SANDHYA CHANDRASEKARAN
News Editor

The 2013 Caltech Student-Faculty Conference was held on February 14, 2013, and on the whole, promoted productive discussions on key areas of improvement within the Caltech education system.

After welcoming remarks by Academics and Research Committee (ARC) Chair Pushpa Neppala and Caltech President Jean Lou Chameau, the conference began with a discussion about year-round undergraduate research. ARC representative Connor Rosen explained, "I hope the BoC can continue encouraging interactions between students and faculty."

Interestingly, a significant portion of the following Q&A session centered upon JPL SURFs. A few students voiced concern that research projects at JPL are not well advertised to Caltech students. Consequently, they either prematurely sign up for projects that they do not completely know about and have a lackluster experience, or miss out on the opportunity altogether. An immediate, implementable recommendation that was proposed suggested organizing JPL research 'puzzle' courses, where JPL faculty could come and present some of their research projects to interested students.

Notably, Professor Niles Pierce, who teaches ACM95a and witnessed a large cheating episode in his course last year, voiced concern about the punishments given for cheating. Specifically, he pointed out that only nullifying the answer containing direct evidence of cheating was essentially a 'slap on the wrist' and that considerations for effectively negating the entire assignment, should be made.

The afternoon session centered upon reviewing, the 2013 Student-Faculty Conference fulfilled its goals of opening students' eyes to the broad yet unique aspects of the Caltech education system as well as helping readers burst out of the Caltech bubble.

For further information regarding decision and discussion points during these option sessions, please contact ARC Chair Pushpa Neppala, pnepala@caltech.edu and/or the option committee chair.
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

ASCIT Minutes

Minutes for February 11, 2013. Taken by Allika Walvekar

Officers present: Diego Caporale, Matt Fu in lieu of Christian Rivas, Pushpa Neppala, Mario Zubia, Michelle Tang, Allika Walvekar, Puikei Cheng

Guests: Connor Coley, Representatives from Dabney House

Call to Order: 9:12 pm

President’s Report (Diego):
Pasadena Games: Diego is organizing the uniforms and logistics with Zach

V.P. of Non-Academic Affairs (IHC Chair: Matt Fu, Zach Rivkin):
Safety Training: Tool training happened on Saturday. The IHC is working on scheduling another one with more advanced anotice and at a different time in the day.
New Leadership: John Pharo (Dabney), James Chang (Avery), Ben Grabowski (Page)

Director of Operations (Mario):
SAC: If you want a room in the SAC (music room, study room etc), sign up on the Room Reservation system on Donut.
Water Coolers: Water coolers have been purchased. Houses or clubs can borrow the water coolers for parties, interhouse sports, etc.

Treasurer (Puikei):
Dabney came and received their $500 for interhouse
Granted a funding request for Startup Weekend run by Caltech Entrepreneurship Club
Reminder that the take-a-prof-to-lunch program is still active; contact Puikei

Social Director (Michelle):
Be A Kid Again March 1st: Puppies, jolly jumps, girl scout cookies, face painting
ASCIT Formal: ASCIT Formal will probably happen at the Mt. Wilson Vista.
Mudeo: moved to march 8th

Secretary (Allika):
DevTeam: Sign ups went down, and the interview process will start as soon as possible
Little T: Sign ups were posted next week.

Meeting Adjourned: 11:15
A piece of clothing, or jewelry, or anything else - even a car - is only partially defined by its presentation...it is mainly defined by the person wearing - or driving - it.

Finally, there comes the crucial step of admitting to yourself that you want to resolve these problems and that you are ready to put effort into doing this. Without this crucial step of admitting your own intentions to yourself, no diets will be effective, no new habits will form, and no lasting changes will take place. After this, everything else is just a matter of tactics and consistent self-honesty. I’ll take the risk and use myself, Nina, as an example of the first step. I saw a dress that I really liked and I was getting a great deal on. It was gorgeous and very cleverly made, so I thought I might wear it to this year’s ASCIT formal. It looked beautiful on the hanger. Yet, when I tried it on, it was no longer the same dress. It was the wrong length. There is a certain length that is almost suicidal for me to wear, simply because of my skeletal proportions.

If I were to buy this dress, I would not be buying the beautiful dress on the hanger. Instead, I would be buying the ill-fitting and unflattering dress that I tried on. Oh well. Hopefully another girl will find it and the two will be a perfect match for each other.

This is an illustration of a realization that I came to recently (it would have helped if I had this realization years earlier). Clothing on display in a store is not necessarily the same clothing that you try on.

A piece of clothing, or jewelry, or anything else - even a car - is only partially defined by its presentation at the store. It is mainly defined by the person wearing - or driving - it. So, look for your own match, and don’t worry if few others have the same things as you do.

Caltech Library

Study Spaces

The library is a good place to visit when you want to study. Whether you want to work collaboratively or independently, there is a study space that will meet your needs.

• Group study rooms in the Sherman Fairchild Library (SFL) can be reserved online.
• There is silent study space on SFL-2.
• Millikan 7 offers lovely views from the study carrels.
• The branch libraries in Dabney, Cahill and North Mudd include quiet and unique work spaces.

Please email library@caltech.edu with questions, feedback or to suggest a book for purchase.
Misha Raffiee recounts internship in DC

MISHA RAFFIEE
Contributing Writer

After reading about the Beckman Political Internship, which provides support for an individual to pursue an interest in public policy through the Dean's Office, I was inspired to apply for a congressional internship position in Senate Majority Leader Harry Reid's office. Driven by an insatiable curiosity to learn about the inner workings of government and better understand the relationship between science and engineering fields and public policy, I ventured to the east coast to experience the political process first-hand.

Being from a relatively small hometown, I had never experienced the necessity (or desire) to use public transportation. Using public transportation in and around Washington, DC, though, is nearly a requirement. Every morning, I would walk about a half mile to the Bethesda Metro Station to ride the red line for 30 minutes to Union Station. The sight of businessmen and women dressed in fancy suits and dress shoes running to catch the train never ceased to amuse.

I began my work day going through security in the Hart Senate Building and taking the elevator to the Senator's office on the 5th floor. I shared an office with the majority of the Senator's staff, though, as Senate Majority Leader, Senator Reid also had a separate office in the Capitol building where his most senior staff members worked. Legislative Correspondents and Senior Advisors alike gave me assignments throughout the day, ranging from attending hearings on energy projects and financial issues to completing hearings on energy projects and providing sound evidence in support of maintaining adequate funding in STEM fields.

The first time I was properly acquainted with Senator Reid, I was riding an escalator linking one Senate building (Dirksen) to the other (Hart). Though I had seen the Senator on numerous occasions beforehand, I never had the opportunity to speak directly with him for more than a couple seconds. His warm demeanor and down-to-earth personality were thoroughly surprising and impressive. After introducing myself, I was surprised to find the Senator inquiring about my opinion on seersucker suits and dress shoes running to catch the train never ceased to amuse.

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Perhaps most of all, though, I experienced the role of science in policy, not on the drastic implications those cuts would have on the future of science but on the slight increase in financial stability provided by deducting tens of millions of dollars from already-restricted funding sources. Venerable the presence and participation of individuals from scientific backgrounds would help educate Capitol Hill on the importance of research and provide sound evidence in support of maintaining adequate funding in STEM fields. My experience in Washington DC was phenomenal.

It opened my eyes to aspects of public policy of which I would have never been made aware; more importantly, it made me realize how essential it is as a scientist to understand the political process of which I would have never been made aware; more importantly, it made me realize how essential it is as a scientist to understand the political process.
Cooking Healthy With Chef Poppy

Learn how to cook easy healthy foods

Tuesday, Feb 26th 2013
12-1pm & 4-5pm
Braun Athletic Center
FREE Event for members!

Brought to you by the Department of Athletics, Physical Education & Recreation

Synthetic biology labs at Tech cover many issues

AAKASH INDURKHYA
Contributing Writer

Over the last two decades, the cost of DNA synthesis has dropped to fractions of a cent per base pair. In the last five years alone, there have been significant improvements to the cost of DNA synthesis and sequencing: January 2008 marked the sudden outpacing of Moore’s Law by these costs. Rapid increases in the availability of DNA (and related technology) make the advent of DNA based computation very feasible. DNA based computation is the intelligent manipulation of encoding and binding capabilities of DNA to compute and solve problems. We highlight one major approach (among others) to this developing field: synthetic biology.

Richard Feynman famously stated, “What I cannot create, I do not understand.” Synthetic biologists play out this mentality by “engineering life” using the building blocks that nature provides. Caltech labs (such as the Elowitz Lab, Murray Lab, and Winfree Lab) manipulate biological parts, which are frequently regulatory elements, to construct, characterize, and model gene regulatory networks. For example, synthetic biologists have already made bi-stable switches, oscillators, and logic gates. Many refer to these networks as biological/gene circuit: in fact, this field was the brainchild of electrical engineers and computer scientists interested in using microbial cells as computers. The Elowitz lab uses time-lapse movies to track transcriptional response in individual cells and at the population level. Individual cell observation confirms the function of the networks, but population level analysis gives insight into how the network behavior might change as a result of cell communication (quorum sensing). This technique has been useful for understanding how transcriptional noise may function in regulatory networks. Transcriptional noise is typically a detriment to the function of networks as it represents a loss in control over the network. Elowitz’s lab has constructed the biological equivalent of a “DC-to-AC” converter in a noise-dependent network. Specifically, they built two-part network which first creates pulses (protein production) in response to a sensitive switch (a smaller network) and next amplifies these pulses using feedback loops. The Murray Lab is working on feedback networks that allow for more rapid and robust response to input signals (typically chemicals). More importantly, these networks are modular and must maintain their robustness when used with entire classes of proteins coding sequences. Before moving on to larger and more sophisticated regulatory networks, synthetic biologists must go through quality control to ensure that the biological parts being used work well in coordination with other parts and host organisms. The work being done by the Murray Lab will improve the overall reliability of the gene regulatory networks created by the field in the coming years. Many wish to use synthetic biology for genetic medicine in the future; however, without highly tunable, controllable, and reliable networks, these applications will not be possible. Other developing topics in synthetic biology (SynBio) include opto-genetics (transcriptional response to light) and post-transcriptional network modification. However, simply using DNA as a means to store data is not enough to complete computation. In fact, we can mimic nature’s self-assembly of DNA structures (i.e. chromosomes) to build machines. The Winfree lab uses DNA tiles, with temperature dependent bindings, which assemble into tiling systems that represent Turing machines.

This model, abstract Tile Assembly Model (aTAM), has been implemented in the lab as the

I.G.E.M. provides students with a chance to explore and expand upon synthetic biology.

I.G.E.M. continues to be pushed forward through programs like I.G.E.M. (International Genetically Engineered Machines), which is an undergraduate level team research competition.

Caltech’s team was mentored by Richard Murray in 2012 and has participated in the competition for several years now. I.G.E.M. is associated with the Registry of Standard Biological Parts, which requires that contributors provide thorough characterization of submitted parts so that other scientists may use them in the future.

Students interested in the topics mentioned here should check out BS/CS/CNS/Bi 191 or pursue related SURF projects.
Today’s Puzzle: Crossword

Across
1. Shape  
5. Period of time  
9. Ursine animal  
13. Woodwind instrument  
14. Avid  
16. Car  
17. Deterioration  
18. Underwater breathing device  
19. Harvest  
20. Type of poem  
22. Pay close attention to  
23. Domicile  
24. Sign of assent  
26. Tardy  
28. Award  
33. Something surviving the past  
36. Anger  
37. Test  
39. Wanderer  
41. Reconstruct  
43. Mistake  
45. Speed competition  
46. Hanker  
48. Hinge joint  
50. Fuel  
51. Appliance that removes water  
53. Almanac  
55. Pitcher  
57. Nothing  
58. Admonish  
61. Sport  
64. Molars  
68. Assist, usually in wrongdoing  
69. Overhead  
71. Land measure  
72. Insect  
73. Warble  
74. Scorcher  
75. Recount  
76. Condition  
77. Expect with desire

Down
1. Poultry  
2. Comply with  
3. Bellow  
4. Sheep with high quality fleece  
5. Affirmative  
6. Apiece  
7. Chills and fever  
8. Renegade  
9. Unmarried man  
10. Currency  
11. Particle  
12. Strong cord  
14. Easy on  
15. Detection instrument  
21. Young male horse  
22. Pay close attention to  
23. Domicile  
24. Sign of assent  
26. Tardy  
28. Award  
33. Something surviving the past  
36. Anger  
37. Test  
39. Wanderer  
41. Reconstruct  
43. Mistake  
45. Speed competition  
46. Hanker  
48. Hinge joint  
50. Fuel  
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71. Land measure  
72. Insect  
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74. Scorcher  
75. Recount  
76. Condition  
77. Expect with desire

Caltech Public Events is now hiring student ushers. 
$15 per hour to work concerts, performances, lectures, films and parties.
No experience needed, no hard labor, flexible schedules.
*Requirements: Caltech student, Positive attitude, Friendly personality
To apply email Adam Jacobo (ajacobo@caltech.edu) or call (626)395-5907
For info on Caltech Public Events visit: www.caltech.edu/content/public-events
Caltech men’s tennis takes on Biola; sports editor doesn’t care about conflict of interest

AMOL KAMAT
Sports Editor

On Friday afternoon, the Caltech Men’s Tennis Team took on the Biola Eagles, losing a tight match 4-5. Still, the day was not without highlights. At #2 doubles, Rushikesh Joshi and Amol Kamat (who shall henceforth be referred to simply as “that sexy guy”) went down 1-4 early in the set, but some tough play from the young Joshi and some distracting good looks from that sexy guy brought the Beavers back into the match. They would ultimately win the match at 9-8, winning the tiebreaker 7-5. That’s some quality tennis. With that win, Rushikesh Joshi extended his win streak to two (which is a lot). Following doubles play, the Eagles found themselves up 2-1. But, everybody knows Beavers are solitary creatures (is that true? I’m not actually sure if that’s true. Caltech bio majors don’t really learn that much about animals…), so the true test would be in singles play.

At #1 singles, Devashish Joshi lost a close one, 6-2, 7-5. Suffering from cramps in his hand and legs, Joshi fought hard but could not come away with the victory. We gave him a juice box and some fruit roll ups and he felt alllll better.

Looking to further extend his win streak and his brother’s embarrassment, Rushikesh Joshi came out swinging at #2 singles, defeating Biola’s Isaiah Pekary (say it in a British accent, it’s worth it) in straight sets (7-5, 6-3). For those of you keeping track at home, Joshi’s win streak now stands at three.

Not to be outdone by a freshman, Caltech’s Luka Mernik defeated Biola at #3 singles in straight sets, although from all the yelling, I thought he had lost.

That sexy guy played pretty sexy at #4 singles, but ultimately lost 6-4, 6-4. He also suffered from cramps but was much more manly about it, only complaining about it two or three times after the match.

The real story of the day was at #5 singles where Caltech’s Alex Henry, a freshman, made his opponent puke in the middle of the match before pounding him 7-5, 6-2. Well done, Alex, it’s a true athlete who makes his opponent physically ill.

At #6 singles, senior Brian Kim lost 6-1, 6-3 to Rodic Pence (again, British accent), but he looked damn good doing it. BK always looks good. Caltech dropped to 0-3 with the loss (and had to have Saturday practice with the rest of the lowly Caltech teams). They return to action this Saturday when the travel to Redlands.

Full Match Results:
Biola vs Caltech
02/15/2013 at Pasadena, CA
(Braun Tennis Courts)
Biola 5, Caltech 4

1. David Mossman (BIOLA) def. Devashish Joshi (CALTECHM) 6-2, 7-5
2. Rushikesh Joshi (CALTECHM) def. Isaiah Pekary (BIOLA) 7-5, 6-3
3. Luka Mernik (CALTECHM) def. Brandon Chang (BIOLA) 6-3, 6-4
4. Chris Evans (BIOLA) def. Amol Kamat (CALTECHM) 6-4, 6-4
5. Alex Henry (CALTECHM) def. Greg Cobain (BIOLA) 7-5, 6-2
6. Rodic Pence (BIOLA) def. Brian Kim (CALTECHM) 6-1, 6-3

Doubles competition
1. Isaiah Pekary/David Mossman (BIOLA) def. Devashish Joshi/Luka Mernik (CALTECHM) 8-4
2. Amol Kamat/Rushikesh Joshi (CALTECHM) def. Chris Evans/Greg Cobain (BIOLA) 9-8 (7-5)
3. Rodic Pence/Brandon Chang (BIOLA) def. JD Co-Reyes/Ishan Mehta (CALTECHM) 8-5
Acquired Taste

by Dr. Z

I shall surely defeat you for I am prince of the Saiyans and you are a puny ganking and I have trained at 10x gravity for over 30 years and I have dealt on my side and no one has ever defeated me because I am so strong and

I can go super saiyan 2 and I have so many powerful attacks so surely you will not win because I am very strong and you do not stand a chance and I will show you no mercy because I am powerful and that strength comes from all of my hard work and

you are a puny weakling and I am so strong and you do not stand a chance considering how strong I am because my power is too great for you and there is nothing you can do and it is already too late because your destruction is imminent because

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

tech.caltech.edu