

FALL-WINTER 2017

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Beering Scholar Student Association

LETTER FROM THE PRESIDENT

Fellow Boilermakers,

To me, this season always holds a special charm. Yes, daylight may be in short supply, and the Indiana air is chilly, but the winter months are a wonderful time to gather friends and family, celebrate holiday traditions, and reflect on the year behind us. Looking back, this semester has held many opportunities for the Beering Scholars, and I am excited to share those moments with you.

The Beering Scholar Student Association has been continuing old traditions as well as starting new ones. At the beginning of the school year, we were incredibly honored to meet President Mitch Daniels, Dean Phillips, and our fellow Honors College scholarship recipients, and we came away with new connections and newfound gratitude. On homecoming weekend, the BSSA hosted the third annual Honors Alumni Panel, where Honors College graduates shared their pathways to success with current students. We volunteered for our favorite service activities, including Purdue Space Day and Winterization. This year also marked the second Beering Scholar retreat, held for the first time at Camp Tecumseh; it was amazing to see Beering Scholars from every year developing their leadership skills and bonding over late night campfires.



As always, our scholars have been busy in their individual activities, including programming aerial robots, presenting at Posters on the Hill in DC, installing clean water systems in the Dominican Republic, and researching at Oxford. In this newsletter, senior Mark Gee will share how his studies in agriculture go beyond the classroom, and sophomore Maya Black will present her research in gene discovery and gene editing. You will hear from one 2017 graduate, Aseem Jha, about how his undergraduate education funded by the Beering Scholarship led him to Harvard Law School. We also have a new freshmen class, who you will meet in the following pages. I have found these seven new Beering Scholars to be kind, enthusiastic, and eager to learn, and I can't wait for you to get to know them, too.

Most of all, this season is a time for giving thanks. The Beering Scholarship is such a blessing, and we are endlessly grateful to the Beering family, scholarship donors, advisors, faculty mentors, and alumni for your support. Our scholars have been living their dreams because of your generosity. We can't thank you enough.

Boiler up!

Gina Clepper

Class of 2019

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NEW YEAR

Katherine Li

Degree Plan: Chemical Engineering, minor in Biological Sciences

My Beering Story: When my parents first came to this country, their first destination was Purdue. Purdue was not just an institution of higher education for them; it proved a springboard for their goals and a basis for completely different lives. Even though they moved away long before I was born, I grew up cognizant of the lasting impact that this university had impressed upon them.

Over two decades later, I am humbled, grateful, and a little shocked that I am able to attend Purdue through the generosity of the Beering Scholarship. I've always been interested in the intersection of biology, chemistry, and physics, especially as a means to tackle problems of human health; as a result, engineering immediately appealed to me. I look forward to pursuing a degree in Chemical Engineering and potentially a minor in Biological Sciences. Hopefully, my time at Purdue will equip me with a unique perspective and skillset for a career serving others through medicine.

Though I have only been here for a few months, I've already experienced the brilliance of my peers, mentors, and faculty firsthand. I have joined the Science Olympiad Club, which puts me on the organizational side of a competition that I participated in throughout middle and high school. I also hope to get involved in undergraduate research and study abroad. I look forward to an exciting and intellectually stimulating four (or more) years, and I'm beyond thankful that they're here at Purdue.



Garrett Mulcahy

Degree Plan: Mathematics and Statistics, minor in French

My Beering Story: My family always joked that my dream job would be that of a lifetime student. I have always loved school, regardless of whether I was in a French, Chemistry, or English class. However, when it came time to decide which one of my many academic passions I would pursue in college, there was no contest: I chose to study mathematics. I love how in math there is very little room for guesswork or empirical error, yet at the same time there is always an opportunity to unexpectedly discover something new. I aspire to obtain a PhD in mathematics and become a university professor to expand upon my beloved field while introducing students to its magnificence. With this goal, one can only imagine how excited I was when I received the opportunity to apply for the Beering scholarship—it is all I could have ever wanted: I can pursue my dream without financially burdening those who mean the most to me, my family. Although I will never know how I, a math nerd from the suburbs of Chicago, could ever merit the gift that is the Beering Scholarship, I know that every day I am so grateful that it not only provides me the ability to pursue my dream of being a lifelong learner, but that it also makes life for my family back home so much easier. I am truly indebted to all those affiliated with this unfathomable opportunity, and I hope that my time as a Boilermaker will live out President Beering's vision (while of course infusing my own quirky, curious, and mathematical flair)! Boiler Up!



NEW FACES

Melanie Martinez

Degree Plan: Genetic Biology, minors in Spanish, Biotechnology, and Global Studies

My Beering Story: I remember being a junior in high school, and a boy in the class above me was awarded the Beering Scholarship. Upon asking my friend, who was much more well-versed in scholarship culture than I, how to apply for such a prestigious award, she responded that, "You don't apply for it. They find you." In that moment, my brief dream of receiving the scholarship dissipated. I believed that I wasn't special. I believed I wasn't good enough to be chosen over the 48,916 others who had applied to Purdue.

I believed wrong.

While the interview was the most stressful moment of my life, the phone call was the most satisfying one. In a matter of days, my turbulent quest was over, and a huge weight had been lifted off my shoulders. Without having to worry about a financial liability, I was free to design any path that I desired. At Purdue, I am able to pursue an interdisciplinary education and explore various courses and themes that widen my perspective as a learner. From sixteenth-century Spanish sonnets to mechanisms of G protein coupled receptors to pirate sea shanties, my studies so far have challenged me and enlightened me. Outside of the classroom, I am looking to build my experiences in leadership, service, and research. I do not yet know where my future will take me; I could go to medical school, pursue an MD/PhD, or take a break and join the Peace Corps. However, I am not afraid. I am beyond fortunate to have the opportunities, resources, and community here to guide and support me throughout my journey.



Christopher Embry

Degree Plan: Economics, minor in Psychology

My Beering Story: "You'll be happy wherever you go." It's hard to estimate how many times I heard this phrase during my college application process. My friends, family, and teachers all understood the excitement that I had in beginning the next phase of my life. For years, I had researched, visited, and talked to just about every university that I could, because I wanted to be as informed as possible when making a decision. And out of all of those schools, none stood out to me in the same way that Purdue did. The STEM focus of Krannert immediately interested me, as someone who took multiple engineering courses each year of high school. Beyond the academic aspects, Purdue seemed like a beautiful and welcoming place, and I knew I would be grateful to attend under any circumstances.

My decision to major in economics is rooted in my childhood. I can still remember my dad trying to teach me lessons about finance as a kid, creating hypothetical situations about people's choices with their money to get me thinking about how to be fiscally responsible. Since then, I have always been interested in how people make, budget, and choose to spend their resources.

It is my goal to do research within the field of behavioral economics, and eventually to start my own consulting firm, helping businesses understand why consumers make the choices that they do. This is why I am extremely humbled to be blessed with the opportunity to attend this university under the Beering Scholarship. Knowing that I can challenge myself, research, volunteer, and grow as much as I can without financial worry is something I am extremely grateful for.



Calvin Robinson

Degree Plan: Management, Political Science, minor in Spanish

My Beering Story: My story begins right here in West Lafayette, where I was born and raised for my first two years of life. Then, my family moved to Zionsville (a suburb of Indianapolis) where I was raised alongside my six siblings prior to coming to Purdue.

During my time at Zionsville Community High School, I was an active member of my local Boy Scout troop and earned the rank of Eagle Scout. In addition, I performed in my high school's show choir program, ran on the cross-country team, and pursued service opportunities locally and abroad. During my senior year, I went on a life-changing mission trip to Haiti. As I am getting plugged in finding my niche here on campus, I am continuing to pursue activities about which I am passionate about and that grow me develop me as an individual.

On campus, I've already become heavily involved in Purdue Student Government and in the Krannert School of Management. And, I love to spend my (limited) free time enjoying nature. Be it hiking, camping, kayaking, laying in a hammock... if it's in the great outdoors, I'm there!

As I continue on my Purdue journey, I can't wait to use the flexibility which the Beering Scholarship has provided me to develop myself and prepare to be a high-impact individual after I leave Purdue. With a background in business and medicine, I will be able to work to change the world, all under the Purdue name.



Praneeth Medepalli

Degree Plan: Computer Engineering, minor in Physics

My Beering Story: Time flies in college, and often my brain thinks I'm still on summer vacation (my excuse for procrastinating). Nevertheless, it has been one crazy journey so far, and it all began 18 years ago.

A cold, snowy afternoon in January 1999, I was born. I was a big baby, weighing in at over 10 pounds (I like to think it was my unusually large brain, although my parents think otherwise). I grew up in the suburbs of Detroit, downtown Hyderabad, and the city of Kalamazoo. Despite my home address, however, I realized that I had one extraordinary talent: annoying everyone I met. Although I disliked math, social studies, English, and learning/working in general, I loved pestering my parents with questions. Mostly they would be about science, and especially physics. I would ask about how cars steer, or how planets move in circles around the sun (the word 'ellipse' was not yet in my vocabulary).

Fast forward a few years. I was in my prime (or so I thought), at the ripe old age of 13. My dad introduced me to Resnick and Halliday, the original introductory physics textbook. Initially, my old enemy procrastination got in the way, and I kept putting off the read. I just never had the right "feeling". Then, one day when I had asked one too many questions to my dad, he made me read a chapter of the book. I quickly realized that it was answering many of my questions! I began to read the book in earnest, and started to enjoy it. I took great pleasure in solving the "red colored", difficult problems on my own, or conducting simple experiments. Understanding the fundamentals of physics became my top priority. Now, when I look back, I can still remember when a concept finally clicked – potential energy, electric flux (okay, maybe not every concept, but at least 4/9's of them).

There's still an infinite ocean of information out there, even just in the field of physics. But I also have an endless supply of questions, and I look forward to answering them at my time at Purdue.



Laura Galles

Degree Plan: Exploratory Studies

My Beering Story: I am truly blessed to be where I am today. I grew up the oldest of nine children in Westfield, Indiana, about a forty-minute drive from Indianapolis. Ever since I can remember, I have been fascinated by how the natural world functions, and passionate about doing my part to help other people in little ways. When applying to Purdue, I was intrigued by so many fields of study across multiple disciplines, particularly within the Science and Health and Human Sciences departments. My high-school-senior self could not decide! As a result, I applied to the Exploratory Studies program in order to learn more about the hundreds of academic majors Purdue University offers and to take the necessary time to carefully consider which career would be the best fit for my strengths, interests, and passions.

As a Beering scholar, I have been welcomed into a community of some of the most innovative and passionate people. I have also been humbled by my peers' mentorship and renown faculty. This funding has allowed me the opportunity to discover a field of study at Purdue University that not only challenges me but also fulfills my ultimate goal of bettering the lives of average individuals. Beyond graduation, I hope to pursue a career that lessens the pain people face through many of life's hardships, whether it is through scientific research, counseling, or simply through my continual involvement in service. At the moment, I am considering a major in brain and behavioral science with a tentative minor in Biochemistry.

The beautiful thing about being at such a prestigious university is that although my career path is currently unknown, I have complete faith and confidence I will be able to both discover and to pursue a very rewarding career path. I cannot wait to discover the countless doors this scholarship will open for me and the impact I will become capable of producing in the years to come.

Aseem Jha: Outgoing Scholar

Graduating: B.S. in Electrical Engineering, minor in Biology

Next Steps: J.D. at Harvard Law School

My Beering Story: I caught myself starting a sentence with "back when I was in undergrad" the other day and that's when it really hit me. The years and the experiences flew by: from first year engineering and the camaraderie of Shreve Hall's 8th floor to the long nights spent toiling on our senior design and designing the circuit board so I could fit *just one* more capacitor on it. I had the opportunity to learn from the best and then to pass on the knowledge as an engineering TA, the opportunity to understand the needs of my fellow students and then to serve them as their student-councilman. I remain eternally grateful for the numerous opportunities I have had and the Beering Scholarship in particular has not only provided me with financial support but also with a community. To date, some of my closest friends and most trusted mentors are fellow Beering scholars. The bond we share, in spite of our varied experiences and interests, is truly remarkable.

Right now, I'm nearing the end of my first semester at Harvard Law School and as I make new friends and memories, I find myself cherishing the old ones all the more. My dream has always been to serve the public and to solve problems for people. To that end, I learned Engineering in undergrad and seek to learn Law now, to understand how each profession solves problems. While we enjoy the benefits of living in a republic, these freedoms come with certain responsibilities. As the old saying goes, the price of liberty is eternal vigilance. The great problems of our day require diligence, integrity, open-mindedness, and compassion to solve them. I truly believe that, as citizens, we have an obligation to be informed and to serve. I hope that I may join a long line of Boilermakers who have helped make this a better country and a better world.



Agri-Cultivating Curiosity

By Mark Gee, B.S. Biological Engineering, Agronomy, Biochemistry, May 2019



I'm from Iowa, so when people discover I'm a proud Boilermaker they often ask, "How did you end up at Purdue?"

The hope started at the World Food Prize when I was 11 years old and became a reality when I received a Beering Scholarship. The World Food Prize is an organization in Des Moines, Iowa, devoted to recognizing achievements that have advanced human development by improving the quality, quantity, and availability of food in the world.

The first year I attended the World Food Prize Symposium was in 2006 to see Nobel Prize winner Norman Borlaug, a man who I was told had saved a billion lives by breeding high yielding wheat varieties that prevented famine. His example helped me understand how agriculture can improve lives. I wanted to learn more.

The first time I heard about Purdue was in 2007 when the World Food Prize Laureate was Dr. Philip Nelson, a Purdue alumnus and professor. He was recognized for his innovations in bulk aseptic food processing. I heard about Purdue again when I met another Purdue alumnus and professor, Dr. Gebisa Ejeta. After Dr. Ejeta won the Prize in 2009, he still made time to talk with me about his agricultural research at Purdue and introduced me to his wife Senait and their children.

When I was a senior in high school, I met Jay Akridge, Purdue's Dean of Agriculture, at the World Food Prize event. He convinced me that there really is something special going on in West Lafayette. So I visited and realized Purdue was where I wanted to study because of the commitment to solving important problems. When I was offered a Beering Scholarship, I was grateful and appreciative of the trust placed in me to make the most of this opportunity.

I'm now a senior soon to complete a triple major in agronomy, biochemistry, and biological engineering. I hope to combine these areas and work with farmers to improve crop options, increase nutrition, and implement sustainable practices. When I was young, way before I was a student here, Purdue professors helped me learn about opportunities to make a difference through agriculture. They then helped me connect at Purdue where I am making my dreams a reality.

As a Beering Scholar, I've tried to fuel the curiosity of younger students and share about Purdue. I volunteer every year at the World Food Prize youth programs in Indiana. Through the program, the high school students write a paper about a food security issue in another country and present potential solutions to a panel of Purdue experts. I enjoy moderating these discussions because I feel like I am helping foster the types of relationships that brought me to Purdue.

This year, I had the opportunity to help organize "Reading Is Leading", an event that brings over 100 second grade students to the Purdue campus. The students read with Purdue celebrities like the Purduettes, athletes, and ROTC members. The second graders get excited about reading and get a healthy dose of Purdue pride.

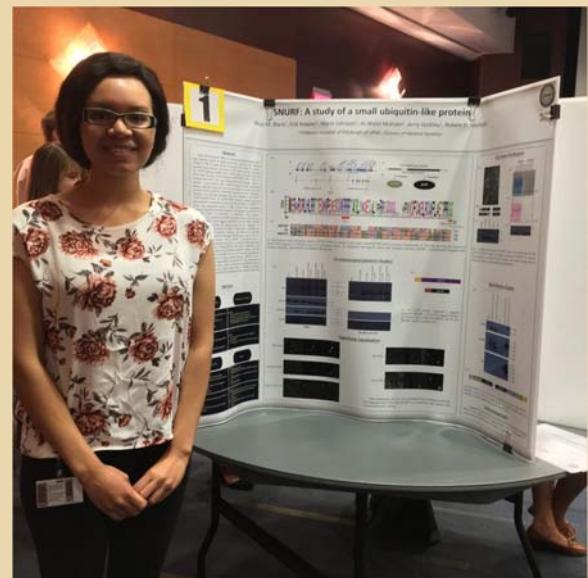
Soil conservation is a topic I'm passionate about. I enjoy talking with kids about how soil is formed, what it does to help us, and why we need to protect it. Students invariably ask how we know so much about soil, and I proudly talk about the great research going on at Purdue.

My Purdue experience would not have been possible without a Beering Scholarship. I try to give back in my daily life by encouraging an interest in agriculture and sharing my appreciation of Purdue. Boiler Up!

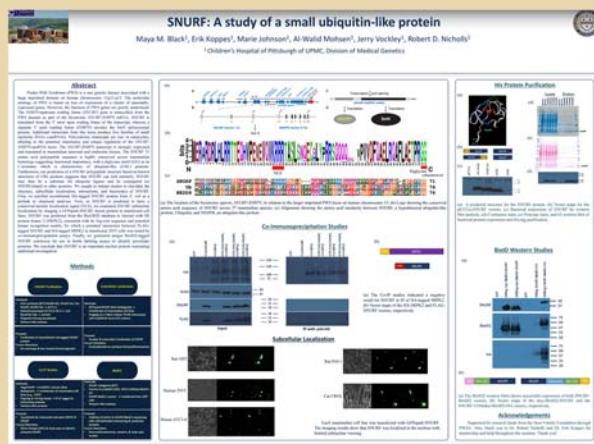
SNURF: Scholars Navigate Undergraduate Research Fearlessly

By Maya Black, B.S. Genetics, Cell, Molecular, and Developmental Biology, May 2020

This past summer I had the wonderful opportunity to dive headfirst into research. My hometown, Pittsburgh, is a city that has rebranded itself as a medical capital both within the United States and within the world. As such, there are a ton of opportunities for research. I was accepted into our Children's Hospital's Summer Research Internship Program. Through this program, I was able to become involved in a research project, attend weekly seminars and lectures on current molecular medicine research, and shadow different clinical rotations in the main hospital. I worked under Dr. Robert Nicholls, a cell biologist who studies Prader-Willi Syndrome. Prader-Willi Syndrome (PWS) is a complex genetic disorder that affects many systems of the body. Its hallmark symptoms include extreme hunger and corresponding extreme obesity, intellectual debility, short stature, and behavior problems. It is a disorder of genomic imprinting, which means the disease occurs due to a genetic mutation caused by the deletion or silencing of certain paternal genes on chromosome 15. Only the maternal genes are expressed in order to produce the PWS phenotype.



My project focused on the SNURF gene. SNURF stands for SNRPN-upstream reading frame gene. SNRPN stands for small nuclear ribonucleoprotein N. SNURF sits upstream of another SNRPN locus. Together SNURF and SNRPN (SNURF-SNRPN) appear to be a bicistronic operon potentially responsible for the mechanism of imprinting on chromosome 15. The fact that this is a bicistronic operon is astounding because this is extremely rare (practically undiscovered) in eukaryotic cells. Together this operon encodes for various other genes that potentially control the different phenotypic symptoms of Prader-Willi Syndrome.



Throughout the summer, I worked to create models of the disease for current and future study. First, I had to test that the plasmid we were given containing the gene was functional. In order to do this, the plasmid was inserted into competent *E. coli* cells. The cells were then allowed to grow, and their DNA was collected and purified. The DNA was then digested using restriction enzymes and ran on an electrophoretic gel in order to ensure the plasmid had transferred to the *E. coli* successfully. Next, we worked to integrate the SNURF plasmids into mammalian cells for study. These cells theoretically would incorporate the Snurf gene into its own genome and produce some type of product or interaction between molecules. After transfection with the SNURF plasmid, the cells were harvested and their DNA was purified. We were able to

successfully integrate the plasmid as evidenced by only the lanes containing the Snurf gene having a positive result. After we knew we had successful integration, we wanted to see if we could detect a hypothesized interaction between SNURF and another protein called SRPK2. We were able to produce a positive result occasionally, but not consistently enough to prove the hypothesis right. Lastly, we wanted to see if we could visualize subcellular localization of SNURF. There is a known nuclear localization signal (NLS) within the amino acid structure of Snurf. We were able to view that the SNURF protein did localize within the nucleus; however, we were unable to clearly view subnuclear localization.

Overall, this research experience was a great opportunity and possibly the most-fun summer I have ever had. I made lasting connections with great researchers, doctors, and other students. I also was able to gain a wealth of knowledge and truly learn what it's like to "do research". This summer opportunity continued to increase my interest in research and made me extremely excited for the day I'll create and carry out my own research project.

BSSA in Action: Service and Social Activities



Second Annual Beering Retreat

By Melanie Martinez, B.S. Genetic Biology, May 2021

"Oh, and you can't use any form of verbal or tactile communication".

Laura, Paul, and I all looked at each other in disbelief. How were we supposed to guide our blind-folded group through seven activities without being able to talk to them? We walked over to the other members and started humming a lullaby to complete the first activity: get everyone to sing a song. Everyone started singing along, except for Garrett. Paul stood in front of his face, aggressively humming "Twinkle, Twinkle, Little Star" to no avail. We clapped our hands loudly in his ear; again, nothing. Later, when we started stomping our feet to indicate that we wanted the group to walk somewhere, Marlow started clapping and stopping her feet and everyone did the same. It was hilarious, but also extremely frustrating. We clapped and clapped until a member had a fantastic idea: one clap for yes and two claps for no. The blind were forced to be the leaders and question the guides, not the other way around. Challenges are things we often have to face with leadership, and achieving the end goal despite these obstacles makes the success all the more satisfying.

From canoeing to archery to a friendly bonfire, the BSSA retreat was the best way I could have spent my first weekend at Purdue. It was relieving to know that I could be honest about myself with people I had only just met. I wasn't scared to be authentic, and neither was anyone else. The freshmen were free to ask questions, and the upperclassmen offered their sage advice. Throughout the retreat, we considered what the BSSA stands for and offered our own definitions and examples of leadership, service, and community.

From the activity described above to a musical chairs-esque get-to-know-you activity, we were able to learn about each other as a group and benefit from everyone's unique strengths. Leadership is about communication, but it is also about chemistry. On this retreat, we strengthened old friendships and made new ones; upon our return to campus, we were ready to begin the new academic year, invigorated with a sense of purpose and belonging.



Coming Home to the Honors Alumni Panel

By Chris Embry, B.S. Economics, May 2021

Of all our events, the alumni panel is special because it outlines things that we hold important as Beerings- community, fellowship, academics, and giving back. (Additionally, our panelists recommended that we find time to relax as well.) By bringing in past scholars, we aim to celebrate the achievements of our panelists while also receiving advice that is applicable to current students. This year, our four panelists included Hanna Tso, Matt Snell, Stephen Whitnah, and Dr. Ben Miller.

When planning the event, we wanted to highlight our growing relationship with the Honors College. A particular highlight was an opening speech given by Dr. Rhonda Phillips, the Dean of the Honors College. We were also grateful to have a panel with a mix of Beering alumni and Honors alumni. With this configuration, the audience would be able to see how these scholars, all having been associated with the Honors College, have learned from their experiences.

The event had strong turnout from Honors College students who came for the combination of food and advice. We look forward to speaking with more alumni and friends in the future.

Raking in a Winter Wonderland

By Laura Galles, B.S. Brain and Behavioral Sciences, May 2021

Winterization 2017 was an impeccable success. Each year, a variety of student organizations and volunteers across Lafayette participate in a day of service for those who are unable to do some of the manual labor that the transition to winter demands. The Beering Scholar Student Association served four different residents in a little over four hours across Tippecanoe County performing simple tasks such as raking leaves, clearing gutters, weeding gardens, trimming bushes, washing windows, and cleaning-out a garage. We also encountered more challenging tasks such as removing a hornet's nest from the overarching branches of a tree. Those we served were overwhelmed with a joyful gratitude and astonished by the degree of work we were able to complete in such a transient time-frame. For some of our scholars, this event provided a first-time-experience of raking and jumping into a gigantic pile of leaves after a job well-done. For others, it provided a renewed sense of appreciation for how blessed we truly are, as Purdue creates opportunities for exceptional students with a desire to serve before the Thanksgiving season.



To Infinity and Beyond!

By Katherine Li, B.S. Chemical Engineering, May 2021

On an early Saturday morning in October, the Beering Scholars had the pleasure of volunteering at the annual Purdue Space Day. Led by activity head and fellow Beering Scholar Noah Franks, the Beering Scholars helped run an activity called Apollo 13. Just as NASA scientists had to fix their carbon dioxide filter during the eponymous Apollo 13 mission, groups of four or five seventh and eighth grade students tested their engineering mettle by designing an air filtration device with improvised materials that ranged from PVC piping to band-aids to loads of duct tape. Other highlights of the day included the chance to listen to former astronaut and Purdue alum Mark Polansky, who shared stories from his travels in space and answered questions from the student participants. Overall, it was extremely gratifying to see the creativity and passion for science and engineering displayed by the students engaging in the activities. The Beering Scholars look forward to participating in this service event, which has become a lasting and meaningful tradition, next year!



We hope you enjoyed catching up with the Beering Scholars!

The world moves fast, and few places move faster than the world-class Purdue University. Our goal is to continue to build a Beering network, hearing stories from and offering opportunities to all.

We invite you to join the Beering conversation by filling out our brief survey at: <http://goo.gl/bLbkBz>

Visit our BSSA website to find our upcoming events, study abroad and internship destinations, photo gallery, and newsletter archives: <http://purduebeeringscholars.weebly.com>

Or email us at: purdue.beeringscholars@gmail.com

This newsletter would not be possible without the contributions of a great many. We would especially like to thank Dean Rhonda Phillips and Ms. Catharine Patrone, our BSSA advisors in the Honors College.

<https://honors.purdue.edu/current-students/beering-scholars/index.php>

Cover photo by: Paul Dawley

Editing and design by: Gina Clepper, Paul Dawley, Andrew Santos, Katherine Li, Garrett Mulcahy, Chris Embry, Melanie Martinez, and Laura Galles