Hi MCBees!

What an astounding year it has been for the MCB GSA! We held our second annual Research Symposium in August, moving out of CLSL to the Union for an all-day affair featuring 2 poster sessions, 5 invited student-talks, and a keynote by MCB alumnus Dr. In-Hyun Park. We also continued our robust Outreach program with bi-weekly trips to Jefferson Middle School, monthly activities at the Orpheum Children’s Science Museum, Bio Café Seminars by faculty at the Champaign Public Library, and many other exciting outreach collaborations. We held our first two fundraisers, selling cupcakes and hosting a Harry Potter trivia night (Go McGonococci)!

We’ve also worked hard to provide both opportunities for career development and exploration through our monthly Science on Tap seminar series, invited career development speakers, and our second annual Career Development Week (which you can find out more about later in the newsletter). In the spring, we held two exciting recruitment weekends each with exhilarating MCB Olympics leading to an incoming class of 47!

We also got to know each other as well as graduate students in other departments throughout the year by attending happy hours, having doughnuts and coffee, going apple and pumpkin picking at Curtis Orchard, and celebrating graduate student appreciation week with a screening of the Black Panther with dinner, coffee and cookies, bagels and smears, and ice cream all sponsored by our amazing departments.

If you missed out on any of these events, make sure you sign up for our mailing list and follow us on Facebook, Instagram, and Twitter so you can stay up to date on all the latest MCB GSA events.
It was truly an unforgettable year and we are eagerly looking forward to making next year even better! As we look towards the new year, we hope that each one of you will consider running for a position on the MCB GSA Board for 2019-2020. The GSA cannot run without a dedicated board and improvements and creativity to our program are fueled by new board members! We sincerely thank those of you who donated your time or money to the GSA this past year and we hope to keep working to earn your donations in the future. As always, GSA board meetings are open for anyone to attend and voice concerns/share ideas and you can always reach out to us at mcb.gsa@gmail.com.

With that, I wish all of you a productive, safe, and happy summer!

-Katie
MCBee Outreach

The busy hive keeps buzzing

A core mission of the MCB GSA is to increase public understanding of science. Over the years, we have accomplished this goal through a diverse array of outreach events, ranging from messy chemistry demonstrations to lectures on unpublished original research. The 2018-2019 school year brought some changes to the MCBee’s outreach program. In the Fall we said a bittersweet goodbye to longtime Outreach Chair Mara Livezey, who established an amazing series of outreach events and valuable connections between the MCB GSA and Chambana community. Something that hasn’t changed is the availability of MCB graduate student volunteers with a deep passion for science and excellent ability to communicate this to the layperson.

Together with these outstanding volunteers, MCB GSA outreach has continued the strong schedule of events established in previous years. Our longest running outreach project, the monthly DIY Weekend Wizards at the Orpheum Children’s Science Museum in Champaign, just completed its 26th event on June 8th, 2019. Cumulatively over the past 2+ years at the Orpheum, 28 MCB graduate students have shared their excitement for science with hundreds of children from ages 4-10 through hands-on activities. And the impact of these events isn’t limited to the children. For example, volunteers have been queried extensively about hydrogen bonding by parents while their child is blissfully blowing bubbles!

Another recurring event by the MCBees brings experiential science learning directly into an area school. We have been going to 8th grade classrooms at Jefferson middle school and we do fun hands-on science experiments. We have covered various scientific topics like learning about chemical reactions and pH to isolation of DNA from strawberries. Through these activities we hope to pique students interest in science as well as encourage diversity and accessibility in STEM. These activities are well received by both students and teachers and we have been invited back to continue these activities in the coming academic year.

To promote science in the local community, we are participating in the UIUC Physics Graduate Student Association ‘Science at the Market’ event. During this event we have a table at the Urbana farmers market where kids and parents can do a quick hands-on experiment. We participated in this event last year and we received positive feedback from the community. We are looking forward to this event in the coming days.
While most outreach focuses on communicating science fundamentals at a simplified level, the MCB GSA's BioCafe at the Champaign Public Library and Science on Tap at Riggs Brewery have given MCB faculty and students, respectively, the chance to speak about their research to the public. Science of Tap has proven to be a unique platform for students and public to engage in interesting conversations about pressing scientific matters of our times.

MCBees continue to organize and participate in many stand-alone events. In the past year these have included activities with high school groups visiting campus from rural Illinois, and a collaboration with UIUC’s Division of Intercollegiate Athletics. Graduate students from our program are also deeply involved in science outreach outside of that organized by the MCB GSA, such as volunteering at Champaign’s Next Generation School and a wealth of events from UIUC’s Institute for Genomic Biology.

It is deeply important that we as researchers effectively communicate with, educate, and stoke excitement in the citizens that support our science. In the past 5 years of MCB GSA outreach, we have reached uncounted non-scientists in the Champaign-Urbana community and beyond, both increasing interest in science and enabling more informed decision making on topical scientific issues. This success is due in great part to our excellent MCB graduate student volunteers, so thank you to all that have participated!

Moving forward, our priority is to maintain the diverse schedule of recurring events, while drawing upon experience from past activities to increase their impact. The BioCafe series is searching for faculty looking to broaden their impact through giving a public lecture, those interested can contact Max. If you have ideas for new events, or want to volunteer for something you read about above, contact one of us below:

Max Baymiller | baymill2@illinois.edu | Orpheum, BioCafe, stand-alone events
Pradeep Kumar | pradeep3@illinois.edu | Jefferson Middle School, Science at the Market
THE YEAR THAT WAS

By Pooja Agashe

“Let’s start at the beginning with fall setting in
The MCBees went apple and pumpkin pickin’
Cookies and bagels and ice cream they ate
To appreciate their work, for they leave nothing to fate
Protocols are followed even when they bake
A fundraiser held by selling cupcakes
Warm in a pub toward the end of the year
Teams played trivia without any fear
We hope you had fun, and your spirits have soared

Goodbye from the 2018-19 GSA board!”
Pumpkin and Apple Picking Social

Grad Student Appreciation

Harry Potter Trivia Fundraiser
Mara Livezey earned her Ph.D. degree from Prof. David Shapiro’s lab in the Department of Biochemistry. Her work focused on studying unfolded protein responses during cancer and cell death. She is currently a faculty member at the University of Detroit Mercy, a PUI (primarily undergrad institution), where she teaches an organic chemistry course and lab courses for undergraduates while gearing up to start her own research program. We asked her about her current position, how her experience in graduate school shaped her career trajectory, and what advice she would like to give the current MCB graduate students.

How did your grad school training help you in getting your current job?
Presenting my research annually to the department and as a CBI trainee was definitely helpful because it helped me become more comfortable and confident. Additionally, being able to present my research to an audience who are not experts in my field was something I got a lot of practice in, through the Biochemistry department and CBI, but also through the MCB GSA Science on Tap events. This experience was essential for my interview process. My experiences at the lab bench were also helpful. I was able to develop my mentoring skills by working with undergraduate researchers. At the University of Detroit Mercy, I will be training undergraduate students in my lab, so this is an important skill to have. I was also lucky to work in a lab environment with Dave as my mentor. He gave me the space to think creatively and independently, which has helped me feel comfortable developing my own research plan, apply for, and receive funding.

What does a typical day look like for you?
A typical day during the semester starts at 5:45 am. I go to the gym before heading to work. I usually get to work around 8 or 9 am. On most days, I have 1-2 classes. I spend an hour or so in the morning preparing for class; I go over my slides to make sure I am comfortable with all the material I am reviewing for that day. Following my “prep” time, I have an hour for office hours, which often extends past my official
office hours! Lectures are 50 to 75 minutes and labs are 3 hours long. This past year, I taught night labs, so I was on campus until 9 pm three days a week. When I am not teaching or talking with students, I am in my office drinking coffee, preparing lecture slides, writing quizzes or problem sets, and of course, grading. I find that during the semester, I barely have enough time to take a break for lunch or talk to co-workers.

**How is your current school environment different from UIUC?**
It is much smaller here. We are primarily an undergraduate institution and have about 3,000 undergraduate students. There are also some graduate and professional students that bring the total enrollment up to about 5,000. The faculty here are more focused on teaching than research, but doing original research, publishing, and attending scientific conferences are still important. I envision being able to maintain a low level of research during the school year, and the summer months being the time when the students can just focus on research without taking classes.

**You are in the process of setting up your new lab this summer. What unique challenges are you facing?**
Setting up a lab here is very different from UIUC. We don’t have the core facilities that large institutions have. We also don’t have staff that are well-versed in scientific equipment. So some of the things I had taken for granted at UIUC I now have to do myself. I will be making my own cell culture medium and PBS to save money for my lab. Since I have a very small start-up fund, I have to look for refurbished equipment and find ways to pay via other internal sources of funding. I organized the lab space by myself during this past semester before I had research assistants. For example, I bleached the floors and walls to prepare for growing human cells!

**Can you elaborate on the Livezey lab’s research program?**
We will be working on cancers that express estrogen receptor alpha, including breast, ovarian, and uterine. My lab wants to better understand how protective pathways within these cells interact and intertwine. We will be using the small molecule drug that the Shapiro lab has developed as a tool to probe these cancers and the pathways that sustain them. My current focus is understanding how that drug impinges upon the cell’s ability to recycle itself. I am especially interested in utilizing simple but robust assays that will be ideal for undergraduate researchers to learn and perform reliably. More information can be found here: [http://sites.udmercy.edu/livezeylab/](http://sites.udmercy.edu/livezeylab/)

**What advice do you have for students interested in getting a job like yours?**
It seems very serendipitous that I found my way so quickly from publishing, to defending, to an instructor position, to where I am now, starting as an Assistant Professor this coming fall. The one thing that made me stand out as an applicant was my willingness to go above and beyond in my work when it was not asked or required. One example was starting the outreach program with the MCBees. I demonstrated that I am willing to develop new programming and improve upon it independently, not just maintain the status quo.

If you want to teach at a PUI, you will have to demonstrate an interest in education and pedagogy. Reading up on the latest trends in science education will be helpful, and engaging in science education at UIUC and in the community will look great on a resume. Don’t be afraid to try less traditional routes on your way to teaching at a PUI. Many job postings still say “post-doc preferred” but equivalent experience could be teaching for a couple of years as an instructor.
The MCB GSA’s annual Career Development Week was held from April 1-5, 2019. Each day of the career week offered events that centered around a distinct theme and were geared to introduce new ideas, opportunities, and training resources for MCB graduate students and post-docs. Workshops and seminars were aimed at motivating attendees to contemplate their future careers and provide strategies to take the necessary steps to achieve their goals.

On Monday, the MCBees kick-started career week by taking ‘An active role in career development.’ During the first workshop, attendees participated in a discussion with Michael Decklever, Director of Illinois Business Consulting (IBC), about the life and duties of a consultant, career advancement at a large consulting firm, and how the experience gained at IBC can be a gateway for those interested in a consulting career. This session was followed by a workshop on ‘Preparing for a career in teaching’ from the Center for Innovation in Teaching and Learning (CITL). The workshop provided useful tips and resources for future educators and covered how CITL can help with TA development and certification.

Day one rounded off with a panel discussion on ‘Careers in Science’ with Joanne Manaster (Science Writer and Educator), Maggie Berg (Research Development Manager Interdisciplinary Health Sciences Institute UIUC), Adil Anjem (Microbial R&D Lead, Bayer), Geethika Yalamanchili (Computational Biologist, Twist Biosciences), and Julian Reed (Post-doctoral Fellow, Oak Ridge Institute of Science and Education). Panelists answered questions about the importance of networking and different styles of networking, especially with alumni and peers using LinkedIn. They suggested being respectful of people’s time when asking them for information or help on social networking sites. The panel also discussed when in grad school is the right time for students to start thinking about their career (answer: all the time and as soon as possible). All the panelists stressed the importance of asking for help in graduate school from PIs, mentors, committee members, or collaborators. The panel also recommended self-reflection: determining what aspects of current and past positions you want to keep in a future job and developing your skills in grad school (such as taking classes, doing an internship, or joining campus organizations) to get the career you desire!

The second day was dedicated to ‘Taking the next steps in academia’ and it began with an information session for those interested in post-doc positions. Derek Attig from the Graduate College, led the session and brought up the numerous questions that need to be considered when applying for such positions: have you met...
any interesting PIs who could help you enhance your skills and publication profile in preparation for the faculty job market, who are the PIs you frequently cite, does the PI have funding and what career stage are they at?

International students had a dedicated hour for immigration and visa related questions conducted by International Student and Scholar Services (ISSS). The key message was the distinction between a Curricular Practical Training (CPT) authorization, which allows international students to work during their period of study, and an Optional Practical Training (OPT) authorization, which allows students to work after the period of study.

**Day three** was dedicated to ‘Developing your skills away from the bench.’ Emily Wuchner, from the Grad College conducted the first session of the day, stressing the importance of knowing your audience and minimizing jargon during the ‘How to give an effective presentation’ workshop. Emily also spent part of the workshop delving into strategies for delivering effective Rapid Fire or lightning talks. The key takeaways: get the audience hooked with a story or personal anecdote, communicate ‘why’ you did the research rather than ‘what’ you did, and keep the visuals simple! This was followed by the ‘CV to Resume’ session led by Derek Attig. His central point was also to know your audience. A CV is used for an academic setting while a resume is a concise summary of skills. For those who are interested, the Grad College conducts personal CV/Resume review sessions. The final session of the day, by Michele Guerra from Campus Wellbeing Services, was on managing time effectively. Her suggestions were to make a priority based to-do list, in an effort to attempt the most important and urgent tasks first without feeling overwhelmed. She also emphasized the importance of having a self-care routine and placing fitness and exercise as a priority.

**The fourth day** was dedicated to ‘Careers in Entrepreneurship.’ Speakers included UIUC Professor of Biochemistry David Kranz, venture capital fund senior director Tom Parkinson, and start-up co-founder Ryan Shelton. Professor Kranz, who is also the founder of two start-ups, BioDisplay and ImmuVen, gave advice on how to sustain/maintain both an academic and entrepreneurial career. He suggested that post-tenure is the ideal time to pursue a venture simultaneously with a faculty position. He outlined the structure of a company, describing the importance of putting together a strong team for a successful start-up. He also recommended that those interested in entrepreneurship should seek
prior work experience at a venture firm. Tom Parkinson, senior director of IlliniVENTURES, where he supports numerous UIUC researchers with bringing their product to market, visited us for an afternoon session. With his entrepreneurial funding experience, Tom Parkinson presented a “Sales School 101” session. He emphasized the importance of storytelling during a pitch and coming away with a clear “ask” from the audience, whether that be funding, a follow-up meeting, or feedback on the pitch. He also encouraged succinctness with the description of work/ideas using a formula from another entrepreneur: we help X do Y by doing Z. The afternoon ended with Ryan Shelton, co-founder of Photonicare. Ryan shared his experience from college to post-doc. He, not unlike Prof. Kranz, expounded the significance of putting together a good team, researching your customers and also reflected on the satisfaction he gets from running a business. His team took advantage of the NSF I-corps program on campus which enabled Photonicare to garner relevant insight from their future customer base, a game changer process, according to him.

The pièce de résistance of career week was the final day, which was dedicated to ‘Tech transfer with Dr. Jen Rice’, Director of Business Development at the Harvard Office of Technology Development. Apart from Dr. Rice’s seminar, a joint workshop was held by the Office of Technology Management and Dr. Rice where students got a taste of what technology transfer involves. Attendees were asked to peruse a published primary research manuscript and assess the potential of the technology to be applicable, patentable, and marketable along with a more detailed analysis of the technology and its advantages and limitations.

With these events the GSA hopes to inform the students of the varied career opportunities following grad school and to also enhance the grad school experience for the MCBees! Resources from the career week can be found here.
BECOMING A LIAISON BETWEEN RESEARCH LABS AND INDUSTRIES

By Ananya Sen

Dr. Jen Rice’s journey began in the Department of Microbiology where she got her PhD. She went on to work at the Office of Technology Management (OTM) at the University of Illinois. She is currently the Director of Business Development at the Office of Technology Development at Harvard. Conventionally, research labs focus on developing tools and techniques that answer important scientific questions. Some of these innovations are then used by the industry to try to develop products that can benefit the general population. Although the two can have overlapping interests, usually they require a mediator who transfers the findings from academia to the industry. Dr. Jen Rice is one such mediator.

Rice worked on her PhD in Dr. Cari Vanderpool’s lab, where she studied small RNAs. Although she loved her research, she did not see herself becoming a professor. She was aware of alternative careers because her father was a patent attorney with a PhD in Chemistry. Furthermore, she had an interest in business. Therefore, she was driven to explore careers where business and science overlapped. “Although I had never heard of technology transfer before, I liked that it was based in an academic setting and it incorporated some business aspects and a little bit of patent law, which I knew about from my father’s job,” said Rice.

Intrigued by the work that was being done at the OTM, Rice worked there first as a volunteer and later as an intern. When she was close to graduating in 2011, a full-time position became available. Her experience as an intern helped her get the job. “It was a good transition step for me, and I had colleagues who were willing to train me in this field. The experience set me up for my current position,” explained Rice.
At Harvard, Rice facilitates the transfer of cutting-edge innovations from the lab to the public. “Academic researchers are not commercial entities; they lack the capabilities to sell their products. Companies have a good idea of what the market needs but do not know the latest research,” explained Rice. “As a part of the business development team, my job is to provide an intersection between the faculty and the industry.”

When asked about what PhD skills help her in her current position, Rice said it was helpful to have the ability to articulate the purpose of her research and to think critically. “Everyone in my job has a PhD and I think that it is helpful because you understand the research environment and the limitations,” said Rice. “However, the biggest challenge is being knowledgeable about many different things at a shallow level as opposed to being a researcher where you are knowledgeable about limited things at a very deep level.”

“I would recommend that students start thinking about their next step as soon as possible so that they are prepared to utilize the opportunities that may arise. Reach out to the OTM, the research park, and expand your network,” said Rice. “Also remember that even in academia there are several alternative careers. You can build a company from your project, you can help with managing the grant writing process, or oversee research operations. A PhD is useful in all these careers, because they all require critical thinking.”

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**STUDENT SPOTLIGHT**

**Payel Mondal**  
Kai Zhang Lab, Dept. of Biochemistry

- University of Illinois Dissertation Completion Fellowship 2019-2020
- Biochemistry Travel Award

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DOCTOR OF PHILOSOPHY

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