

First Issue!



Hello, PRISE! I am Alyssa Klein and I am continuing a tradition started last year by Shimwook Lee: a newsletter, now for PRISE, BLISS, and PRIMO! I hope this helps everyone get to know each other better and little bit about everyone's research in a fun, easy way.

I am a rising junior in Lowell House, concentrating in Chemistry currently, but planning to switch to Human Developmental and Regenerative Biology soon. I'm originally from Philadelphia.

I work in the Scadden lab at Mass General Hospital, studying the effect that different levels of oxygen in the bone marrow can have on the stem cell niche.

Apart from science, I love to sing and perform with the Harvard Callbacks, a coed a cappella group, during the year. I also am part of the Harvard-Radcliffe Science Fiction Association and I volunteer at the Harvard Square Homeless Shelter.

Also, because it needs to be shared... My most embarrassing lab experience happened this summer. I had never worked with mice before, so while I knew conceptually that they could bite, I wasn't really expecting it. I was taking a mouse out of its cage when it sunk its teeth into my finger. I screamed like a little girl and my postdoc looked at me like I was crazy.

I would like to thank my wonderful team of newsletter writers: Kevin Ni, Roxana Feier, Anji Tang, and Richard Alt. And finally, thanks to you, all of PRISE/BLISS/PRIMO, for making a newsletter like this possible in the first place!

Sincerely,
Alyssa Klein

*Feel free to send questions or comments to
aklein@college.harvard.edu*

Natalie Jacewicz



Year: 2013

Concentration: Organismic and Evolutionary Biology

House: Winthrop

Hometown: Memphis, Tennessee

PRISE research project: I'm researching what drives the evolution of skull morphology in Anolis lizards. I know you've all been worried about it, so rest easy; I'm on it.

About Natalie: During the year, I do Mock Trial, Stories for Orphans, and Stressbusters -- a group of student volunteers that gives free back rubs to other students and is not as sketchy as it sounds.

Most embarrassing lab experience: Much of my job in the lab involves working with live lizards -- and this means catching them. When I started at the lab, I was not worried about this, because I was unaware that lizards move in a separate space-time continuum from my hands. I am so bad at catching them that one day not only did four lizards escape, but they then proceeded to climb all over me -- they perceived me as that little of a threat. My postdoc removed them.

Fun fact: I'm an ordained minister.

Charlotte Lee



Year: 2014

Concentration: Neurobiology MBB or Human Developmental Regenerative Biology- learning towards the latter

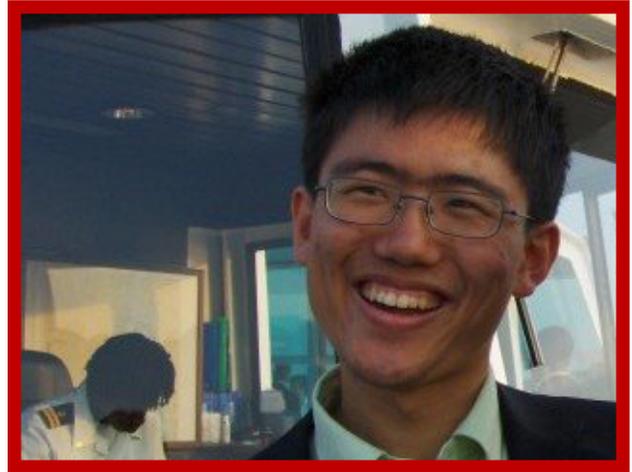
House: Adams!

Hometown: I grew up in Tokyo, Japan, was born in San Jose, California, but am ethnically Chinese. A lot of my relatives live in Hong Kong, which has become a second home somewhat. :)

PRISE research project: I work in the Greenberg Lab under the Neurobiology department at Harvard Medical School, and am studying a particular transcription factor called MEF2 (myocyte enhancer factor 2) in the hippocampus, which is primarily involved in memory. When activated by sensory experience, this transcription factor is known to restrict the number of excitatory synapses by inducing the gene expression of certain genes. During development, excess neurons are formed, so the elimination of synapses through neuronal activity and synaptic activity is crucial in the adult organism. These synapses can be eliminated through an activity-regulated manner that depends on our sensory experiences, which throughout our lifetime, affects synaptic connectivity and in turn, learning and memory.

I'm looking for direct transcriptional targets of MEF2 (specifically MEF2A and MEF2D0), which is highly present in many areas of the brain, and also the biochemical mechanism by which these transcriptional programs are activated by MEF2, using conditional knock-out mice. A really interesting experiment that we've done so far is to put mice into an "enriched environment", which basically means giving them new and colorful toys to play with for a set amount of time, observing them, and then seeing what genes have been induced

Kevin Chen Ni



Year: 2012

Concentration: Chemical and Physical Biology

House: Cabot!!!

Hometown: I hail from Shanghai, China, and I grew up in Utah.

PRISE research project: I work in the structural biology lab of Dr. Rachele Gaudet (Molecular & Cellular Biology). The goal of my project is to solve the structure of an ATP-binding cassette transporter. My tasks involve protein purification, crystallization, and structural determination.

About Kevin: I had the terrible luck of getting surgery the week before PRISE began. My recovery has been excellent so far in spite of the grueling bike rides to and from lab. Back in the day and during my prime years, I was an avid longboarder along with my linkmate (PRISE '09 Fellow: Josh Zagorsky).

Most embarrassing lab experience: The Structural Biology Supergroup is a very close community. I call one of our grad students by the nickname "Aunt Jessy", and my roommate calls her by the nickname "Grandma" (In reality, she's only three years older than us). My professor's office is next to my cubicle; when she first heard my use of Aunt Jessy, she paused before smiling and laughing. =)

Fun fact: My mom named me Chen (Chinese for morning).

Scott Kim

by these new sensory experiences. From the research done on MEF2 so far, it has been found that many of the transcriptional targets are mutated in epilepsy, autism and other neurological disorders, so it is interesting to see how these mutations may be related to MEF2's control of certain genes.

About Charlotte: From what I can recall, I became interested in science because of a book my dad bought me when I was little. It was a historical biography on Marie Curie that was written like a Japanese anime book for children, and I remember it really inspiring me to challenge myself to pursue the unknown in science. She became like a role model to me, especially since all of my close relatives and family are in business/finance-related fields. As a little kid, I admired her strength and perseverance and wanted to win the Nobel Prize just like her (although reality soon kicked in :)! She made me curious about the physical world, and made me ask "Why" so much more. Outside of science though, I'm really interested in history and understanding how the past has shaped the way our present world is, and about the dynamic relationships between nations; my favorite periods in history are the French Revolution and the Cold War. Perhaps because of this and also because I acquired a "traveling bug" from my parents who loved taking me on traveling trips from Venice to Beijing to trekking across the Silk Road, I'm heavily involved in Model United Nations, and the International Relations Council at Harvard. As a pre-med, I'm also hoping that in the future, I can go on a Doctors without Borders trip, or work part-time for the UN, which are some of my more serious goals amongst some ridiculous ones such as becoming a part-time cake shop owner :)

Most embarrassing lab experience: Haven't had one that is too embarrassing yet, but...aside from going to the bathroom several times in a row to take power naps on my first day of lab (I was jet lagged...and I promise it didn't happen again!), and going a little berserk in fear of RNase contamination by wiping literally every part of my pipettes, I did have a horribly bad PCR day. First, I pipetted twice as much mastermix into one tube. Then, I pipetted too little, with my mentor ultimately noticing that I had run out of mastermix. I had to re-prepare everything for that one tube. Finally, as I was getting ready to put the caps onto my 8-tube rows and run them, I lifted it up to check the contents and accidentally flicked the bottom of the tubes. There was a slight pause, after which my mentor standing behind me said, "...umm, you could also note that there could be cross-contamination from tubes 26-29" amongst all the other notes I had to make.



Year: 2014

Concentration: Undecided (potentially chemistry?)

House: ADAMS

Hometown: Troy, MI

PRISE research project: E.coli Production of C8/C12 Fatty Acids and Alcohols as Biofuel Additives

About Scott: When I was little I used to have dreams of being abducted by aliens all the time, literally at least once a week. Then one day (I don't know if this actually happened or a dream), I remember a vivid experience of seeing a UFO floating near the house next to mine. This FREAKED me out. So, when I started learning science at school and random museums, I tried to find out ways to kill the aliens that I had dreamt about (I was really young lol). I think this sparked my interest in science. Nowadays, I don't really dream about aliens nor am I still interested in UFOs and such, but the interest in science stuck with me. But if anyone wants to share UFO dreams or real-life stories, let's talk!

Most embarrassing lab experience: Few days ago, my mentor gave me two tubes of almost-prepped DNA that he spent almost a week getting ready. I just had to do a simple procedure and save it for later use. After I did the work and labeled the tubes, I put them in the freezer. Today, my mentor asked for them for his experiments. So, I took them out... but I couldn't read my own handwriting. I blamed it on the marker. Now, he's making me practice writing small on eppendorf tubes. FML.

Fun fact: Hmm... I think people making animal sounds are really cool... especially bird mating calls... wait, this is really weird...

Fun fact: Growing up in Tokyo helped foster a rather unique talent in me. Aside from becoming highly proficient at sticky pic machines, I'm really good at the UFO catchers/claw machines at game centers. If you ever want a toy, let me know :) As random side notes, I also love blueberries, the word "transcend", and hearing good math jokes.

Nadia Liyanage-Don



Year: 2012

Concentration: Neurobiology

House: Kirkland

Hometown: Augusta, ME

PRISE/BLISS/PRIMO research project: I am conducting thesis research at the Harvard Social Neuroscience and Psychopathology Laboratory with Dr. Christine Hooker. My project focuses on the link between brain structure, cognitive function, and social outcome in patients with schizophrenia. Specifically, I am investigating the correlation between structural abnormalities in the anterior cingulate cortex and impaired performance on tasks that require sustained attention. Additionally, I hope to explore how the known structural and cognitive deficits in schizophrenia relate to social functioning. The idea that gray matter abnormalities predict cognitive performance and social outcome has not yet been examined in great detail, making my work a novel addition to the scientific literature and potentially changing the way we think about and treat schizophrenia.

About Nadia: I enjoy reading, watching movies, dancing, cooking, and hanging out with friends. I'm an avid traveler and hope to visit as many places as possible in my lifetime. I play the flute, have a fat cat and a skinny dog, and speak Spanish. I love studying science because it allows me to figure out the answers to my never ending questions!

Isabel Marley Vogt



Year: 2014

Concentration: Chemistry and Math

House: Lowell

Hometown: Boca Raton, FL

PRISE research project: I am working in an origin of life lab. As a whole, the lab has the goal to create a self-replicating protocell capable of undergoing Darwinian evolution. Clearly, this is a difficult, long-term problem; however, by working on each of the components of the hypothetical protocell individually, we may reach a level of self-replicating efficiency that we can begin to put them together. I am working on the genetic polymer side of the problem. My main project is an in vitro selection: trying to select for (artificially evolve) an efficient, universal, prebiotically plausible RNA sequence capable of replicating other RNA sequences. Such a ribozyme would be able to catalyze the replication of sequences such as itself and eventually other catalytically active RNAs that would perform beneficial functions for the protocell. Because this is a long term project, my side summer project involves stochastically modeling nonenzymatic primer-extension reactions to better understand the chemical system that could have given rise to oligomers of RNA with catalytic abilities in the first place.

About Isabel: I've wanted to be a scientist since around age 5. My parents are "mentally allergic" to all forms of animal hair, and so, on the hundredth time I asked my parents for a pet my dad took several jars, filled them with cooking yeast and water and gave them to me with the instructions to feed my new "pets" with some sugar on a regular basis (of course with the teachable moment explanation of cellular respiration). I was hooked. I've since branched out from microbial companions to molecular biology, chemistry, and math. Besides being interested in research, I'm passionate about math

Most embarrassing lab experience: Embarrassment doesn't exist in my lab :)

Fun fact: I'm half Polish and half Sri Lankan.

education reform and am teaching a proof-based math class this summer to high school students.

Most embarrassing lab experience: While apparently struggling when withdrawing a solvent through a syringe, I was told by a grad student that I need to go to the gym.

Fun fact: I want to teach yoga on the side.

Hamsa Sridhar



working on levitating microspheres above a gold substrate.

About Hamsa: I joined an optics lab in Stony Brook University through my high school research program in 10th grade. Since then, I've spent all my summers doing various kinds of physics research with lasers. I constantly endure the mental battle of doing theoretical physics instead of experiment: I've always enjoyed solving hard problems with pen and paper, but lasers are just too cool to walk away from! Someday I hope to become an eccentric professor like Howard Georgi or Melissa Franklin.

Year: 2012

Concentration: Physics and Mathematics

House: Dunster

Hometown: Kings Park, New York

PRISE research project: Quantum Levitation using the Casimir Effect. Applying boundary conditions to the vacuum electromagnetic field in quantum field theory gives rise to the Casimir effect, an attractive force between two non-interacting bodies. This force becomes repulsive in certain three-layer geometries, causing 'quantum levitation.' This summer, we are currently

Most embarrassing lab experience: Last year, I was using one of the electron-beam evaporators at the nanofabrication facility at Harvard. We were supposed to turn off the mechanical vacuum pump when the system reached a pressure of $2E-1$ torr, and turn on the high-vacuum cryostat pump. However, it was really late at night and I accidentally turned on the cryostat at $2E+1$ torr instead. I heard a loud explosion from within the machine. It then took 12 hours to regenerate the cryostat, during which time no one else could get their work done.

Fun fact: I spent my first summer of research in high school playing spades all day.