The California Tech

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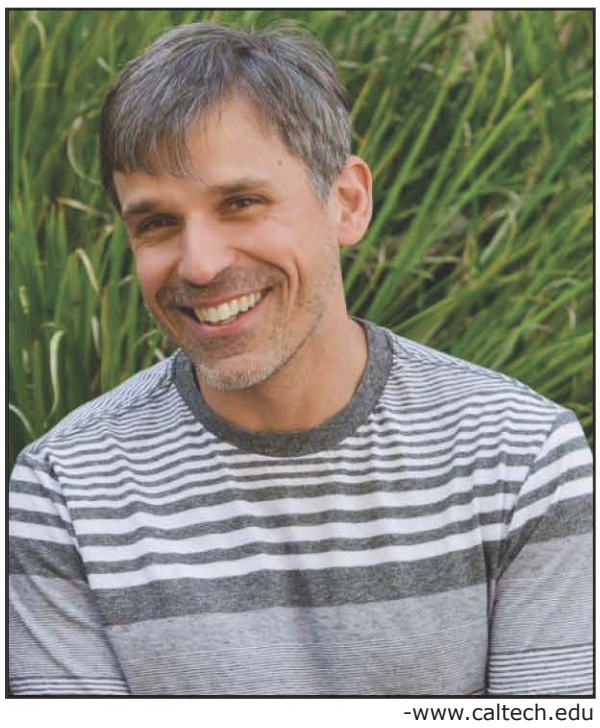
Jonas Peters researches chemical transformations for food, fuel

JESSICA STOLLER-CONRAD
Caltech Today

Many science disciplines are dedicated to investigating naturally occurring curiosities that have yet to be explained. However, in the laboratory of Jonas Peters, researchers must first create the curiosities they'll study—in the form of new chemical compounds and molecular configurations. Peters's research with the Joint Center for Artificial Photosynthesis (JCAP) at Caltech is focused on finding chemical compounds that can turn sunlight and water into fuel—much like the photosynthetic processes used by plants. In addition, his laboratory's interest in nitrogen fixation—a chemical transformation that, ultimately, enables the delivery of nitrogen to the molecules of life (DNA, RNA, proteins)—could one day influence how fertilizer is produced and is used to feed the world.

Peters received his bachelor's degree from the University of Chicago in 1993 and a doctorate from the Massachusetts Institute of Technology in 1998. He joined the Caltech faculty as an assistant professor of chemistry in 1999, became an associate professor in 2004, a professor in 2006, and the Bren Professor of Chemistry in 2010.



-www.caltech.edu

Recently, Peters spoke with us about his research, his childhood, and how a stint as a college football player contributed to his career as an academic.

What are your main research interests?

Our group is interested in the chemical transformations that are relevant to feeding and fueling the planet. There are two efforts on this campus in artificial photosynthesis, and I participate in both. One is the National Science Foundation–funded Center for Chemical Innovation in Solar Fuels (CCI Solar), which we call "powering the planet." Our work here is at the fundamental level of developing the science and the concepts for artificial photosynthesis. In JCAP, our emphasis is more on taking those concepts and applying them to, ultimately, make real prototype devices that would accomplish the goal of delivering liquid fuels via artificial photosynthesis.

What role does your work play in "fueling the planet"?

On the fueling-the-planet side of things, our group is interested in using protons and electrons derived from water for the production of fuel. That fuel could be hydrogen, generated by combining the protons and electrons, or a liquid fuel that instead can be made by adding the protons and electrons to carbon dioxide to make a carbon fuel source like methanol, for example. Our specific interest is in the design of metal complexes that have a high affinity for the substances like CO_2—these metal complexes could then facilitate putting the CO_2 through a desirable transformation instead of an undesirable one.

And how about "feeding the planet"?

To make fertilizer to feed the planet, you need to understand how to redirect those protons and electrons to other really important substances, like the element nitrogen. Industry currently does this using hydrogen and very high pressures and temperatures with a catalyst. And so another big interest in our group is trying to understand and also discover systems that mediate nitrogen fixation [the process by which some soil microorganisms turn nitrogen from the air into ammonia—an essential transformation for all life]. Elsewhere in our lab we are interested in catalyzing reactions that could be important to organic chemists—and ultimately the pharmaceutical industry. One such example is using copper and light to catalyze molecular-bond constructions.

What makes your research unique?

In all of our projects, we try to advance new concepts for catalysis, and to test these concepts. For us, it is the conceptual advance that is intellectually most exciting, rather than the longer-term possible applications. But on a day to day basis, we are also excited about making cool, fundamentally new types of molecules—ones that are just interesting in and of themselves—so that we characterize them and use them to ask interesting chemistry questions. So it's fair to say that while catalysis drives the problems we work on, we're also very interested in making new molecules that push the boundaries of what we know can be made, what we know cannot be made, and why. This has been the essence of chemistry as a discipline for a long time.

What excites you most about your research?

I think what I find most interesting is when my coworkers discover fundamentally new molecules, or an unexpected chemical transformation, that represents a whole new set of possibilities for us to think about and explore.

Something that distinguishes chemistry from a lot of other disciplines is that often chemists create—via the synthesis of new molecules—the problems that they then study. That's certainly true of my research. You can make molecules that are similar to other things you've made, but once in a while a student or a postdoc will come in with something that is fundamentally new and conceptually different, and these moments inspire a ton of ideas that can pave the way for literally years' worth of interesting work. Probably the most exciting moments for me are when students and postdocs open up brand new territory that sort of gets us past a logjam in thinking and instead swimming in an exciting new current.

Can you tell us a little bit about your background?

I grew up in Chicago. My parents have had a remarkably wide range of jobs through the years, but when I was a kid the most memorable was when we had a small diner in the city. I washed a lot of "glassware" there and helped out in various ways. I grew up in the city's North Side, went to Chicago Public Schools, and then went to the University of Chicago for college. So I actually didn't leave the city until I was 22. I played football in high school and for my freshman year in college, and I was really awful.

Ironically though, sports provided a means for me into higher education. I only applied to the University of Chicago because their football coach contacted me, which in retrospect was incredible, given just how bad at football I really was. Without that encouragement, I wouldn't have applied there, because I would have assumed that I wouldn't have been accepted on academic merit. In fact, the dean of admissions there eventually confided to me that I just barely was accepted into their college—just by the skin of my teeth.

Continued on p. 3

In this issue

News briefs from around the globe

Helping readers burst out of the Caltech bubble

Need to know < **100** words about the world this week – topics sorted from good to bad

by *The Tech* Eds

New fund to protect poor	**$140** mil. fund by US & UK to help poor vulnerable to climate in Asia	[WSJ]
New Jersey rebuilds	**13** months after Hurricane Sandy, NJ has repaired most damages	[TIME]
China launches rocket	**1**st robotic lunar rover ("Jade Rabbit") for China launched in rocket	[NYT]
Black Friday sees crowds	**97** million Americans took advantage of Black Friday deals this year	[BBC]
Workers killed in fire	**7** dead in Chinese-owned clothing factory in Italy that caught on fire	[BBC]
Massive pileup in MA	**70**-car accident in MA due to icy roads resulted in at least 35 injured	[CNN]
NYC train derailed	**4** killed, 60+ injured in train derailment caused by speeding in Bronx	[ABC]

Food with Mannion!

Do you like eating food?
How about free food at nice restaurants?
Ever want to tell the world exactly what you think of said food?
The Tech will be beginning a new column to chronicle the foodie experiences of new writers every other week...The Catch: They'll be going head-to-head with Tom Mannion who will be reviewing the same restaurant. If you have ever thought you were more of a gourmand than our resident master chef, now's your chance to prove it!
Email us for a spot on the list at tech@caltech.edu

The California Tech

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Last week's ASCIT Minutes*

*(Since there was no meeting during the break)

Minutes for November 19, 2013. Taken by Catherine Jamshidi

Officers Present: Zach Rivkin, Connor Coley, Malvika Verma, Connie Hsueh, Michelle Tang, Catherine Jamshidi

Guests: Connor Rosen, Margaret Lee

Call to Order: 9:05pm

President's Report (Zach):

- In my candidacy statement from April, I advocated for student leadership to take a level headed approach with the administration and focus on increasing student mental health resources. The process has usually been successful, and the most recent and largest accomplishment is an evening hours pilot program. After half a year of civil discussions with Kevin Austin, Leslie Nye, Tom Mannion, Anneila Sargent, John Dabiri, plus many other invaluable participants, along with a recent hardline passionate Faculty Board presentation, a limited evening hours trial will go into effect until the end of this academic year. This is an incredible step forward for the Caltech safety net and auspiciously points towards a positive shift in relations between students and student affairs. I hope to see further improvements during the next half of ASCIT's term and in the years ahead. Significant thanks goes to those mentioned above along with the student leadership, the Head UCCs, and especially to the IHC Chair Connor Coley for spending an innumerable number of hours and offering constant support through the entire process.
- Club funding has been completed.
- The ASCIT retreat and midyear reviews occurred. Survey responses were very helpful for framing discussions and supplying appropriate feedback.

Officer's Reports:

- **V.P. of Academic Affairs (ARC Chair: Malvika):**
  - Meeting with Provost Online Education Committee
    - Flipped classroom vs. online courses
    - Faculty don't want to dumb down standards
    - Concrete proposal: CS0
  - The second Student-Faculty Lunch was this past Thursday. We have continued to see a large amount of interest in this program from both students and faculty.
  - The ARC is interested in adding a compliments section to the ARC Concern Box on Donut.
- **V.P. of Non-Academic Affairs (IHC Chair: Connor):**
  - The IHC is working with Jon Webster and Dining to enter nutrition information of food options. If you're interested in helping us with data entry (for some money), send me an email. We'll likely begin around winter break.
  - Invite your professors to your house dinner! It's a great way to get to know them in a non-academic context.
- **Director of Operations (Connie):**
  - Remember that you can still register a new club anytime! Apply at clubs.caltech.edu
- **Treasurer (Monica):**
  - We finished Club Funding and I will be publishing the breakdown of the 2013-2014 budget on Donut.
- **Social Director (Michelle):**
  - The Ice House comedy show event will likely be made a termly event.
  - Page Interhouse: Daft Punk was this past weekend.
  - The Wallpaper. concert will be Friday, December 6th, at 9PM on Bechtel Mall (just west of Millikan).
    - There will probably be an after-party (details to follow) with a Snap Yourself! Photo booth.
- **Secretary (Cat):**
  - Connor Rosen and I have created a follow-up survey to gauge trends in feedback on the student experience. It should take no more than 5 minutes to complete and there will be several Amazon Gift Cards awarded to randomly selected people who responded to the survey. Go fill it out!!
  - I sent out all of the club funding decision emails and tried to provide reasoning for our decisions. If any clubs have any questions, please do not hesitate to ask!
  - I'm working to schedule ASCIT meetings for 2nd term.
  - I've posted all of the recent minutes on the Donut Website and have compiled a list of action items to follow-up on for each BoD member.

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

Meeting Adjourned: 10:53 pm

Caltech Y Column: Look out for new events

PHOEBE ANN LAURA SANTOSO
Contributing Writers

Hi everyone! This is the Caltech Y Column, designed to inform you about the Y and the opportunities we provide for you to inspire your passions, whether by participating in our programs or leading your own!

Upcoming Events:

1. Ice Cream Competition!

South Houses: Wednesday | December 4th | 6:30-8:00 p.m. | Caltech Y

The Caltech Y is hosting a Fosselman's Ice Cream Competition among the houses, sponsored by Tom Mannion! The houses will be competing to create the best flavor of ice cream, and the winner will get their ice cream flavor featured at CDS dinners in addition to $2000 for the house retreat fund. The other semifinalist will win $1000, and there will be additional prizes from the Caltech Y.

2. The Caltech Y Science and Policy Series presents: A Discussion with Professor Susan Hackwood

Tuesday, Dec 3rd | 12-1:30 p.m.| Avery Library | Lunch is provided, but space is limited | Priority is given to students

Susan Hackwood is a professor of electrical engineering at the University of California, Riverside and the Executive Director of the California Council on Science and Technology (CCST). After naming the electrowetting effect while working at AT&T Bell Labs in the 1980s, she became the founding Dean of the Bourns College of Engineering and consequently the first woman dean of a US major research university.

In addition to her academic research in cellular robotic systems, Dr. Hackwood has continually acted on her strong interest in science policy through initiatives such as the Center for Environmental Research and Technology, by chairing AAAS committees, and now through heading the CCST that advises the state of California on all aspects of science and technology from biotechnology to intellectual property.

Please join us for a Q and A discussion with Dr. Hackwood after a brief introduction to her accomplishments and experiences. Please be aware that participants are expected to stay for the duration of the event. Lunch is provided.

To sign up, please visit http://docs.google.com/forms/d/1gOA80KwhgGtVoVPq-WOACqsliFFBhpu0aCHrRZtaVM0/viewform.

The Caltech Y Science Policy Series provides an opportunity for interested students to interact with those who have played a role in the formation or implementation of science policy in order to promote understanding and engaged responsible citizenship. Please contact kluxem@caltech.edu if you have questions. The series was made possible with generous support from the George Housner Fund.

3. Adventure 101: Winter Sports in Southern California

Friday | December 6th | 12:00 noon

Are you looking for some fun and local winter activities, but think that Southern California only offers summer sports? Think again!

Did you know that there are actually six ski areas within two hours of Caltech, and you can even see one from campus?

Come find out about all different types of winter sports activities here in Southern California at the next Caltech Y Adventure 101 talk.

Space is limited and lunch is provided so sign up is required. Location details will be included in your confirmation.

Signuphere:https://docs.google.com/forms/d/1w4R1VsUlhEm_YpgNOnRTwMvXx5-uQQWv0z6a5yQiQUg/viewform

The Adventure 101 lunch series is designed to introduce opportunities and information that can help students expand their adventure repertoire. The Caltech Y offers many outdoor adventures, organized and led by Caltech students and open to all, from the novice to the seasoned enthusiast. The Y-Outdoors committee is open to any student interested in helping to lead trips – contact caltechy@caltech.edu if you are interested in joining the committee.

If you have any questions at all, feel free to contact the Caltech Y at (626) 395-6163 or caltechy@caltech.edu.

Feel free to drop by at one of our weekly meetings at the Caltech Y (505 S. Wilson, next to CEFCU), Mondays at 12:00 noon. Lunch is provided. Go to http://caltechy.org/lists/ to self-subscribe to announcement lists for upcoming events.

For a student's perspective, feel free to contact Phoebe Ann at phoebe.ann2@gmail.com or Laura Santoso at santoso.laura@gmail.com.

ARC calls on Techers to fill out quarterly TQFRs

MALVIKA VERMA
ARC Chair

Dear fellow Techers,

Short: Fill out your TQFRs! Feel free to see **Long** if you have time.

Long: In a recent survey of undergraduates, we were asked: "What do students think of teaching at Caltech? What could be done to improve teaching quality at Caltech (if needed)?" Many of you wrote that the quality varies from professor to professor and from TA to TA. You noted the efforts of the Academics and Research Committee (ARC) and Center of Teaching, Learning, and Outreach (CTLO) that have been persistent but not 100% effective. You all agreed that students know how they learn best and believed that student feedback would help a lot, but only if professors actually read the responses.

We have many outlets for student feedback in our courses– ombuds in your houses, the ARC, TAs, the CTLO, and even the professors themselves. For short-term changes in your courses, you should use some or all of these. But, in the long-term, collect and remember all your thoughts for the course and put them in your Teaching Quality Feedback Report (TQFR). Professor John Dabiri, chair of the Faculty Board, was a graduate student at Caltech and is one of the most popular professors here. He lives in Avery as a Faculty in Residence (FIR). Professor Dabiri says, "Aside from my own midterm questionnaires that I ask the students to complete, the TQFRs are the main tool I use to improve my classes from year to year. Although the TQFR feedback comes too late to help the students currently enrolled in the class, it ensures that future classes will benefit from a better course experience."

Sometimes, courses do change hands from professor to professor, and of course graduate students do not stay forever, so TAs change as well. Thus, it's useful to document comments about a course so the new professor or new head TA can read them and design the course to include student feedback.

We are losing to our subordinate institutions (like MIT, Stanford, Harvard, University of Chicago, Princeton, etc.) when it comes to TQFR response rates. It's not even close. Caltech TQFR response rates are consistently under 40%, while MIT is at 65%, Stanford is at 80%, and Harvard is at 90%. This reflects poorly on our desire to learn in the classroom from the best faculty in the world. Like many of you, I sacrificed a conventional college experience (which often includes some Greek Row partying and football games) for the rigorous academic experience that Caltech offers. We're paying a lot of money to be here, and we should demand the best education we can get. The faculty and administration agree as well. They see an increasing TQFR rates as a key step to improving teaching quality.

Professor and Vice Provost Melany Hunt says, "Ed Stolper and I believe it is a high priority for the Institute to encourage and continue to see improvements in the quality of teaching at Caltech. As part of this, Caltech recently established the Center for Teaching, Learning, and Outreach. As a critical component of achieving these goals, we also need student input and feedback (both positive and negative), and we strongly believe that an effective way to get this is if we can achieve high response rates to the TQFR. We can assure the students that this is well worth the effort: the faculty and administration do look at the responses and read the comments."

We have the best faculty in the world. This does not mean they are all the best teachers. But, many of them care about their courses and work with the CTLO and ARC to solicit student feedback. I think professors are really cool people. Some of them even have sleeping habits similar to ours. A lot of them want us to come to their office hours and ask questions and give them feedback on how the course is going. Professor David Tirrell says, "I consider TQFR comments, and other comments from students, very carefully. I don't always agree with what people say, and in any group there will be contradictory views, but even when comments seem to point in opposite directions, it's useful to have a sense of the full range of perceptions of what's going on. During the last week of class in ChE 63a, I pose specific questions that I would like the students to address on the TQFR forms. The questions raise points I am wondering about with respect to the class. For example, do the students feel that the lecture mirrored the textbook too closely (and were therefore redundant or boring) or that there was not enough connection between the two (leaving students to wonder, 'What's really important here?'). I would say that I probably work more problems in class than I would have if I had not asked for student feedback on the value of doing so. In the lab course that I teach with Mike Vicic (ChE 130), we've adjusted the balance between written and oral reports in response to student comments."

The ARC will read the TQFRs for courses we think are under-united and also look out for any comments on vague or "harmful" collaboration policies.

Please make sure you fill out your TQFRs and give thoughtful comments so we can work together and improve Caltech's teaching quality.

Thank you,
Malvika Verma
ARC Chair

Prof. Jonas Peters discusses life outside of research

JESSICA STOLLER-CONRAD
Caltech Today

Continued from pg. 1

What happened with your football career?

I fortunately had some injuries that helped me quit football after my first year, but around that time, I had started to get really excited about lab work. I was not very focused in high school—at least not to the extent that would be helpful if one is going to go the academic route in science—but I managed to clean up my act in college. In addition to getting really excited about what I was learning in my courses and also the lab, what probably made me focus on schoolwork in college more than anything else was the shocking sum of money I knew my parents were forking out for me to go to the University of Chicago.

Guilt is powerfully motivating. It was not at all easy for them to pay those bills, but they were willing to do it and rarely complained. I was very lucky, and after a year or so that luck translated into innate interest and excitement about science, and chemistry in particular.

How did you get interested in chemistry?

That's an interesting story, because my first chemistry class in high school was a disaster. I was 15, and was too preoccupied with other things at the time. When I got to college and took the core chemistry classes, I discovered that I had an aptitude for them that I didn't realize I had. Once I realized that, I began to get a lot more confident and excited about chemistry.

What drew me irreversibly into chemical research was linking up as an undergraduate with a wonderful research mentor who helped me realize how exciting research is, and what a wonderful community was there to embrace me if I just made the effort.

Do you have any other interests outside of your chemistry research?

For a few years, I had a bit of a baseball career here in L.A. I was a member of two teams in the Los Angeles Baseball League called the Mudskippers and the Christmas Bail Bonds Cardinals. I'm on temporary retirement until my son finishes his baseball years, but I fully expect to return as a player/manager some day; right now, I'm coaching my son's T-ball team.

I really enjoy gardening; that's probably one of my favorite things to do day to day, in addition to going for runs in the area.

Ad hoc faculty-student committee announced

JOHN DABIRI
Chair of the Faculty

Professor Anneila Sargent (Vice President for Student Affairs) and I have coordinated to form an ad hoc Faculty Board committee to examine undergraduate self-governance at Caltech in the context of the Honor Code, with a view toward increasing mutual understanding among the students, faculty, and administration at Caltech. This new committee will place particular focus on issues relevant to the House system, as a complement to the ongoing committee chaired by Professor John Hall that focuses on academic issues. The ad hoc Committee on Undergraduate Self-Governance is led by Professor Paul Asimow and is comprised of four other faculty (including an undergraduate alumna), four student leaders, and four key staff from across campus. My charge to the committee is reprinted below. Feedback for the committee can be sent to the chair at asimow@gps.caltech.edu.

Committee Charge
December 1, 2013

As Chair of the Faculty, I appoint this ad hoc committee to review the policies and procedures that facilitate undergraduate self-governance at Caltech, and to formulate recommendations to enable this tradition to be sustained. Although the charge is inherently broad, I ask that, among the many topics that may be addressed, you specifically formulate a recommendation for a procedural structure for implementation of the Honor Code as it applies to non-academic issues. This structure should respect the role of the undergraduate Conduct Review Committee, the Administration's mandate to enforce Institute policy, and the Institute's obligations to adhere to state and federal law. In instances where procedures currently exist, the committee may choose to simply reaffirm those processes.

Within the context of an overarching governance structure, the committee may wish to address specific issues related to enforcement of Institute policy that have arisen in recent years, e.g. mural policies, pranking, house parties, access to campus facilities such as the steam tunnels, etc.

In your deliberations it is essential that your committee engage substantively with undergraduate Deans Kiewiet, Nye, and Green, as well as with Peter Daily, Assistant Vice President for Housing and Dining, and Tom Mannion, Senior Director for Student Activities and Programs.

I have appointed ex officio members who provide important expertise in topics relevant to this charge. They are full voting members of the committee but may elect to recuse themselves as appropriate.

The committee will formally begin January 1, 2014, and I would be most grateful for a report from your committee by May 15, 2014, so that the recommendations can be considered and potentially implemented by the start of the 2014-15 academic year.

Thank you for your service to Caltech in this important duty, and I will look forward to your report.

With best regards,
John O. Dabiri
Chair of the Faculty
Professor of Aeronautics and Bioengineering

NOMINATE YOUR FAVORITE PROFESSOR FOR THE FEYNMAN TEACHING PRIZE!

Here's your chance to nominate your favorite professor for the 2013-14 Richard P. Feynman Prize for Excellence in Teaching! You have from now until January 2, 2014 to submit your nomination package to the Provost's Office to honor a professor who demonstrates, in the broadest sense, unusual ability, creativity, and innovation in undergraduate and graduate classroom or laboratory teaching.

The Feynman Prize is made possible through the generosity of Ione and Robert E. Paradise, with additional contributions from an anonymous local couple. Nominations for the Feynman Teaching Prize are welcome from faculty, students, postdoctoral scholars, staff, and alumni.

All professorial faculty of the Institute are eligible. The prize consists of a cash award of $3,500, matched by an equivalent raise in the annual salary of the awardee. A letter of nomination and detailed supporting material, including, but not limited to, a curriculum vitae, course syllabus or description, and supporting recommendation letters should be emailed to kkerbs@caltech.edu or directed to the Feynman Prize Selection Committee, Office of the Provost, Mail Code 206-31, at the California Institute of Technology, Pasadena, California, 91125. Nomination packages are due by January 2, 2014.

Additional information including guidelines for the prize and FAQ may be found at http://provost.caltech.edu/FeynmanTeachingPrize. Further information can also be obtained from Karen Kerbs (626-395-6039; kkerbs@caltech.edu) in the Provost's Office.

Theater Arts Caltech

STUDENT ONE-ACT SHOWCASE
featuring performances directed, acted and written by Caltech students
COME JOIN US!
Performances will be in Ramo on Friday, December 6th at 8:00 pm and on Saturday, December 7th, 2013 at 7:30 pm, at a Decompression evening with special musical performances.

Chris Dosen (Freshman) directs *The Philadelphia* by David Ives
A young man in a restaurant who has fallen into "a Philadelphia," a Twilight Zone-like state in which he cannot get anything he asks for.

Cast of *The Philadelphia*:
Al - Grant Remmen (G2, Theoretical Physics)
Mark - Chinmay Nirkhe (Freshman)
Waitress - Rebecca Tang (Sophomore, Physics)

Dan Ilyin (Freshman) directs *Here We Are* by Dorothy Parker
Set in the early 1930s in a Pullman car on a train to New York City, a newly married young couple set out on their honeymoon. Adapted from Dorothy Parker's short story by the same name.

Cast of *Here We Are*:
He - Jeremy Brouillet (G1, Applied Physics)
She - Dan Ilyin (Freshman)

Dongyang "Clark" Kang (G5, Electrical Engineering) directs *Flop Cop* by Laura Cunningham
A cop is summoned to subdue an out of control playwright, who has set up a siege in a theater, and is threatening to deliver his monologue.

Cast of *Flop Cop:*
Officer Murphy - Hui Ying Wen (JPL Navigation Engineer)
Playwright - Dongyang "Clark" Kang (G5, Electrical Engineering)

Manan Arya (G3, Aerospace) writer/director/actor as Timon in *Timon & Pumbaa are Dead*
This original student composition features the lovable characters from Disney's The Lion King as they make their way through an existential universe of the Playwright's creation.
with Juan Diego Palomino as *Pumba*

Juan Diego Palomino (Sophomore, CS): writer/director directs *A Forgotten Cause*
A Forgotten Cause by Juan Diego Palomino will be read as an original piece in progress.
In this piece, two men, young and old, meet on a battlefield as enemies and learn something about each other and themselves in the process.
with Brian Brophy (Caltech Director of Theater Arts) as Nica and Raj Katti (Senior) as Bael

For more information, please contact Brian Brophy at brophy@caltech.edu.

Please join for our
SPRING PLAY AUDITIONS
TACIT / EXPLICIT / CALTECH PLAYERS

Saturday, December 7, 2013
Sunday, December 8, 2013
Ramo Auditorium, 2:00 - 6:00 pm

Caltech Theater brings legendary
Caltech Humanities
Professor Emeritus Oscar Mandel's
GOBBLE-UP STORIES
to Ramo Auditorium. Witty and profound, Mandel's little moral tales are full of unexpected points, deep lessons, ethical ambiguity, and raise challenging questions of modern culture. In the tradition of Aesop these entertaining fables will delight all ages.
We are looking for ten daring students to participate. Rehearsals begin middle of January.

PERFORMANCE DATES IN RAMO:

Friday, April 4th, 2014	8:00 pm
Saturday, April 5th, 2014	2:00 pm
Saturday, April 5th, 2014	8:00 pm
Sunday, April 6th, 2014	2:00 pm

For more information, or to volunteer, please contact
Explicit Officers
Kelvin Bates - kelvin@caltech.edu and
Sarah Slotznick - sslotz@caltech.edu

Daytona's eponymous album blends retro and modern styles

NAILEN MATSCHKE
Contributing Writer

With their full-length self-titled debut album released on November 19th, Daytona has entered the music scene as yet another indie band with bright guitars and airy vocals. All three members played music together while living in Chapel Hill, North Carolina, and began performing together again after separately moving to Brooklyn, New York in 2011.

After putting out their *Storm So Long* EP in 2012, the band signed to a record label and began recording their first album. Between the EP and the album not much has changed, with the group maintaining just about every aspect of their sound, but presenting it with much higher quality recording, mixing, and balance, with all of their remarkably intricate layers coming through to the listener's ears. The LP is also twice as long (as one should expect), but its 37-minute length can work against it, as the songs start to sound a little too similar by the end.

The album starts off with a heavily delayed clean guitar playing the main theme to opener "The Road," which is quickly joined by a slightly overdriven guitar playing a variation on this theme. Over a few repetitions of this theme the bass and drums are introduced, both fairly simple. More than half a minute into the song, the vocals are finally brought in, with a chorus of either two or three voices singing the lyrics in unison at all times. Here Daytona does something unusual of most modern rock bands: the separate vocalists sing every syllable as a chord, which adds a surprising depth even if it can be overpowering when compared to three instrumental parts that never stop repeating their riffs. In typical genre fashion, the vocals are always a little bit out of tune, and this emphasis on the human element serves the overall texture of the sound well.

-http://i1.sndcdn.com

The next song, "New Foundation," is one of my favorites on the album. Critics have called Daytona's sound "Afro-Caribbean," and the reasoning behind that is apparent on this track. Between the beat backing the verse that could be mistaken for Vampire Weekend to the marimba fill that comes in every now and again, the influence is there. What I also enjoy about "New Foundation" is its sort of instrumental chorus, with loud, sharp horns, a catchy guitar part, and a predictable but perfectly done bass part underneath alternating splashy and poppy drums.

The next song, "Honey," is quite a bit different in tone, with conflicted lyrics regarding someone the singer loves, and a slower, downbeat instrumental backing. With the occasional acoustic guitar and retro drum part, this demonstrates the other side of Daytona's songwriting, mixing the new with the old, and following a decisive progression throughout the song from the almost joking beginning to the faster, nostalgic ending.

Unfortunately, the next few songs do little to differentiate themselves from the first three. "Lighthouse" has only a few lines of lyrics, and the same beat the entire time. By itself, it's quite good, using the same Caribbean tones as "New Foundation" and blending them into something you can't find in other artists. But hearing it for four minutes is tiresome, and eventually it becomes like listening to the verse of "New Foundation" on repeat. "Ought to Be a Law" is your acoustic, bass, and drum folk song, which is a welcome break to the album, but nothing special.

"Maria" ends this streak by introducing multiple musical ideas throughout its relatively short playtime, focusing (at most points) on one vocal part that shows some real emotion, and using the wide range of sounds one can achieve with different types of guitars to full effect. It showcases all of Daytona's best elements and keeps them short and sweet, building to a bittersweet climax. However, like I mentioned before, as the album still has four more tracks, we get into some serious repetition. "Old Friend" sounds like a rehash of "Lighthouse," and while I was excited at first by "Metropolitan" when it started off with a serious groove and took advantage of the marimba again, it dissolved into another fairly repetitious Daytona song.

I like the second to last song, "Raincoat," as it gives us so many interesting ideas, including a couple atmospheric, lullaby-speed interludes, a Beatles-like ballad, and even an utterly head-bobbing dance-pop segment. The closer, "Oregon," is all right, capped on either end by quiet vocal-focused parts surrounding a middle that sounds almost like a country-western tune. It's nothing special, but it leaves me feeling good about Daytona's future as a band.

Ultimately, *Daytona* is a solid first release for Daytona. While a well-established band should be able to create an album with more variety and experimentation, Daytona sticks to what they're comfortable with, and that's all right. Their blend of retro and modern styles, layered sounds, and surprisingly complex guitar parts works well, and gives them plenty of room to expand in the future. While veteran fans of similar acts like Vampire Weekend or Best Coast will probably be unimpressed by this album due to its reliance on a small amount of songwriting techniques and unabashed use of repetition to pad song lengths, I feel that Daytona is a band for them to watch for and to look forward to their future efforts.

Seniors go on a journey to explore Alaska's nature

GEUNWOOK PAEK
Contributing Writer

As graduating seniors, Chang Sub Kim and I wanted to end the last chapter of the four years at Caltech with a special experience. It was the last summer before heading to graduate schools, and we did not want another research job like SURF (the next 5 years or so will be dedicated to just that) or an internship in the industry. Instead, we wanted to explore the world we have never encountered and go on an adventure. When it was our time to choose the destination, we easily decided on Alaska. We have both had admirations for the North because of the glaciers, breezy summers, Mt. McKinley and exotic Alaskan cultures.

Moreover, we welcomed the physical challenge of trekking the vast nature of Alaska because it epitomized our lifelong drive for challenge – we both went to boarding schools before coming to college, decided to study abroad in places with different languages and cultures, and worked hard at Caltech. We wanted to explore Alaska and see the world from a different perspective than lecture halls or a research lab.

We kicked off our journey from Seward, where we saw the glaciers while hiking and kayaking. We went sea kayaking in the Resurrection Bay and hiked inside a ghost forest. Interestingly, the sea was not salty at all; melting glaciers during the summer lower the salinity. The best part was hiking all the way up to the Harding Icefield. As we hiked up to the top, the landscape changed from green conifers, flowers and moss to white snow and black gravels. At the top was a window to past ice ages – a horizon of ice and snow that stretched as far as the eyes could see. We even went inside a living glacier (it was so blue!) and it was a thrilling experience.

Our adventure to the vast nature of Alaska continued as we moved to the interior of the state. We took a Mt. McKinley flightseeing tour from Talkeetna, a small town with less than a thousand residents which is 60 miles from the summit of Denali. We viewed towering snow-capped mountains and glacier-filled valleys during the flight and enjoyed the vastness of the wilderness landscape after landing on a glacier. Standing on a glacier amongst the peak was quite a different perspective and I could feel the immensity of Mt. McKinley.

Chang Sub Kim and Geunwook (James) Paek standing on a glacier amongst the peak of Mt. McKinley.

-Geunwook Paek

Denali National Park was the passageway to a wilderness. After receiving backcountry training and hiking few trails, we challenged ourselves with a more strenuous hike, called Discovery Hike. We hiked over the spongy tundra with a park ranger while trying not to follow other people's paths. This facilitated the re-vegetation of the land. The climax of the journey to wilderness and nature of Alaska was the backcountry hiking and camping in Denali National Park. The sun did not set until 11:30pm, and even after that, the twilight kept the sky bright until the sun rose again a few hours later. We were able to hike deep into the park till late at night, set up a tent and cook food.

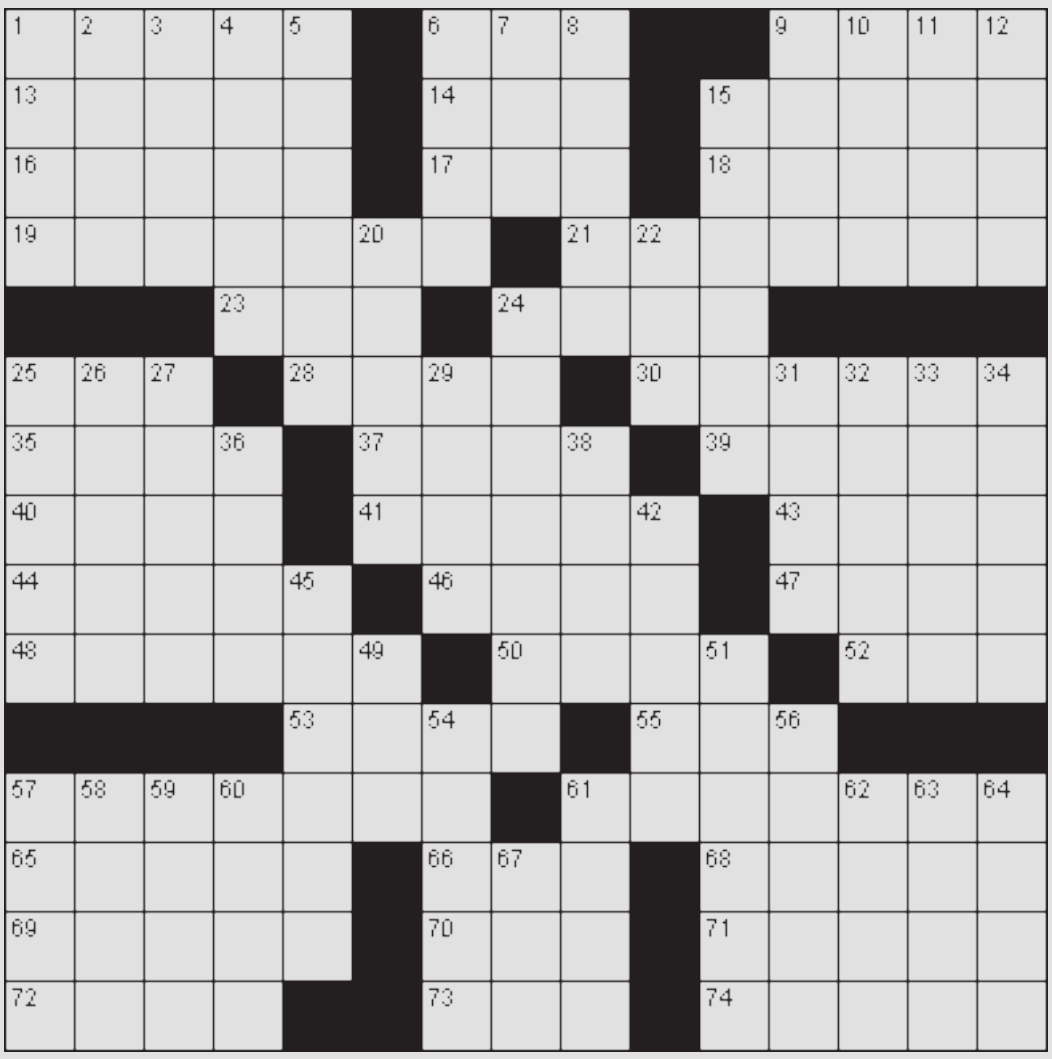

Geunwook (James) Paek catches a rainbow trout in a Talkeetna Lake.

-Geunwook Paek

Not only did we experience the nature in Seward and Denali, but we also learned about different cultures in the museums in Anchorage and Fairbanks. Moreover, by talking with Alaskan people on the train and meeting other travelers at hostels, I could better understand Alaskan people and towns. Watching a culture show performed by the natives, I could better experience Alaskan culture. I confirmed that the best way to learn and understand was to see and experience.

I thank Mr. SanPietro and the Fellowship Advising and Study Abroad office for providing me this opportunity to challenge myself and broaden my experience. Caltech offers several opportunities to travel or study abroad and I recommend taking advantage of them. There is a lot to learn and experience.

Today's Puzzle: Crossword



[www.puzzlechoice.com]

Across
1. Collect or gather
6. Decompose
9. Small bird
13. Power
14. Make a mistake
15. Forgo
16. Relating to birds
17. Hawaiian garland
18. Forefinger
19. Actuality
21. Subject matter
23. Female deer
24. Similar or related
25. Type of tree
28. Payment for use of property
30. Migratory grasshopper
35. Sleigh
37. Squad
39. Having a specified value
40. Wan
41. Mayhem
43. Woodwind instrument
44. Small island
46. Annoy
47. Part of the hand
48. Refrain
50. Scorch
52. Indicating maiden name
53. Average
55. Darn
57. Moderately slow tempo
61. Course of study
65. Inexperienced
66. Fuss
68. Proverb
69. Form of communication
70. Food of a ruminant
71. Variety show
72. Join together by heating
73. Beverage
74. Support weight on the patella

Down
1. A great distance
2. Relocate
3. Type of song
4. Burn caused by hot liquid
5. Advanced in years
6. Depend
7. Mineral
8. Prank
9. Desire
10. Travel by horse
11. Fifty-fifty
12. Adjacent
15. Separate grain from chaff
20. Parts of a gear
22. Embrocate
24. Reappearance of an earlier characteristic
25. Savory jelly
26. Cut open
27. Greeting
29. Close
31. Animal or bird enclosure
32. Relating to the city
33. Took without the owner's consent
34. Topic
36. Cervid
38. Small burrowing mammal
42. Discontinue
45. Underground passageway
49. Chronic drinker
51. Comment
54. Respond
56. Broaden
57. Afresh
58. Make reference to
59. Circular graduated indicator
60. Eager
61. Soft drink
62. Part of a church
63. Chills and fever
64. Spool
67. Scheduled to arrive

Answers to last week's crossword puzzle from puzzlechoice.com

S	T	A	R	■	■	L	A	P	■	F	L	I	N	T
P	O	L	O	■	M	A	R	E	■	E	E	R	I	E
O	U	S	T	■	A	X	I	S	■	R	E	I	N	S
T	R	O	U	P	E	■	A	T	O	M	■	S	E	T
■	■	■	N	E	S	T	■	E	W	E	■	■	■	■
■	S	E	D	A	T	E	■	R	E	N	E	W	A	L
A	I	D	■	T	R	A	P	■	■	T	R	I	B	E
C	R	I	B	■	O	R	I	E	L	■	A	N	O	N
R	E	C	A	P	■	■	E	X	I	T	■	C	U	D
E	N	T	R	U	S	T	■	A	M	U	L	E	T	■
■	■	■	■	L	A	W	■	M	I	N	E	■	■	■
O	R	B	■	S	T	E	M	■	T	E	N	D	E	R
V	I	O	L	A	■	N	I	C	E	■	G	I	V	E
A	L	L	O	T	■	T	R	O	D	■	T	R	E	E
L	E	D	G	E	■	Y	E	N	■	■	H	E	R	D

Women's basketball grabs first win of the season

GoCaltech

After a slow start, the Beavers turned on their offense with a strong post presence in tallying a 73-61 win over Crown College at Occidental on Friday afternoon.

"After a worrisome start to the game, we were able to compose ourselves and get down to business," said head coach Sandra Marbut. "We did a lot of good things tonight led by our post players. We will enjoy this win for a brief moment and carry the momentum into Saturday's game."

After an ominous start, the Beavers grabbed control and found an offensive rhythm. Caltech missed their first eight field goal attempts as Crown jumped out to a 10-0 lead less than four minutes into the game. A three-pointer by Esther Du broke the scoreless drought and began a run of seven unanswered points in spurring the offense.

Esther Du helped the team win by giving a 14-point, six-rebound, five-assist performance.

-gocaltech.com

Caltech continued to chip away at their deficit and took their first lead of the game at 21-20 when Kristin Anderson hit a jumper with 6:41 left in the half. For the rest of the half the Beavers outscored Crown 13-7 as they took a 34-27 lead at intermission.

During the first 20 minutes Caltech forced Crown into 18 turnovers which they translated into 13 points as they built their seven-point halftime edge. Du went 4-for-5 from the floor in the half, including two three-pointers, during her 10-point half.

Crown rallied in the second half and took a 39-37 lead with 14:50 left in the contest. Over the next five-plus minutes the lead changed hands three times with three ties. A three-pointer by Michelle Wong with 9:49 gave the Beavers a 50-48 lead. It was a lead they refused to relinquish but fought to keep.

With 5:25 left in the game, a lay-in by Kate Lewis gave Caltech a 58-50 lead but the Storm got within four points on three occasions down the stretch yet couldn't get their deficit down to a single possession. The Beavers sealed the win by hitting nine of their final 10 shots from the charity stripe.

Grace Leishman posted her first career double-double with a career high 19 points while corralling 12 rebounds. Fellow post player Lewis also posted a double-double with a 16-point, 16-reound effort in the second collegiate contest.

Du chipped-in a 14 point, six-rebound, five-assist performance to aid in the winning cause.

Caltech baseball team hosts local event for community's youth

GoCaltech

On Saturday, November 18 members of the Caltech baseball team, hosted a unique endeavor involving new baseball technologies while serving a local youth baseball team.

"Being the top technological school in the world we should be doing everything possible to gain exposure to the most cutting edge baseball teaching technology available," second year head coach Matthew Mark said. "In addition, it is always great to support baseball at the community grass roots level."

The Pasadena Elite 14-and-under team coached by Mark Davis took part in the event.

A representative from Easton brought their "Hitlab" equipment which is a new swing analysis system that uses radar to focus in on key hitting traits to pair a player to a specific bat that will offer the best chance at success.

Caltech's season begins on Feb. 9 when they will host Pacifica in a doubleheader beginning at 11 a.m.

The Beavers baseball team supports a local youth team by practicing hitting with new baseball technologies.

-gocaltech.com

Weekly Scoreboard

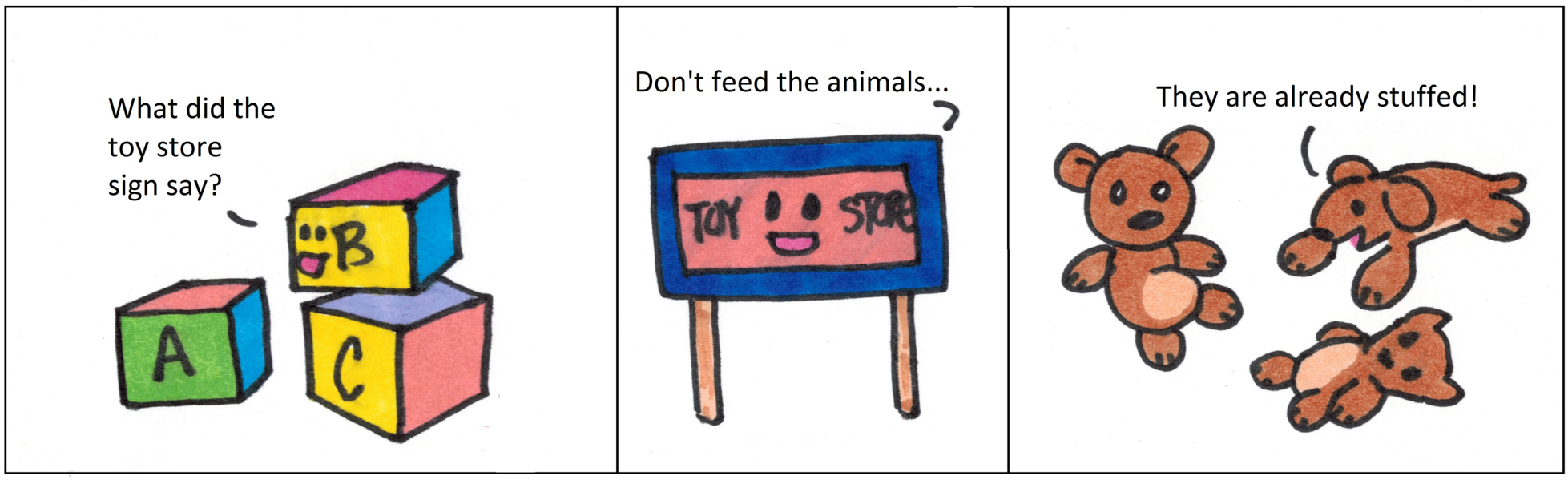
Women's Basketball
vs. La Sierra
L, 55-63 Final

Women's Basketball
vs. Crown
@ Occidental
W, 73-61 Final

Men's Basketball
vs. Whitman
L, 87-73 Final

Women's Basketball
vs. Linfield
L, 85-55 Final

Unoriginal Jokes **Kerry Betz**



Acquired Taste *Dr. Z*

For more photos, videos, and archives of previous issues, check out the Tech website!

tech.caltech.edu

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