



Caltech combats malaria with engineering

CAROLINE YU
Contributing Writer

The Caltech Global Health Association hosted a mini symposium titled "Technology vs. Malaria" on May 26. The symposium featured Dr. George Maltezos and Professor Changhui Yang, who spoke about their solutions to make diagnosing diseases such as malaria more accessible, affordable, and simple. The potential impact of their technologies should not be underestimated: in Africa, every 45 seconds one child dies of malaria, according to the WHO. Malaria and diseases like it disproportionately affect those who cannot afford health care or do not have access to health care, trapping families and communities into a vicious cycle of poverty. Early diagnosis prevents deaths and reduces transmission of the disease, so researchers worldwide are working

to develop accurate and rapid diagnosis techniques. Dr. George Maltezos, current director of the Caltech Global Health Initiative, has worked on an inexpensive and

inexpensively detecting a range of pathogens and disease indicators. Maltezos is working with David Baltimore and Pamela Bjorkman on the Caltech Global Health

Yang instead took advantage of "microfluidic flow to deliver specimens across arrays of micrometer-size apertures defined on a metal-coated CMOS sensor to

on African Health in partnership with the GEANCO foundation and periodically hosts the Global Health Journal Club. Currently, GHA is working on the Giulio Project to fundraise for donation and equipment to supply basic science equipment for a middle school in Honduras.

Freeing people in developing countries and the United States alike from the crippling grip of disease is difficult; factors like access to affordable medicines, poor infrastructure, lack of diagnostics, political will, poverty, hunger, gender inequality, and funding are all very real obstacles.

Symposiums such as "Technology vs. Malaria" help spread awareness and encourage people to explore the potential solutions to epidemic diseases and health crises.

Forscientistsworkingtoimprove infrastructure and prevent loss of life through better application of seismological data, observations from the event will help inform future research priorities.

Simons says one of the most interesting findings of the data analysiswasthespatialcompactness of the event.



<http://www.theresilientearth.com/>

portable real time PCR machine, called the Eco Time PCR. This system can supply high quality data in a short time period and is more compact than the typical thermal cycler. As the world's first portable PCR diagnostic tool, the Eco Time PCR is capable of reliably, quickly, and

Initiative to develop technology that will make low-cost, sample-to-answer, molecular diagnostics accessible worldwide.

Professor Changhui Yang attacked the problem from a different angle: microscopy. He and his group are working on an optofluidic microscope, which can be thought of as a "microscope-on-a-chip". Abandoning lenses,

generate direct projection images." The optofluidic microscope is only about the size of a quarter, but delivers the same image resolution as a microscope with 20X objective. Yang's lensless microscope would help clinicians diagnose patients by allowing them to observe cell morphology.

The Global Health Association (GHA)hasalsohostedasymposium

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News briefs from around the globe

Provided by Tech correspondent Sam Barnett

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

by Sam Barnett – links to full stories available at barnett.caltech.edu/news

NASA's new spacecraft \$ **3 billion** more funds for vehicle to take astronauts into deep space [CNN]

Veteran dog adoptions **6** month waitlist to adopt retired dogs – demand up since Osama raid [ABC]

Walmart's next move \$ **2.4 billion** for 51% of Massmart – 288 stores in 14 African nations [BBC]

Germany's energy target **10** years to phase out all nuclear power – seek renewable alternatives [BBC]

California groundwater ▼ **25 million** acre-feet (30 km³) since 2003 – excessive demand [NYTIMES]

Home prices fall again ▼ **33%** since last peak (2006) – Great Depression peak-to-trough: 31% [CNN]

More violence in Yemen > **115** killed last week in fighting between government and tribes [BBC]

PSA from the CRC

The dry ice bomb is a commonly overlooked threat to student welfare at Caltech. These improvised explosive devices are made from carbon dioxide, a toxic byproduct which has been shown to cause global warming. Some students incorrectly regard these devices as innocuous pranks, recklessly ignoring the unfortunate fact that bombs explode. In recent history Caltech students have fallen victim to dry ice bombings. In one incident a witness was nearly injured looking down the barrel of the Fleming cannon where a bomb was placed, and a more recent incident, Fleming residents were endangered by two bombs that were thrown into a house alley. The students responsible for both of these incidents were prosecuted by the CRC committee and incurred severe penalties. There are many books and online videos that glamorize dry ice bombs. As fun and entertaining as these home-made devices may seem, be assured that dry ice is no joke. Its surface temperature of -77 degrees Celsius can easily cause severe skin burns if handled without protective equipment, and its sublimation can raise the carbon dioxide levels in air to dangerous levels without proper ventilation.

However, possibly the biggest hazard occurs when dry ice is placed inside sealed containers along with water, as is done in the fabrication of the dry ice bomb. The time before detonation is unpredictable and can cause unexpected injuries to the person handling the device if it goes off before planned. Examples of such injuries, according to Salt Lake City Bomb Squad commander Carl Merino, can range from blown-off fingers and severe skin burns to permanent loss of hearing and eyesight. For these and many other reasons, dry ice bombs are illegal in most states. In particular, the state of California classifies dry ice bombs as "destructive devices," and their manufacture can incur severe penalties, from fines to imprisonment, depending on the location of detonation and the intentions of the offender. In other states like Utah even simple possession of a dry ice bomb is a second-degree felony. Dry ice bombs are sometimes used in pranks, but it is important to note that they are a direct violation of the prank policy. According to the Caltech Prank Primer, which is available online, "It is acceptable and encouraged for students to execute creative, nondestructive pranks in accordance with the Honor Code." The prank primer specifically outlines the necessary protocol and guidelines for the execution of pranks. Any prank must be cleared with either a house president, the IHC chair, or Tom Mannion, and pranks must leave a note at the site of the prank revealing their identities. In addition, there are regulations on the types of pranks which are acceptable. Pranks involving theft or property damage will not be permitted, and violators will face punishment from the CRC.

In addition, pranks targeting any of the houses' seven "non-RFable" items are forbidden. Students may remember the uproar caused when a group of unidentified bandits stole Fleming's non-RFable wall flag. It goes without saying that pranks such as dry ice bombs that directly endanger student welfare are strictly off-limits. Above all, it is important that all members of the Caltech community exercise precaution and consideration for one another, and the pranking tradition remains a creative and constructive part of the undergraduate experience at Caltech.

Supervisor Luna goes above and beyond call of duty for earthquake aid

The 2011 Tohoku earthquake, also known as the Great East Japan Earthquake, was a magnitude 9.0 undersea earthquake off the coast of Japan that occurred at 14:46 JST on Friday, March 11, 2011.

It was the most powerful known earthquake to have hit Japan, and one of the five most powerful earthquakes in the world overall since modern record-keeping began in 1900. The earthquake triggered extremely destructive tsunami waves up to 128 feet that struck Japan, in some cases traveling up to 6 miles inland.

In addition to loss of life and destruction of infrastructure, the tsunami caused a number of nuclear accidents, of which by far the most serious was an ongoing level seven event and 12 mile evacuation zone around the Fukushima Nuclear Power Plant.

The Japanese national police Agency confirmed 15,188 deaths, 5,337 injured and 8,742 people missing. Approximately 4.4 million households in Japan were left without electricity and 1.5 million without water.

Supervisor Jesus Luna was a witness to the 1985 Mexico City 8.1 earthquake that destroyed much of the city. The event caused between three and four billion USD in damage as 412 buildings collapsed and another 3,124 were seriously damaged in the city. While the number is in dispute, the most-often cited number of deaths is an estimated 10,000 people but experts agreed that it could be up to 40,000.

Jesus spent several days pulling people and dead bodies from the destruction and rubble, doing what he could to assist the authorities and the families of the victims. This tragedy left an indelible image that forever will be a part of him.

Shortly after the Tohoku earthquake Luna was stirred to do something meaningful and once again relived the nightmares he witnessed in Mexico City.

Jesus made the decision to fashion an event that would not only raise money but would involve the youth in Pasadena and surrounding cities. He began with simple telephone calls and ultimately personal visits to city hall talking to anyone that would listen about his mission. After several disappointments he managed to find a friend in Marcia Montez, president of the Pasadena Sister Cities Committee.

Together they planned and began to put together what became a successful 10-hour marathon of music and entertainment featuring high school and college bands, local choral groups and emerging bands from the local rock'n'roll and heavy metal scenes. Several hundred people attended the event and all of the proceeds were donated to earthquake relief.

Despite an ocean separating Japan and the San Gabriel Valley, intimate connections between the two places were on display at the event because of one Caltech Security supervisor's compassion and need to make a difference.

Jesus is applauded for his unselfish devotion to a tragedy that included both a humanitarian crises and a major economic impact. Jesus is recognized for his tenacious efforts to assist in a tragedy that resulted in over 300,000 refugees in the Tohoku region, and shortages of food, water, shelter, medicine and fuel for survivors.

Jesus is an outstanding manager and an extraordinary person who is a role model for all that knows him professionally and socially. He is an example of the Spanish proverb "It's not the same to talk of bulls as to be in the bullring"

William Heim
Director of Security Operations
Caltech

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Science updates from Caltech Today

Heath, et al., develop cheap, portable single-cell barcode chip

KATIE NEITH
Caltech Science Writer

PASADENA, Calif.—There's a wealth of health information hiding in the human immune system. Accessing it, however, can be very challenging, as the many and complex roles that the immune system plays can mask the critical information that is relevant to addressing specific health issues. Now, research led by scientists from the California Institute of Technology (Caltech) has shown that a new generation of microchips developed by the team can quickly and inexpensively assess immune function by examining biomarkers—proteins that can reflect the response of the immune system to disease—from single cells.

The scientists reported on their advanced technology in the May 22 online issue of *Nature Medicine*.

"The technology permits us for the first time to quantitatively measure the levels of many functional proteins from single, rare immune cells," says James Heath, the Elizabeth W. Gilloon Professor and professor of chemistry at Caltech and corresponding author of the study. "The functional proteins are the ones that are secreted by the cells, and they control biological processes such as cell replication and inflammation and, specific to our study, tumor killing."

In 2008, Heath—an expert in molecular electronics and

personalized medicine—led the development of a "barcode chip" that, using just a pinprick's worth of blood, could measure the concentrations of dozens of proteins, including those that herald the presence of diseases like cancer and heart disease. This latest single-cell barcode chip (SCBC) device builds upon the success of that initial design, which is currently being utilized in diagnostic medical testing of certain cancer patients.

The researchers tested the chip by measuring a cancer patient's response to a type of cell-based immunotherapy designed to target and kill tumor cells. The only way to know if the therapy is doing its job is to measure many proteins at the same time from the individual cells that were targeting the tumor. The SCBC aced this test, generating readouts of a dozen secreted biomarkers—each of which represented a distinct cell function—and taking those readings from about a thousand single cells simultaneously.

The team was able to conduct a proof-of-concept study by looking at samples from a melanoma patient participating in the immunotherapy trials, and comparing those results to similar samples from three healthy subjects.

"This technology has the potential to be used routinely to monitor immune system performance," says Chao Ma, a

graduate student in Heath's lab at Caltech's NanoSystems Biology Cancer Center and lead author of the *Nature Medicine* paper. "For example, it can be directly used to evaluate the effectiveness of certain classes of therapeutics, such as vaccines and other immunotherapies."

According to Ma, the technology is minimally invasive, cost-effective, and highly informative. The goal, he says, is to help physicians closely track the effectiveness of a therapy, and to rapidly alter or switch that therapy for the maximum benefit of the patient.

"The research fully demonstrates real-life clinical use of our

the SCBC with existing assays in order to get a more comprehensive picture of a therapy's efficacy.

In fact, the same study that showed the microchip's efficacy is already helping the researchers better evaluate the specific cancer immunotherapy trial, from which the patient in the study was drawn.

"We are doing these same types of measurements on similar patients but at a significantly higher level of detail, and at many time points over the course of the cancer immunotherapy procedure," explains Heath. "It is helping us put together a 'movie' of the patient's immune system during

understanding of the human immune system by allowing an efficient and multiplexed functional readout of immune responses using limiting numbers of lymphocytes," says Antoni Ribas, associate professor of medicine and physician who led the clinical trial portion of the study at UCLA's Jonsson Comprehensive Cancer Center.

The other Caltech authors of the *Nature Medicine* paper, "A clinical microchip for evaluation of single immune cells reveals high functional heterogeneity in phenotypically similar T cells," are postdoctoral scholar Qihui Shi; Rong Fan, former postdoctoral scholar; former graduate students Habib Ahmad and Gabriel Kwong; and Chao-Chao Liu, former undergraduate student.

Begonya Comin-Andiux, assistant professor of surgery; Thistle Chodon, assistant researcher of medicine; Richard C. Koya, assistant professor of surgery; and Caius G. Radu, associate professor of medical and molecular pharmacology from UCLA's Jonsson Comprehensive Cancer Center also contributed to the study.

The work was funded by the National Cancer Institute, the Ivy Foundation, the Jean Perkins Foundation, the California Institute for Regenerative Medicine, the Caltech/UCLA Joint Center for Translational Medicine, the Melanoma Research Alliance, and the National Institutes of Health.

“

The technology permits us for the first time to quantitatively measure the levels of many functional proteins from single, rare immune cells.

- James Heath

”

revolutionary technology," Ma says.

The next step for the team will be to systematically apply the technology to clinical studies. The researchers have already begun to test the technology in additional patient populations, and to combine

the therapy, and it is providing us with some very surprising but also valuable insights into how the therapy works and how we might work with our UCLA colleagues to improve it."

"Application of this technology provides an unprecedented

Caltech-led team debunks theory on end of "Snowball Earth"

LORI OLIWENSTEIN
Caltech Science Writer

PASADENA, Calif.—There's a theory about how the Marinoan ice age—also known as the "Snowball Earth" ice age because of its extreme low temperatures—came to an abrupt end some 600 million years ago. It has to do with large amounts of methane, a strong greenhouse gas, bubbling up through ocean sediments and from beneath the permafrost and heating the atmosphere.

The main physical evidence behind this theory has been samples of cap dolostone from south China, which were known to have a lot less of the carbon-13 isotope than is normally found in these types of carbonate rocks. (Dolostone is a type of sedimentary rock composed of the carbonate mineral, dolomite; it's called cap dolostone when it overlies a glacial deposit.) The idea was that these rocks formed when Earth-warming methane bubbled up from below and was oxidized—"eaten"—by microbes, with its carbon wastes being incorporated into the dolostone, thereby leaving a signal of what had happened to

end the ice age. The idea made sense, because methane also tends to be low in carbon-13; if carbon-13-depleted methane had been made into rock, that rock would indeed also be low in carbon-13. But the idea was controversial, too, since there had been no previous isotopic evidence in carbonate rock of methane-munching microbes that early in Earth's history.

And, as a team of scientists led by researchers from the California Institute of Technology (Caltech) report in this week's issue of the journal *Nature*, it was also wrong—at least as far as the geologic evidence they looked at goes. Their testing shows that the rocks on which much of that ice-age-ending theory was based were formed millions of years after the ice age ended, and were formed at temperatures so high there could have been no living creatures associated with them.

"Our findings show that what happened in these rocks happened at very high temperatures, and abiologically," says John Eiler, the Robert P. Sharp Professor of Geology and professor of geochemistry at Caltech, and one

of the paper's authors. "There is no evidence here that microbes ate methane as food. The story you see in this rock is not a story about ice ages."

To tell the rocks' story, the team used a technique Eiler developed at Caltech that looks at the way in which rare isotopes (like the carbon-13 in the dolostone) group, or "clump," together in crystalline structures like bone or rock.

This clumping, it turns out, is highly dependent upon the temperature of the immediate environment in which the crystals form.

Hot temperatures mean less clumping; low temperatures mean more.

"The rocks that we analyzed for this study have been worked on before," says Thomas Bristow, the paper's first author and a former postdoc at Caltech who is now at NASA Ames Research Center, "but the unique advance available and developed at Caltech is the technique of using carbonate clumped-isotopic thermometry to study the temperature of crystallization of the samples. It was primarily this technique that

brought new insights regarding the geological history of the rocks."

What the team's thermometer made very clear, says Eiler, is that "the carbon source was not oxidized and turned into carbonate at Earth's surface. This was happening in a very hot hydrothermal environment, underground."

In addition, he says, "We know it happened at least millions of years after the ice age ended, and probably tens of millions. Which means that whatever the source of carbon was, it wasn't related to the end of the ice age."

Since this rock had been the only carbon-isotopic evidence of a Precambrian methane seep, these findings bring up a number of questions—questions not just about how the Marinoan ice age ended, but about Earth's budget of methane and the biogeochemistry of the ocean.

"The next stage of the research is to delve deeper into the question of why carbon-13-depleted carbonate rocks that formed at methane seeps seem to only be found during the later 400 million years of Earth history," says John Grotzinger, the Fletcher Jones Professor

of Geology at Caltech and the principal investigator on the work described. "It is an interesting fact of the geologic record that, despite a well-preserved record of carbonates beginning 3.5 billion years ago, the first 3 billion years of Earth history does not record evidence of methane oxidation. This is a curious absence. We think it might be linked to changes in ocean chemistry through time, but more work needs to be done to explore that."

In addition to Bristow, Eiler, and Grotzinger, the other authors on the *Nature* paper, "A hydrothermal origin for isotopically anomalous cap dolostone cements from south China," are Magali Bonifacie, a former Caltech postdoc now at the Institut de Physique du Globe de Paris, and Arkadiusz Derkowski from the Polish Academy of Sciences in Krakow.

The work was supported by an O. K. Earl Postdoctoral Fellowship, by the National Science Foundation's Division of Earth Sciences and its Geobiology and Environmental Geochemistry program, and by CNRS-INSU (French research agency).

A night with Casey Handmer at the movies

It might not be scientifically accurate, but Thor is awesome

CASEY HANDMER
Staff Writer

Last Monday evening the Glee club rehearsal was moved to Tuesday, so with heaps of spare time, I decided to go to the movies. Of course, on Tuesday, I was in a dead panic about homework, but by then I'd already seen the movie, so it was too late. I went to see Thor, the first of a series of hotly anticipated 3D blockbusters fated to hit the big screen this summer.

Thor had already generated significant press as another piece of the Avengers puzzle, which will shortly take its full-fledged form. The Batman formula for big-screen comic adaptation success has been generalized, first with Iron Man, and soon with just about any other superhero. Except the Incredible Hulk.

The film opens with an apparent storm chasing sequence in New Mexico, in which we are introduced to Jane Foster (Natalie Portman), her advisor, and friend as they perform some kind of scientific research. It's as exciting as we imagine research will be before we actually start, complete with a soaring sound track. Naturally, some degree of suspension of disbelief is required to enjoy movies about people who whack things with hammers (whoops, spoiler) and about five minutes into this movie, I gave up trying to tally the scientific mistakes, and just let

the awesome take hold. As already mentioned, Jane Foster is played by the academy-award-winning Natalie Portman, an actress who is just versatile enough to portray the inner turmoil and angst of an experimental physics grad student. Her celebrated physical beauty, too, is just about adequate to portray the average physicist (full disclosure: I

physics grad student's natural flair for courtship. The character of Thor is played by Chris Hemsworth, a man whose personal charisma and physique are entirely characteristic of his Australian nationality (full disclosure: I am Australian). But seriously - Hugh Jackman, Sam Worthington, Russell Crowe, Eric Bana, Hugo Weaving, Mel Gibson

They are watched for outrageous 3D CG action sequences, which give us, for the first time, an answer to the age-old question: pirate vs. ninja. Actually, there are neither pirates nor ninjas in Thor, but this does not matter. After sitting through all of thirty seconds of tedious, tedious character development, Thor finally starts

Hemsworth's characters climbing onto a roof to look at stars and talk physics (minus equations, unfortunately) made me wonder just how many Caltech students had been consulted by the producers.

The film at one point flirts uncomfortably with the concept of genocide. Without delving unnecessarily into the subtext, the reader is invited to speculate which race, Thor and fellow gods, or the dark skinned, red eyed frost giants is more representative of the "Aryan ideal".

Speaking of which, for a society of supposedly extremely advanced technology (pushing the atheist, rationalist agenda...), the gods seem to have extreme difficulty with subtlety, or being quiet at all! Being beamed across the universe is all very well, but leaving a huge crater every time you land on a planet somewhat undermines the concept of stealth.

At the end of the day, I did not go to see Thor to think, at all.

I went to see huge explosions everywhere for the very reasonable rate of about \$6 an hour, and in that respect Thor represents a reasonable advance on last summer's offerings and a promising trend for future 3D action films.



<http://ii71222efy.blogspot.com>

am a physicist), although there was one moment where she sounded disturbingly like Sean Carroll. Still, by hitting Thor twice with her truck she demonstrates the typical

cough. Apparently he was cast for his dance-like hammer wielding during screen tests, but movies of this nature are not usually watched for high-quality acting.

smashing stuff, which is what we came to see.

There are a number of relatively resonant scenes in the film. In particular, Portman's and

Newest Pirates is not as grand, but is still entertaining film

CASEY HANDMER
Staff Writer

Continuing the trend of 3D summer films, I recently saw the latest Pirates offering. This film stands strong on its merits, however it is also a response to the pre-existing trilogy. At first sight it is both leaner and meaner. With a budget of "only" \$150m, as compared to more than \$300m for "At World's End", and with \$55m going in Depp's pocket, the film lacks much of the massive CG battles and scope of the previous films. In particular, the final sea battle of "At World's End" would be difficult to top.

Instead, the film is driven by a relatively small cast of characters following a simpler plot. The most successful elements of the previous films have been recast, adapted, and reused. Depp as Captain Jack Sparrow appears in nearly every scene, and continues to be the most interesting character. While the character of Sparrow has earned more money at the box office than Avatar, it is worth noting that Depp's portrayal was not initially supported by Disney. Dick Cook,

who backed Depp, resigned from Disney during the production of "On Stranger Tides", casting something of a shadow over the franchise.

stand without it. Additionally, the departure of Orlando Bloom and Keira Nightley from the story has left space for new characters, filled largely by Penelope Cruz

Barcelona", but I was unsure how well she'd fit into the larger-than-life surreal world of Pirates. Not to worry! For the most part she carries it brilliantly, and her on screen

chemistry with Depp is much more lively than his dalliance with Knightley in the previous films.

I was somewhat surprised by the addition of topless women (hence the 3D, I suppose) as mermaids. While Disney generally makes family friendly films, the violence-nudity exchange rate has always

puzzled me. For instance, the presence of occult, undead, and thoroughly nasty characters in many Disney films is accompanied by violence and mayhem and

presented as a normalized behavior and perfectly acceptable entertainment for six year olds. Yet, even in this modern and relatively sexualized film, nudity is only ever hinted at. Is it that the primary market of the American public is so ashamed of bodies (and women's bodies in particular) that nudity is reflexively associated with forbidden, repressed, and perverse sexual behavior? The reader is invited to speculate what Pirates, produced for the European market, might have looked like.

The film at times veers towards self parody, signaling its role as a coda to and comment on the original trilogy. The score of Hans "Inception - BOOM" Zimmer is both familiar and playful, highlighting the satirical nature of a few of the more high-strung moments. Despite the entertainment value of the film, I hope that this now rather tired old horse is not flogged to death. The formula of swashbuckling adventure can be recycled without tainting the charm of the original series. But who knows: perhaps what the Pirates franchise will get next is a gritty prequel reboot starring Shia LaBeouf?



<http://www.fourseasonsclimbingdirect.com>

The film is shot in 3D, a noticeable increment on the originals. For the most part, this added depth is used tastefully and intelligently, though the film could probably

as Angelica, an old flame of Sparrow's. It was this addition I was most apprehensive about. I last saw Cruz in the highly regarded Woody Allen film "Vicky Christina

Places to dine while SURFing this summer

Plate 38 is nothing special, but Tres is a must for tea time

WESLEY YU
Staff Writer

Plate 38 is a trendy new spot in a not often visited area on Colorado and Sierra Madre. Having burned down last year, it has only been

Tech number 22, May 2, 2011) or Marston's French Toast for a dollar more.

But perhaps I just had a bad experience and, since a seasoned food journalist never makes an uninformed ruling, I went back for

Spun as "A Playful Twist on a Classic Tradition", afternoon tea at Tres was very different from what I was expecting. Having fully experienced the classic British version, I was expecting thin but hearty sandwiches, scones, and

highlights from the "Savory Little Snacks" portion were the caviar-topped steamed buns with crème fraiche and the beet macaroon with goat cheese.

The salty caviar warmly accented the buns, which were soft and fresh. I didn't expect the beet macaroon to be very good, but I was pleasantly surprised by their rich flavor that was set off by the tangy goat cheese.

Out of the savory snacks, these were probably my favorite. I also found the mini foie gras sandwich with quince, although tangy, were very tasty.

The tea was wrapped up with a selection of "Secretly Lusted Sweets" which included after eights, chocolate tablets, an almond orange tart, and financiers, among others. One of the most interesting – or, at least memorable – were the chocolate-covered pop rocks which exploded as soon as you ate them. Having never really experienced these before, I quite enjoyed this part of the dessert selection.

The chocolate tablets were of two varieties – dark chocolate with sea salt and white chocolate with peppercorn; although the former was as expected,

the white with peppercorn had an unexpected bite that was very interesting.

I finished up the meal with raspberry pipets, which were a combination of fresh raspberries skewered on a disposable pipet that was filled with the fruit extract. I enjoyed being informed by the waiter on how to use the pipets, but the dessert was also a treat to eat in such a pseudo-scientific manner.

The \$29 per person price did put a slight damper on my enthusiasm for the meal, although it was completely made up for by the atmosphere and the unlimited refills on the tea (and I took full advantage of that). The setting and room were gorgeous, and I was comfortably seated on a couch in front of a large fireplace.

The décor, great service from the waiters, and the lighting made for a completely enjoyable several hours when I expected it to be more of a quick snack.

I was also surprised how full I was after such small servings of limited finger foods, but the selection was definitely sufficient. Overall, I would strongly suggest this splurge.

Location: 465 South La Cienega Blvd. Los Angeles, CA 90048

Hours for Afternoon Tea: 3-5pm, daily.

Evaluation: Very good.



The truffle burger wasn't incredible, but it certainly looked good.

- Wesley Yu

resurrected in the past couple months. It offers basic American fare and claims to serve "fresh foods using local organic ingredients [...] at a reasonable price."

Being a big breakfast fan, I first visited Plate 38 for the first meal of the day.

Their menu isn't extensive, but does offer some extremely interesting dishes including a prosciutto and artichoke omelet, braised smoked pork belly, and a smoked salmon croissant.

I opted to try the wild mushroom and truffle omelet (\$12.75) and the brioche French toast (\$9.5).

I must admit that my expectations were high given the rave review in the Pasadena Weekly and the relatively decent Yelp rating (3.5 stars).

Unfortunately, I learned that "rave reviews" do not necessarily equate to quality food. I was highly disappointed.

The omelet was underdone and runny inside.

The mushrooms were extensive and not notable, but the truffle seasoning did give a slight nutty, rich edge to the omelet.

That would have been fine except for the snotty consistency, which turned rich into gross. The French toast was not bad, but not incredible for the price. I would rather have had Jullienne's (see

dinner. Thankfully, that was better. Though the prices were still quite high, the food was acceptably tasty. I ordered the Four Cheese Sexy Mac side (\$7), Braised Beef Short Ribs (\$18.5), and the 1/3 lb Truffle Burger (\$12.5).

The Sexy Mac was quite good, living up to an appeal that wasn't exactly sexual, but was definitely gastronomical. The macaroni was done just enough, and the cheese was ample and well portioned.

I also liked the short ribs. They had a bit too much sauce, but they were well marbled and tender.

I wouldn't say they melted in my mouth, and I thought they were a bit over-done, but it was a good attempt.

The truffle burger was not any better than the burgers from the Caltech Coffeehouse, which are not bad for a quick midnight snack, but for double or triple the price, I think the Coffeehouse wins--especially due to its proximity.

All in all, Plate 38 was slightly disappointing.

Location: 2361 E. Colorado, Pasadena

Hours: Sun-Th 7am-10pm, Fri and Sat 7am-1am, Mon 7am-3pm

Evaluation: Not terrible, but consider other options.

scalding tea that is better known for its heat than its flavor. However, Tres fully lived up to its founder's reputation, and I was able to spend a couple of delightful hours lingering over what was definitely a unique twist on many of the classic tea-time dishes.

For the actual tea, I tried the Nobo Whole Fruit and the SLS Blend. The former was a house blend of wild strawberries, blackberries, and raspberries and defied all expectations for a house tea.

The fruity sweetness complemented the rest of the menu. The SLS Blend was also excellent, though I preferred the fuller flavor of the fruity tea. The SLS was a version of Ceylon with accents of jasmine and various antioxidants for a more pointed taste. I preferred this tea after the addition of some of the amazing acacia honey that was provided.

Although very different, both types of tea went well with the variety of snacks that were provided. Some of the



Drinks at Tres are not only delicious but artfully presented.

- Wesley Yu

An open appeal: Funding for mental health class

Dear President Chameau, Provost Stolper, Vice President Sargent, and other concerned members of the Caltech community,

I am writing concerning a topic of utmost importance to Caltech: the mental and emotional well-being of its community members.

As an Upperclassman Counselor, Health Advocate, and undergraduate student, I am acutely aware that Caltech students can strongly benefit from a class that teaches the theory and practical application of good personal and interpersonal mental health practices. Since January I have been working to create such a class with Dr. Lynn Paul, a psychology lecturer at Caltech and a clinical psychologist in Pasadena for the past several years. These credentials make her the ideal person to present the topics in a way that is both academically rigorous and personally enriching.

The class on leadership and interpersonal communication that Dr. Paul would like to teach is an innovative way of approaching the question of improving mental health awareness. It is an excellent format for many students at Caltech in that it teaches not only the practical application of good mental health practices, but also the theory behind it. It allows students to have an intellectual and emotional understanding of the issues of mental health, while posing it alongside key research in social and abnormal psychology. This unique formula appeals to the natural intellectual curiosity of Caltech students, making it an ideal way to present the topic here at Caltech.

Unfortunately, I have been informed that Caltech is unable to provide the course due to funding issues, though I am still hopeful that we can find a way to finance it. There is an obvious need and an obvious desire among Caltech undergraduates to learn about their mental health. The need stems from the demanding and stressful academic culture of Caltech and the lack of any class in the Caltech

curriculum that addresses how to navigate the psychological side of being a high-caliber scientist or engineer. The need is also evident in the sad loss of several of our community members to suicide in the past few years and the findings of our Mental Health Task Force. The desire for a class of this type is evident in the fact that over 70 undergraduates were on the waiting list for Dr. Paul's psychology course this term and that I have personally talked with dozens of students who would like a class of this type.

The proposed class is clearly in line with the mission statement of Caltech, recommendations from the Mental Health Task Force, and the Caltech On-Campus Residential Safety Net Proposal by the Interhouse Committee.

The mission of the California Institute of Technology is to expand human knowledge and benefit society through research integrated with education. We investigate the most challenging, fundamental problems in science and technology in a singularly collegial, interdisciplinary atmosphere, while educating outstanding students to become creative members of society. –Caltech Mission Statement

We propose that a comprehensive Undergraduate RA training program should include instruction in the topics of: leadership, self awareness, active listening, team-building, mentoring, stress management, conflict resolution, first aid, diversity issues, alcohol education, and assisting freshmen in transitioning to college. –Excerpt from the IHC On-Campus Residential Safety Net Proposal

Caltech faculty should consider an appropriate "First-Year Experience" seminar, both as part of an approach to stress reduction and as part of our role in providing each student with the means to achieve according to his abilities. –Excerpt from the MHTF report

The class would integrate research and education and educate outstanding students to become creative members of society. It would also include instruction

on leadership, self awareness, active listening and mentoring and provide each student with the means to achieve according to his abilities. This class would be available to the general student body and increase the number of informed eyes and ears that can direct students into the current safety net. However, this class would not only fulfill the function of responding to the mental health concerns here at Caltech, but it also addresses the needs of students post-graduation. Since Caltech educates its students to become leaders in science and technology, it is important to prepare them to be able to navigate the personal and interpersonal adversities that are intimately intertwined with the science and technology problems they will need to solve. This class would do this and, due to its emphasis on relating mental health to key research, would give our undergraduates a uniquely "Caltech" way of understanding mental health issues.

Finally, it would be academically rigorous. Dr. Lynn Paul brings considerable experience from both academia and clinical psychology, making her the ideal person to teach a class on the psychology of leadership and interpersonal communication that is worthy of the educational standards of Caltech. She is the Director of the Caltech Brain Imaging Center Psychological Assessment Lab and a Lecturer and Senior Research Fellow in Psychology. Dr. Paul also directs the Psychological Assessment services for all Caltech investigators who perform brain imaging. She is a licensed clinical psychologist with over 15 years of experience in psychological diagnosis and cognitive assessment in both clinical and research settings, and has been teaching psychology at Caltech for several years. Her plan for the class is not simply a "skills-training" course, but one that incorporates research, communication theory, and human psychology in a format that is scientifically stimulating. Her course plan is in line with

what makes Caltech education uniquely effective: it will give a solid theoretical understanding of the psychology behind good mental health that students can then practically apply.

The idea for the class has been eagerly received by many members of the Caltech community. I have talked with many undergraduates, including Upperclassman Counselors and Health Advocates who were excited about the prospect of the class. It was strongly welcomed when it was presented to the Graduate Resident Associates, Area Coordinators, and Master of Student Housing. It has also been well received from the beginning by the counseling center staff. Many more members of the faculty and safety net have also given it their support. For example:

I think a course like this would be a great addition to the safety net and really hope it can be offered. –Barbara Green Volkmann, Dean of Undergraduate Students

[The students] developed it into something very worthwhile... a curriculum that had the discipline of psychology as its basis with an applied focus. –Kevin Austin, Senior Director, Health and Counseling Services

The Mental Health Task Force did not know how to design such courses within Caltech's unique culture, but invited the faculty to "consider" doing so. Echoing Kevin's remarks, Lynn Paul has now designed an approach. The proposed courses could nicely address [many of the MHTF recommendations]. –Henry Lester, Chair of 2011 MHTFAs a former member of the Mental Health Task Force that Henry chaired, and a close collaborator of Lynn's, I want to strongly echo [these sentiments]. Caltech needs courses such as the ones Lynn is proposing, and Lynn is the ideal person to teach them. I would strongly urge us to pursue this and to find a mechanism to make these courses available to students. –Ralph Adolphs, member of MHTF

Despite this reception, the unique nature and importance

of the situation, the professional credentials of Dr. Lynn Paul, student interest, the alignment of the course with the Caltech Mission Statement and with the recommendations of the Mental Health Task Force Report and On-Campus Residential Safety Net Proposal, its advocacy by the Undergraduate Dean of Students, by the Director of the Caltech Health and Counseling Services, members of the MHTF committee and other faculty, it remains a struggle to make this idea for a class into a reality. I am disappointed by the fact that Caltech has not yet been able to find a way to fund this class in an appropriate division despite its importance to the mental health of the community. So I propose that special funds be set aside, specifically for this activity, to indicate Caltech's level of commitment in continuing to pursue and address these ongoing issues.

Sincerely,

Peter Buhler
Junior, Geology

Course description

Psy or PA ##. Leadership and Interpersonal Communication. 9 units (3-0-6); first term. An introduction to the field of interpersonal psychology, with an emphasis on cross cultural communication, mentoring, conflict resolution, risk assessment, and effective listening. In addition to communication theory, this course will incorporate key research findings from social and abnormal psychology that will prepare students to more effectively navigate leadership roles and interpersonal relationships they are likely face in the workplace. The course will include specific training in empathic listening skills and psychiatric risk assessment. Instructor: Paul.

Cheap, fast Japanese food available at Sansai

JOY LIN
Staff Writer

Most of my reviews have been about restaurants we wouldn't be able to reach without a car. However, I've discovered over the years that there's no need to go far to get good food even if you haven't started that Chem 3a lab report due tomorrow. Lake Avenue offers a huge selection of food choices, but after a couple of months of Panda Express, Chipotle and Rubio's, it's easy to start getting tired of them. What some of our undergrads might not know is that located on the other side of Del Mar (the Caltech side) is Sansai Japanese Grill.

What differentiates Sansai from the four or five other Japanese restaurants in the area is the fact that it offers all the benefits of a fast food place without being greasy and unhealthy. Also, the food comes out hot usually in 10 minutes on a busy day, so you won't be hungry for long! It's clean, relatively fast for what it offers, and only a bit more expensive than other places. The menu also includes significantly more than one would expect, such as a healthy selection of vegetarian options, chicken/pork/beef/salmon/shrimp bento box style combos, sushi and sashimi, tempura, noodles and your choice of white or brown rice. With fresh sashimi that beats Chandler's by a

long shot and specialty rolls that will make you drool, Sansai is the Japanese place to be! Furthermore, I spied on a couple of neighboring tables. Their yakisoba and yakiudon noodles (both stirfried) looked amazing and not as greasy as those found in Chinese fast food places.

Most people who have been to Sansai agree that the salads are what make its stand out. I would certainly concur. You may wonder how a Japanese place can be known for its salad, but for the full experience you'll have to find out for yourself. For me, the salads provide a fresh and zesty appeal to the meal that you just can't get at any other fast food place. They give you at least four different options

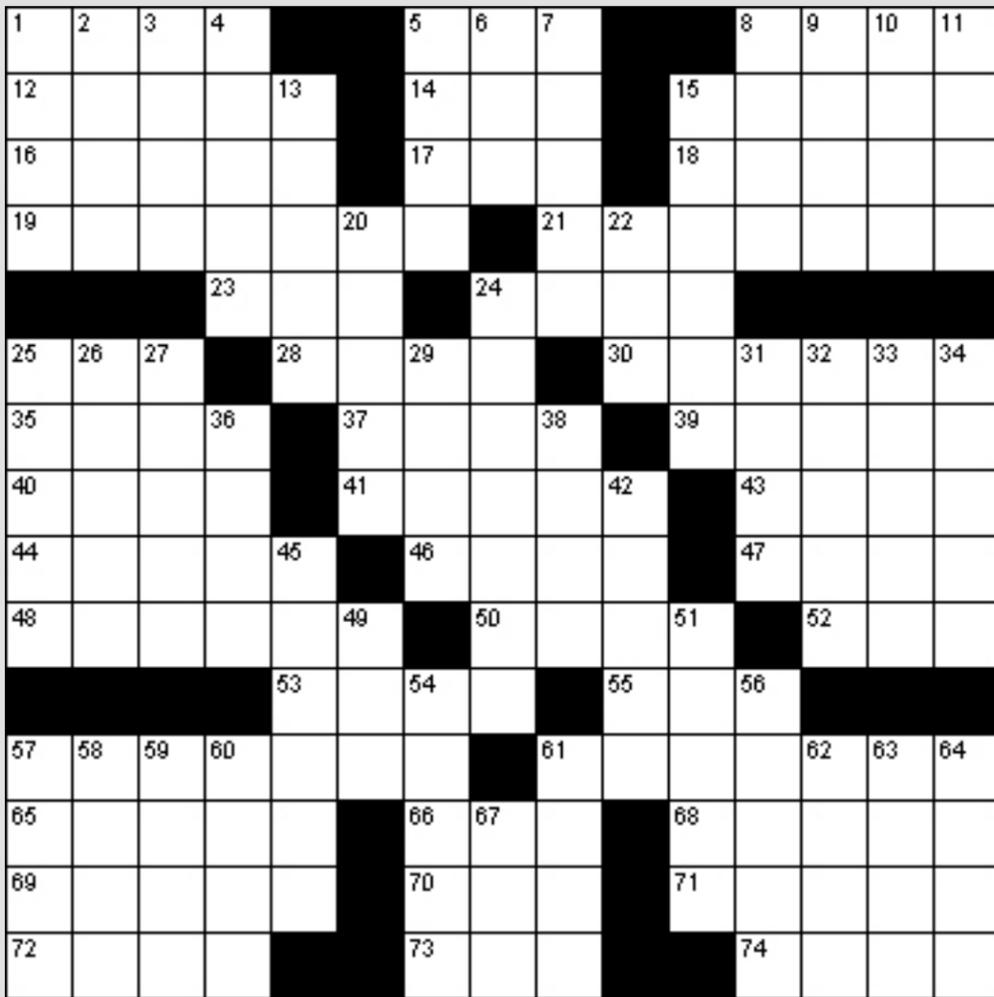
of salads, very generous portion sizes and the flavors aren't over done. In fact, my favorite salad (perhaps tied with that of Green Street Restaurant's Dianne Salad) is the Sumi salad. With shredded green and purple crisp cabbage, carrots, green onions, almonds, crunchy noodles as well as sesame seeds, you can see the resemblance. Furthermore, it's a lot cheaper than the Dianne Salad.

I ordered the Shrimp plate as well as the California Roll & Tempura plate with Sumi and Oriental salad. The shrimp was plump and tasty while the tempura was hot and crunchy. The tempura was so light and crispy that I wanted to get another order right away! The

shrimp was a bit sweet, and kind of reminded me of Chandler's luau skewers, though with a higher salty to sweet ratio. I especially liked the mushroom/vegetable skewer they gave with the shrimp. The vegetables were obviously marinated in sauce beforehand, so each bite was just perfect. The California rolls were just as expected – very tasty. The salads were fresh, delicious and added a citrus taste which complimented the other flavors very well. Each plate was also very filling. In all, the two plates each cost about \$9.

For those of you who've been there before, you can also call in ahead with your order and save even more time.

Today's Puzzle: Crossword



Across

- 1. Stringed instrument
- 5. Young child
- 8. Fuss
- 12. Obviate
- 14. Be indebted to
- 15. Fragment
- 16. Water barrier
- 17. Single
- 18. South American animal
- 19. Restless
- 21. Brass instrument
- 23. Japanese currency
- 24. Scorch
- 25. Weep
- 28. Small stream
- 30. Ploy
- 35. Harvest
- 37. Amphibian
- 39. Very slow tempo
- 40. Hawaiian island
- 41. Overhang
- 43. Musical composition for one
- 44. Contempt
- 46. Sate
- 47. Carbon black
- 48. Purloined
- 50. Zeal
- 52. Solfa syllable
- 53. Parch
- 55. Label

57. Part of a set of

- 61. Female inheritor
- 65. Country life
- 66. Regret
- 68. Visual part of TV
- 69. Animated
- 70. Lout
- 71. Church officer
- 72. Manufactured
- 73. Moist
- 74. Musical instrument of ancient Greece

Down

- 1. One of two equal parts
- 2. Assert
- 3. Wander
- 4. Righteousness
- 5. Implement
- 6. Possess
- 7. Fangs
- 8. Movie
- 9. Type of year
- 10. Highest attainable level
- 11. Type of fuel
- 13. Postpone
- 15. Denotes more than one
- 20. Combine
- 22. Music with syncopated melody

- 24. Stringed instrument with keyboard
- 25. Traverse
- 26. Respond
- 27. Cheerful sounding search engine
- 29. Loiter
- 31. Musical setting for a religious ceremony
- 32. Sulk
- 33. Ice hut
- 34. Part of a comb
- 36. Knitting stitch
- 38. Small wooded hollow
- 42. Roofing material
- 45. Cuddle
- 49. Indicating maiden name
- 51. Callow
- 54. Pointer
- 56. Kind of restaurant
- 57. Pack to capacity
- 58. Polynesian dance
- 59. Desiccated
- 60. Part of a church
- 61. Lift with difficulty
- 62. Miniture whirlpool
- 63. Soothsayer
- 64. Painful
- 67. Arab federation, initially

[http://www.puzzlechoice.com/]

Nine & Nine Thai food is bounteous booty

H.A. NGUYEN
Staff Writer

LUIS NAVARRO
ALEX ATSUSHI TAKEDA
GREG OR CACTAUR
Contributing Writers

Last Thursday, we decided to sprinkle some Southeast Asian magic on our daily lives. Right across from the well-known Target on Colorado Boulevard, there is a den of lime and chili named Nine & Nine. The interiors were garnished with mirrors, one elephant relief, and classy B&W detailed vegetables photographs with properly unfocused backgrounds.

Our first contact with Thailand came in the form of exotic drinks. Upon ordering a young coconut drink and expecting it to come in a glass, we were surprised by a delicately cut whole coconut. The vessel contained soft white moist and tender flesh with refreshing water.

The Thai tea had the appropriate degree of sweetness according to its drinker, a little less than normally found in other Thai restaurants, whereas the chrysanthemum tea was "sweet and delicious...tasting like a flower should," according to Simonian. The drinks cost either

\$2.00 or \$2.50, except for the coconut, whose fullness of flavor was well worth \$3.95.

The water was average.

After much deliberation over the cornucopia of options, we finally decided on what to order.

(\$8.95). The broth resembled the aforementioned dish, but with the addition of lemongrass pieces. The hearty broth sea was sailed by mushrooms, tomatoes, and green onions. Its fauna included fillets of sole fish, which were slightly rigid, but had appreciable flavor.

Amid oceans of tom yum, we also had an island of kai kua (\$7.50). The opinions of the court

noodles, chicken and eggs, accentuated with green onions, served on a bed of lettuce. Those with allergies should steer their ships away from the peanuts. Under the influence of spicy foods, the other members ruled that it was too bland a composition, and would benefit from more spices.

Next, we lowered our anchors into Roast Duck Curry (\$9.50) Bay, named so during the Roast Duck Dynasty for its royal family of roast ducks. This roast duck dish might have been the most flavorful of our dishes, as the roast duck floated amidst red and green bell peppers, Thai basil, and pineapple, bathing

in a terracotta chili and coconut curry. The roast duck connoisseur would like to remark that this paragraph has more instances of roast duck than his dish.

After so many adventures in Asia, our sailors had no choice but to dessert. The choices were few, so we explored two options. The mango sticky rice (\$5.95)

but not mushy, and the mango was ripe and succulent. All were served with coconut milk and a sliced strawberry (hear that, Mannion?).

The fried banana roll with ice cream (\$4.95) was also scrumptious but very sweet. The contrast between the warm rich banana and the cool creamy vanilla ice cream was clearly the chef's contemporary expression of yin-yang. The yang, however, was disruptive, since the sugary banana was glazed with honey, an addition we all deemed unnecessary.

In conclusion, our adventures were satisfactory, especially considering for our limited amount of pieces of eight. If you have been in the sea for long, it is a good place to treat your scurvy with abundant citric flavors. It might not be as good a place for bringing your wench compared to some excessively expensive restaurants like that Americana locale mentioned in this here periodic some moons ago.

PS1: They also deliver for free for more than \$15.

PS2: We would like to note that any similarities between this restaurant and nautical themes and pirates, extant or extinct, are entirely fictional and purely coincidental.

Nine & Nine Thai Kitchen, 754 E. Colorado Blvd, Pasadena, CA 91101

Open daily 11 AM - 10 PM
Tel.: (626) 844-1899



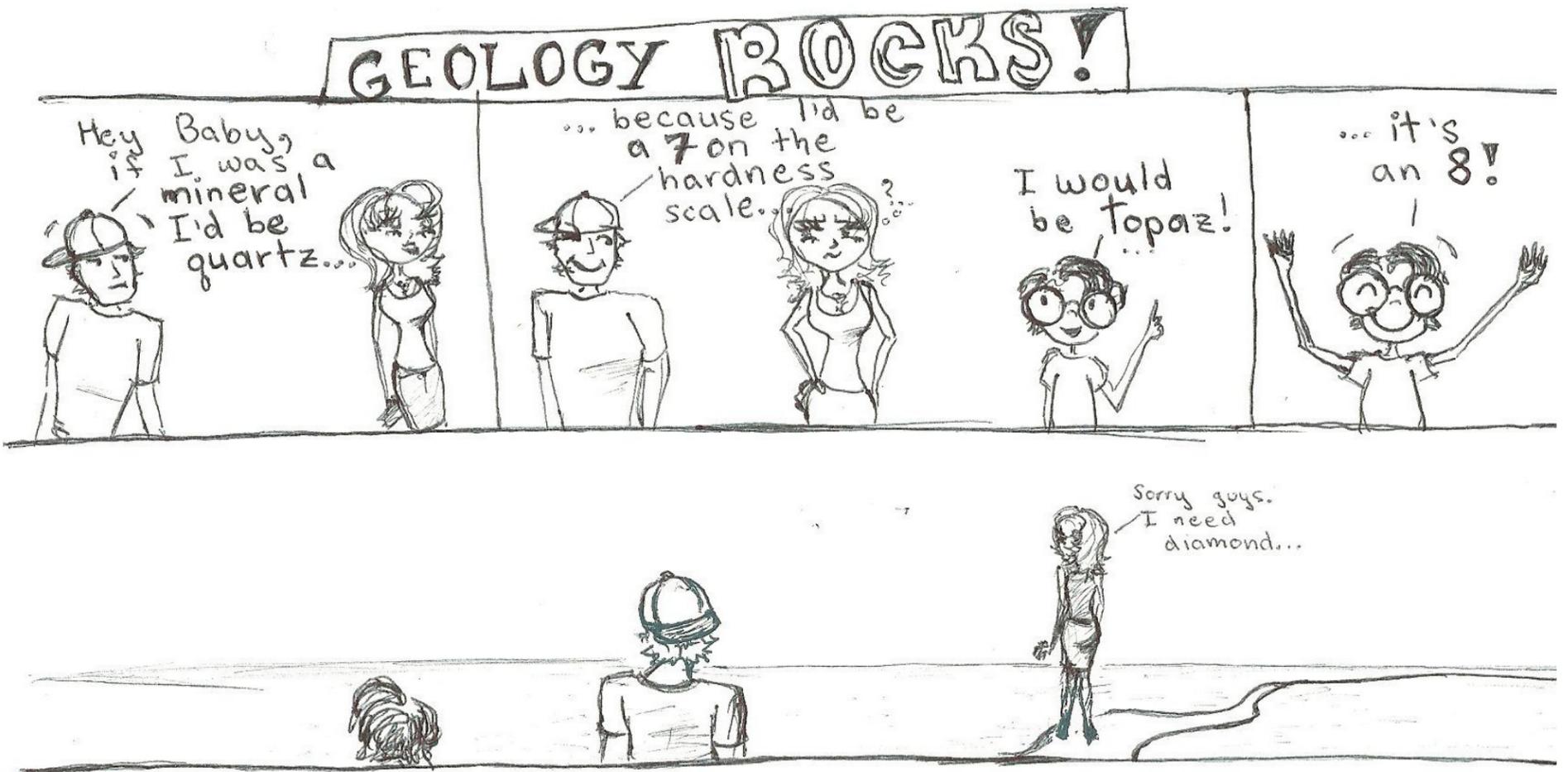
Top: The mango sticky rice was a refreshing finale to the meal.
Bottom: An assortment of Thai delicacies awaited the feasters.
- Luis Navarro

One of the entrées was the house tom yum noodles (\$7.50). It contained fish balls and cooked shrimp floated in a spicy and very limey broth, which also had thin and fair-colored rice noodles. There were also some inedible lime leaves that added to the strong lime flavor.

Another related order was the tom yum sole fillet soup

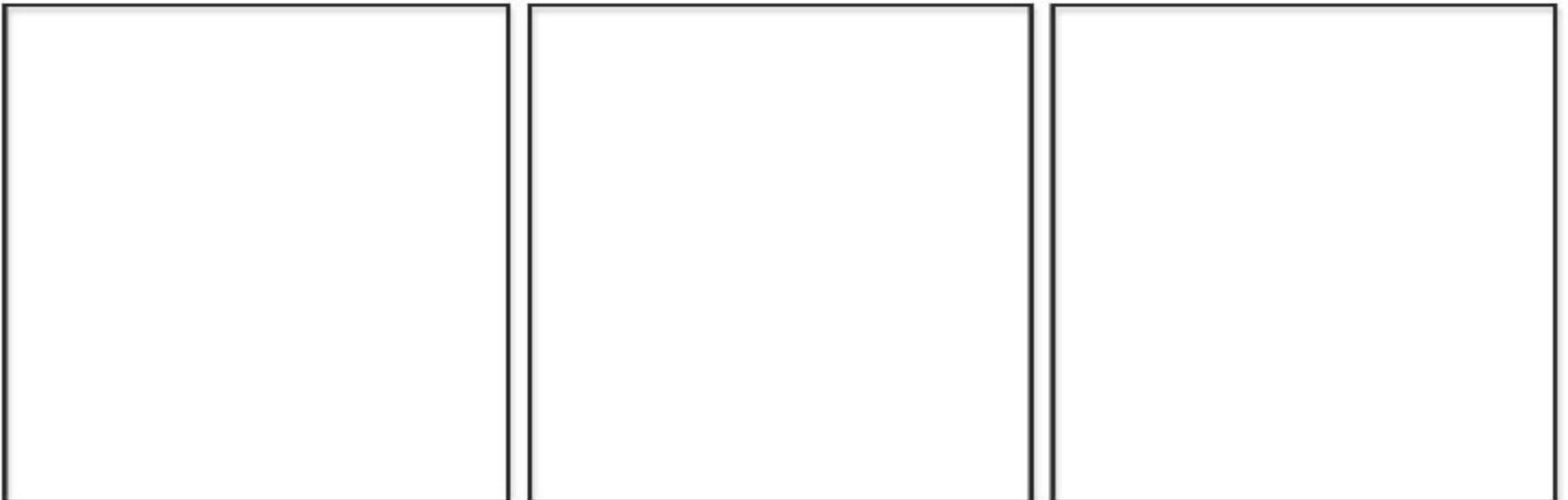
dissented. For one, it was definitely a very vegetable-oriented dish, consisting of pan-fried flat rice

arrived in a porcelain vessel and reminded us that we were in the tropics. The rice was al dente, soft



By Alexandra Souverneva

David Ginola is currently embroiled in a licensing suit with Paul Sennorex; feel free to provide your own off-color comics!



Thanks to all of our readers for such a great year! Your support has been invaluable to our growth and success.

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