL WONG**
DESIGN **MICHAEL WONG**

LOOKING SAXY Biophysics graduate student Muir Morrison solos on the tenor sax during the Jazz Band's guest artist concert.

NOT LIKE ON TV In contrast to what the TV show *Glee* might have you believing, glee club at Caltech is more like a choir than a theater troupe.

FEARLESS LEADER Dr. Glenn Price, conductor of the Caltech–Occidental Concert Band introduces tonight's set to the crowd. This ensemble is a collaboration between Caltech and Occidental students, and plays three concerts throughout the year.

RUNWAY READY Alistair Hayden, a graduate student in geology, plays the violin during a performance at Techstock. His unique outfit included half-fastened overalls, a flannel shirt, sunglasses, and a galaxy print snapback.

MUSIC THEORY

WORDS **ELISE CUTTS** | PHOTOS **MICHAEL WONG** | DESIGN **JOSEPH MIN**

EVERY CALTECH STUDENT who takes Ph2a or Ph12a has no doubt stayed up until some ungodly hour of the night working out problem sets on waves and sound. Maybe all that calculating frequencies and interference patterns payed off, or maybe Caltech is just full of musically gifted students. Whichever is the case, the music scene on campus is certainly much more compelling than a problem set out of *Kittel and Kramer*.

On one end of the musical spectrum at Caltech there are the acapella groups, student bands, and lone wolf performers rocking solo at Ricketts Open Mic Night. By now, Caltech's original acapella group has grown and split into four, each with its own distinct style. The two co-ed groups, Fluid Dynamics and Out of Context, share a friendly rivalry despite favoring wildly divergent genres; Out of Context tends to perform pop and modern favorites, while Fluid Dynamics will sing just about anything, including memes (they once performed an arrangement of "Shia Labeouf" by Rob Cantor). At concerts throughout the year, these groups are joined by two more: the Pipettes, a women-only group, and the Keytones, which is just men. Many students who sing in an acapella group can be found elsewhere in the campus music scene. **AMY ZHAI [19]**, of Lloyd house, performed at Techstock this year and at open mic nights. Perhaps her best musical moment this year came when she aced the difficult solo in "Bang Bang," which Fluid Dynamics performed at a concert in 2016.

Of course, this wouldn't be Caltech unless there were people interested in the more technical, scientific side of music as well. Dozens of chamber music groups allow students with backgrounds in a classical instrument to continue to play at school, and the Caltech–Occidental concert band draws crowds to every performance. Many students also take music theory, studying the ins and outs of music from a logical perspective. The jazz band, glee club, and chamber choir also cater to people interested in a music experience more formal than that found in the acapella groups and student bands. Whichever kind of music students prefer, most would agree, it's a shame that Ph2 doesn't give extra credit for putting all that wave physics to work.

NEARER MY R.A. TO THEE Kelvin Bates, a graduate student in chemistry and the Page House R.A., holds down the solo line of "Nearer My God to Thee," an epic choral piece adapted for acapella and performed at Caltech by Fluid Dynamics.

JD SO FLY Senior goalkeeper JD Feist lays out to stop a shot against Claremont-M-S. Although he was unable to help Caltech earn a victory in this match, JD added six saves to his eventual total of 179 on the year.

"**IT HAS BEEN** great to be a part of this team, and I'll miss it greatly. I look forward to the success the team will see in the coming years, as the younger guys are the heart of this team. I expect great things out of them."

SCHAEFFER REED '17

KEVIN YU '20

"**ALTHOUGH** we were not able to get any wins, we clearly showed that we can outplay teams in the midfield and compete to win games. I believe we will be one of the better SCIAC teams within a few years."

USING YOUR NOGGIN Headers don't scare Schaeffer Reed, a veteran of the soccer team. At 6' 4" Reed was the tallest member of the 2016 squad, and as a senior who could play both attacking and defending positions, younger players looked up to him in more ways than one.

"**NEVER** give up, never surrender."

KEVIN GAO '17

THEO YANG '20

"**THE UPPERCLASSMEN** have been really supportive of all the new guys on the team. Because preseason started earlier than orientation and rotation, the upperclassmen were the first to help us get to know Caltech, not only athletically, but also socially and academically."

GOLDEN BOOT Sophomore Tristan Nee gracefully slips past a Claremont-M-S defender. Nee lead the team with three goals in 2016.

"**MY FAVORITE** quote from JD: 'Let's kick some ass.'"

TRISTAN NEE '19

FIREWALL

WORDS **ELISE CUTTS** | PHOTOS **MICHAEL WONG** | DESIGN **JOSEPH MIN**

IT'S FOUR O'CLOCK on a Wednesday. The sun simmers in the hazy Pasadena sky, casting a glare on the computer screens in Annenberg where professors specializing in cryptography imagine the digital security methods of the future. Across campus, in the orange afternoon light bathing the South Field, an entirely different kind of firewall is booting up.

JOHN DAVID FEIST [17], better known as "JD," is a senior chemistry major who conducts research at Sandia National Lab. When he isn't working towards his degree, he is vice president of Fleming house, and quite possibly the best goalkeeper Caltech soccer has ever seen.

As the team warms up, it's easy to spot the First Team All-SCIAC goalie among his teammates—while the rest of the Beavers sport orange and white uniforms, JD's position in the goal finds him clad in neon yellow. Goalies often find themselves set apart from the team—they work on different skills, wear a different uniform, have different rules, and can sometimes even feel like they're playing an entirely different game than their teammates on the field. But with the 176 saves he made against SCIAC teams this season, JD stands apart even from other goalies. He holds the record for the second-most saves in conference history and ranks 20th out of all goalkeepers from *all divisions* in NCAA history.

"It's hard not to be proud of it," JD confesses, "It's the culmination of a lot of hard work. It goes back a long time for me—I've been playing soccer for oh, for something like 17 years now. So for all that work to culminate in something like this is really rewarding." Being a goalie for Caltech hasn't always been easy, though. Standing as the last line of defense is a special kind of pressure, one that JD has faced many times throughout his career. "As a goalkeeper you can't just go out with a head full of steam…Part of it is just realizing, you know what? Everyone makes mistakes sometimes. And I'm certainly no different, so when you make a mistake you have to realize that it's not the end of the world and you still have a job to do, so better get up and do it."

Beyond his incredible performance on the field, JD stands out as a leader among his teammates. His role, notes defender **KEVIN GAO [17]**, is trifold: "JD is a good friend, a great goalkeeper, and a better teammate."

However JD is a graduating senior—while his achievements this year shattered records and his leadership energized his teammates, the future of Caltech soccer ultimately won't rest on his shoulders. Compound this with the loss of seniors **SCHAEFFER REED [17]** and Gao and prospects for next season might appear uncertain. "Those are two starting defenders," JD notes, "and it's always hard to replace defenders." He remains hopeful, however, despite losing the core of their defensive line, that the Beavers' prospects for the coming years are good. "Looking at the freshman and sophomore classes I'm really optimistic about the future…I think the team will continue to move in a positive direction."

Across the field, a referee blows his whistle and the Beavers pull together out of their warmup into a huddle. Freshmen look hopefully to the future, seniors look hopefully to the freshmen, and everyone looks to JD. It's time to boot up Caltech soccer's firewall and get to work.

JOSEPH MIN

IN ~~SOVIET~~ RUSSIA...

"IN RUSSIA we don't really have high school tennis, so you play individually. You can play in a club, and sometimes you can write you represent this club, but it's more or less, like, nah. And here...I think my favorite part of playing here is being supported and being in a team."

—SASHA BODROVA [20]

TIME TO PLAY The tennis team celebrates Kana Moriyama's [19] introduction to the match with a series of high-fives.

1. ONE OF THE TWINS Ramsathwic Pathireddy [17] prepares to return a shot. **2. GAME FACE** Derik Nguyen [19] strikes a brilliant backhand. **3. HAVE YOU BEEN SERVED?** Erin Wang [18] fires off a serve.

LOVE TO WIN

WORDS **SHARON CHEN** | PHOTOS **MICHAEL WONG** | DESIGN **MICHAEL WONG**

EIGHT WOMEN STOOD HUDDLED in the middle of a tennis court, clad in their bright orange uniforms and sporting bright orange ribbons in their hair. Coming off of last season, in which both the men's and women's tennis teams had their best finish in over a decade, the Beavers knew that the pressure was on, especially for the new recruits.

And they didn't disappoint. This year, Caltech's tennis recruits made history, as the two freshmen, **ALEXANDRA (SASHA) BODROVA [20]** and **ANGELICA ZHOU [20]**, made up the first women's recruiting class to receive votes in the annual tennisrecruiting.net rankings. With fresh talent, the rookies were able to introduce a new angle to the team.

"I think that alongside my doubles partner and the other freshman on the team, Angelica, we just brought some diversity into the team because our style of play is a bit different from most players on the team," said Bodrova. "We're like more on power and we attack more; other people are more, I don't know, like, their technique is better or they run more and get everything in, so it brings a nice diversity to the team."

The diversity proved successful for the women's team, as they had their best season ever, finishing fourth in conference and at the Southern California Intercollegiate Athletic Conference (SCIAC) Championships. They also achieved their first-ever win over a nationally ranked opponent in a 7–2 victory over No. 40 California Lutheran University, leading to their first national ranking in program history.

In other words, the women's season of "firsts" echoed what the men achieved last season, when they earned their first national ranking. Although injuries prevented the men's team from having their best season, they managed to have a positive season and secure several important wins against ranked opponents. They, too, brought in strong talent, landing the first nationally ranked recruiting class in program history. Together, they worked hard to put Caltech on the map.

"We've been able to get stronger as a team so that we're not like an afterthought, you know? We can actually compete for SCIAC and do well," said rookie **CONNOR SOOHOO [20]**. "Other schools are like, 'Oh, Caltech, lame athletics,' right? I think recruiting has been doing really positively and breaking that stereotype."

But regardless of competitive performance or program status, it's clear that the Beavers love their sport. As Soohoo says, "You will make time out of your day for the things you want to do the most, right? And tennis is one of those things for me."

WORDS **SHARON CHEN** | PHOTOS + DESIGN **MICHAEL WONG + ELISE CUTTS**

CENTER OF ATTENTION

WITH TWO MINUTES LEFT on the clock, men's basketball superstar and center **NASSER AL-RAYES [17]** comes barreling down the court, beautifully executing a dunk that makes the crowd go wild. The sea of orange erupts in applause and hollers, as the Beavers take a 95–83 lead against Whittier at the SCIAC season opener.

Through those two points, Al-Rayes not only helped assure Caltech's victory, but he also set a career-high scoring mark of 24 points, a record which he would break in the next game, and then again with an impressive 37 points against La Verne. Al-Rayes' leadership in scoring, rebounding, and blocking earned him the honor of First Team All-SCIAC, making him Caltech's first player to be named a First Team selection since 1960.

In light of his recent successes, Al-Rayes reflects on his experiences as a frosh, when things weren't going as well. "We just didn't know how to win," he says, "which sounds kinda weird, but when you've been losing for so long, a lot of our upperclassmen just didn't know how to finish out games we were winning, because they weren't used to being in that situation."

Fellow teammate **RICKY GALLIANI [17]** agrees, "I really feel like it's that mental confidence, that self-confidence that you get when you win, that just makes the experience a lot better, that just propels you to more victories."

This season, seniors Al-Rayes, Galliani, and **DAVID LEBARON [17]** guided the men's basketball team to a fifth-place finish in the SCIAC, the highest since the 1970–71 season, when there were only six teams in the conference. Gone are the days when Caltech basketball was known for its losing streak, as the team's seven freshman have started their careers with six SCIAC wins and a number of non-conference wins.

"So," says Al-Rayes, "although the team might be losing players like me and Ricky and David, as seniors, the whole winning mentality and competitive culture has been instilled over the years."

While the Beavers lose a star player, another team may gain one. Al-Rayes intends to pursue basketball professionally in Europe for a few years after he graduates. As he puts it, "You've got your whole life to sit down and do work either behind a desk or behind a screen or behind a microscope, but I mean I don't have my whole life to have a basketball in my hand and play a game that I really enjoy."

SNIPER

TOO STRONG

RAINING THREES

1,2,3. BY THE NUMBERS Standing at a full 6' 10," Nasser Al-Rayes [17] couldn't help but stand out even among the great talent playing for the Beavers. During the 2017–2018 campaign, Al-Rayes lead SCIAC in rebounds (9.5) and blocks per game (1.8), and in double-doubles (8), and lead the Beavers in points per game (13), defensive rebounds per game (6.9), free throw percentage (69%), field goal attempts per game (10.76), and minutes per game (32.3). **4. HIGH RISK, HIGH REWARD** Ricky Galliani [17] crouches, preparing to spring up for a 3-point shot. Galliani lead the Beavers in three-point field goal attempts per game (5.8), three-pointers per game (1.9), and offensive rebounds per game (1.8). **5. KUMBAYA** The Beavers group up for a team meeting, many players standing with their arms around each other in supportive camaraderie. A great team dynamic was mentioned by every men's basketball player interviewed by *The Big T* this year.

SLAM DUNK Nasser Al-Rayes [17] soars to the rim, delivering a dunk to score for the Beavers as a shocked defender looks on in disbelief.

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SPLASHVISION

EAT, BIG FELLA

THE CHEERLEADER

CALVIN HUH [20] might not have seen much playing time this season, but he didn't see much downtime either. He was notorious for his energetic cheering and imaginative, often downright wild poses, dances, and hand signals which he kept up relentlessly throughout games. *The Big T* made a point of catching some of Calvin's best cheer routines from this season and asked the master rabble-rouser himself to caption our photos. Needless to say, we weren't disappointed. Keep on cheering, Calvin!

MUSIC TO OUR EARS Cheers and shouts of excitement echo throughout Blacker House courtyard, joining the cacophony of bangs, thuds, bams, and cracks that can only mean the violent death of a piano. Armed with crowbars and sledgehammers, prefrosh compete with the Moles to "deconstruct" their piano the fastest.

ON THE MORNING of April 20, 2017 campus is buzzing with people carrying orange and black colored drawstring bags. Over 200 prefrosh step foot onto the Caltech campus. From the get-go, they have their schedules packed with interesting activities such as the world's biggest game of "the floor is lava," where prefrosh jump from foam tile to foam tile, to different panels and socials, where they learn more about Caltech's culture. Since many panels and events can be happening at the same time, the prefrosh were very busy running from event to event, and even with a tiny campus, it's easy to get lost sometimes. They sit in on classes too; Ge1 is packed full, and people even have to sit on the steps. After two days of the packed schedule, there is the Caltech club fair on the Olive walk. During the club fair, the prefrosh get to see all the clubs that Caltech has to offer, eat Caltech Crunch ice cream, and play with the cute puppies.

Of course, who can forget the house dinners and house events? After a busy day of sitting in on various classes and attending panel sessions, the prefrosh can de-stress with Caltech's unique house dinners. Huddling closely at the family styled dinners waited on by student waiters, the prefrosh get to experience the unique tradition that is Caltech's house dinners. In the pandemonium of food and paper throwing in some of the houses, prefrosh either sit there wide-eyed guarding their food closely, or they join in on the chaos. In the other houses, prefrosh get to ask various upperclassmen about their experiences at Caltech. After dinner, the most exciting part of the day begins: the house events. From breaking pianos during Blacker's deconstruction to creating art at Dabney's color carnival, the prefrosh have a taste of all of the houses' culture.

All this could not have happened without the help from the prefrosh yield committee and the plethora of volunteers. To ensure the prefrosh got an accurate view of Caltech and had entertaining activities, the prefrosh yield committee started meeting since early January. Three people from each house were chosen to be on prefrosh yield committee, many of them are frosh who experienced prefrosh weekend last year and wanted to improve it. **JONATHAN CHAN [20]** said "It was really exciting to witness and be part of the the behind-the-scenes work of trying to present Caltech in the best (but honest) light to prefrosh. During PFW, it was also very rewarding to see prefrosh wearing the shirts that we helped design and enjoying the activities that we helped (in part) make happen."

1. ROCK ON Music at Caltech isn't just band and chamber groups—there's no lack of talented guitarists at Open Mic Night who perform in bands and as solo acts. **2. TOO COOL** Brian Lee [18] pours dry ice over honey and chocolate to make delicious cold treats for prefrosh during Blacker's deconstruction event. **3. SHAMELESS PLUG** Joseph Min [20] shows off a yearbook at *The Big T*'s booth on the Olive Walk for the prefrosh weekend club fair.

MICHAEL WONG

4. SAFETY FIRST Anne Dorsey [18], clad in a reflective safety vest, goggles, and hard hat, calls out instructions to her housemates operating a makeshift rig for hoisting their piano two stories off of the ground. **5. PIANO MAN** Students showed their stuff on the guitar, vocals, drums, piano, and plenty of other instruments during Open Mic Night.

WORDS **ZIYAN MO**
PHOTOS **JOSEPH MIN**
DESIGN **ELISE CUTTS**

STRANGE NEW WORLD

TAKE ME AS I AM Ricketts House's prefrosh weekend event is a chance for musicians of every kind to show their stuff. A few prefrosh even got up on stage for impromptu shows of talent on the Ricketts courtyard bricks.

MICHAEL WONG

DISCOVERY

WONDER WOMEN

DR. DIANNE NEWMAN

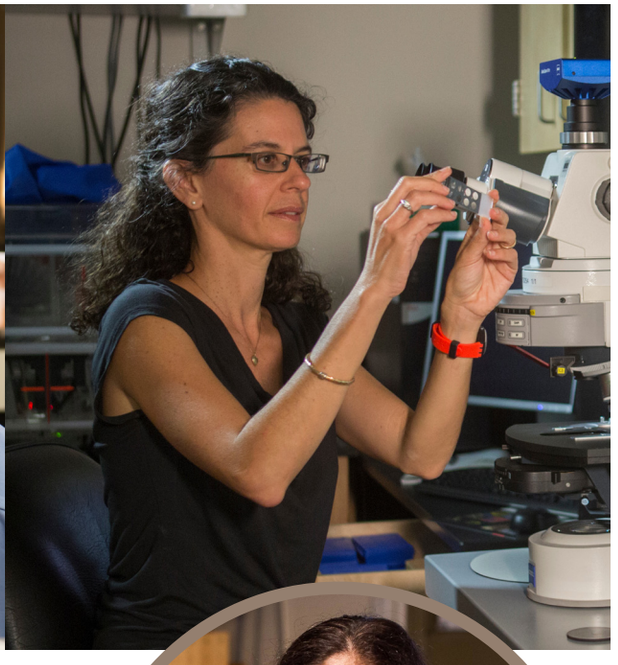
METABOLISM lies at the core of Professor Newman's research interests, specifically the way that electron-transfer reactions tie into the ancient metabolisms predating oxygenic photosynthesis and aerobic respiration. She is especially interested in the co-evolution of metabolism with the microenvironments in which bacteria live. Recently, her work has focused on colorful, redox-active pigments which are produced by microbes living in aggregate communities and how they enable microbial mats to grow.

THOUGH THEY AREN'T DASHING through "No Man's Land," wielding magic gauntlets, or saving the world from a dark god, Professors **DIANNE NEWMAN** and **VICTORIA ORPHAN** are certainly wonder women. This year, the MacArthur Foundation honored these two professors as MacArthur Fellows—individuals who are selected for their "exceptional creativity, promise for important future advances based on a track record of significant accomplishment, and a potential for the fellowship to facilitate subsequent creative work." Both scientists work on the exotic metabolisms used by microbes to live in harsh and strange environments like the Earth's subsurface, the bottom of the ocean, and the anoxic centers of microbial mounds. However, they approach these problems from vastly different perspectives.

"I made the decision in the beginning of my career to work with organisms that were relatively tractable to grow in the laboratory for genetic approaches," Professor Newman explains. "There's a lot you can gain from that approach because it's possible to get to a mechanistic level of understanding." Professor Orphan, in contrast, studies organisms that are important geologically but aren't so easy to grow. "Her success came from being okay with that, from developing ways of assessing their activity by capturing their physiology as best possible given that limitation," says Professor Newman.

The significance of their award goes beyond personal achievement. It is rare for an institution to have even one faculty member honored with the fellowship—this year, Caltech had two. Both women are geobiologists, researchers in a field which has never been recognized before. "The community has finally been recognized—we are the lucky figureheads, but it's a question of years of work by everybody in our lab. It was a collectively joyful thing," Professor Newman laughs, continuing, "the community feels a sense of validation—this field, geobiology, it's always been kind of a backwater field where people go because they're passionate but not because they're going to get a Nobel Prize." The work recognized by the MacArthur foundation reflects not only the genius and hard work of Professors Newman and Orphan, but years of contribution by collaborators, graduate students, and even undergraduates. Professor Newman commented that throughout her career, she's worked with many talented undergraduates at Caltech, some of whom worked on the projects specifically cited by the MacArthur Foundation as rationale for her award.

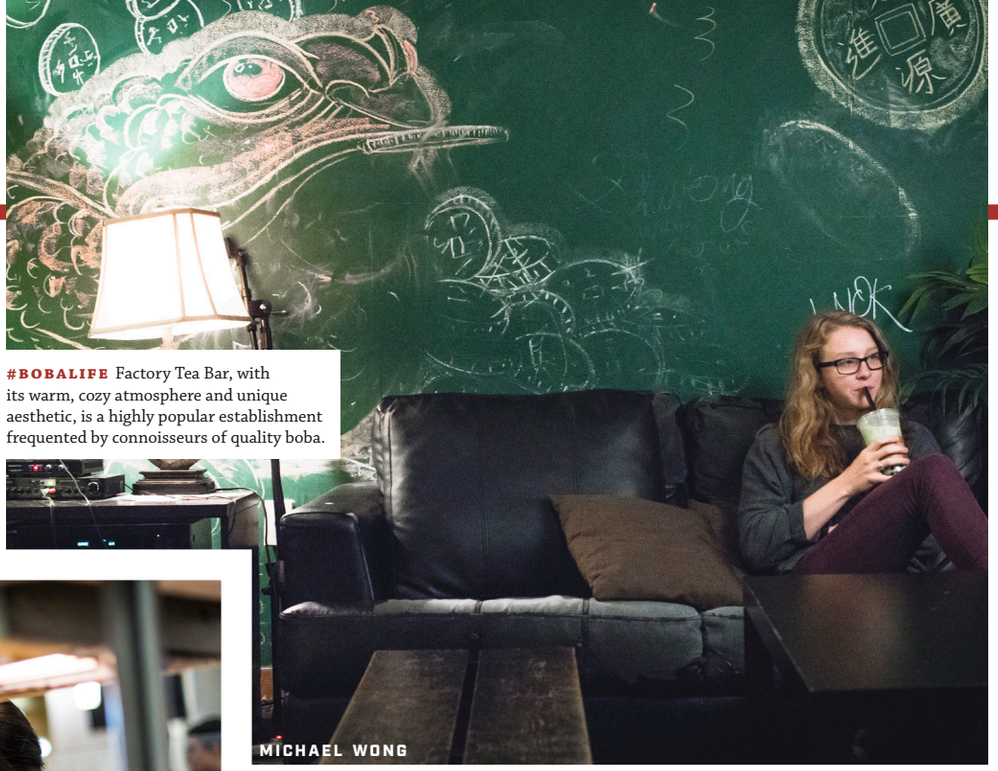
Of course, there's another reason this achievement is important as well. Professor Newman explains, "truthfully, the fact that we are both women, I think that is not trivial. Especially for young women in the field, it's a cool thing. We're not blind to that!" *Wonder Woman* may have made history in the box office this summer, but Caltech's own wonder women are probing into the ancient past, discovering how invisible organisms shape the world, and paving the way for others to follow in their footsteps.



THE EXTREMES of habitability are Professor Orphan's domain, especially places where microbes subsist without the nutrients and oxygen necessary for many other organisms to live. She has developed molecular and isotopic techniques for learning about geologically important microbial communities which are difficult to grow in the laboratory setting. She studies bacteria which grow in the deep subsurface of the earth, marine sediments, oil, gas seeps, and environments like those which may have existed on the early Earth.

DR. VICTORIA ORPHAN

ELISE CUTTS 1


#BOBALIFE Factory Tea Bar, with its warm, cozy atmosphere and unique aesthetic, is a highly popular establishment frequented by connoisseurs of quality boba.

MICHAEL WONG

MICHAEL WONG 2

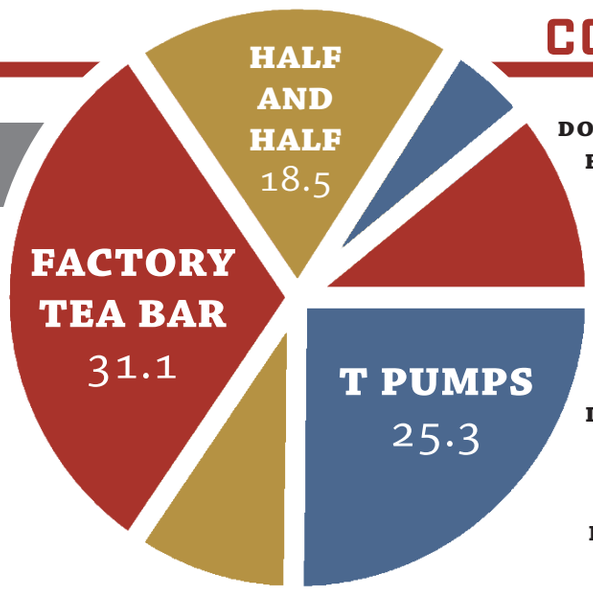
1. PIECE OF CAKE Carly Robison [18] expertly whips up some batter during the cooking competition that serves as a final for Tom's class. **2. CHOUSE** Hard-working students staff the Student Coffee House and dish up ramen, milkshakes, and other favorites all through the night. **3. NOM NOM** Deep-fried gyoza is the perfect complement to a sweet pearl milk tea. **4. NAME THAT FRUIT** Tom's cooking class is highly experimental, as evidenced by these exotic options. **5. FLAVORS ABOUND** Taste tests are essential in any cooking class, and Søren Schmidt [EXCHANGE] proves that Tom's is no exception.

3
MICHAEL WONG

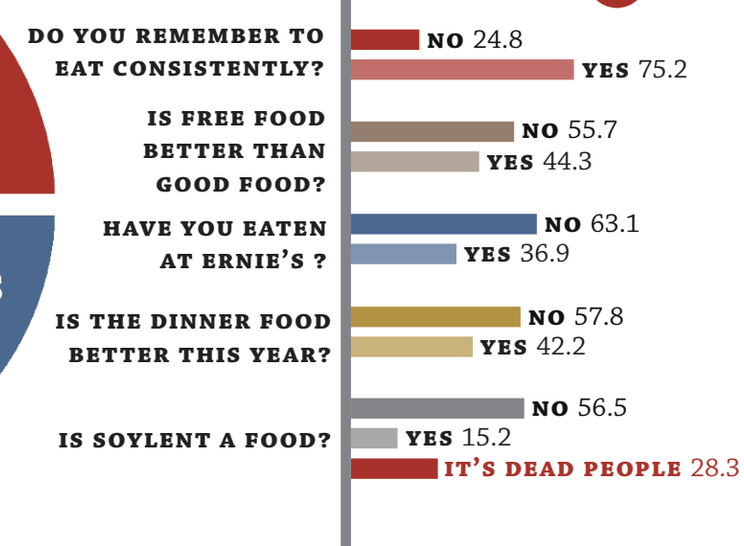
4
ELISE CUTTS

THE BEST BOBA NEAR CALTECH

SOMEWHERE ELSE 10.9
TEA SPOTS 9.2
AU 79 5.0



COUNTING CALORIES



FOOD FOR THOUGHT

WORDS **SHARON CHEN** | DESIGN **ELISE CUTTS**

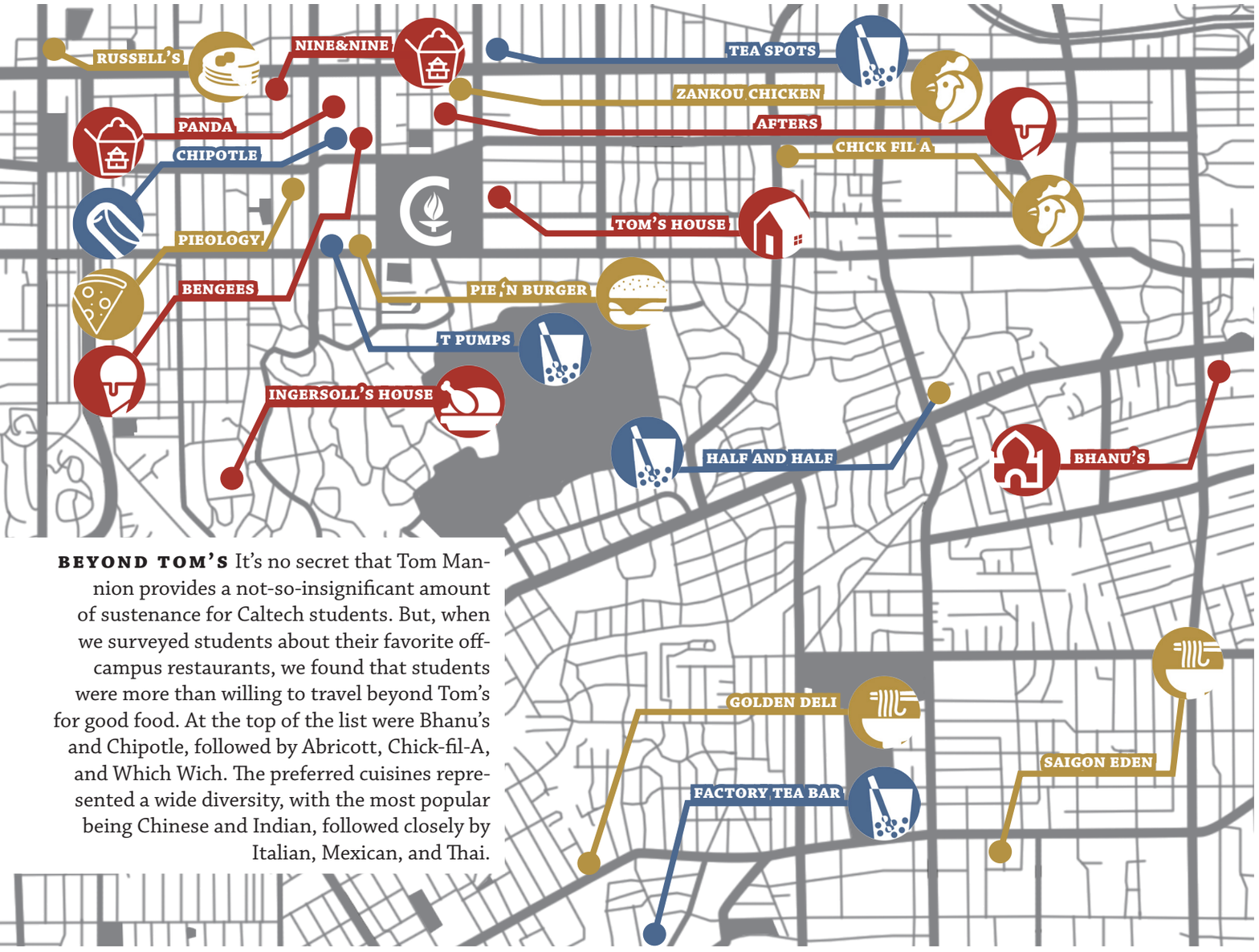
IT'S A BRISK, WINTER EVENING, and a lucky couple dozen students sit at large round tables, under the cover of a white canopy and bright string lights. As they munch on the snacks in front of them, **TOM MANNION** stands at the front, lecturing his class on seeds, grains, legumes, and nuts. "Does anyone know how the Japanese dealt with bacteria in the exposed rice of sushi?" he poses to the attentive listeners. The answer? "Vinegar."

Fast-forward twenty minutes and Tom's backyard is crowded with bustling student chefs. A Taylor Swift tune and calls of "How much sugar do we need?" fill the air. Students expertly mince garlic, sauté chicken, and compete to see who can grate a block of cheese faster. As they race to make the best shrimp fried rice before time runs out, students offer each other taste tests of the plethora of other dishes, experimenting to determine the ideal Sriracha-to-chicken ratio for a chicken lettuce wrap.

In addition to exploring new tastes and techniques for Mannion's wildly popular cooking class, Caltech students are always trying new things when it comes to food, whether it's venturing out into mysterious off-campus lands to find that perfect KBBQ joint, prodding carefully at CDS's famous "mystery meat," or embarking on an exhaustive tour of all the best boba places around.

While new discoveries are made food-wise, unique traditions continue to reign supreme. Students enjoy pelting each other with bread during daily student-waited house dinners, crowding the Olive Walk to snag a couple of ASCIT donuts, satisfying those midnight cravings through way-too-frequent visits to Chouse, staving off finals sleep-deprivation with CDS's "snake kits," and indulging in late-night breakfast food during Midnight Madness.

Despite the fact that one-quarter of the surveyed student body reported that they failed to remember to eat consistently, there's no doubt that we here at Caltech take our food seriously. As one student says, "The Big Bang Blueberry Espresso Smoothie at Red Door is one of my favorite things about this school."



BEYOND TOM'S It's no secret that Tom Mannion provides a not-so-insignificant amount of sustenance for Caltech students. But, when we surveyed students about their favorite off-campus restaurants, we found that students were more than willing to travel beyond Tom's for good food. At the top of the list were Bhanu's and Chipotle, followed by Abricott, Chick-fil-A, and Which Wich. The preferred cuisines represented a wide diversity, with the most popular being Chinese and Indian, followed closely by Italian, Mexican, and Thai.

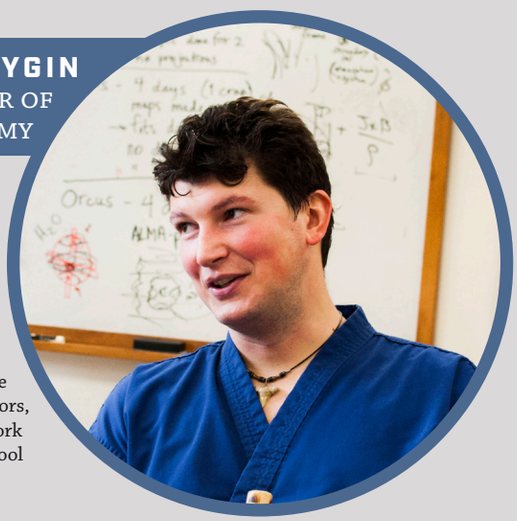
ORBITAL WEIRDNESS Professor Brown demonstrates the unusual orbits of outer solar system objects using marital arts sticks Prof. Batygin brought to their yearbook interview.

SPACE JAM When he isn't hunting planets, Prof. Batygin can be found in seedy bars throughout LA playing gigs with his band, the Seventh Season.

MIKE BROWN
PROFESSOR OF PLANETARY ASTRONOMY

FEW SCIENTISTS are better known by their twitter handle than their last name, but Mike Brown aka @plutokiller might be an exception. Despite rising to fame (or infamy, depending on who you ask) through his involvement in the Pluto's demotion, Prof. Brown, with the discovery of Planet Nine, might bring his career planet count from –1 back to 0.

KONSTANTIN BATYGIN
ASSISTANT PROFESSOR OF PLANETARY ASTRONOMY



ASTRONOMY WAS A FALLBACK for Konstantin Batygin—he only pursued his degree in astrophysics in case his band didn't make it big, and even then, he only chose astrophysics at the urging of an apparently prophetic homeless man. One of Caltech's youngest professors, Prof. Batygin continues to work with his former graduate school mentor, Mike Brown.

PLANET NINE FROM OUTER SPACE

WORDS **ZIYAN MO**
PHOTOS **ELISE CUTTS**
DESIGN **JOSEPH MIN**

THE IDEA OF A NINTH PLANET has haunted people's minds since the discovery of the Neptune in 1846, the furthest planet from the sun that has been seen in telescopes. From 1930 to 2006, Pluto took the spot as the ninth planet. In 2006, thanks to discoveries made by Caltech professor **MIKE BROWN**, Pluto was demoted from a planet to a dwarf planet, and the solar system was back to eight planets. People once again questioned: is there a mysterious planet lurking at the edge of the solar system, observing from afar?

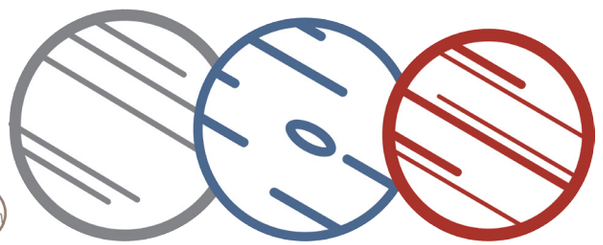
In 2016, in a ground-breaking announcement, two Caltech researchers, Brown and **KONSTANTIN BATYGIN** provided strong mathematical proof, confirmed with computer simulations, for the existence of a new planet: Planet Nine.

Brown knocked on Batygin's office in July of 2014 to ask for collaboration to study a strange observation found at the edge of the solar system. Over the next several months, they tried many different models, and the unknown force being a planet came up as a joke fairly early. "We never suspected that there was a Planet Nine. We suspected that there wasn't a Planet Nine," said Batygin. When all the other models failed, the two researchers were still unwilling to believe that they found a new planet.

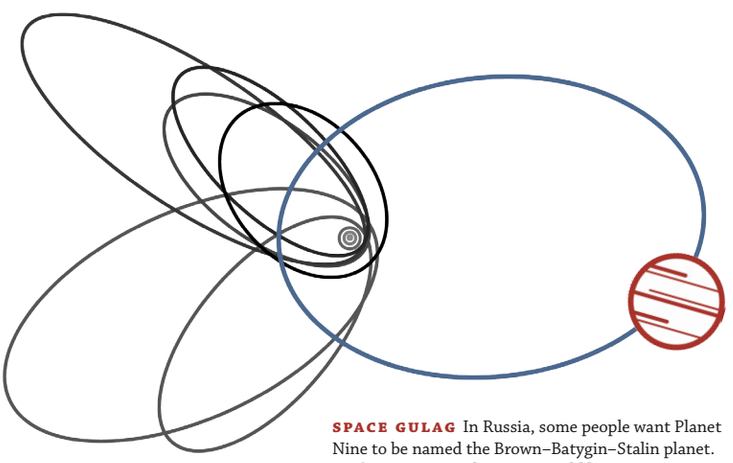
Even though many pieces of data fit in with the idea of a ninth planet, one key factor was missing. There should have been clustering of orbits around the planet due to gravitational effects. The two researchers were ready to throw out the Planet Nine model altogether when they had an earth-shattering insight. Usually, when researchers plot the Kuiper Belt, they disregard objects that veered into interplanetary space. They were not looking at the complete data set. Batygin and Brown lifted that restriction. "That was the moment when it from this is a really cool idea to holy crap there is a planet out there," said Brown. Scary was the word that Brown chose to describe when they realized that there really was a ninth planet.

The model fit and the math matched up. The only thing left is to observe Planet Nine through the telescopes. Since the announcement, many researchers all over the world are scanning the skies for the elusive ninth planet. "Someone is going to find it; we don't have the monopoly on finding this guy," Brown said. Their current focus is on refining their prediction of the location and interactions of planet nine and other objects. It is impossible to know how Planet Nine ever got to its current position, but the two researchers are confident that its location will be found soon.

BUSINESS CASUAL Prof. Batygin is known for his laid-back attitude—true to form, he came to his *Big T* interview straight from martial arts practice and didn't change out of his uniform!



	EARTH	URANUS	NEPTUNE	PLANET 9
Mass	1	14.5	17	10
Radius	1	4	3.9	3.7
One Year	1	84	164.8	10k-20k
Temp. (°C)	15	216	218	-226



SPACE GULAG In Russia, some people want Planet Nine to be named the Brown–Batygin–Stalin planet. Prof. Batygin says the name would be appropriate, since Planet Nine forces smaller bodies into strange orbits far from the Sun's warmth.

WORDS **ELISE CUTTS** | PHOTOS **VARIOUS** | DESIGN **ELISE CUTTS**

FEAR OR FUN

ACCORDING TO GPS DIVISION CHAIR JOHN GROTZINGER, people fund the GPS Division for one of two reasons: fear or fun. Donors in the fear camp hope their contributions will improve our understanding of earthquakes, volcanoes, global warming, and other geological hazards. Important as this work is, fun is where GPS really shines. Studying Mars, dinosaurs, and icy moons might not be as practical as devoting research funding to seismology, but who doesn't secretly want Jurassic Park to happen for real? Students fortunate (or perhaps wise) enough to be pursuing a major in the department enjoy weekly social hours, whimsically named department softball, soccer, and dodgeball teams, the chance to go to the Galapagos for class credit, the annual GPS division party "Zilchbrau" and, most importantly, field trips.

Somehow both educational and enjoyable, field trips continue to be a highlight experience for many undergrads at Caltech—both in and out of the GPS division. For many students, field trips might be the first time they've left campus in weeks or, depending on dbal stretching skills, months. Luckily for them, Southern California is a geologic wonderland—its mountains and deserts are perfect for seeing features that are usually covered up by pesky foliage, and the region's geologic history is varied and dynamic. The San Andreas Fault cutting from the Saltan Sea to San Francisco is a popular stop on field trips, as is the "Pleistocene Zoo," an extinct lakebed in the Mojave Desert where the ten thousand year old footprints of extinct North American megafauna are preserved in stone.

And, of course, after a long day of fun, there's nothing better than soaking in a natural hot spring under those weird twinkly lights in the sky which we never seem to see back home in Pasadena.

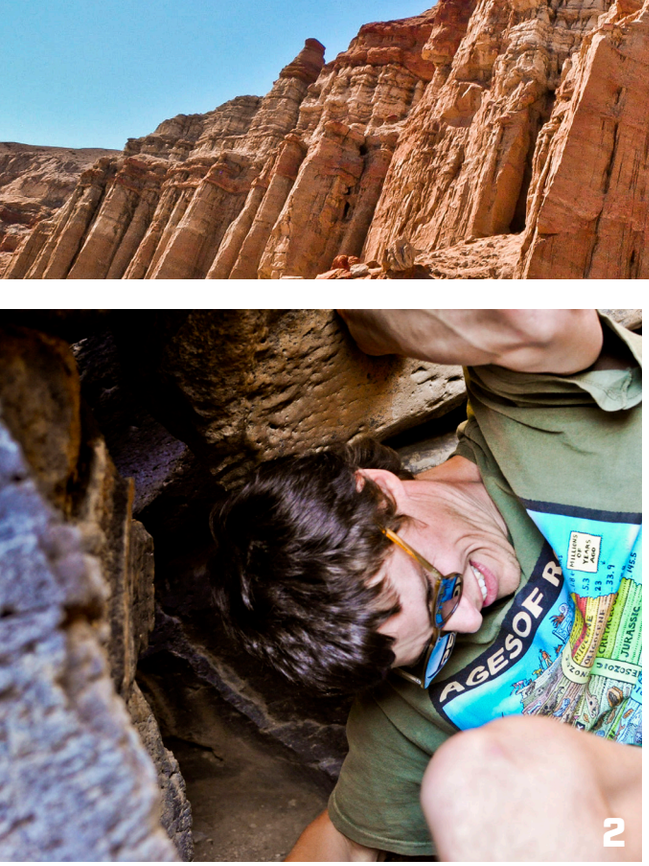
1. ARE YOU LICHEN THIS PICTURE? Colorful mosses and lichens stand out in vivid contrast against rhe black surface of basalts near Fossil Falls. Recognizable due to their dark color and small the small size of their mineral grains, basalts are one of the most common rocks on Earth and are formed when certain kinds of lavas cool rapidly at the Earth's surface. **2. CRAM SESSION** Why cram for a test when you can cram youself inside a tiny cave? Teaching assistant Hayden Miller shows off his caving skills during the Ge11a field trip stop at Fossil Falls.

PHOTO BY PETER MARTIN
Ge136, a 3-unit class offered every term, is quite literally just a field trip. This year, 136 kicked off with a visit to the rocky shores of Big Sur.

PHOTO BY BRIGITTE ROONEY
Beloved by undergraduates as the perfect spot for a desert retreat and by professors for the geology, Joshua Tree was the perfect site for a winter trip.

PHOTO BY CIARA ORDNER
Caltech's final Ge136 field trip of the year hit desert highlights from the Mojave Desert to the Grand Canyon and the Valley of Fire.

JUST CALL ME JJ Even a JJ Abrams-style lens flare isn't more dramatic than these stunning wind-blasted cliffs. The red color comes from iron oxides in the rocks making up the cliff.

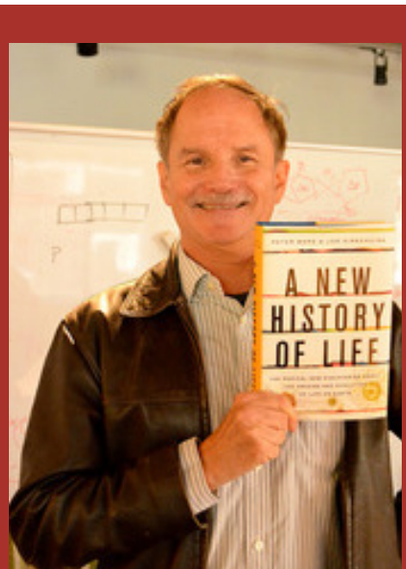


2

LOOKING UP Students perch atop the unusual basalt formations at Fossil Falls while listening to their professor explain the site. The winding, smooth walled canyons were carved by water long ago.

A NEW HISTORY OF Ge136

"Ge136 is a historic class here," Professor **JOE KIRSCHVINK** says, leaning back in his office chair. "You know the Bob Sharp lecture hall? Well [Bob] taught the class for around 50 years, right up to when he was running it as a part time emeritus professor." Once a student enrolled in the same class he teaches today, Kirschvink continues the tradition of Ge136, a class that is quite literally three units of field trip. "For the geologists, it's extremely important as a part of their general education to be exposed to a variety of topics. Earth and planetary sciences are sort of unique in that you need to study the objects—to get out and beat on a rock, there's no replacement for it." Non-geologists often tag along on 136 trips, too, and when asked how he felt about it, Kirschvink was adamant that it's important for them too. "Even if you're a computer scientist, seeing that… it's not all fake science: the people who study the deep time climate record actually have data… Particularly when we live in a century when we're going to have climate change whether you like it or not, whether you deny it or not."



SCIENCE BY DAY

WORDS **ELISE CUTTS**
PHOTOS **MICHAEL WONG**
DESIGN **MICHAEL WONG**

FIFTEEN MINUTES OF FAME Groups competing in Techstock's battle of the bands had 15 minutes to show their stuff and, hopefully, impress the judges. The winners took home a hefty chunk of prize money and had the chance to play a longer, 45-minute set to close out the Caltech group performances.

1. FOLKING UP Techstock wasn't just rock-and-roll and covers of "All Star." Elle Chimiak, a grad student studying geochemisty, teamed up with some of her colleagues to play folk-inspired tunes during the battle of the bands. **2. SATURN'S RINGO** Chris Spalding studies planetary disks and ring structures as a graduate student in the GPS division and also rocks on the drums—both with his friends during Techstock, and with Professor Konstantin Batygin's band, The Seventh Season.

SONG BY NIGHT

"WE'VE GOT TO GO, but there's time for just one more." The announcement is drowned in cheers. The performance so far has been great, but there's one song which has been conspicuously omitted from the set—one which most people in the audience have been waiting for.

Techstock, a tradition only three years old as of Spring 2017, began as a Fleming event but has grown into a campus-wide music festival attended by the whole community.

During the day, Caltech-affiliated bands battle it out for cash prizes and the right to more stage time. Legions of volunteers in grey T-shirts man Tom Mannion's fleet of rolling grills, serving free burgers and hot dogs to festival-goers while students lounge on picnic blankets in front of the stage at Winnett Student Center.

At night, however, the grills roll off and the blankets are replaced by an impromptu mosh pit as the main event begins. The Mowgli's, the headline band, takes the stage.

With the kickoff of their last song—"San Francisco"—the crowd erupts in cheers. A Go-Pro somehow makes its way from the crowd into the lead singer's hand and makes a round around the stage before it is returned to the audience. The night ends with applause as the Mowgli's disappear backstage, leaving the aftershocks of blasting speakers buzzing in the audience's ears.

3

4

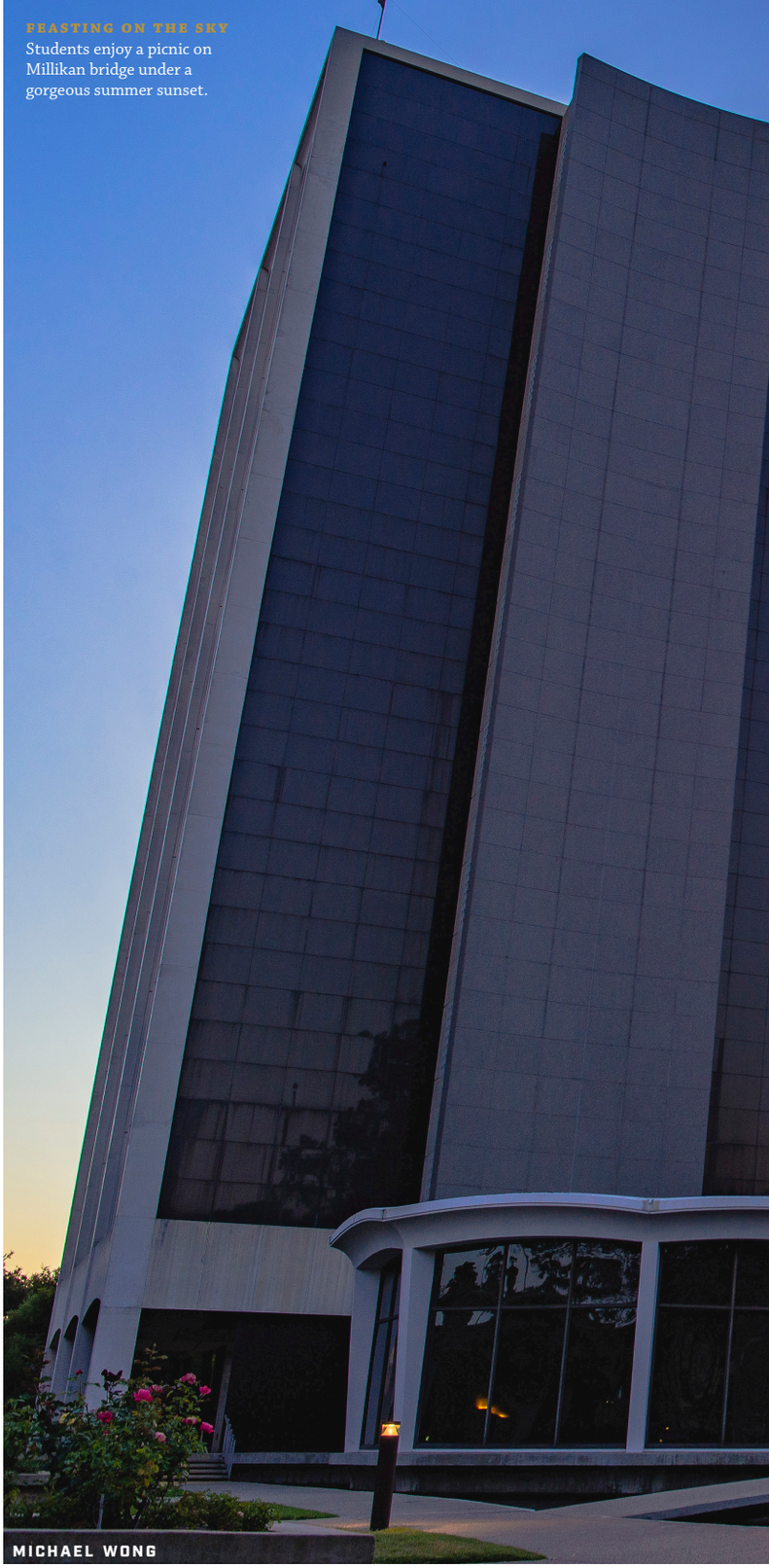
5

1. MOSH PIT? The Mowgli's might not be known for producing rave-worthy party anthems so much as folksy indie hits, but that didn't stop Caltech students from clumping together and dancing the night away. **2. DON'T TRY THIS AT HOME** Professional crews were brought in to assemble the stage in front of Winnett Student Center. Caltech students might be good enough at construction and lighting to pull off a good interhouse party, but when pros like the Mowglis are singing, it's best to make sure the stage matches the talent. **3. SHAKE IT** Tambourines might be popular among 1st grade music teachers, but that doesn't mean they're not cool. Katie Jayne Earl, one of the lead vocalists for the Mowgli's, shakes a tambourine during her performance at Techstock.

GSC SOFTBALL

ELISE CUTTS

FEASTING ON THE SKY
Students enjoy a picnic on Millikan bridge under a gorgeous summer sunset.



MICHAEL WONG

SURF'S UP

WORDS **MICHAEL WONG**
DESIGN **MICHAEL WONG**

1. EPICENTER Professor Victor Tsai, who studies seismology, is about to make some tremors of his own. **2. THOM DA BHOMB** Thom Chaffee [18] sprints towards first base. **3. PROJECTILE MOTION** Lee Saper [G2] launches a pitch against El Jefe, the Ismagilov Lab team. **4. TARGET ACQUIRED** Caroline Atyeo [18] pitches for the Melonheads, the undergraduate team.

"SUMMER SUCKS," says **JOSEPH MIN [20]** before turning back to his computer and his work. Buckling down and diving into research for the first time can be a grueling and eye-opening experience. Min, who is participating in the Summer Undergraduate Research Fellowship (SURF) with Professor **PAUL STERNBERG** on fully automated RNA-seq., will spend from late June to late August on campus, turning in long hours of coding.

"At least I have time for art," says **ZIYAN MO [20]**, an avid digital painter, who can finally spend her evenings at her iPad with Procreate open instead of a math set. After two days of hard work, she produced a beautiful image of paper airplanes flying over the atmosphere of a planet—a visual representation of what summer means to her: freedom.

Other students pick up passions that they'd never tried before. "Summer's great because I don't have classes, so I actually have time to cook," says **SHARON CHEN [20]**. "I hadn't boiled water until this summer, but now I stir fry everything."

While Chen focuses on perfecting fried broccoli, rising junior **ELISE CUTTS [19]** is studying fried rocks that came from Mars with Professor **BETHANY EHLMANN** this summer through the SURF program. "It's about as close to being an astronaut as I'll ever get," she says, her excitement contagious. "I even convinced my mom to go to some seminars about asteroids."

Across campus, Min is pounding away at his keyboard. At least one project is going as planned for him. The yearbook is getting submitted on time.

WORDS **SHARON CHEN** | PHOTOS **VARIOUS** | DESIGN **MICHAEL WONG**

TRAILBLAZERS

"I'D BEEN TO LONDON BEFORE, but was surprisingly not prepared for Edinburgh," recounts **THOMAS (THOM) CHAFFEE [18]**. "The accent is what got me the most—ask a random local for directions, and you may find yourself more confused than when you started."

Getting used to unfamiliar accents was just the beginning of new experiences Techers encountered in their worldly explorations this year. During the fall and winter terms, dozens of students took advantage of the opportunity to study abroad, generalizing Caltech's spirit of academic discovery to global cultures. Students participated in term-long programs at the University of Edinburgh in Scotland, École Polytechnique in France, and Cambridge University and University College London in England.

Participants in the École Polytechnique program, in particular, were entirely entrenched in a vastly different culture. All classes, discussions, assignments, and exams were in French. "The chance to learn science in a different language has opened my eyes to the global world of STEM," says **ANUSHA NATHAN [18]**. Other student

1. LAUNCHING POINT One of the reasons to love studying abroad in Europe is how easy it is to travel from their host university. Lucy Chen [17], an Edinburgh study abroad student, snapped this selfie with Sonia Kim [17] and Sean Mckenna [17] in Oslo, Norway. **2. TABOO** Selfie sticks are never okay. Well, almost never. Standing on top of a pristine hillside in Scotland with your friends is one of those special times where a selfie stick is definitely called for. **3. QUEEN OF THE HILL** Senior Zofii Kaczmarek stands triumphantly at the top of a hill overlooking a Scottish town. **4. OLD SCHOOL** Nand Kishore [17] stands in front of a stunning building on Cambridge campus, where he studied abroad for a term. Cambridge was founded in 1209, 682 years before Caltech! **5. CAPTURE THE FLAG** Zofii Kaczmarek [17] snapped this photo of her friends Lucy Chen [17] and Julie Kew [17] waving a Scottish flag atop a beautiful green hill.

highlights included the opportunity to take a class with one of the creators of the Haskell programming language.

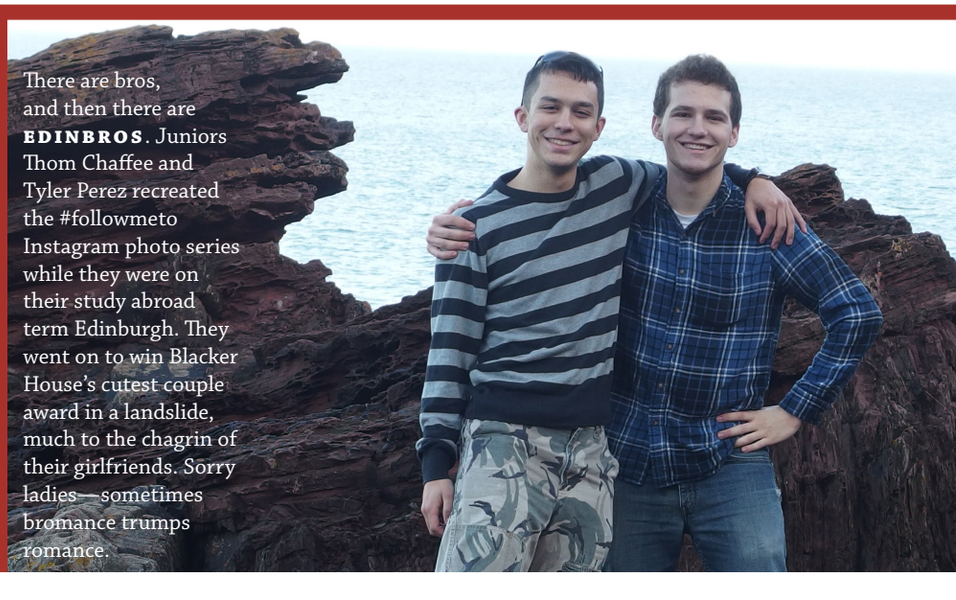
Besides offering a new perspective on science and math, the chance to study at much larger universities provided a chance to explore the humanities in a more engaging environment. At UCL, **WON JUN NOH [17]** was able to take an introductory course on London Architecture. "The classes meet at museums or historical sites within London, and the instructor talks about the history and architecture associated with these places."

Used to the rigorous and time-consuming weekly problem sets at Caltech, students found a new approach to academics in their time abroad. Grades were based mostly on exams and homework was typically optional, providing greater freedom as well as self-responsibility. For **LUCY CHEN [17]**, "Study abroad has been a pleasant break from the nonstop work schedule of Caltech. There is time to cook, pursue hobbies, go out with friends, and in general, feel human again."

With more free time, Techers took full advantage of the extracurricular opportunities afforded by studying at a large university. In the words of **KISHA THAYAPRAN [18]**, "It is literally impossible to not find something to do!" The gigantic fall Freshers' Fair in Cambridge, for example, showcased countless societies and clubs, and Caltech students chose to join a variety of these, including Rowing Club, Massage Society, and Chess Club. Likewise, **TYLER PEREZ [18]** says about his time at Edinburgh, "I have made it a goal to try and do things that I couldn't do at Caltech so I am involved in Kickboxing, African Drumming, Dance Music Society, Christian Union and beatboxing."

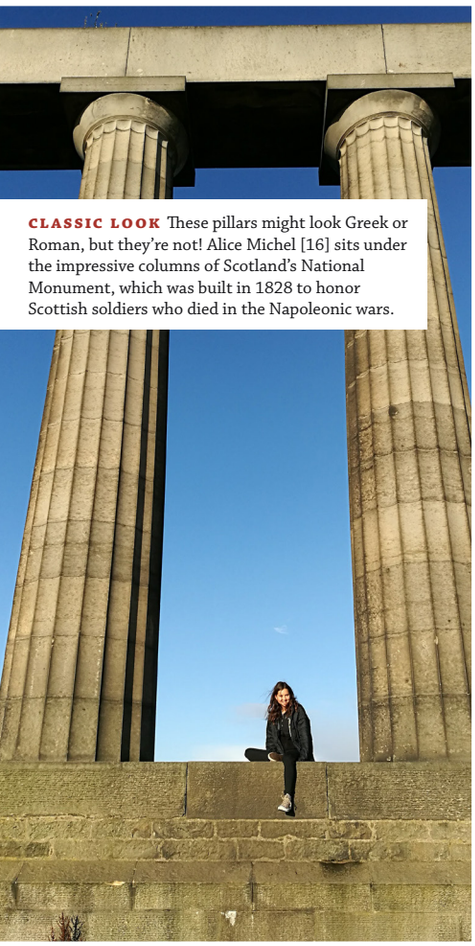
It's clear that study abroad students will look back fondly at their memories exploring the rolling hills of the Scottish countryside, enjoying student-run comedy sketch nights at Cambridge, lining up at crêpe stations in the streets of Paris, or wandering through London's famous museums and historical sites. As **JULIE KEW [17]** puts it, studying abroad is "a break from the usual, an exciting adventure, a reminder that there is life beyond Caltech."

#FOLLOWMETO



There are bros, and then there are **EDINBROS**. Juniors Thom Chaffee and Tyler Perez recreated the #followmeto Instagram photo series while they were on their study abroad term Edinburgh. They went on to win Blacker House's cutest couple award in a landslide, much to the chagrin of their girlfriends. Sorry ladies—sometimes bromance trumps romance.

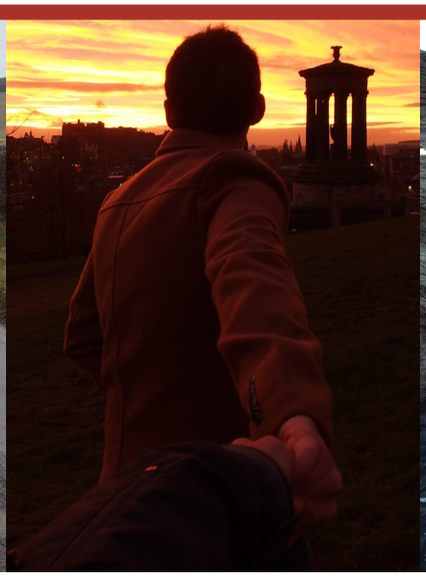
BONNY BANKS Zofii Kaczmarek and Julie Kew [17] sit perched atop a cliff near Glencoe, Scotland which overlooks Loch Lamond, the subject of a popular Scottish song.



CLASSIC LOOK These pillars might look Greek or Roman, but they're not! Alice Michel [16] sits under the impressive columns of Scotland's National Monument, which was built in 1828 to honor Scottish soldiers who died in the Napoleonic wars.

4

5



COURAGE

ROAD TRIP

WORDS **ZIYAN MO** | DESIGN **MICHAEL WONG**

#WEWON After winning their Orange Out match, the Caltech women's volleyball team join in an ecstatic group hug.

ELISE CUTTS

SUZANNAH OSEKOWSKY

We went into the game with a can't lose attitude. Even if we had lost, we would have still spent a couple of hours playing a great team and having a lot of fun.

[17]

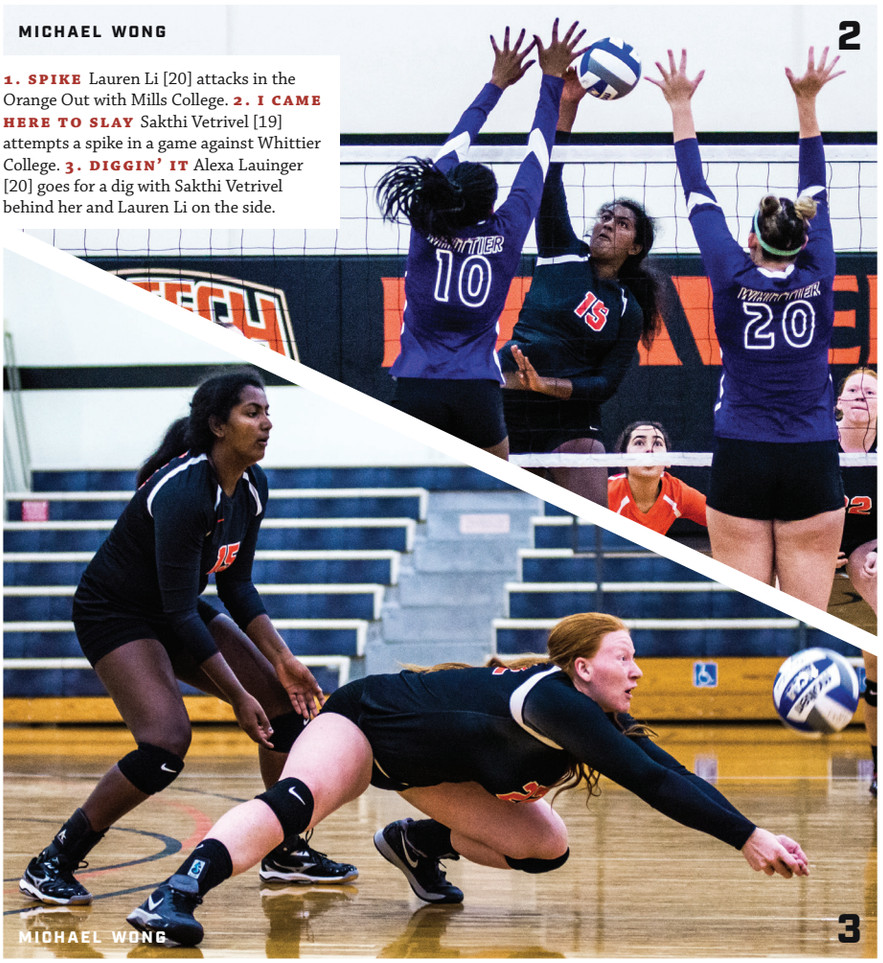
MEI-LING LAURES

Philosophy: Playing hard—if I play hard, I have a lot more fun. I enjoy compeition and playing with others and with my own team. When we play hard and well, that is when I have the most fun.

[20]

MICHAEL WONG 1

MICHAEL WONG 2



MICHAEL WONG 3

1. SPIKE Lauren Li [20] attacks in the Orange Out with Mills College. **2. I CAME HERE TO SLAY** Sakthi Vetrivel [19] attempts a spike in a game against Whittier College. **3. DIGGIN' IT** Alexa Lauinger [20] goes for a dig with Sakthi Vetrivel behind her and Lauren Li on the side.

NERVOUS CHATTERING DRAWS to a close as the bus approaches the University of Antelope. Today is the second day in a two-day competition against the Pioneers.

Away games are always difficult. First, there is the drudgerous ride to the game: everyone stays awake to keep the team energized, whether laughing over inside jokes with their teammates or trying to finish Ma1a sets without a TA. Once they arrive, the Beavers face an unfamiliar court and an unfriendly crowd. As many of the women on the team commented, the best part about a home game is the crowd. In an opponent's gym, however, the crowd cheers for their mistakes. "It gets to your head when the crowd cheers when you are doing poorly," said **CLAUDIA CAÑAMAS-DONNELLY [20]**.

Although it is difficult to keep the energy up during the tedious journey to Antelope, the girls are determined. Their "we can win" attitude is what will carry them to their first away game in years. Tired but resolute, they get off the bus, and head into the gym.

Four intense sets pass. The scores are neck-and-neck and everyone's energy reserves are wearing thin. However, no one is willing to give up. The scores are close and there is still a chance! The Pioneers start the last set with a 3–0 lead and hold it until the match point when they slip up, committing an error. Now, the ball is on the Beaver's court. The girls seize the opportunity. **ALEXA LAUINGER [20]** scores a pair of kills, and another error by the Pioneers puts the Beavers in the lead. Riding a wave of adrenaline, **ELLIE WALKER [20]** seals the match with a spectacular ace. The scores are announced, and the Beavers are all smiles as they come together into a team hug. This is their first away win in 13 years. The Beavers go on to wrap up their season with a win on senior night and a decade-high total of three wins out of 13. This is, perhaps, the start of a new chapter for the women's volleyball team at Caltech. With a six-pack of talented freshman filling out the roster, the team's statistics are miles beyond last year's: digs, kills, and assists are the second highest in Caltech history.

Looking to next year, the team intends to build on their success. According to Lauinger, the freshman co-captain, "This year was great for building the team. We are a lot better, but next year we're wanting to show with more wins."

ALEXA LAUINGER

Lead by example, and during a game you're expected to hustle and have a good attitude, and sometimes that's hard. You really have to bring the energy out when everyone is really tired from a hard week. I'm just really happy to be able to fill this spot.

[20]

KER LEE YAP

"For the first time, we started beliving that we can win. Hashtag #wecanwin!

[17]

IN COMES COMPANY

WORDS **ELISE CUTTS** | PHOTOS **MICHAEL WONG** | DESIGN **JOSEPH MIN**

THIS ONE'S FOR THE ROAD Holly Bender (JPL) sings in A Wasted Evening with Tom Lehrer during one of the performances at Caltech's Athenaeum. The show also traveled to Lineage Performing Arts Center in Pasadena and Grove Theater Center in Burbank.

STAGE LIGHTS FLARE to life and music erupts from the pit, filling the air in Ramo Auditorium. Clad in brightly colored dresses and fitted suits, actors pour onto the matte-black stage, striding and twirling across the floor in a carefully practiced dance number. After months of dance rehearsals, drilling lines, improvisation warmups, and long hours on the stage, it's finally time: it's finally opening night for Company.

Theater Arts at Caltech (TACIT) brings together undergraduates, graduate students, postdocs, faculty, staff, JPLers, and their family members to create art onstage for members of the community to enjoy. This year, TACIT opened their season with A Wasted Evening with Tom Lehrer, a cabaret-style performance of satirical songs by Lehrer, which was held at the Athenaeum. However, it is the spring musical that, without a doubt, stands alone as the crown jewel of Caltech's theater program.

Throughout the night, the cast of Company sings and dances through the story of Bobby, portrayed by first year graduate student **STEVE MARKHAM [G1]**. While Bobby's struggles to understand his position as the lone bachelor among his married friends might not resonate with the average undergraduate, the cast's vibrant performances makes the story accessible to all who come. **LYDIA KIVRAK'S [19]** portrayal of bride-to-be Amy in the frantically-paced number "Not Getting Married Today" is a highlight thanks to her exuberant personality and superhuman mastery of vocal tongue twisters.

At the end of the night as the cast comes together for their curtain call, the band plays an upbeat medley of songs from all of Company's numbers as the audience cheers on their favorite performers. Finally, the cast steps into a line together. Hearts pounding and spirits soaring, they link hands and take their final bows together, knowing that tomorrow they'll do it all again.

WHEN A PERSON'S PERSONALITY IS PERSONABLE Annie Marinan (JPL) and Steve Markham [G1] share a scene in Company, Caltech's 2017 musical. Marinan portrayed Kathy, one of the three eccentric girlfriends that Markham's character, Bobby, dates in the show.

ETHAN PRONOVOST

TEMBA, HIS ARMS WIDE From left to right: Ashley Stroupe (JPL), Chandru Dahandapani [G], Peter Basch (JPL), and Holly Bender (JPL) spread their arms wide in A Wasted Evening with Tom Lehrer.

SWEET AS SUSAN Putting on her most charming Southern accent for Company, Olivia Hindera [18] plays Susan, who goes through the happiest divorce imaginable.

WHAT WOULD WE DO WITHOUT YOU? Giuliana Viglione [G4], Elizabeth Freeman (Community), and Steve Markham [G1] sing and dance in "Side by Side by Side," the opening number to Act II of Company.

SOMEONE TO HURT YOU TOO DEEP Lydia Kivrak [19] and Ian Garcia [19] portray a tragic wedding day in Company, where Kivrak's character, Amy, breaks her fiancée's heart.

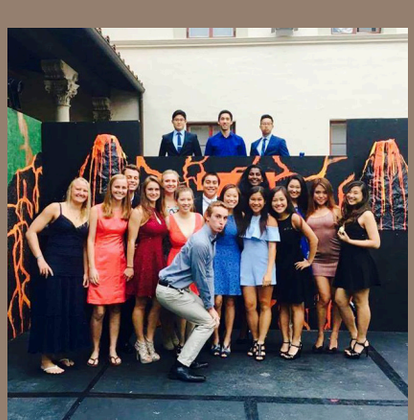
YOU COULD DRIVE A PERSON CRAZY Annie Mirinan (JPL), Kelvin Bates [G5], and Alison Koontz [G1] dance the three girlfriends' number in Company.

TO BOBBY, WITH LOVE Steve Markham's [G1] character, Bobby, is surrounded by his married friends at his surprise birthday party, a recurring scene throughout Company.

JAPAN THROUGH TIME was the theme of Blacker's interhouse party this year. Moles put their building skills to work, constructing water features, an artificial koi pond, DJ booth, a huge mural of godzilla, and a pagoda dance floor lit with paper lamps and covered by a magnificent sloping green roof.

WE LAVA TO PARTY

Fleming interhouse's theme might have been "Big Fleming Paradise" but it was lava, not tropical sunsets and sandy beaches, that took center stage in the build this year. The party boasted two huge paper mache volcanoes rigged with carbon-dioxide cannons that could errupt at the DJ's command, a massive 8 panel mural featuring a chain of volcanic islands, and a lofted DJ booth emblazoned with a magma "F" and dripping lava flows. "All of the lava was fingerpainted. I'd take globs of paint - red, orange, yellow- and just let it flow over the boards. It made for a more natural, gooey look," explained painter **ELISE CUTTS [19]**, who, perhaps predictably, is a geology major.



ALICE IN WONDERLAND

APACHE

SUBTERRANEAN CAPITALISM

KANYE

KINGDOM HEARTS

IF YOU BUILD IT, THEY WILL COME

WORDS **ELISE CUTTS**
PHOTOS **VARIOUS**
DESIGN **ELISE CUTTS**

"SO, WHAT'S THE PARTY SCENE like?" It's a question that inevitably comes up during prefrosh weekend dinner conversations. Some prefrosh ask tentatively, like they're afriad of what the answer will be. Others, thinking that the answer will most certainly be "there is none," ask with a condescending laugh or shake of the head.

Parties do, contrary to popular belief, happen at Caltech. Eight nights throughout the year, at least, students put aside homework sets and projects and head to one of the eight house courtyards to dance, eat, and, of course, size up the building. Interhouse parties are a chance for a house to show off its personality—and, for some houses, a serious point of pride. Pressure to produce a good build or a good night for guests can be huge on the house responsible for a weekend's event, and it's not unusal for students to spend months preparing for interhouse parties.

As far as themes go, this year was a mixed bag of pop culture references and ideas drawn seemingly out of nowhere. Page threw a Kanye West themed interhouse, while Dabney opted for a much less mainstream Subterranean Capitalism theme for their party, which, thrown on the last day of term students can drop classes, is called "Drop Day." Ruddock, Lloyd, and Avery all chose themes from popular media franchises, and Ricketts stuck with Apache, which they throw every year. Blacker and Fleming chose more general themes: Japan Through Time and Big Fleming Paradise, respectively.

The definition of a perfect party is, of course, just as varied as the houses themselves. Some think that flashing lights and loud music make for the best night, while others prefer to focus on art and provide a more low-key atmosphere. Sets range from towering three-story monstrosities with elevated DJ platforms and roofs to ramshackle dance floors held together by duct tape, a few screws, and a lot of luck. No wonder it's so hard to explain Caltech parties to prefrosh!

YYYYYEEEEEEEEEEEEEEEAAAAAAAAAAAAAAAHHHHHHHHHHHHHHHBEAVERS!

1. POINTING FINGERS Eli Pinkus [20], after noticing a yearbook photographer was on the scene, makes a cheesy move for the camera. His ploy apparently worked, since the photo is featued as the primary image in a spread about a Facebook group he and his friend, Alec Andrews [20] made together. **2. HAVING A BIG HEAD** is usually a bad thing, especially here at Caltech where egos can sometimes grow dangerously out of proportion. But giant cardboard cutouts of senior Nasser Al-Rayes and sophomore Brent Cahill brought to games by their friends are anything but bad for spirit. During a conference game against Whittier, Chris Bradley [20] holds high a cardboard effigy of his friend and OCA roommate Nasser, yelling encouragement (or perhaps digs at the other team) from the stands.

WORDS **ELISE CUTTS**
PHOTOS **ELISE CUTTS**
DESIGN **ELISE CUTTS**

A WHITE SPECK AGAINST a sea of orange, a referee tries in vain to quiet the uproar coming from the crowd packed into the poolside stands outside Braun Gym. Caltech water polo has never seen fans like these: rowdy, numerous, and literally painted orange.

"Well, Al had this great idea, and you know, he's always coming up with great ideas," **ELI PINKUS [20]** explains, recalling the game. "He told me—get a bunch of guys, paint your bodies and you know, get wild for the event. And you know I was skeptical at first but when we got down to the pool and there were four or five guys all in paint and hats and stuff, we got pretty stoked, you know." Pinkus laughs as his friend, **ALEC ANDREWS [20]** shakes his head, a bit embarrassed. "We pissed off a ref or two—it was a great idea."

Andrews and Pinkus, both freshmen, orchestrated the paint stunt through their Facebook group, The Beaver's Dam, which they started in the fall hoping to encourage school spirit. The Beaver's Dam, Andrews explains, started like most things do at Caltech: late at night as a way to procrastinate on a problem set. "So, basically we were in my room one night, and I was like 'Eli, I wonder how many people will be at the game.' And he was like 'think about all the other games: baseball, water polo… we should start a Facebook group so people know when the games are!' And then we started it that night."

The group has been incredibly effective in mobilizing sports fans to get out and support athletics throughout the year. Fans came out in record numbers, sporting orange shirts, hats, and face paint. There even appeared a handful of giant cardboard cutout "Fatheads" of basketball players. **CHRIS BRADLEY [17]** commented "[Spirit was] certainly more consistent throughout the year. In years past we'd get up for maybe a basketball game. This year we saw it at water polo games, at baseball games… we're winning now!"

Despite the referee's calls for quiet, the fans scream on. This year, Caltech answers the call to support its athletes at the field, on the pool deck, and in the stands—all because of a Facebook group started by two freshmen who should have been studying.

3. MAKE SOME NOISE More fans at games means more noise: yelling, taunting, cheering, and, apparently, air-guitaring. Sophomore Mark Burleson, pictured here showing his support with an orange shirt and two, count them, *two* pairs of Caltech shades, describes himself as a "part time student, full time professional air guitarist and volleyball superfan." **4. COLOR ME SURPRISED** At a men's water polo game, Pinkus riles up the crowd, including fellow orange-painted freshmen Marcel Griffioen, David Adams, and Courtland Perry. Attendance at Orange Outs remained strong throughout the year, and for most Caltech sports. Yeah, Beavers!

TEACHING AWARDS

DR. BRIAN STOLTZ

Ch41c: Organic Chemistry

"What is the pKa of you passing this class?"
—not Brian Stoltz

DR. ROB PHILLIPS

Bi1: Introduction to Biology

"Street Fighting."

DR. PAUL ASIMOW

Ge1: Introduction to Earth and Environment

"Trust me kiddos, licking rocks is actually a legitimate way to do geology." —not Paul Asimow

DR. EVAN KIRBY

Ay101: Physics of Stars

"My wife is a photographer. I think her photos are beautiful! But don't take my word for it. See her website http://www.bambooshootsphoto.com/."

AN ANIMATED CHATTER took over the lecture hall as a hundred freshman threw ideas around with their friends, trying to tackle the question posed on the blackboard: "How long can a frog survive in salt water?" It was just one piece of the puzzle investigating the potential evolutionary relationship between frogs from the African mainland and island species from São Tomé.

Professor **ROB PHILLIPS**, one of four professors to win the ASCIT Teaching Award, chose to structure his introductory biology course as a series of puzzles, giving students the opportunity to explore biological concepts such as evolution and genetics through case studies involving rigorous math and physics. Professor Phillips's bold, revolutionary approach to biology was inspired by his own curiosity.

"I don't use books to teach," he said. "I really enjoy trying to figure out if I were to do this subject by myself, how would I describe it? You could say, forget how everyone else did, I'm going to invent a new way. The question is what would it look like. That is what I find fun."

Likewise, Assistant Professor **EVAN KIRBY** put his own spin on teaching, with unique and engaging activities, which earned him an ASCIT Teaching Award for Ay101, his first ever undergraduate class.

For instance, Professor Kirby explained, "We were learning about dipole radiation, so I took pictures of myself holding my TV antenna at home, and I made the students work out, what is the best orientation to actually get your TV reception. So it was a real-world example, but also learning the information."

The third recipient of the ASCIT Teaching Award and former recipient of the Feynman Teaching Prize, Professor **PAUL ASIMOW** was perhaps best-known for his super-popular menu course Ge1. Professor Asimow's philosophy behind teaching was to "teach students that want to be learning what they are learning."

However, recognizing that not everyone would be a geology major, Professor Asimow diversified his class, presenting daily equations, specimens, and landscapes to convey his wonder and passion for earth science. His goal, he says, was "to get across an appreciation of the fact that we live on the Earth, we have to live on the Earth for the foreseeable future, and it behooves everybody to understand something about the natural hazards that the Earth presents as well as the artificial hazards that we are imposing on ourselves."

The fourth recipient of the 2017 ASCIT Teaching Prize was Professor **ADAM WIERMAN**, the Executive Officer of the Department of Computing and Mathematical Sciences.

This year's Feynman Teaching Prize, Caltech's most prestigious teaching award, went to Professor of Chemistry **BRIAN STOLTZ**. Professor Stoltz was praised by colleagues and students alike for his devotion to education and his care for students.

Each lecture, he brought in a renewed excitement and appreciation for his students. As he explained, "Maybe a student will ask a question that will make me think about something a different way. There is sort of a moment where you think, 'Wow, I hadn't looked at it that way before.' You never know when it can hit. You've taught sophomore organic chemistry ten times before, and the eleventh time, something new comes out that you haven't really appreciated before."

WORDS **SHARON CHEN**
PHOTOS **VARIOUS**
DESIGN **ELISE CUTTS**

FRESH SKETCH A completely new class logo accompanied Professor Phillips' total revamp of Bi1's curriculum.

HAVE YOU READ MY BLOG TODAY? Professor Wierman maintains an academic blog, titled "Rigor + Relevance," where he writes thoughts about research issues, conferences, academic life, and teaching.

GO TEAM The Beavers congratulate each other after their win, flashing smiles and high-fiving everyone on the team.

AT LAST!

WORDS **ELISE CUTTS** | PHOTOS **ELISE CUTTS** | DESIGN **JOSEPH MIN**

ON WHAT IS ALL ACCOUNTS an ordinary sunny Pasadena spring day, something extraordinary is happening. With the score tied 3–3 and **KAI KIRK [18]** on second base, **ALEX CORADO [20]** steps up to bat. The dugout is unusually silent, typical heckling and raucous calls of encouragement choked out by 29 years of anticipation thickening the air.

After two successful years of recruiting, the Beavers believed that this year, they might have a shot at a conference game. One Saturday night during preseason, a few members of the baseball team wrote a computer program to estimate their odds of winning this year as a joke. After running the numbers on their gut-feeling probability estimates, the program predicted exactly one win. "It seemed accurate," **MARK BURLESON [19]** comments, remembering that night. The catcher for the Beavers, Burleson came to Caltech with infielder **CONNOR MOFFAT [19]** and pitcher **JONAH KROP [19]** in one of the most successful recruiting classes in years. After another strong year of recruiting, the Beavers added six freshmen to their roster and for the first time in decades looked forward to the season with real hopes for winning a conference game.

March 31st's game starts with an early game lead for the Beavers. In what is possibly the best game of his college career, Krop throws strike after strike, hitting the spots Burleson calls from the plate with impressive accuracy. It isn't until the fifth inning that Pomona-Pitzer pulls ahead, scoring three runs in one inning. By the time **DAVID WATSON [17]** takes to the plate in the bottom of the ninth inning, the score is still 3–2.

Watson makes a base hit and runs to first where he's replaced by **SCHAEFFER REED [17]** who comes in as a pinch runner. Reed, a soccer player who boasts the fastest sprint on the team, has one job: run home. Kirk hits and Reed runs three bases home on Kirk's double. The game is tied. For the first time in almost three decades, the Beavers are in position to win the game with one run. The Sagehens switch pitchers, finally realizing that they're in real danger of losing.

Corado warms up and settles into his batting stance over the plate. Without a single out, he hits a line drive beyond third for a double, Kirk slides home, and, the spell of silence broken, the air erupts in cheers as the Beavers rush the field. Caltech wins its first conference game in 29 years and, a week later on Whittier's home field, they do it again.

ALL IN Between innings, the Beavers group up for a team cheer, hoping to maintain their momentum and carry the game through to a victory.

1. CAPTAIN KIRK Pitcher Kai Kirk [17]'s two year mission on the baseball team culminated in the Beavers winning where no Caltech baseball team had won before. **2. COVERT OPS** During a game, it's not unusual for a team to take some time to get together and discuss their plan for the next plays—even right in the middle of an inning! **3. IT'S ALL SKILL** Catcher Mark Burleson [19] directs his teammates, giving them instructions for the next play. The catcher is responsible for calling spots for the pitcher to hit—deciding what pitch to call is a skill that takes a long time to develop. **4. A NEW HOPE** Freshman like David Adams [20], pictured here talking to one of his coaches during a game, was one of six freshmen to join the roster this year. An uptick in recruiting means that the Beavers can look forwards to a bright future in the years to come.

ON A QUEST Students seek the answer to a riddle to get across Millikan bridge. The drought that had plagued California having been recently mitigated by a wet winter and spring, and the pond was refilled with water, inviting strange, magical demons to migrate back to this territory.

THAT'S IT! A group of green-clad undergrads grin as they work through a puzzle.

IN SPACE, NO ONE CAN HEAR YOU SNORE
An alien takes a well-deserved nap on the grass.

SUNNY SMILES A group of Pageboys clad in "It's Always Sunny in Pasadena" T-shirts brings out sun with their smiles on a cloudy Ditch Day.

TOMORROW

WORDS **SHARON CHEN**
PHOTOS **ELISE CUTTS**
DESIGN **JOSEPH MIN**

IT APPEARS TO BE just another Thursday night as six clueless frosh trudge into an Sherman-Fairchild Library (SFL) study room. They proceed to make fools of themselves, contorting their arms in all sorts of unnatural ways that make the right-hand rule seem less like a useful mnemonic and more like a sure-fire way to sprain your wrist. A couple hours later, they are still far from done with the Ph1c problem set due the next day when they all get an email.

The subject line reads "Go to bed, frosh." They've gotten similar emails many times throughout the year, but this time, they somehow knew it wasn't just another "fake." Perhaps that was why they were barely making any progress on physics—subconsciously, they knew it wouldn't actually be due the next day.

The next day, they'll experience one of Caltech's most famed and anticipated traditions, Ditch Day. On multiple occasions, they had heard upperclassmen rave about the day spent running around solving theme-based puzzles designed by the seniors, while classes and sets were cancelled.

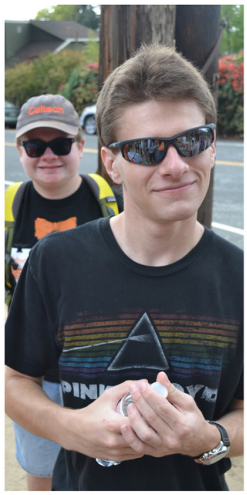
Preparing to run to get their pick of unique "stacks," underclassmen will set their alarms for well before the seniors come to bang on their doors at 8 a.m. Some will spend the day in the universe of fairy tales or Star Wars, while others will partake in activities themed around Drake. They might even get to be in an Ikea-themed stack.

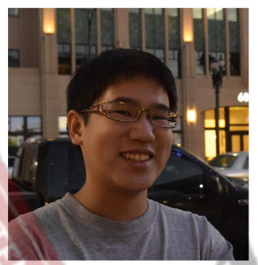
Puzzles, escape rooms, and scavenger hunts are Ditch Day staples that underclassmen surely enjoy. But, they'll also get the chance to go paintballing in the hills, lounge around on a boat, embarrass themselves singing karaoke, or even rappel down a building. A lucky few will feast on a twelve-course dinner provided by Tom Mannion, which the seniors had to reserve spots for when they themselves were frosh.

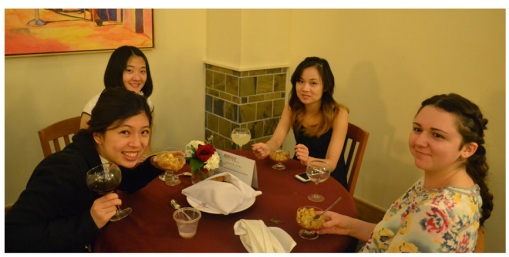
All of this requires meticulous planning by the seniors, who started planning the day months, and in some cases, years, ahead. Even alums come back to help make the Ditch Day escapades as fun and memorable as possible. At the same time, they are intensely secret about anything Ditch Day-related. House rooms get transformed into seniors-only zones, black tape hides unready stacks from underclassmen eyes, and the night before, a curfew with elaborate rules is delivered to every underclassman's inbox.

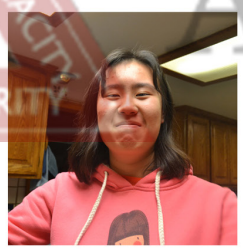
In fact, upon receiving this email, our studious frosh pack up, leave SFL, and go to bed. After all, Ditch Day is tomorrow.

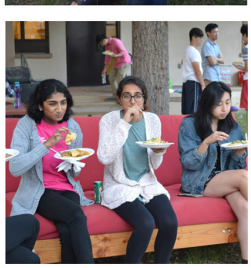
MEMORY



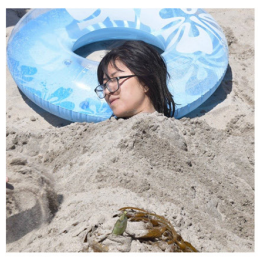




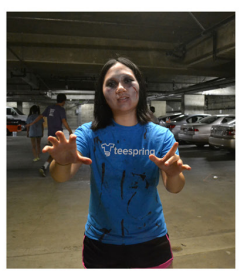
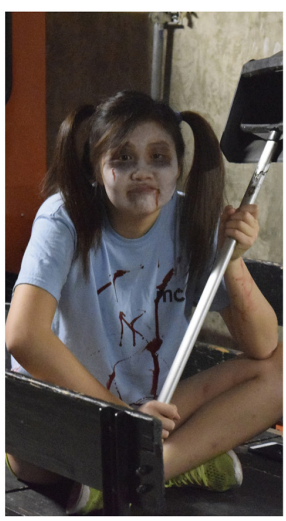




CREATIVITY TENACITY INTEGRITY



ry House

FROSH

TOP ROW, FROM LEFT:
RICKY HAMEL • AIDAN SWOPE • SARA ADAMS • KENNY DURAN • CAMILLA ORA • SARAH OWENS • BEN CASSESE • JAYCE MILLER

MIDDLE ROW:
STEPHANIE DING • SAM BLAZES • NIKITA KOSOLOBOV • MAX DEBBAS • HARRY PUTTERMAN • LEWIS JONES • ALEXANDRA STUTT • CRAIG WORLEY • ALDEN ROGERS

FRONT ROW:
JIM ZHANG • MEGAN DURNEY • MEI-LING LAURES • SARAH CRUCILLA • JACK CALDWELL • ANANT KALE • BETHANY SUTER • TYE LAMKIN • ALEX CUI • SIQIAO MU

SMORES

BACK ROW, FROM LEFT:
AMY ZHOU • SOPHUS SHACKFORD • MADELYN STRODER • ALEXANDER REEVES • LUKE FINNERTY • DIANDRA ALMASCO • MICHELLE ANTHONY • DILLON AZZAM • EVAN HAUGH • JULIA DEACON • LEO BALESTRI • EVAN GUNTER

FRONT ROW:
TOM GORODO • CHRISTOPHER JOHNSTONE • ALLISON TANG • ZACHARY DOMANICO • HANNAH CHEN • PATRICIA BEEKMAN • KALLIOPI SOMIS

NOT PICTURED:
ENRICO BORBA • BENJAMIN CALVIN • SARAH DERETIC • ALEXANDER DENKO • GRZEGORZ FLORES • CLAIRE GOECKNER-WALD • TIFFANY JAGER • LUKE LIAO • SOPHIE WHITMEYER

JUNIORS

TOP ROW, FROM LEFT:
BRIAN LEE • TYLER MIDDLETON • NATHAN BARTON • NICK MEYER • RUOQI SHEN • KEVIN SHU • JAKE KETCHUM • STEPHANIE KWAN • MAYRA MELENDEZ

MIDDLE ROW:
DAVID WU • MARK GILLESPIE • ERICH HERZIG • LUCILLE WELLS • ANUSHA NATHAN • PAIGE GANNON

FRONT ROW:
THOM CHAFFEE • TYLER PEREZ • CAROLINE HOWARD • ANNIE CHANG • ALISON DUGAS • ALEX MEIBURG • CHEN CHANG • ROBERT ENG • ANNE DORSEY

NOT PICTURED:
AVINASH AGRAWAL • WILLIAM LAKE • FRANCESCO MACAGNO • CARLY ROBISON

SENIORS

CLOCKWISE FROM BOTTOM RIGHT CORNER:
JULIE KEW • FABIAN BOEMER • KUSHAL AGARWAL • ALEXANDER PLACE • EMILY MEANY • EVAN DAVIS • MILICA KOLUNDZIJA • WILL YU • VICTOR HAN • HARRISON KROWAS • MICHAEL BAUER • MARY DO • TALIA MINEAR • BELLA GUO • KATE EVANS • CONNIE ROBINSON • MARY DO • SHARI KUROYAMA

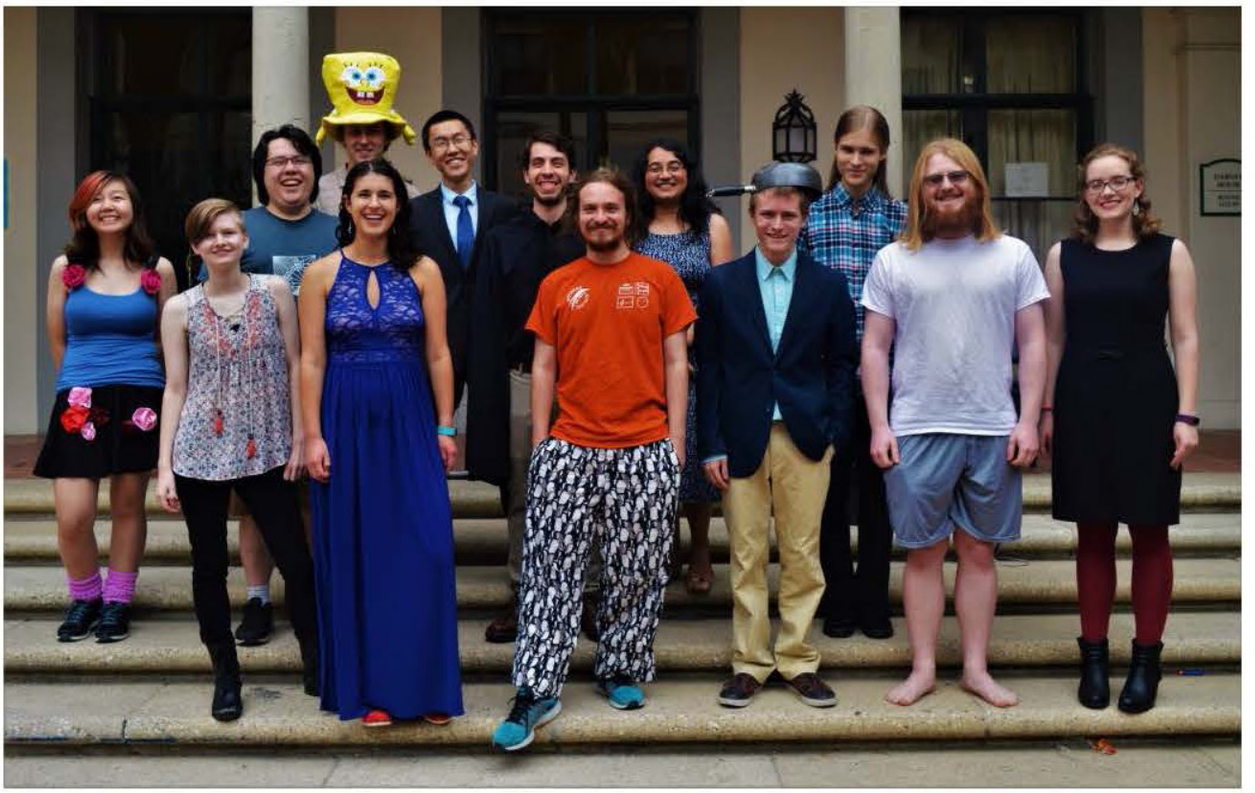
NOT PICTURED:
KIT CHINETTI • SANJI DEWAN • MICHAEL FELDMAN • JEFFREY GU • ANGELA GUI • JESSICA LI • DANIIL LUKIN • ALLISON PENN • JEFFREY ROSENBERG • CHARLES WANG • SHIMMY XU • CHENCHAO YOU

BLACKER

BLACKERHOVSE

DABNEY

2017



2018

FIDELIS ET GRATUS

2019

2020

FLEMING'S SENIOR CITIZENS

DAHN, NOT AGAIN...

HEY GUYS, GREAT IDEA, LET'S BUILD BFP AGAIN... BUT BIGGER!

BOOM!

CHASING THE DREAM AT ROSE BOWL 2017

BIG RED SAVES THE YEAR

FLEMING 2016-17

FLEXCOMM 2016

MOJO SONOLA - ***PRESIDENT***

JOHN DAVID FEIST - ***VICE PRESIDENT***

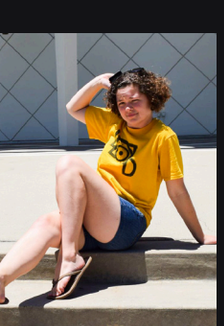
LILLY LUO - ***SECRETARY***

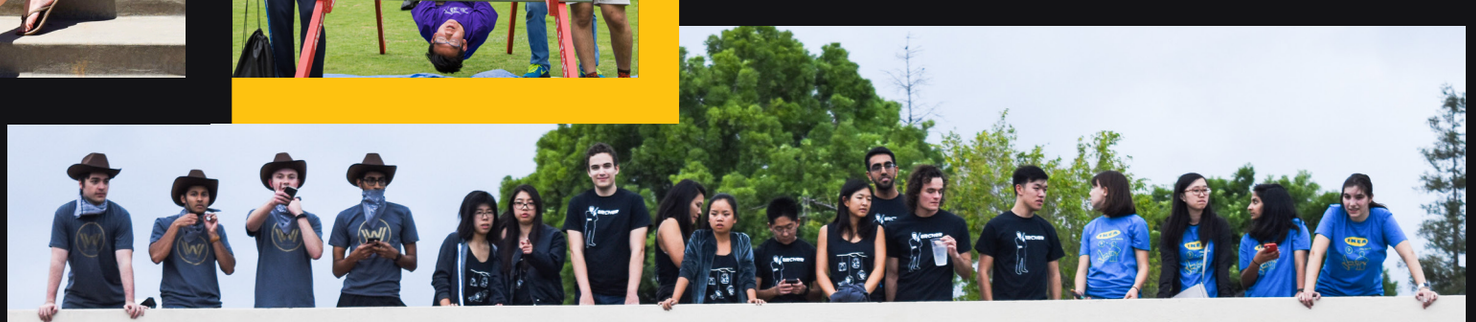
HARRISON JACOBS - ***TREASURER***

VINCI CHEN + ROBIN BROWN - ***SOC 1 + 2***

HENRY BAER + CAROLINE ATYEO - ***ATH 1 + 2***

DESIGN AND PHOTOS BY ELISE CUTTS





I live and die...

Freshmen

Sophomores

Juniors

Seniors

...for those I love.

PAGE HOUSE 2016-2017

WHOSE

HOUSE

EXCOMM
Treasurer: Patrick Hsu
Vice President: Sarah Cai
President: Nishant Desai
Sexcretary: David Lebaron
Ath Man: Jack Lloyd
(left to right)

Freshmen

Sophomores

Juniors

Seniors

Soc Team:

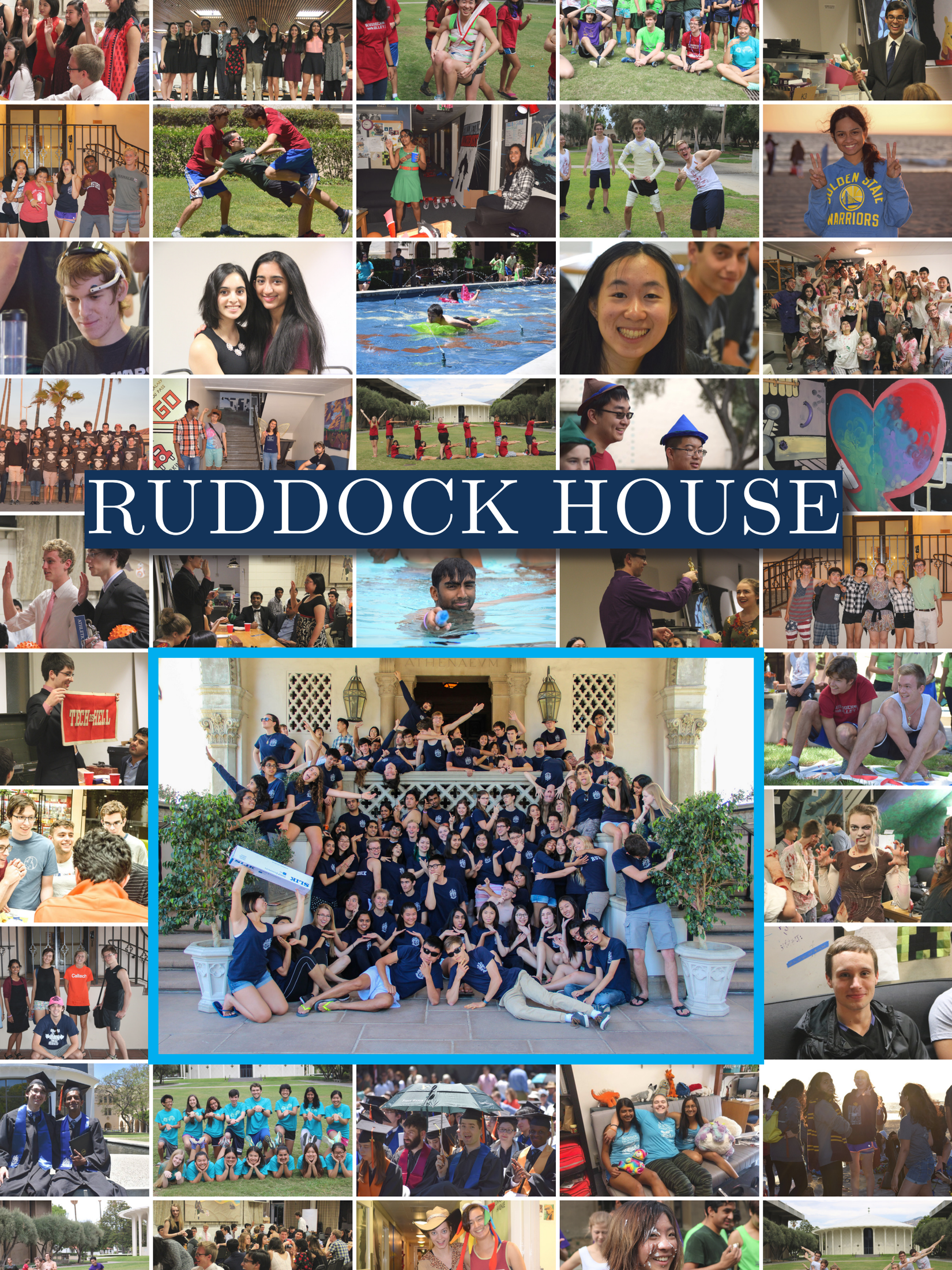
Nishad Maskara
Tiffany Zhang
Maria Newport
Sarah Cai
Suzanne Oliver
Nicholas Redd
Madelyn Wang

Ath Team:

Gemma Takahashi
Nicholas Redd
Jack Lloyd
Aaron Sartin

PREND MOI TEL QUE JE SUIS

Frosh Wash
Formal Dinner
Open Mic Night


RUDDOCK HOUSE

EXCOMM

Ath Man: Jimmy Hamilton
S'more Rep: Tucker Reese
President: Henry Swanson
Off-Campus Rep: Tim Liu
Vice President: Vasant Iyer
Treasurer: William Schmidt
Librarian: Ruchi Pandya
Soc Man: Karim Lakhani
Secretary: Sandra Liu

BIOLOGY & BIOLOGICAL ENGINEERING

CHEMISTRY & CHEMICAL ENGINEERING

ENGINEERING & APPLIED SCIENCE

DIVISIONS

GEOLOGICAL & PLANETARY SCIENCES

HUMANITIES & SOCIAL SCIENCES

PHYSICS, MATH & ASTRONOMY

CLUBS

AARYA

Shilpa Joy [G], Shreya Ramachandran [19], Uma Dingankar [18], Suchita Nety [17], Anusha Nathan [18], Anise Rau [19], Surya Sundararajan [17]

BLACK STUDENTS OF THE CALIFORNIA INSTITUTE OF TECHNOLOGY (BSCIT)

Danny Howard, Weslee Glenn [PD], K'yal Bannister [18], Sarah Sam [G], Stephanie Threatt [G], Kate McAnulty, Karina Edmonds, Chantal D'Apuzzo

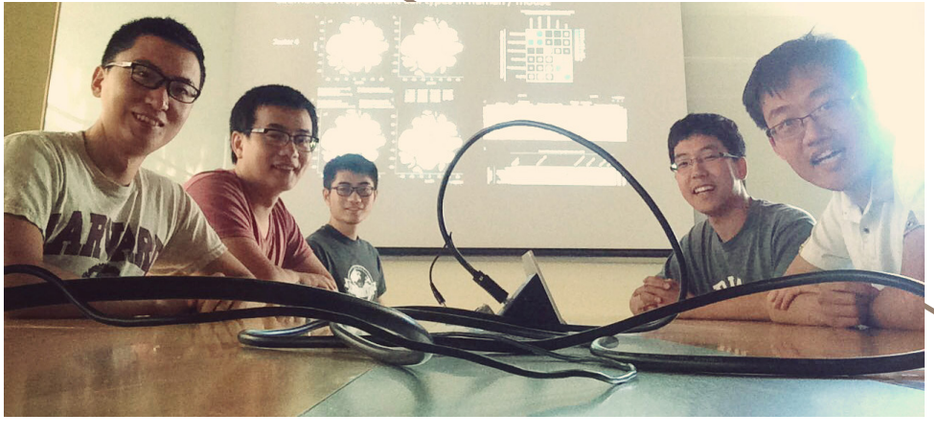
CALTECH ALPINE CLUB

CALTECH BADMINTON CLUB

Di Wu [G], Sophia Dai [PD], Remy Mevel [PD], Chujun Lin [G], Min-Feng Tu [G], Juliette Xiong [19], Chen Chang [18]

CALTECH BALLROOM DANCE CLUB (BALLROOM)

CALTECH BALLROOM DANCE CLUB (SWING)



CALTECH BIOINFORMATICS CLUB

Peng He [G], Xinyan Liu [G], Xiaozhe Ding [G], Yandong Zhang [G], Yapeng Su [G]

CALTECH CHESS CLUB

CALTECH DHAMAKA

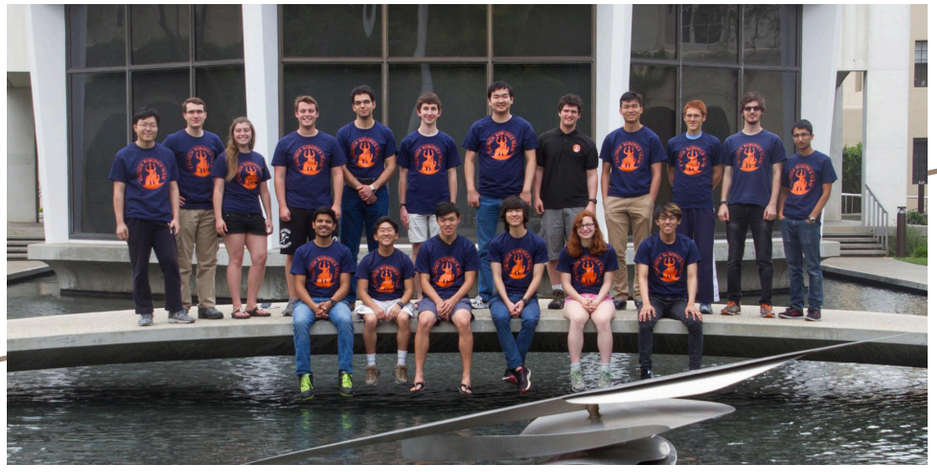
FRONT: Surya Mathialagan [20], Mohar Chatterjee [19], Anjali Premkumar [17], Reeti Gulati [19], Tanvi Gupta [20], Sophia Coplin [20], Ruchi Pandya [19], Celia Zhang [18], Preethi Periyakoil [18], Maitreyi Nair [20], Ramya Deshpande [20], Namita Ravi [18], Hazel Dilmore [20]
BACK: Anshul Ramachandran [18], Sunash Sharma [19], Abhishek Lingineni [19], Harsh Bhundiya [20], Kshitij Grover [18], Anirudh Mathukumilli [19], Chandru Dhandapani [G], Siddharth Kurella [20], Jimmy Hamilton [18], Dennis Yatunin [20]

CALTECH GOLF CLUB

Ricky Galliani [17], Harrison Jacobs [17], Chris Bradley [17], JD Feist [17]

CALTECH JUGGLING CLUB

STANDING: Bella Guo, Ian Garcia [20], Matthew Weidner [18], Aaron Shih [19], Kevin Shu [18]
SITTING: Oriel Humes [18], Mark Gillespie [18], Shari Kuroyama [17], Connie Robinson [18]



CALTECH ROBOTICS TEAM

Qifan Wang [19], David Elliott [20], Julia Deacon [19], James Deacon [19], Artsroun Darbinian [18], Alden Rogers [20], Henry Sun [20], Jeffrey Orenstein [18], Daniel Mark [20], Nikhil Poole [20], Cormac O'Neill [19], Kushal Agarwal [17], Anant Kale [20], Tyler Okamoto [17], Frank Zhou [17], Lewis Jones [20], Madison Brady [20], Evan Yu [20]

CALTECH ULTIMATE FRISBEE CLUB (AFTERMATH)

TOP: Paul Kempler (Coach), Michael Miller [19], Michael Lichterman [G], Dominic Yurk [17], Evan Yeh [20], Zachary Sternberger [G], Somasundara Pandian [19], Vatsal Jhalani [G], Jennifer Norris (Trainer). MIDDLE: Helena Wu [20], Peishi Cheng [G], Sarang Mittal (Captain) [18], Daryl Yee (Captain) [G], Bryce Edwards (Captain) [G], Jonathan Cotler [19], Tommy Alford [20], Alex Cui [20]. BOTTOM: Erika Ye [G], Linus Kim [20], Charlie Dorn [G]

CHRISTIANS ON CAMPUS AT CALTECH

Max Murialdo [G], Yang Li [PD], Brent Belland [G], Min-Feng Tu [G], Yisha Zhao, Yudan Pi, Coco Liang

GRADUATE CHRISTIAN FELLOWSHIP

HACKTECH

MAGIC: THE GATHERING CLUB

Bella Guo, Amulya Mohan [18], Rita Sonka [18], Jeremy Brouillet [G]

MUSLIM STUDENT ASSOCIATION

OASIS

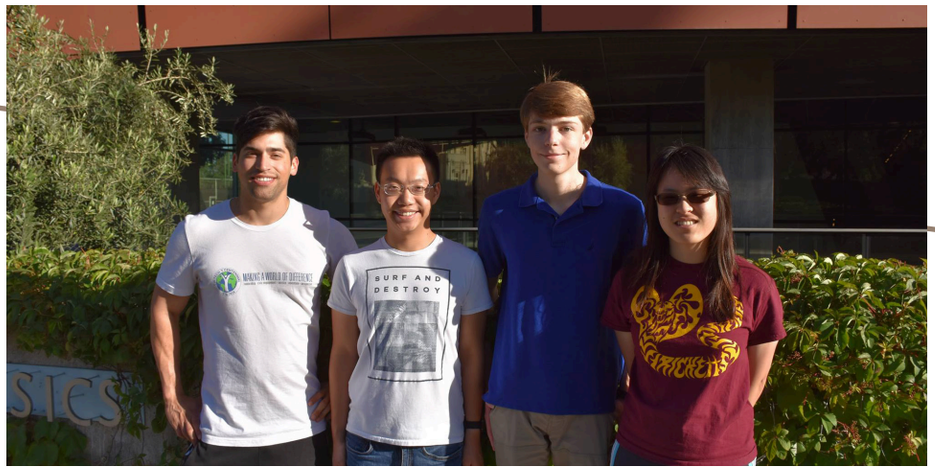
SCIENCE & ENGINEERING POLICY AT CALTECH (SEPAC)

Zach Erickson [G], Anna Ho [G], Elle Chimiak [G], Alistair Hayden [G]

SOCIETY OF WOMEN ENGINEERS

STUDENT INVESTMENT FUND

Paul Nunez [G], Brian Deng [19], Dillon Azzam [19], Bianca Yang [19]



TECH NAACH

TECHERS FOR A SUSTAINABLE FUTURE (TSF)

TENNIS CLUB

BACK: Kelvin Cheung, Harsh Bhundiya [20], Jonathan Nguyen, Stefania Moroianu, Christian Lee
FRONT: Alison Ren [19], Mia Austria [19]

THE FEMINIST CLUB

Coby Abrahmson, Alyssa Poletti [20], Jake Mattinson [19], Emily Mazo [17], Julia Reisler [19], Jane Panangaden [G]

THE PIPETTES

TOP: Jenny He [17], Audrey Wang [18], Amanda Lin [18], Sumana Mahata [17]
MIDDLE: Anne Zhou [19], Rachel Ng [18], Cherish Nie [20], Juliette Hu [20], Gloria Ha [18]
BOTTOM: Alison Ren [19], Stephanie Huard [18], Preethi Periyakoil [18], Victoria Liu [20], Surya Sundararajan [17]

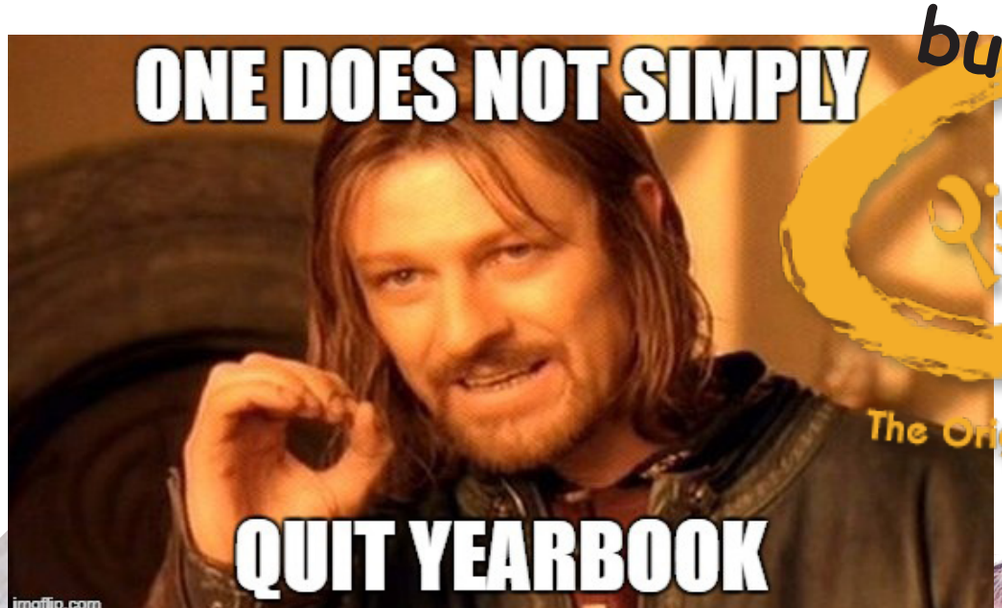
WOMEN IN PHYSICS, MATH, AND ASTRONOMY

Cora Went [G], Allison Strom [G], Nai-Cheng Yeh [PROF], Fiona Harrison [PROF], Ivanna Escala [G], Roohi Dalal [18], Gina Duggan [G], Alicia Lanz [G], Sophie Leon, Anna Ho [G], Anneila Sargent [PROF], Nikita Klimovich [G]

~~CLUBS~~ MEMES

THERE'S THIS FUNNY THING with yearbook publishers - you can only submit books with specific numbers of pages. Our publisher requires multiples of 8. Because we got more response to our requests for club, sports team, and department photos than we expected, we had to tack on a few pages to make sure to include all of your lovely faces. This left us with dead space, however.

If the internet taught us anything, it is that there is only one thing to do with dead space: fill it with memes. Enjoy this shameless, self-serving meme page full of in-jokes you won't understand since you're not on yearbook (that's your bad, maybe think about joining us next year).



DID I JUST SMELL COMIC SANS on this page? This is the most horrendous of design sins, and you will certainly go to yearbook hell for this, Elise.

this whitespace was intentionally kept blank for design reasons

Design Heaven

"You gotta get orange chicken for us basic bitches"

ATHLETICS

BASEBALL *Roster:* David Adams [20], Mark Burleson [19], Alex Corado [20], Matthew Edwards [17], J.D. Feist [17], John Galden [17], Marcel Griffioen [20], Harrison Jacobs [17], Minjae Kim [20], Kai Kirk [17], Jonah Krop [19], Garrett Levine [18], Chris McCarren [18], Tim Menninger [17], Grant Messner [20], Connor Moffatt [19], Cortland Perry [20], Schaeffer Reed [17], Tucker Reese [19], David Watson [18], Will Werst [19], Alex Wuschner [20]

MEN'S BASKETBALL *Front Row:* Michael Li [20], David Kawashima [18], Alec Andrews [20], Andrew Wang [19], Bret Johnson [20] *Second Row:* Roshan Bal [20], Brent Cahill [19], Ricky Galliani [17], Aaron Ayres [20], Steven Brotz [19] *Back Row:* Matthew Edwards [17], Calvin Huh [20], Nasser Al-Rayes [17], Ross Carter [20], David LeBaron [17]

WOMEN'S BASKETBALL *Left to Right:* Coach Dennis Ko, Nika Haleftiras [19], Jieni Li [20], Madelyn Stroder [19], Madeline Schemel [19], Kate Lewis [17], Coach Sandra Marbut, Elizabeth Eiden [19], Alexa Lauinger [20], Grace Peng [20], Samantha D'Costa [20], Coach Jessica Watkins

MEN'S CROSS COUNTRY *Roster:* Tommy Alford [20], Sam Blazes [20], Bhairav Chidambaram [20], Rohan Choudhury [19], Rohan Doshi [19], David Fager [20], Greg Gephart [20], Nick Haliday [17], Michael Hashe [19], Joey Hong [19], Tiger Lu [20], Mason MacDougall [18], Tanner Moore [20], Rishabh Pipada [17], Nikhil Poole [20], Simon Ricci [20], Gianmarco Terrones [20], Gene Vaughan [18]

WOMEN'S CROSS COUNTRY *Roster:* Robin Brown [18], Maria De Angelis [20], Nicole Feng [20], Melissa Gutierrez [19], Cherie Jia [19], Lilly Luo [17], Michelle Marasigan [19], Emily Mazo [17], Skye Reese [20], Gauri Shastri [17], Jena Srikanth [20], Sophie Walton [20], Michelle Zhao [20]

MEN'S FENCING *Roster:* Cole Allen [17], Kai Chang [17], Matthew Jin [17], Nikita Kosolobov [20], David Lin [19], Abhishek Lingineni [19], Ethan Lo [18], Keegan Mendonca [17], AJ Nielsen [20], Julius Oppenheim [19], Aaron Shih [19], Kyung Min Shin [19], Jonathan Stauffer [17], Spencer Strumwasser [18], Qifan Wang [19], Alex White [19], Evan Yu [20], Will Yu [17]

WOMEN'S FENCING *Roster:* Dessie DiMino [20], Mei-Ling Laures [20], Christina Meyer [17], Stephanie Moon [17], Ariel Stiber [20], Maia Stiber [19], Betty Wang [20]

MEN'S SOCCER *Front Row:* Neil McBlane [17], Federico Presutti [18], Ashwin Hari [18], Soren Schmidt [18], Kevin Yu [20], Tristan Née [19], Arjun Zutshi [20] *Back Row:* Arnav Sharma [20], Sammy Piascik [20], Max Shen-Molesky [20], Schaeffer Reed [17], J. D. Feist [17], Nikhil Gupta [19], Richard Shim [20], Alex Lettenberger [20], Fabian Boemer [17], Theo Yang [20], Kevin Gao [17], Amine Boubezari [19]

MEN'S SWIMMING & DIVING *Roster:* David Berger Maneiro [19], Alexander Bourzutschky [18], Adam Dai [19], Leon Ding Sr, Thomas Gallup [20], Hanzhi Lin [18], Dylan Lu [19], Alex Moraru [20], Avikar Periwal [18], Kyle Seipp [17], Henry Steiner [19], Jonathan Willett [19]

WOMEN'S SWIMMING & DIVING *Roster:* Alix Espino [19], Elisabeth Gallmeier [20], Zofii Kaczmarek [17], Angelina Pan [20], Brittany Percin [19], Tzarina Shippee [20], Gemma Takahashi [19]

MEN'S TENNIS *Left to Right:* Ruthwick Pathireddy [17], Ramsathwick Pathireddy [17], Morgan Lebby [17], Derik Nguyen [19], Zixiao Li [19], Miha Valencic [20], Andre Liu [19], Connor Soohoo [20], Tine Valencic [20], Praful Vasireddy [19]

WOMEN'S TENNIS *Left to Right:* Kana Moriyama [19], Sarah Cai [18], Sophia Chen [17], Vinci Chen [18], Alexandra Bodrova [20], Angelica Zhou [20], Julia Reisler [19], Erin Wang [18]

TRACK & FIELD *Roster:* Tommy Alford [20], Damien Bérubé [20], Sam Blazes [20], Alex Bourzutschky [18], Jesse Cai [20], Ben Calvin [19], Lucy Chen [17], Bhairav Chidambaram [20], Rohan Choudhury [19], Rohan Doshi [19], David Fager [20], Nicole Feng [20], Greg Gephart [20], Muskaan Goyal [19], Melissa Gutierrez [19], Chris Haack [18], Michael Hashe [19], Joey Hong [19], Tim Krasnoperov [20], Alexa Lauinger [20], Alex Lettenberger [20], Tiger Lu [20], Alison Lui [17], Michelle Marasigan [19], Tanner Moore [20], Zane Murphy [18], Nikhil Poole [20], Skye Reese [20], Simon Ricci [20], Jena Srikanth [20], Gianmarco Terrones [20], Gene Vaughan [18]

WOMEN'S VOLLEYBALL *Front Row:* Claudia Canamas [19], Ellie Walker [20], Sakthi Vetrivel [19], Suzannah Osekowsky [17], Alexa Lauinger [20], Lauren Li [20] *Back Row:* Mayra Melendez [18], Mei-Ling Laures [20], Helena Shield [20], Julia Fay [20], Rachel Ng [18], Ker Lee Yap [17]

MEN'S WATER POLO *Roster:* Jordan Bonilla [17], Chris Bradley [17], Anuj Chadha [20], Shaurya Gilani [19], Eshan Govil [19], Bradley Justice [20], Connor Lee [17], John Lloyd [19], Richard May [18], Tim Menninger [17], Harry Putterman [20], Charles Ross [19], Parth Shah [17], Tomas Tussie [17]

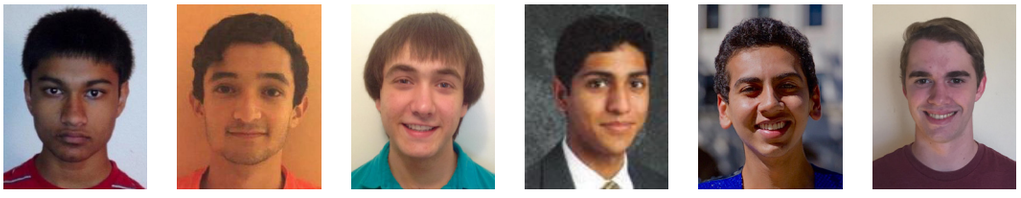
WOMEN'S WATER POLO *Roster:* Mary Boyajian [17], Sam D'Costa [20], Cameron Earl [18], Devi Ganapathi [18], Katie Johnston [19], Hana Keller [19], Sarah Kreider [20], Brittany Percin [19], Gemma Takahashi [19], Mackenzie Wooten [20], Sasha Zemsky [17]

CLASS OF 2020

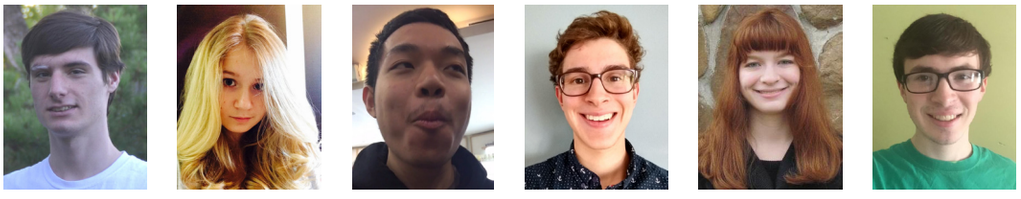
Zafir Abou-Zamzam
David Adams
Wren Adams
Rita Aksenfeld
Thomas Alford
Audrey Anderson

Vincent Andrews
Maria Angelis
Aaron Ayres
Yovan Badal
Andrew Bai
Roshan Bal

Ayan Bandyopadhyay
Sebastian Bedoya
Damien Berube
Vivek Bharadwaj
Harsh Bhundiya
Caleb Bishop

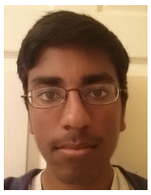
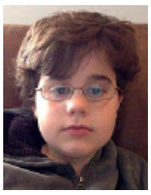


Addison Blazes
Alexandra Bodrova
Arlindo Borges
Alexandra Bouman
Madison Brady
Jackson Briones

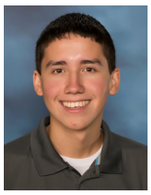
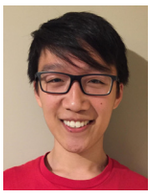


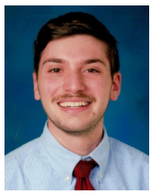
Jesse Cai
Jack Caldwell
Philip Carr
Ross Carter
Benjamin Casse
Anuj Chadha

Gabriella Chan
Jonathan Chan
Sharon Chen
Timothy Chen
Victor Chen
Daniel Chica

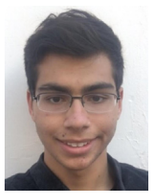
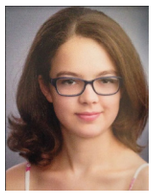



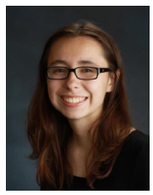
Bhairav Chidambaram
Christopher Cooley
Sophia Coplin
Robert Corado
Adrianna Crowell
Sarah Crucilla

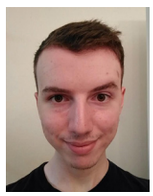


Kaylor Cruz
Alexander Cui
Can Cui
Samantha D'Costa
George Daghlian
Sihui Dai



David Elliott
Noelle Davis
Maximilien Debbas
Cayla Dedrick
Ramya Deshpande
Erica Diaz



Amanda Dilmore
Dessie Dimino
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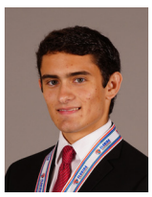
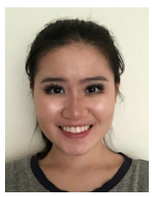
Stephanie Ding
Marcus Dominguez-Kuhne
Harel Dor

Denny Duran
Megan Durney
David Fager
Michelle Fan
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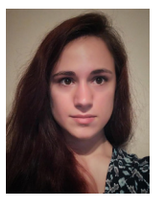
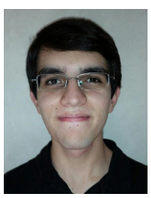
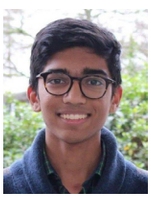
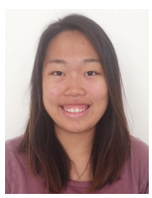
Nichole Feng

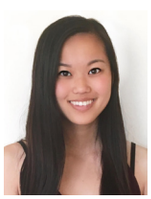


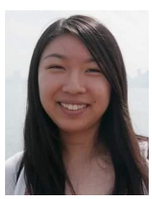
Elisabeth Gallmeier
Thomas Gallup
Ishani Ganguly
Ian Garcia
Gregory Gephart
Monika Getsova



Juan Gomez
Gokul Gowri
Marcel Griffioen
Karen Guo
Tanvi Gupta
Richard Hamel





Dana He
Erik Herrera
Brendan Hollaway
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Juliette Hu
Adrian Huang

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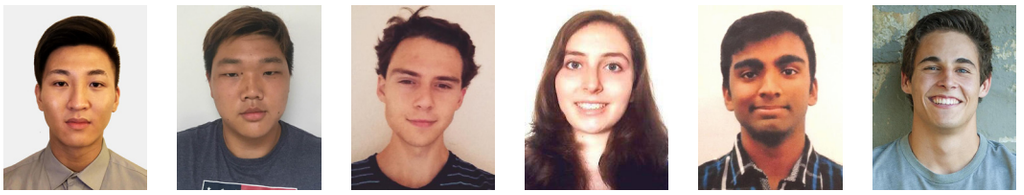
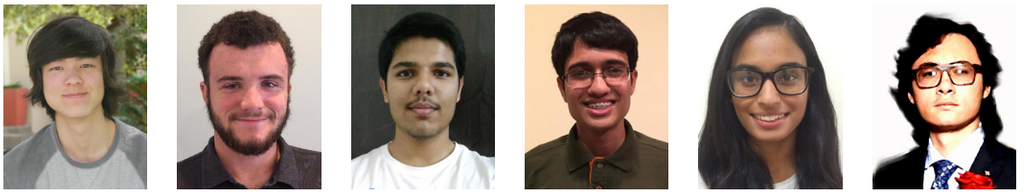
Calvin Huh
Lazar Ilic
Laura Jaliff
Rupesh Jeyaram
Bret Johnson



Lewis Jones
Bradley Justice
Anant Kale
Karthik Karnik
Nivetha Karthikeyan
Carl Keck



Yeokyoung Kil
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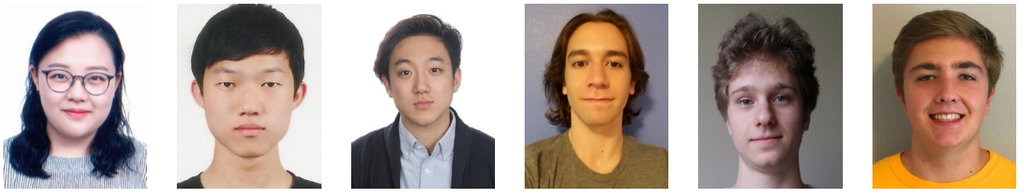
Min Jae Kim
David Kornfeld
Nikita Kosolobov
Timofey Krasnoperov



Frederico Krauss
Sarah Kreider
Alex Krotz
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Kathryne Lamkin
Maggie Lang

Alexa Lauinger
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Madison Lee
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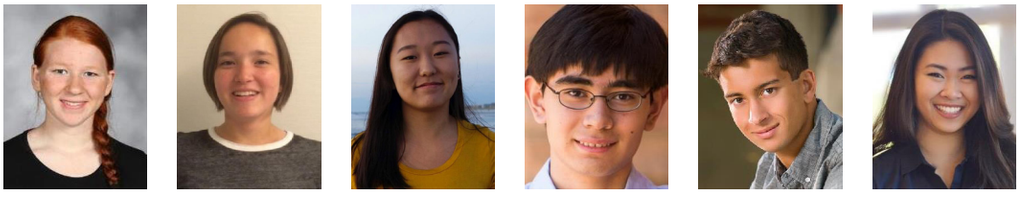
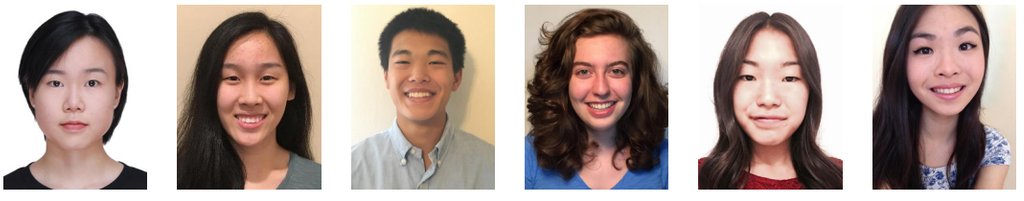
Alexander Lettenberger
Angela Li



Jieni Li
Lauren Li
Michael Li
Nora Linzer
Qianhe Liu
Victoria Liu



Xiaoling Liu
Jared Livingston
Jackie Lodman
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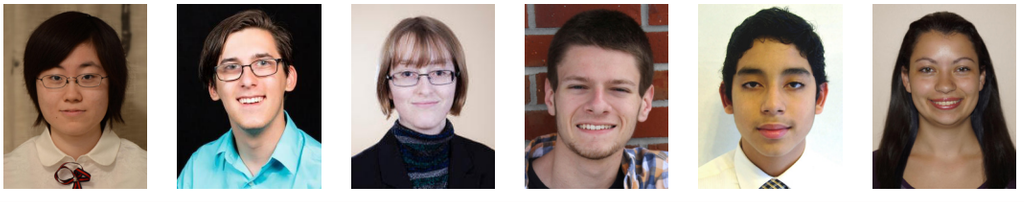
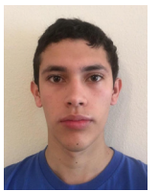
Alejandro Lopez
Sierra Lopezalles



Tiger Lu
Daniel Mark
Christian Martinez
Surya Mathialagan
Sudhi Mathur
James Mclaughlin



Roberto Mercado
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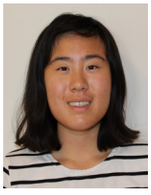
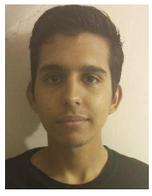
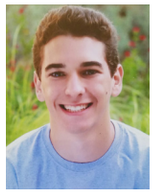
Cathy Miao
Rebecca Mikofsky
Jayce Miller
Joseph Min







Prinesh Mistry
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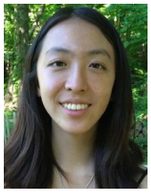
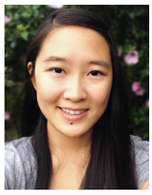
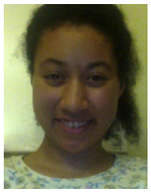
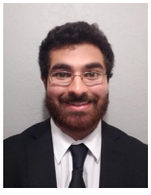
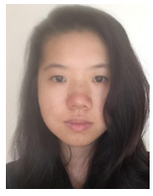
Maxwell Molesky
Antonio Monreal
Tanner Moore
Alex Moraru





Siqiao Mu
Karthik Nair
Maitreyi Nair
Sasha Nanda
Cherish Nie
Avery Nielsen



Camilla Ora
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William Overman
Kayla Owens
Angelina Pan
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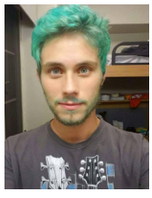
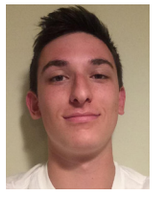

Hee Won Park
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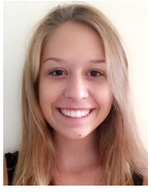
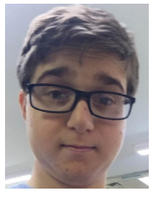
Grace Peng
Karen Pham
Samuel Piascik
Eli Pinkus





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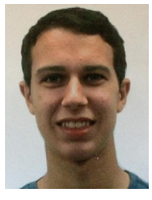
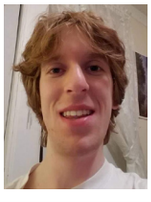
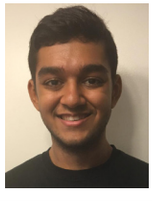
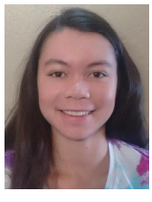
Olivia Pomerenk
Nikhil Poole
Alejandro Proskauer
Harald Putterman
Andrew Ramirez



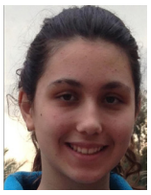
Hamza Raniwala
Skye Reese
Amrita Rhoads
Simon Ricci
Milan Roberson
Alden Rogers



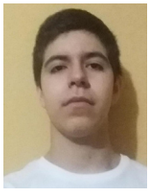
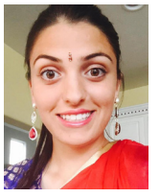



Michael Rupprecht
Erika Salzman
Miranda Schwacke
Arnav Sharma
Helena Shield
Woo Jun Shim

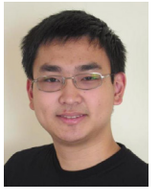
Tzarina Shippee
David Shlivko
Kapil Sinha
Tawny Sit
Yanke Song
Connor Soohoo

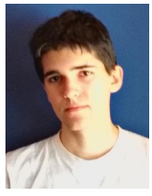


Carlos Sosa
Jena Srikanth
George Stathopoulos
Sarah Steele
Ariel Stiber
Morgaine Mandigo-Stoba

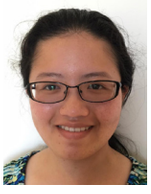



Alexandra Stutt
Henry Sun
Hsuan-te Sun
Juihung Sun
Bethany Suter
Aidan Swope

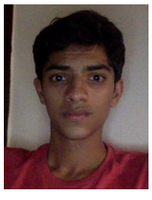




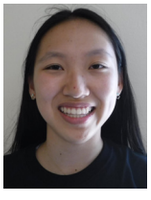
Kaitlyn Takata
Aditya Telikicherla
Gianmarco Terrones
Joseph Tilahun
Alicia Tirone
Miha Valencic

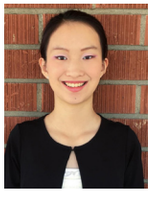


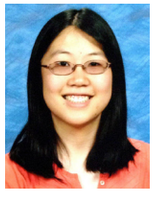
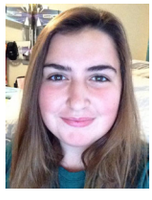
Tine Valencic
Akshay Vegesna
Vibha Vijayakumar
Iman Wahle
Eleanor Walker
Sophie Walton



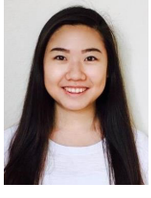
Allison Wang
Jessica Wang
Pei Wang
Shuxian Wang
Tina Wang
Mackenzie Wooten

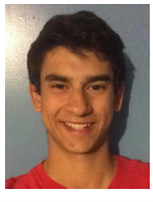
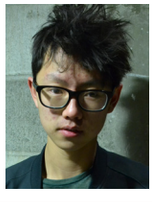




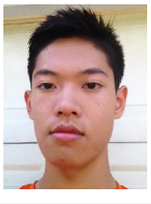



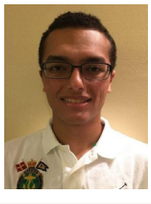
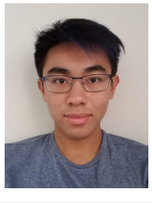
Craig Worley
Asta Wu
Helena Wu
Jennifer Wu
Alexander Wuschner
Albert Xu

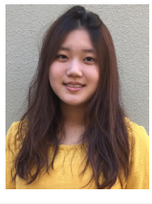


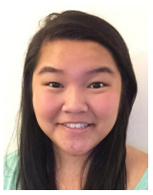



Theodore Yang
Evan Yeh
Muhammad Younis
Evan Yu
Kevin Yu
Rona Yu

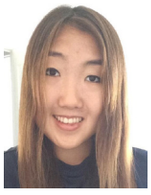






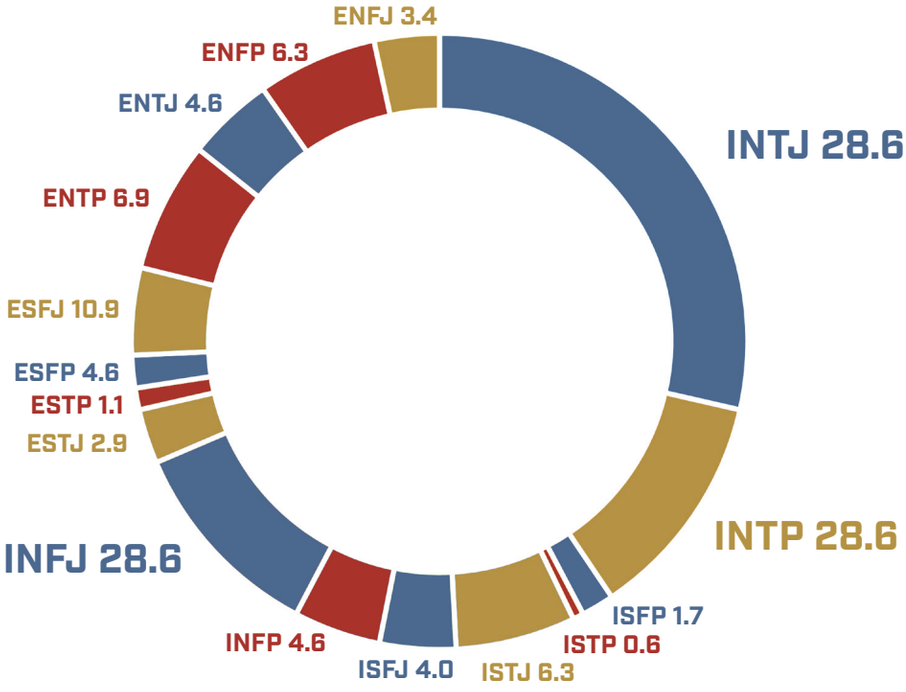
Sean Yu
Hanwen Zhang
Jim Zhang
Manxuan Zhang
Pamela Zhang
Eric Zhao



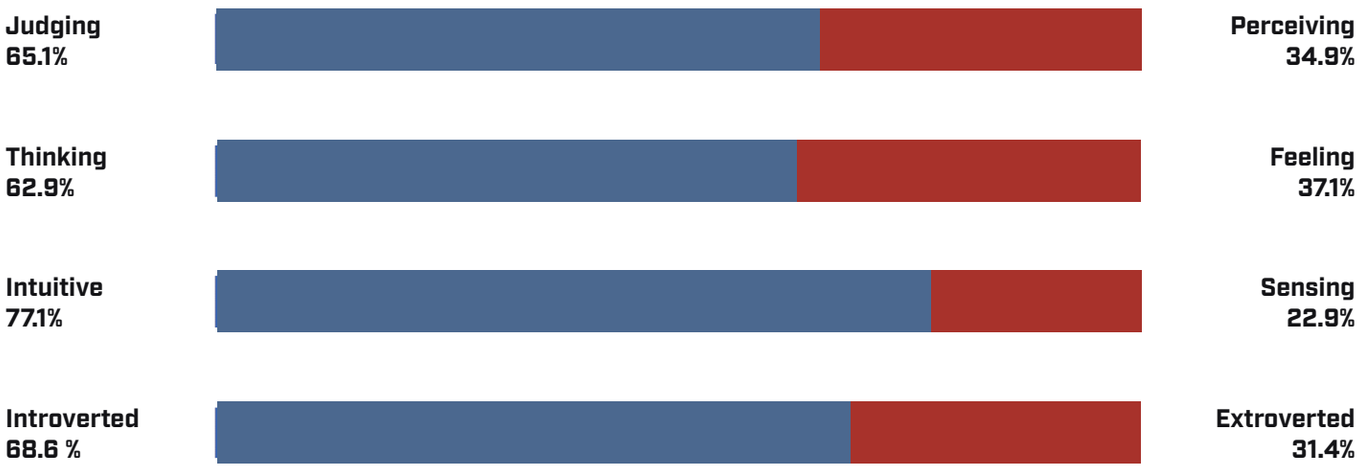
Michelle Zhao
Angelica Zhou
Arjun Zutshi

NOT PICTURED:
Stephanie Shao
Mohammad Shobaki

BRIGGS-MYER PERSONALITY SPREAD OF CALTECH



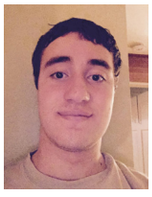
BRIGGS-MYER PERSONALITY TRAITS OF CALTECH



CLASS OF 2019

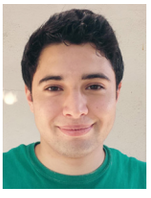
Robert Abrahamson
Ayya Alieva
Ren Alison
Diandra Almasco
Vaibhav Anand
Cecelia Andrews

Michelle Anthony
Daniel Assumpcao
Mia Austria
Dillon Azzam
Leo Balestri
Jack Banaszak

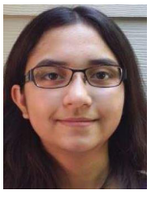


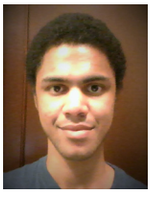
Amarbold Batzorig
Patricia Beekman
David Berger Maneiro
Nishanth Bhaskara
Aadyot Bhatnagar
Urmi Bhaumik

William Bloomquist
Enrico Borba
Eitan Borgnia
Amine Boubezari
Nadine Bradbury
Tatiana Brailovskaya

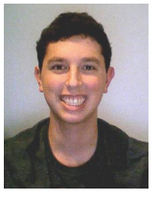


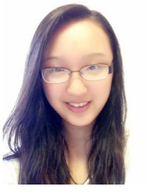
Steve Brotz
Mark Burleson
Lazarina Butkovich
Brent Cahill
Benjamin Calvin
Elyzabeth Camacho

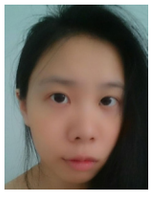


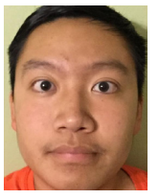


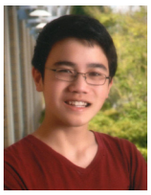
Claudia Cañamas-Donnelly
Zachary Chase
Mohar Chatterjee
Anne Chen
Grace Chen
Hannah Chen

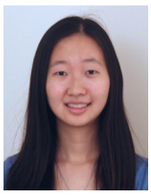




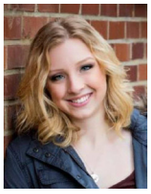


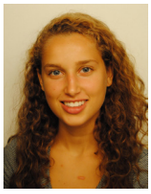






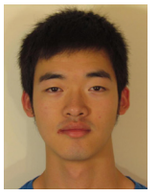
Joshua Chen
May Chen
Richard Chen
Thippayawis Cheunchitra
Jeongyoon Choi
Rohan Choudhury

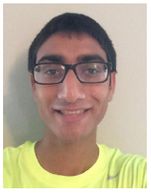




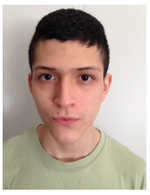
Maria Coelho Dos Santos
Jonathan Cotler
Elise Cutts
Adam Dai
Michelle Dan
Gefei Dang

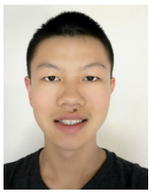
Catherine Day
James Deacon
Julia Deacon
Brian Deng
Alexander Denko
Ashna Dhingra



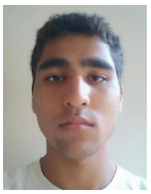


Andrew Ding
Weiyi Ding
Zachary Domanico
Rohan Doshi
Jennifer Du
Shweta Dutta





Elizabeth Eiden
Luke Finnerty
Grzegorz Flores
Zoey Flynn
Wayne Fong
Rafael Fueyo-Gomez

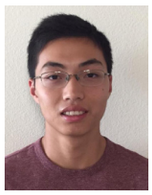


Maya Fuller
Nikhil Ghosh
Mary Giambrone
Shaurya Gilani
Matthew Gladstone
Claire Goeckner-Wald

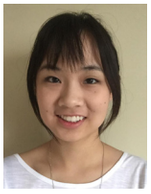
Kristen Goodfriend
Thomas Gorordo
Michael Goulet
Eshan Govil
Muskaan Goyal
Reeti Gulati

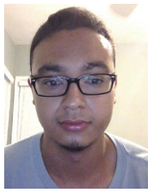
David Gunby
Evan Gunter
Nikhil Gupta
Melissa Gutierrez
Nika Haleftiras
Clare Hao

Michael Hashe
Ariel Hasse
Evan Haugh
Joey Hong
Bozhong Hu
Yanqi Huan

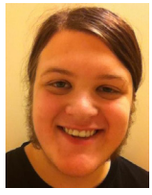


Cindy Huang
Noah Huffman
Abraham Hussain
Michael Huynh
Gyu Jang
Sarah Jeoung

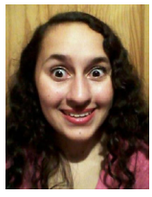




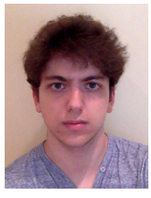
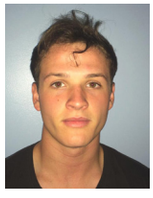
Cherie Jia
Aya Jishi
Katherine Johnston
Christopher Johnstone
Maya Josyula
Luke Juusola



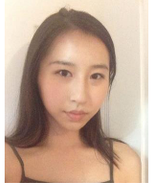
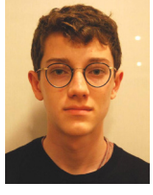
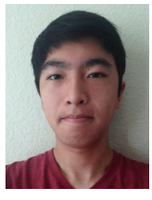
Yeorgia Kafkoulis
Hana Keller
Jake Ketchum
Dong Kim
Suna Kim
Lydia Kivrak



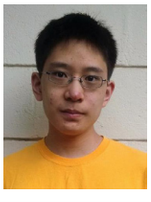
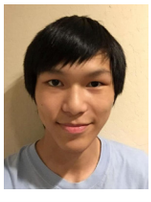
Kai Klocke
Meera Krishnamoorthy
Jonah Krop
Christopher Lamartina
Kale Langley
Marcus Lapeyrolerie

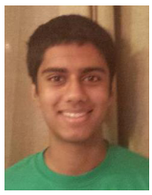
Chih-Chieh Lee
Hye Lee
Renee Lee
Sara Lee
Gideon Leeper
Zixiao Li

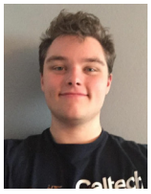
Luke Liao
Charles Lien
Cody Lim
Ty Limpasuvan
David Lin
Abhishek Lingineni

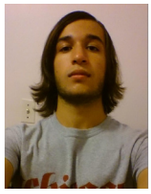



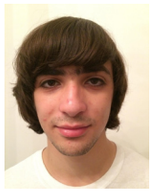
Andre Liu
Sophia Liu
John Lloyd
Dylan Lu
Brian Lue
Filippos Lymperopoulos



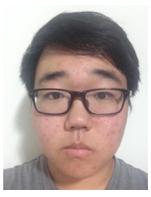
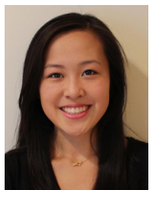
Clara Macfarland
Daniel Magley
Omar Mahfouz
Michelle Marasigan
Nishad Maskara
Anirudh Mathukumilli

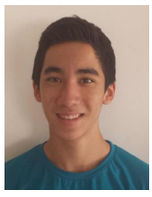




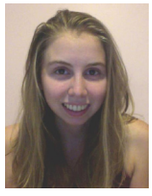


Jake Mattinson
Ishan Mazumdar
Kanan Mehta
Walker Melton
Michael Miller
Connor Moffatt

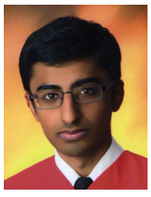
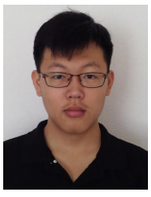
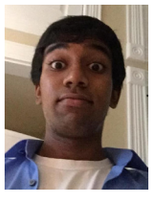



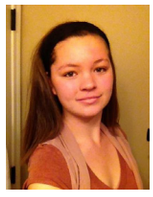


Kabir Mohammed
Christopher Moon
Kana Moriyama
Marc Muhleisen
Tristan Nee
Charles Nelson

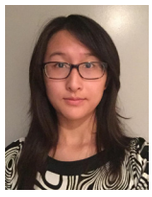
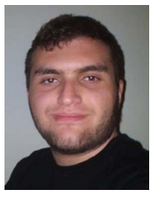


Laura Newport
Danh Ngo
Derik Nguyen
Suzanne Oliver
Cormac Oneill
Julius Oppenheim

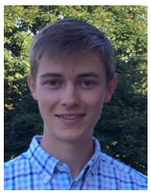




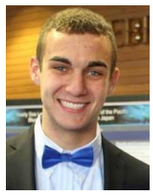


Umesh Padia
Jeffery Pak
Somasundara Pandian
Ruchi Pandya
Kinam Park
Caroline Paules

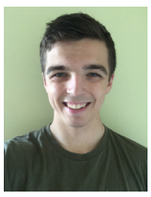



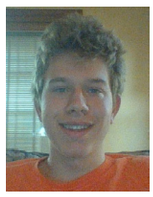
Changnan Peng
Brittany Percin
Isabella Pestana
Sophie Piao
Tyler Port
Siddharth Prasad





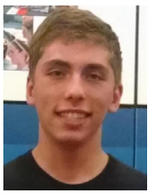
Ethan Pronovost
Shreya Ramachandran
Kavya Ramakrishnan
Anise Rau
Nicholas Redd
Tanner Reece





Tucker Reese
Alexander Reeves
Julia Reisler
Anna Resnick
Kelsi Riley
Charles Ross

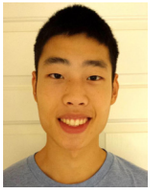
Aaron Sartin
Madeline Schemel
Michael Seaman
Sophus Shackford
Sunash Sharma
Aaron Shih



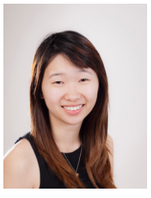
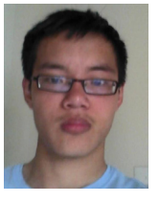
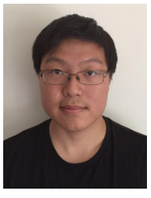
Kyung Shin
Vaishnavi Shrivastava
Kalliopi Somis
Akshay Srivastava
Henry Steiner
Maia Stiber

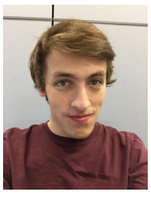
Madelyn Stroder
Hyung Suh
Neha Sunil
Gemma Takahashi
Allison Tang
Kevin Tat

Aris Taychameekiatchai
Teresa Tran
Praful Vasireddy
Sakthi Vetrivel
Andrew Wang
Jessica Wang

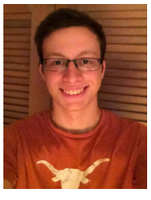


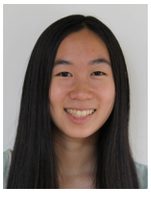
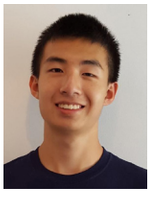
Madelyn Wang
Maxiar Wang
Qifan Wang
Shen Ting Wang
Felix Weilacher
William Werst

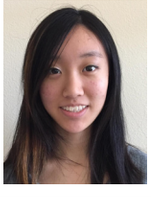


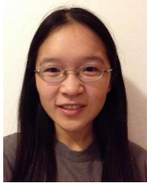
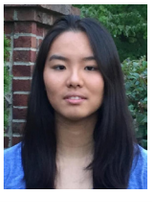
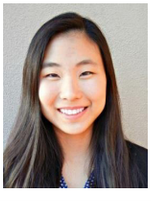
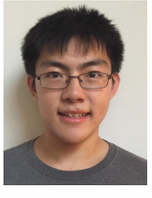
Alexander White
Sophie Whitmeyer
Jonathan Willett
Brenda Wu
Emily Wu
Matthew Wu



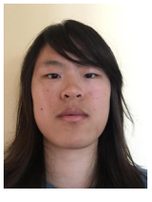
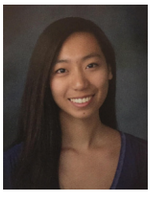



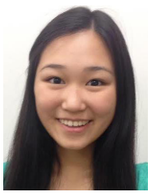
Julia Xia
Yuxie Xiao
Amy Xiong
Grace Xiong
Juliette Xiong
Daniel Xu

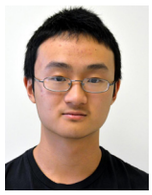
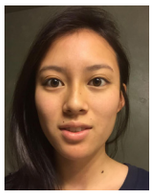


Wenqing Xu
Yaxin Xu
Xiaohan Xue
Bianca Yang
Julia Yang
Kathleen Yang



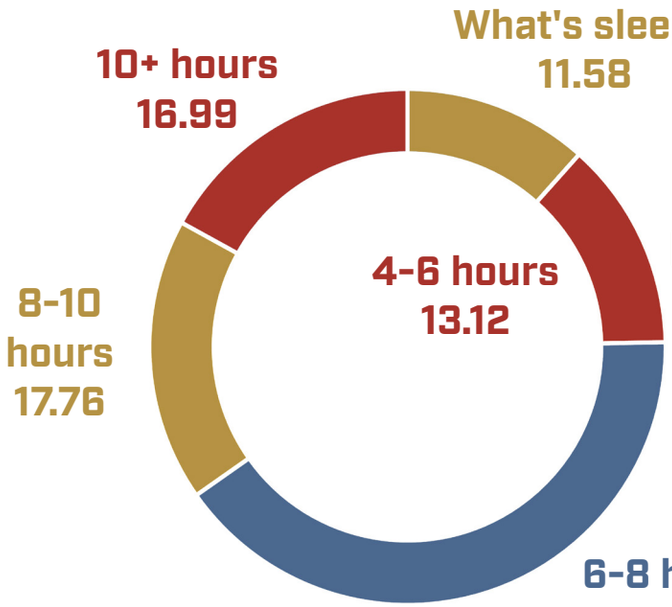



Alejandro Yankelevich
Alice Zhai
Amy Zhai
Benjamin Zhao
Amy Zhou
Anne Zhou

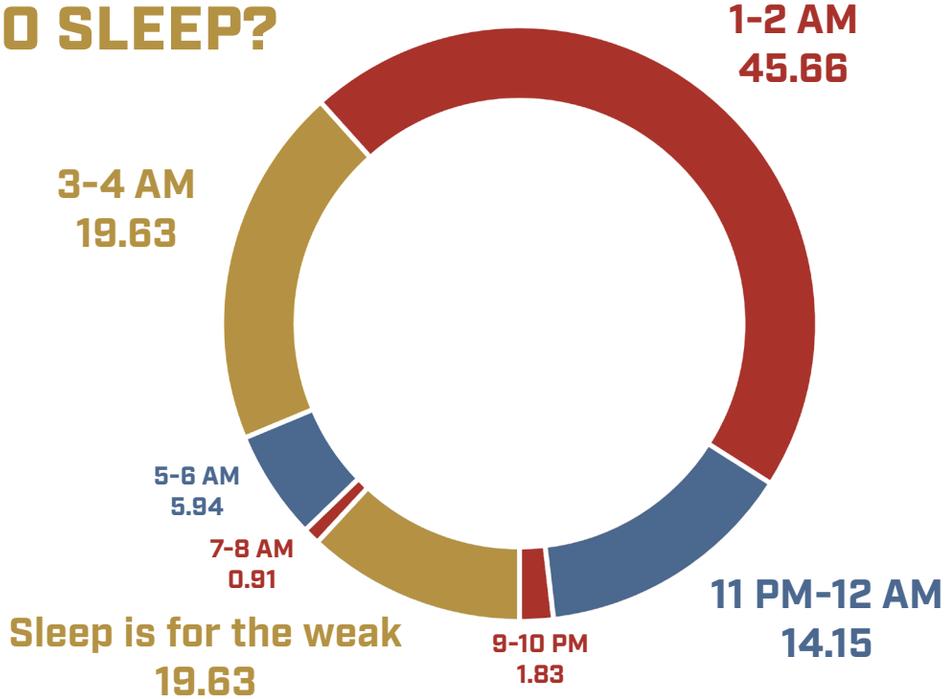
Preston Zhou
Kavya Sreedhar

NOT PICTURED:
Nicholas Choquette
Yongkyun Lee
Crystal Liang
Kyle Martin
Anusha Pai Asnodkar
Alison Ren
Runzhong Zhang

HOURS OF SLEEP THAT CALTECH STUDENTS GET



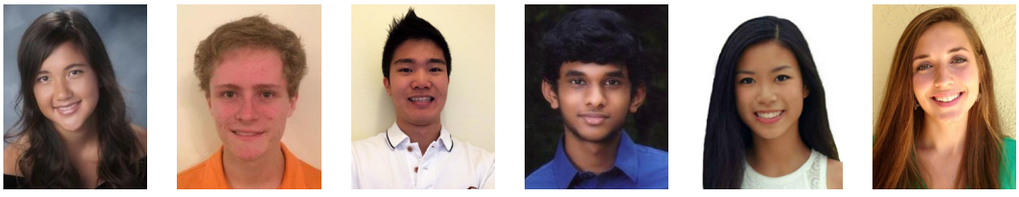
WHEN DO CALTECH STUDENTS GO TO SLEEP?



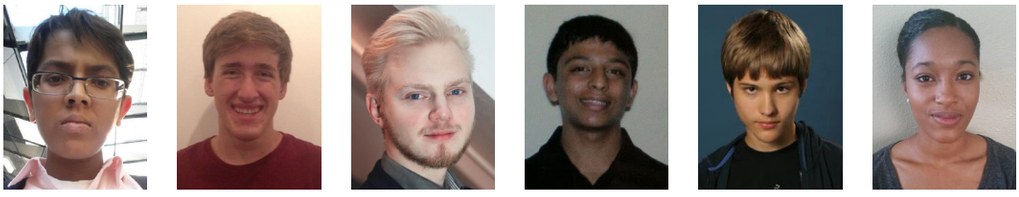
CLASS OF 2018

Carson Adams
Gavy Aggarwal
Avinash Agrawal
Junedh Amrute
Guangning An
Aaron Anderson

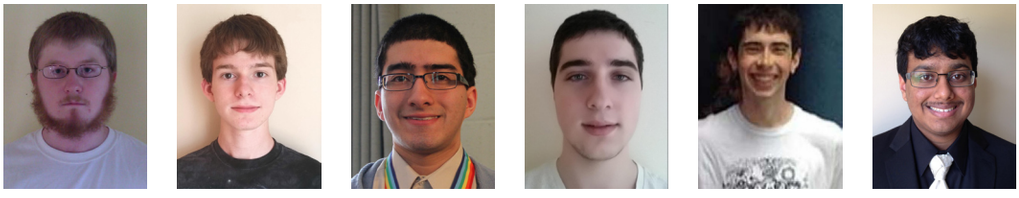
Sarah Antilla
Richard Antonello
Fabio Arai
Naveen Arunachalam
Beatriz Atsavapranee
Caroline Atyeo



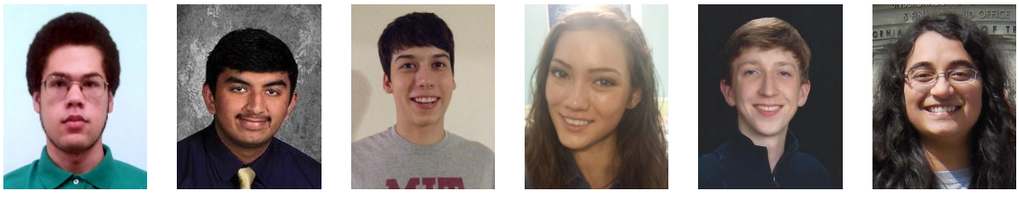
Adrian Avalani
Henry Baer
Eigil Bagger
Ashwin Balakrishna
William Ballinger
K'Yal Bannister



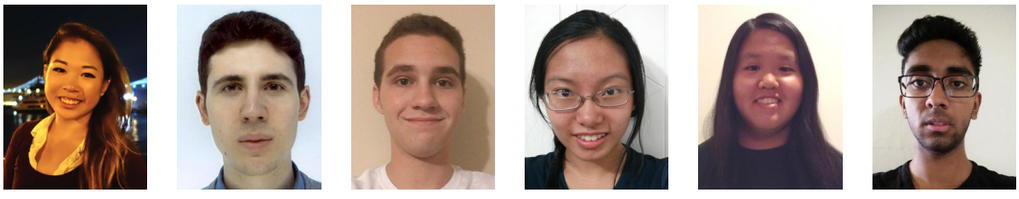
Sam Bardwell-Evans
Nathan Barton
Victor Baules
Frederick Berl
Marcus Bintz
Arjun Bose



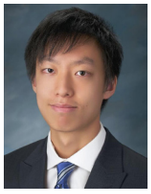
Alexander Bourzutschky
Kabir Brar
Alex Brinson
Robin Brown
Ryan Burns
Nina Butkovich

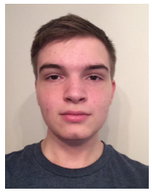


Sarah Cai
Mattia Carrera
Thomas Chaffee
Chen Chang
Annie Chang
Advitheey Chelikani

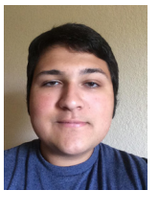


Vinciane Chen
Kathleen Chinetti
Sunghoon Choi
Yunsang Choi
Timothy Chou
Anneline Christensen

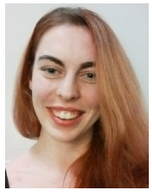




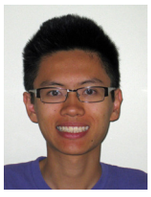
Edward Chu
Ya Lun Chuan
Jonathan Clements
Daniel Cushey
Roohi Dalal
Artsroun Darbinian

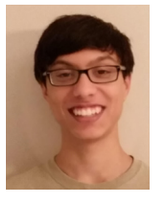


Collin Davda
Joshua Dements
Sarah Deretic
Anant Desai
Uma Dingankar
Stephen Dolbier



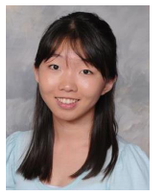
Joseph Donermeyer
Anne Dorsey
Christopher Dosen
Alison Dugas
Cameron Earl
Angel Elizondo



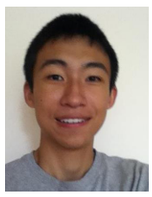
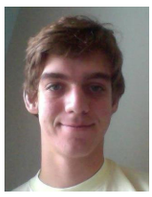


Robert Eng
Alix Espino
Marlon Facey
Jared Filseth
Devi Ganapathi
Siva Gangavarapu

Paige Gannon
Amanda Gao
Daniel Gawerc
Alex Geffner-Mihlsten
Mark Gillespie
Miguel Gonzalez

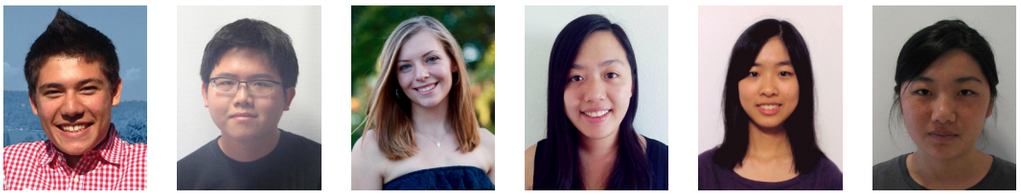


Ashay Gore
Arjun Goswami
Kshitij Grover
Stephanie Gu
Katherine Guo
Gloria Ha

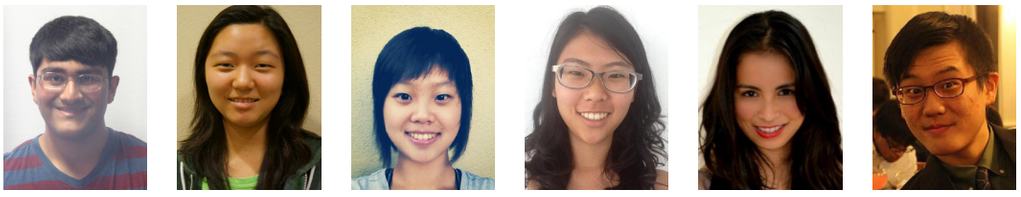
Christopher Haack
James Hamilton
Ashwin Hari
Kevin He
Erich Herzig
Olivia Hindera

Alec Ho
Young Hong
Caroline Howard
Jenny Hsin
Ching Hsu
Audrey Huang

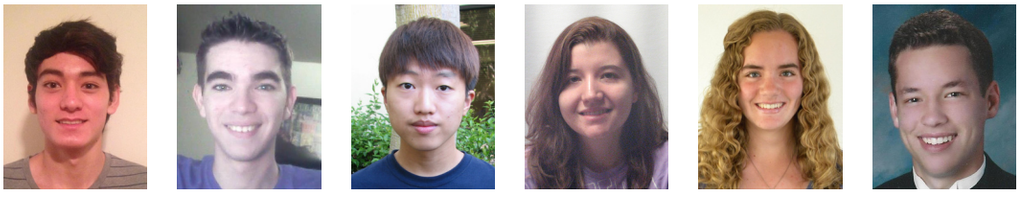


Ida Huang
Jason Huang
Stephanie Huard
Oriel Humes
Nicholas Hutchins
Daniil Ilyin

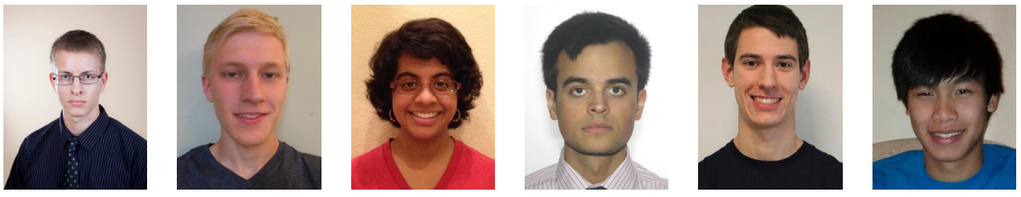
Ryeen Islam
Janice Jeon
Cynthia Jiang
Yiwei Jiang
Sachi Kamiya
Andrew Kang



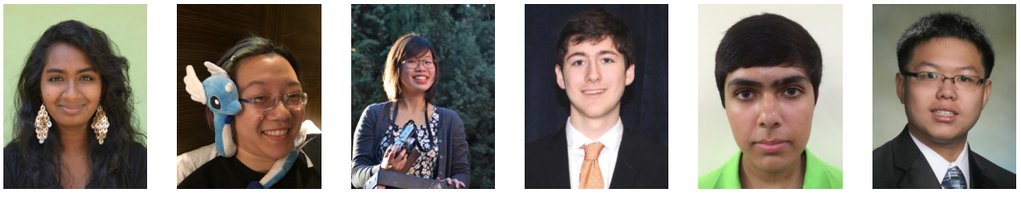
David Kawashima
Matthew Kempster
Kun Kim
Katherine Knox
Gillian Kopp
Joel Kosmatka



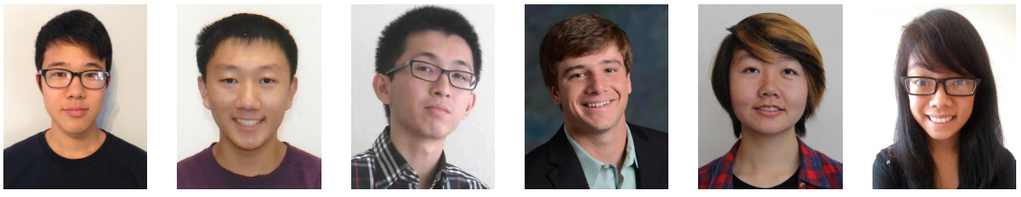
Giacomo Koszegi
Ian Kuehne
Anita Kulkarni
Varoon Kumar
Peter Kundzicz
Lokbondo Kung



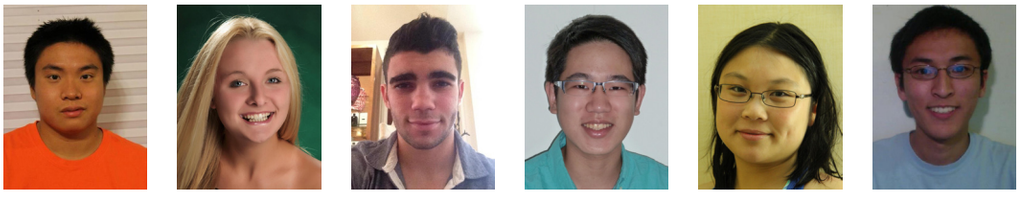
Abirami Kurinchi-Vendhan
Shari Kuroyama
Stephanie Kwan
Frederick Lake
Karim Lakhani
Brian Lee

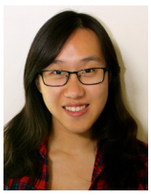
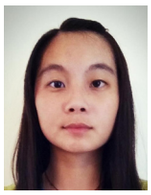


Joon Lee
Richard Lee
Wen-Hua Lee
William Levine
Jessica Li
Amanda Lin

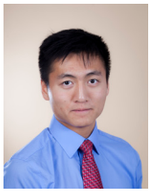


Hanzhi Lin
Sierra Lincoln
Zachary Lipel
Phillip Liu
Sandra Liu
Timothy Liu

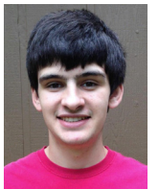


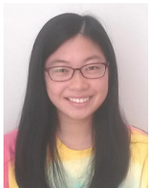
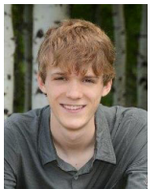



Ethan Lo
Peter Lommen
Parker Lowe
Michaelangelo Lucas
Catherine Ma
Yuan Ma

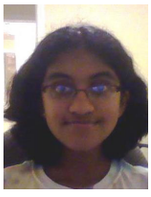


Francesco Macagno
Mason Macdougall
Chanukya Malla
Avery Marshall
Richard May
Neil Mcblane



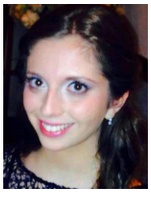
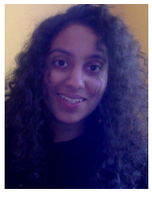



Christopher Mccarren
Alexander Meiburg
Mayra Melendez
Nicholas Meyer
Emily Miaou
Tyler Middleton

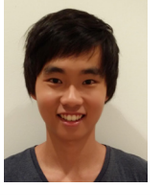


Jiseon Min
Catalina Miritescu
Anvita Mishra
Sarang Mittal
Amulya Mohan
Jisoo Mok

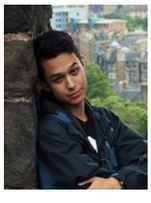
Daniel Molina
Aadith Moorthy
Rachael Morton
Eric Moseley
Tristan Murphy
Zane Murphy

Suraj Nair
Jessica Nassimi
Anusha Nathan
Noah Nelson
Aishwarya Nene
Rachel Ng



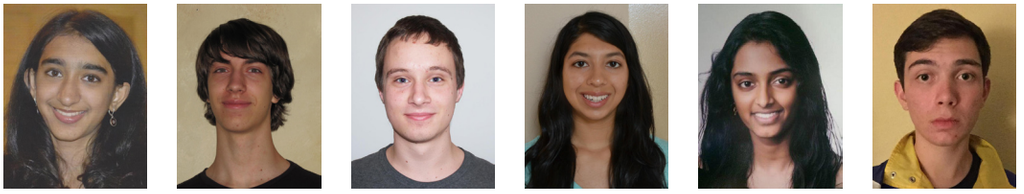
Sandra Ning
Leslie Nitsche
Willis O'Leary
Tynan Ochse
Pedro Ojeda
Masaharu Ono



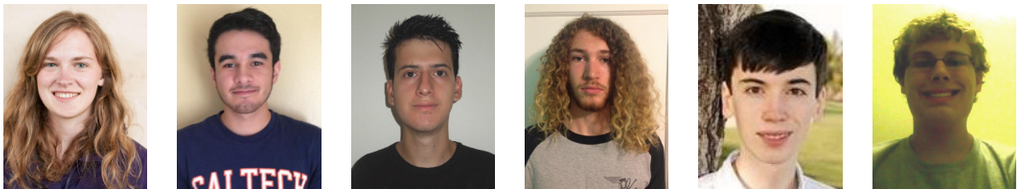
Ciara Ordner
Jeffrey Orenstein
Mizing Paloian
Sarah Pearce
Allison Penn
Tyler Perez

Avikar Periwal
Preethi Periyakoil
Eduardo Plascencia
Zachary Polizzi
Nikhita Poole
Anshul Ramachandran

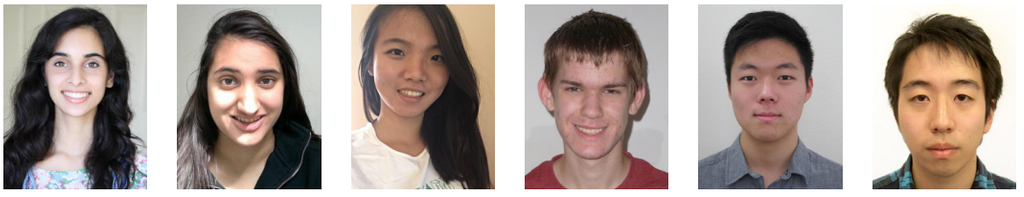
Meera Ramakrishnan
Preston Rasmussen
Gregory Rassolov
Anushka Rau
Namita Ravi
Peter Renn



Carly Robison
Roel Rodriguez
Camilo Saavedra
Drew Schaffer
William Schmidt
Joseph Schneider



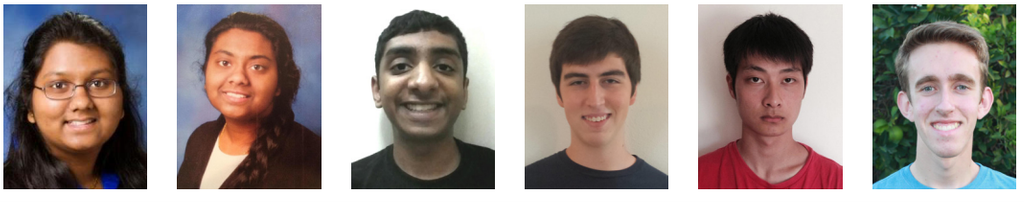
Tara Shankar
Ankita Sharma
Ruoqi Shen
Thomas Sheridan
Dennis Shim
Eisuke Shimizu



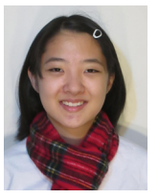
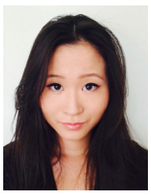
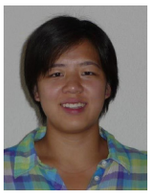
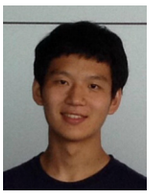
Kevin Shu
Kirby Sikes
Ayaana Sikora
Jason Simon
Tomas Soltinsky
Rita Sonka

Jacob Stark
Matthew Strong
Spencer Strumwasser
Paul Suffoletta
Garret Sullivan
Gabrielle Tender

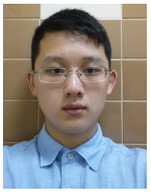
Kisha Thayapran
Narmada Thayapran
Anish Thilager
Julian Thomassie
Boyu Tong
Nicholas Trank

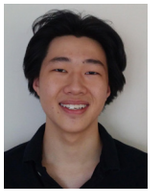


Junno Tseng
Greta Tuckute
Daniel Valles
Eugene Vaughan
Malavika Venkatesan
Ruomeng Wan

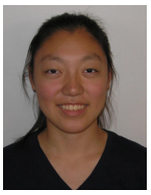





Audrey Wang
Beiyi Wang
Erin Wang
Yuankun Wang
David Watson
Laura Watson

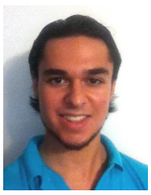
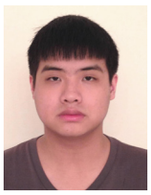


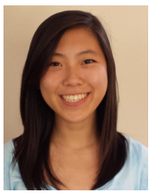


Matthew Weidner
Lucille Wells
Anna Winnicki
Bismark Wong
Kelly Woo
David Wu

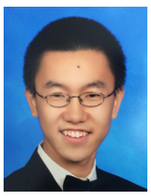
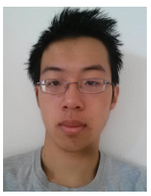


Yeyuan Xin
Yixiao Yan
Sherrie Yang
Grace Yao
Dennis Yatunin
Kevin Ye

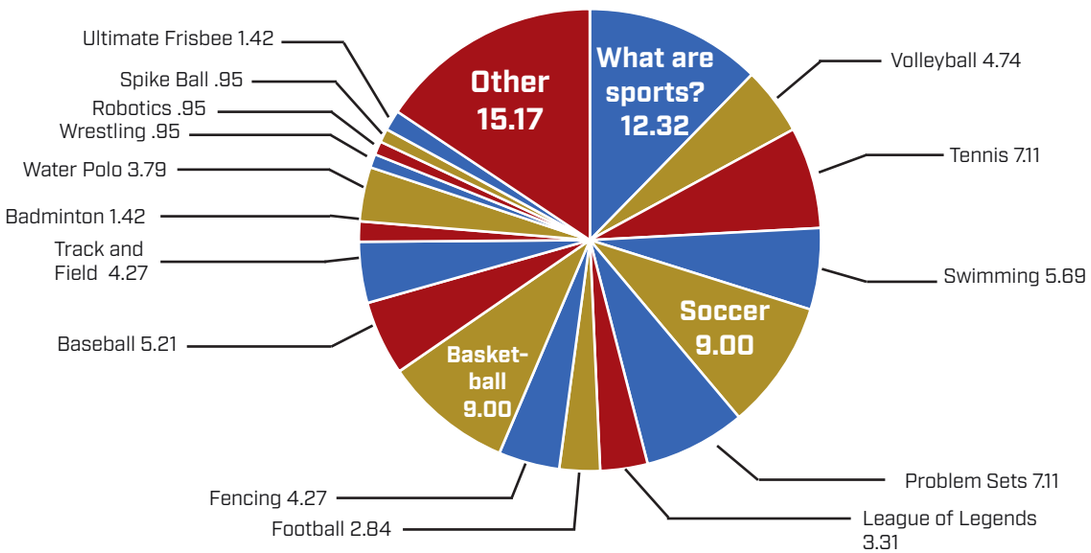


Samuel Yee
Brian Zdeb
Max Zhan
Celia Zhang
Tiffany Zhang
Albert Zhao

Christopher Zhen
Licheng Zhu
Haojie Zhuang
Vincent Zhuang

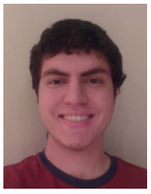
Favorite Sports For Caltech Undergraduates



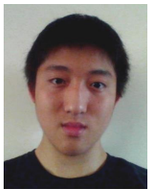
NOT PICTURED:
Bravo-Escudero, Eduardo
Nelson Chou
Hong Chung
Radmila Dancikova
Serena Delgadillo
Egon Einoder
Christopher Gheorghiu
Stefan Grampp
Yi Gui
Jeana Hayashigawa
Nikhil Krishnan
Xinyao Liu
Andrew Lucas
John Mcdaniel
Yu Nam
Vincent Park
Alexa Parker
Kira Pyronneau
Vishveshwas Ramanathan
Zhi Ren
Brandon Robinson
Alec Sands
Anusha Sinha
Nicholas Tillotson
Rithwik Vedati
Benjamin Wade
Margaret Walter
Michelle Wang
Ruyue Xu

CLASS OF 2017

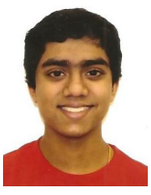
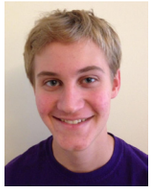
Jacob Abrahams
Kushal Agarwal
Pallavi Aggarwal
Yury Aglyamov
Jagriti Agrawal
Roshan Agrawal



Saaket Agrawal
Nasser Al-Rayes
Cole Allen
Jeffrey An
Ritwik Anand
Alexander Anferov



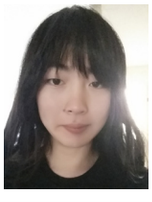
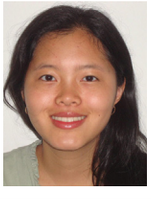
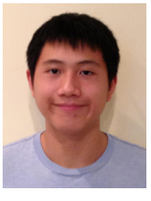
Luc Angel
Katie Antilla
Diana Ardelean
Manasa Ashok
Rahul Bachal
Bolton Bailey

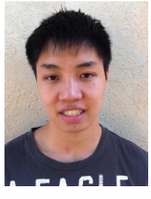



Benjamin Bartlett
Rohan Batra
Michael Bauer
Moriah Bischann
Aritra Biswas
Fabian Boemer

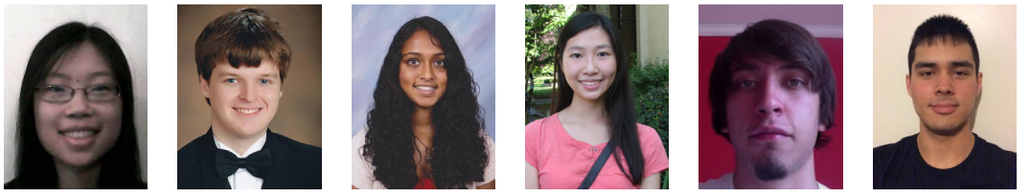
Jordan Bonilla
Mary Boyajian
Christopher Bradley
Alec Brenner
Eugene Bulkin
Nicholas Buoniconti

Slava Butkovich
Lyra Cao
Nancy Cao
Kai-Tang Chang
Kalyn Chang
Kevin Chang

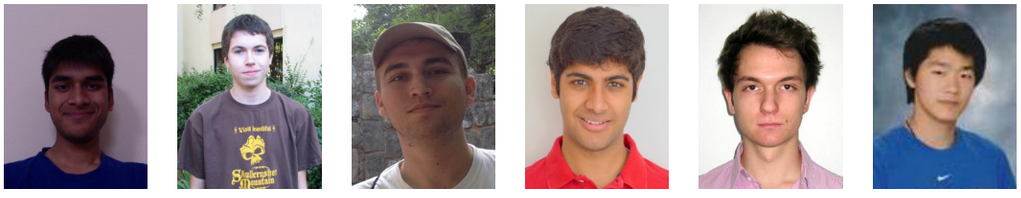


Caitlin Chen
Ching-Hwa Chen
Kevin Chen
Lily Chen
Lucy Chen
Sophia Chen



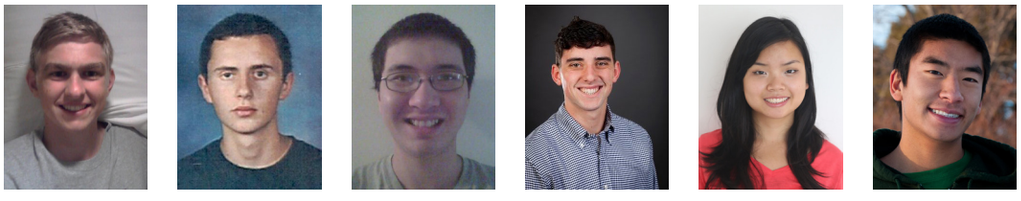
Yintong Cheng
Andrew Chico
Archana Chintalacharuvu
Christine Chou
Andre Comella
Paulo Costa

Adrian Costantino
Christopher Couste
Melissa Cronin
Connor Crowley
Marco Cruz Heredia
Bailey Da Costa



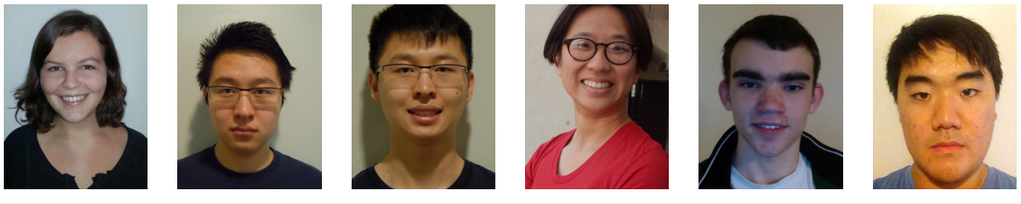
Shival Dasu
Evan Davis
Ryan Dempsey
Nishant Desai
Bogdan Dimitriu
Leon Ding

Mary Do
Avishek Dutta
Matthew Edwards
Henry Elbaum
Benzi Estipona
Katherine Evans



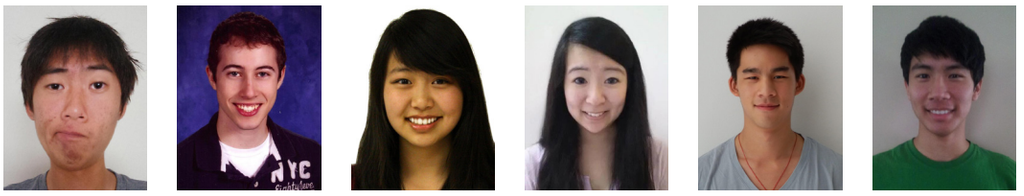
John Feist
Michael Feldman
John Galden
Patrick Galliani
Amanda Gao
Kevin Gao

Albert Ge
Temesgen Gebrekristos
Jaden Geller
Evren Gokcen
Carlos Gonzalez
Jalen Green

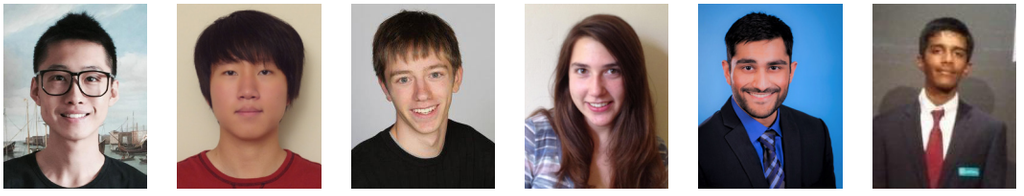


Mara Green
Daniel Gu
Jeffrey Gu
Songshan Guo
Nicholas Haliday
Sirus Han

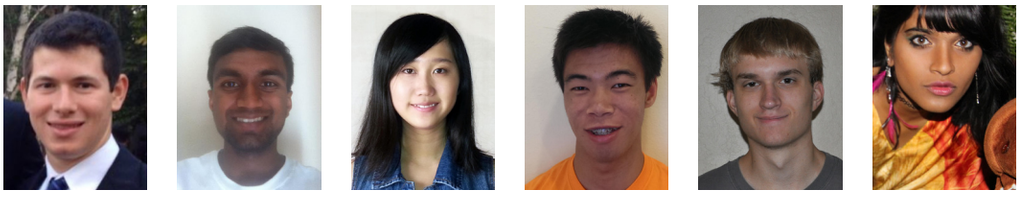
Victor Han
Jacob Harmon
Jianing He
Vivian He
Patrick Hsu
Richard Hu



Tianyi Hu
Seong Im
David Inglis
Erin Isaza
Ryeen Islam
Vasant Iyer



Harrison Jacobs
Shubhankar Jain
Tiantian Jiao
Matthew Jin
Michael Johnson
Bhavana Jonnalagadda

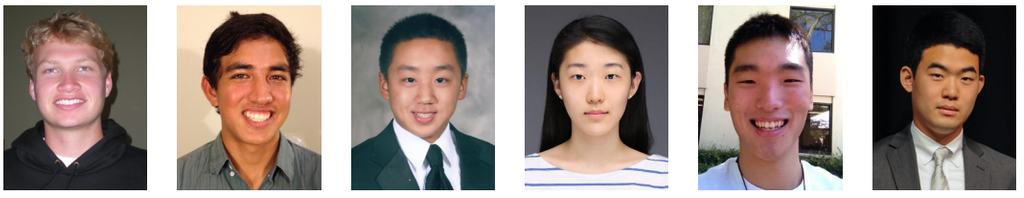


Jonathan Joo
Zofii Kaczmarek
Juliana Kew
Hyun Kim
Jaebin Kim
Seohyun Kim

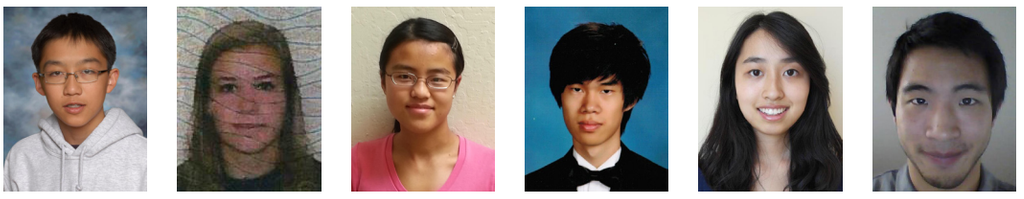
Won Kim
Young Kim
Kai Kirk
Nand Kishore
Milica Kolundžija
Ross Koval

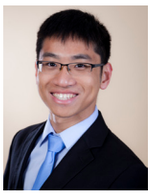
Ankit Kumar
Neil Kumar
Netgie Laguerre
Luke Lango
Jake Larson
Minh Le

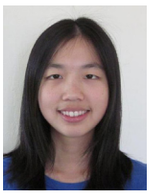
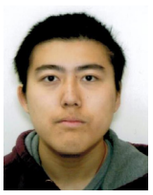
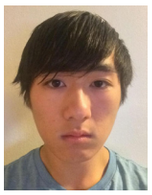
David Lebaron
Morgan Lebby
Connor Lee
Ga Lee
Lawrence Lee
Yoon Lee



Justin Leong
Kate Lewis
Jessica Li
John Li
Lauren Li
Halston Lim





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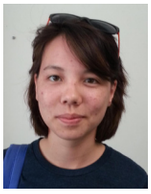
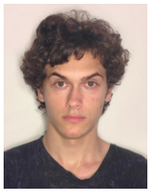
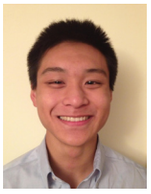

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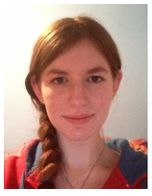

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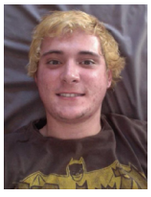

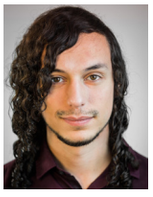

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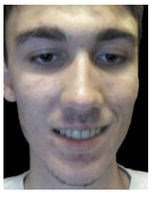

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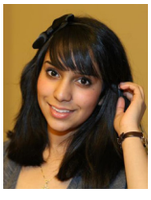
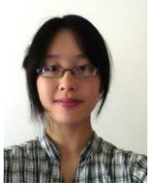

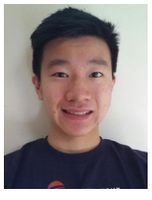

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Xinyi Nan
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Suchita Nety
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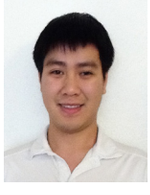

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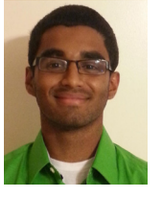

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David Peña
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Federico Presutti
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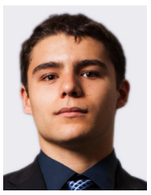
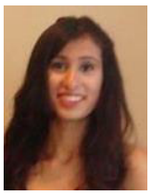

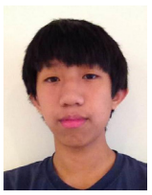

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Joseph Roddy
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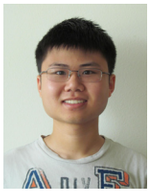
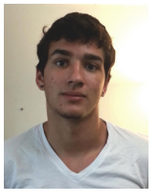

Alexander Ryan
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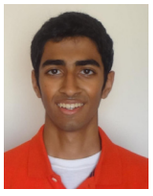
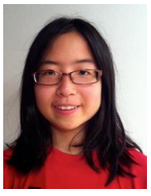
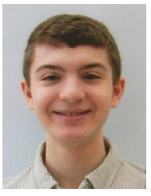
Yuka Sakazaki
Robert Sanchez
Graham Schmidt
Kyle Seipp



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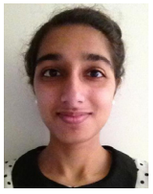

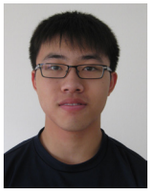

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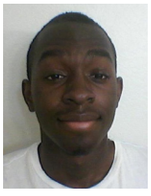

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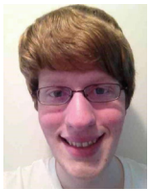

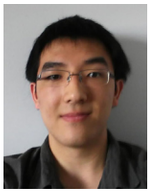

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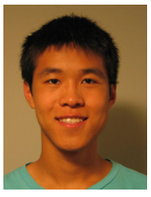

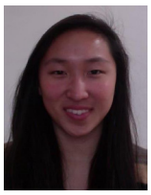

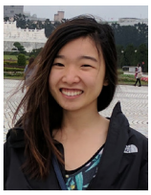

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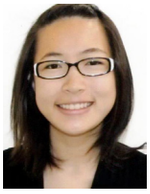
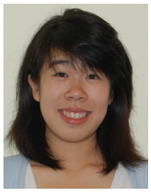
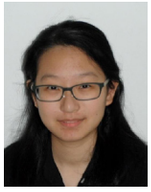

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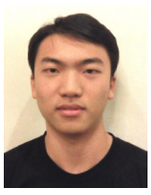
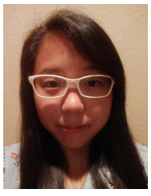
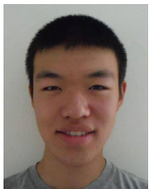
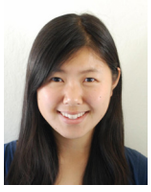



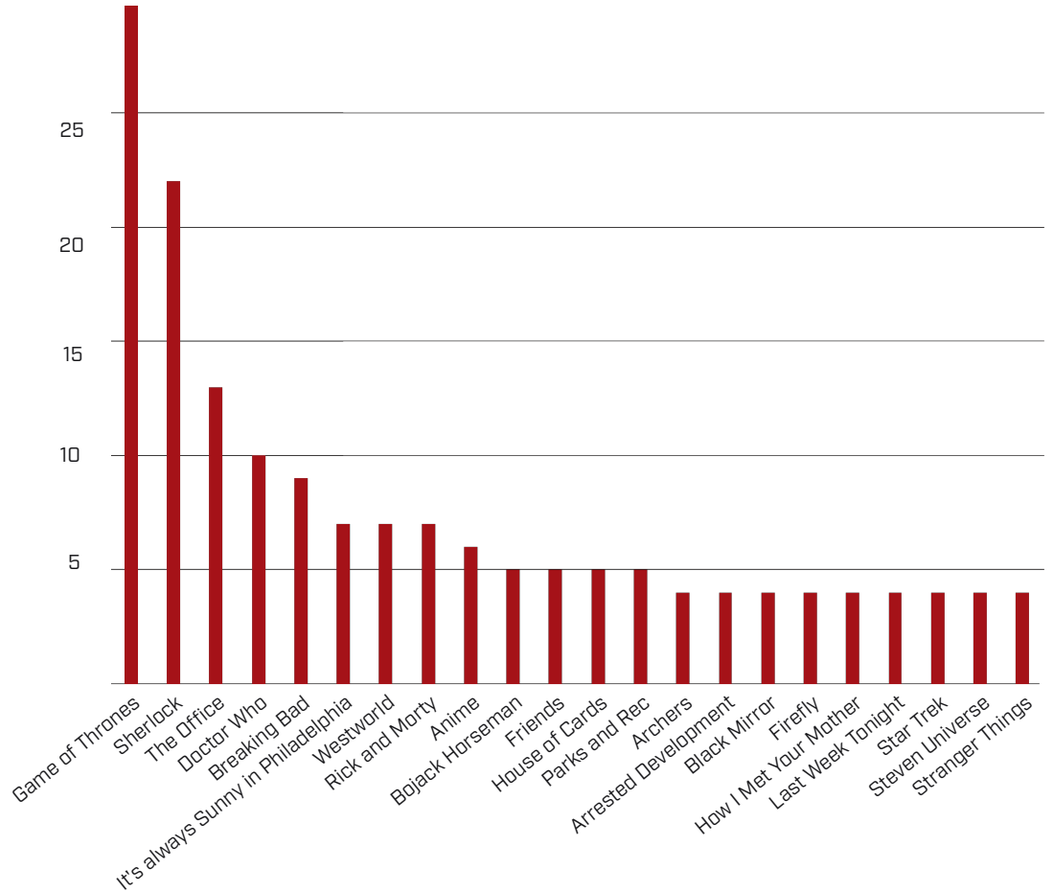



Yizhen Yu
Yi Yuan
Dominic Yurk
Sasha Zemsky
Frank Zhou
Yanbing Zhu

Berk Özdalyan

NOT PICTURED:
Elliot Ahn
Alexander Barreiro
Daniel Chou
Martin Fabbri
Cody Han
Ali Harb
Christopher Hazard
Morgan Hill
Stephanie Hong
Myra Interiano
Joon Kim
Harrison Krowas
Jiaxin Li
Yicheng Li
Anthony Lutz
Ishan Mehta
Ismael Mireles
Kyung Park
Andre Ramos
William Rieger
Roel Rodriguez
Elizabeth Schroder
Elizabeth Terlinden

Popular TV Shows



LETTER FROM THE EDITOR

I'M NOT GOING TO LIE: this was a hard year. Last year's editors, while they definitely made the book better than it had ever been before, left the *Big T* in tens of thousands of dollars in debt, with last year's book unfinished and unpublished, no resources, and a grand total of zero returning staff members. When ASCIT appointed me editor, I had no idea what I was getting myself into: I had no yearbook experience, and what leadership experience I did have was leading fifth graders through science projects. I had to spend the first part of the year aggressively recruiting staff instead of covering events and planning spreads.

After cobbling together a staff, we had to spend time training them, since most hadn't touched InDesign or Photoshop before. We lost over half of the staff we had at the beginning of the year to attrition, namely the lack of a workspace large enough to accommodate us all at the same time. And, once we finally got going, we faced opposition from the student body – the very people we were trying to make an awesome book for were the same ones going to ASCIT and arguing to de-fund t*he Big T*. I cannot tell you how many emails I got this year interrogating me about when last year's books would come out, why the house pages were cut from 5 to 2, why students who didn't want books were paying dues to keep *the Big T* running, or why we would DARE send out a survey with funny questions to use in the book. Were it not for Mike Wong, who has been something of a yearbook guardian angel, I don't think we would have made it at all.

One of these difficulties, however, turned out to be a blessing: ignorance. Yup, that's right, ignorance. The staff and I, with no experience, had no idea what yearbooks were usually like, so we didn't get stuck in the rut of just doing what had been done before. We did wild stuff like cut photos into triangles and use not 10, not 11, but 10.75 font for our body copy. We did feature stories instead of news reporting, and sorted spreads into sections based not on chronology or the traditional sports/academics/student life scheme, but by sub-themes. We based our entire design scheme on Star Trek (did you catch that?), made custom maps and icons, and chose to cover a few stories that mattered instead of trying to fit everything, regardless of significance, into the book. Would we have done anything like that had we known what we were doing? Probably not. In the end, all that ignorance was a boon because we learned how to do yearbooks in a whole new way. And we've got a lot of crazy, ignorant ideas for next year too.

So, thank you Mike, Joseph, Ziyan, and Sharon. You made the best yearbook Caltech has seen in decades, and you did it despite having to lick boots to scrape up publication funds, the casual disrespect of (some of) your peers, a tiny, dysfunctional publications lab, and being possibly the smallest and least experienced university yearbook staff ever to publish. Although we're only five strong, I couldn't have asked for a better staff. Thank you for putting in the hours, learning new skills, writing copy you really didn't want to write, and dealing with my sometimes unconventional leadership style. I'm looking forward to another year of long nights, orange chicken binges, and stupid memes with all of you. I'd also like to thank Half and Half Boba, the unofficial sponsor of the Caltech yearbook and possibly the only thing keeping us all sane.

As far as you go, reader, readers, whoever you are – I hope you liked the book. For all of my bitterness over people wanting the yearbook gone, there's a logic behind that kind of thinking. For years, *the Big T* has been an afterthought. Until the last editors took over three years ago, the book wasn't even designed by students: it was a black and white photo book with no copy or captions, and only the house pages had any trace of student involvement. Of course people would get tired of paying for a product like that. We wanted, more than anything else, to make this book something that people would actually want, whether or not they were featured in the book themselves. That's why we focused on feature stories rather than simply reporting on the existence of various clubs and academic divisions: we wanted the book to be fun to read and to look at, not just a glorified catalogue of sports teams and acapella groups. Only you can say for sure if we were successful, but if I had to bet, I'd say we went beyond expectations.

Until next year,

Elise M. Cutts

Editor-in-Chief

ELISE CUTTS

EDITOR-IN-CHIEF

COLOPHON

The 2017 *Big T* was created on three Dell workstations in Room B134 in the Student Activities Center at the California Institute of Technology and staffers' personal laptops. Software used: Adobe InDesign and Photoshop (CC and CS6). The staff utilized four Nikon and one Canon DSLRs to take photographs. The titles were set in Industry Bold; the body text and captions were set in the Chaparral Pro family of fonts. The swatches were named Kirk (gold), Spock (blue), Montgomery Scotty (red), Khan (brown), and Jaylah (black) after characters from *Star Trek*. The staff would like to acknowledge Corey Mundwiler, our Balfour representative, for supporting our endeavors and helping us renegotiate our contract to publish both the 2016 and 2017 volumes this year.

PHOTOS
MICHAEL WONG

COPY
SHARON CHEN

DESIGN
JOSEPH MIN

COPY
ZIYAN MO

1. I BELIEVE I CAN FLY Graduate student Annelise Thompson soars above the stage during the Caltech Dance Show, bathed in the eerie blue of the stage lights. **2. IN THE SPOTLIGHT** Alison Koontz, a first year graduate student in biology, carries the iconic solo "Another Hundred People" in this year's winter musical: *Company*. **3. BEAUTIFUL BUTTERFLY** Bobby, played by Steve Markham, and June, an airline flight attendant played by Kelvin Bates, flirt over a story April tells about a butterfly during *Company*. The musical broke boundaries this year by holding gender-blind auditions for certain characters, casting Bates in a part usually played by a woman.

2

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A yearbook isn't just a book. It's memory. It's the cannon firing on the last day of term. It's leaving it all on the stage, on the field, or on the lab bench. It's new friends made at 3 a.m. over bad coffee and problem sets who taught us more about who we are than we could have ever found out on our own. And who we are is important.

1. WINNING Senior Chris Bradley, speaking at the athletics awards ceremony, accepts an award for his outstanding career on the Beavers water polo team. This year, Bradley lead SCIAC in goals scored with 103 goals and lead the team with 34 steals, 48 winning sprints, 22 field blocks, and 276 goal attempts. **2. PITCH WELL, CORTLO** "I'm gonna give that pitch some velocity. Pitches looooove velocity." —probably Cortland Perry **3. RITUAL** One explanation for the uncanny success enjoyed by Caltech's tennis teams this year is that they were making ritualistic sacrifices to occult gods. Pictured here in a huddle, it is very possible that the Beavers were planning on sacrificing a frosh to ensure an important win.

We **Pioneer**. We push ourselves and each other to reach new heights and forge new paths. We take the riskier paths to higher summits not because we are told to, but because we want

to. With ambition for a compass and education to fill our sails, we chart our own courses through life, unafraid to cast away from paths well-traveled for opportunities unknown.

SPRING TO LIFE Sometimes, it's easy to forget how beautiful campus is. It's not so easy in spring. Seemingly overnight, barren branches and empty gardens come alive—oranges grow, flowers boom, and the trees are cloaked in brilliant violet blossoms.

We achieve because we **Discover**. We look closely when others stand back, and see the big picture when it is easier to get tangled

ROCK OUT One might be forgiven for thinking the GPS division was offering degrees in music given its ubiquitous presence in campus bands and other music groups. Lee Saper, a graduate student in geology, might be an expert on martian clays, but he rocks out with the jazz band on the trombone at night. Hey—if you don't have an apatite for schist puns, that's not our fault.

up in details. As torchbearers, we carry the light of curiosity and innovation wherever we go, forging the path ahead with the spirits of explorers whether our paths lead to the laboratory, boardroom, or the foot of a volcano.

FLUID DYNAMICS Elise Cutts [19], Dana He [20], and Amy Zhai [19] hold down the three-part solo line in "Bang Bang," backed up by their a capella group, the Fluid Dynamics. Despite being sick during the performance, Zhai hit the impressive high note at the song's climax flawlessly, sending the crowd into a frenzy of cheers.

However, climbing high also sometimes means falling hard. We can go boldly and think bravely only because of the **Courage** of our community. When one of us stumbles, another is there to lend a hand,

CLOWNIN' AROUND The winners of this year's Techstock music festival, The Clowns of Nabla, play a gig at Old Towne Pub close to home, in downtown Pasadena.

hold extra office hours, or make a therapeutic midnight boba run. We support each other even when prospects seem hopeless, and achieve things that wouldn't have been possible alone.

MARS BAR Caltech Dining Services showed off their creative talents for the Caltech Arts Gala, crafting a delicious chocolate astronaut to decorate the desert bar. The Gala showed off the multitude of artistic talent in Caltech's community, from photography to sculpture to chamber groups to "that guitar guy."

This is the end of a year, the end of a yearbook, and, for some of us, the end of a journey. Armed with new **Courage**, a spirit of **Discovery**, and the drive to **Pioneer**, the class of 2017 is ready to start a new adventure, to become the architects of their own futures and the future of the world. For those of us who stay, there is

PERSPECTIVE The audience of graduates, family, and friends gather on the lawn in front of the iconic "wedding cake," Beckman Auditorium.

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still time to learn, to grow, to find our ambition, our creativity, and our heart. But whether this year was the beginning of your Caltech journey or its end, you'll surely agree: this year went **Beyond**.

1. THE REAL PRIZE Dr. Peter Gao, a graduating PhD in planetary science, shows off the piece of paper he was happiest to receive at commencement—a coupon for a free celebratory meal at Ernie's. Ernie's food truck business got his daughter through college and became a fast favorite with the Caltech community. He still values education, and makes sure every new Caltech graduate departs campus on a full stomach. **2. CHEERS** These Pageboys would like to personally thank champagne for getting them through four years of Caltech.