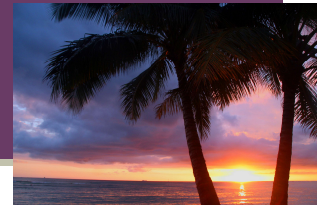


ASPB MIDWESTERN SECTION NEWSLETTER

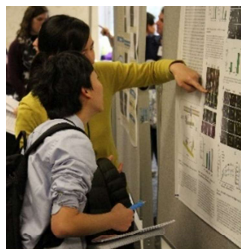
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Report from the Midwest Section Meeting at Purdue

By Hallie Thompson
PhD Candidate, University of Missouri
Photo credits Jeff Beringer, Dow AgroSciences

The 2017 ASPB Midwest was held in the Stewart Center on the Purdue University Campus. The majority of talks were held in a room that could hold all conference attendees, ensuring we all heard a diverse selection of scientific studies. The meeting was a day and a half whirlwind, with talks and posters to satisfy any scientific palette. Depending on the expertise and interest area of the attendee, the takeaways could vary greatly as student and keynote talks included topics from method development in new plant systems to gravity perception in space.



A focus of Saturday was research focused on cell walls: Xiangying (Candy) Mao kicked off the morning with a talk about the role of Mediator (a multi-protein complex and transcription regulator) in maintaining phenylpropanoid homeostasis in *Arabidopsis*. Nathan Reem then discussed his work on Cell Wall Integrity (CWI), which is integral to plant growth and response to pathogens but has components that remain poorly characterized. Following on from that, Phillip Rushton talked about his work modeling the structure of cellulose synthase through X-ray Crystallography. This work in cell wall biochemistry may prove integral for research aiming to improve biomass production in the future.

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We heard about new technologies including metabolomics and synthetic biology: Dr. Steve Evans discussed synthetic biology as a field. He also highlighted recent advances in the area that Dow AgroSciences has made and how they will feed into the production pipeline. Nick Thoma discussed his work on metabolite profiling of the Brassica genus. Metabolomics has been used as a tool for pathway discovery, but Nick showed that it can also be used to discover genetic background. By focusing on low-abundance metabolites, a cluster analysis of results showed Brassica species clustering and revealing genetic relationships.

There were even a few talks with space footage:



Dr. Sarah Wyatt's lab highlighted their work in gravity perception. In a partnership with NASA, plants are sent up to space to germinate and upon return to Earth, transcript and proteome data is collected. This data has revealed some expected gene responses as well as unexpected responses such as dehydration stress genes. Dr. Wyatt underscored the importance in preventing cherry-picking in omics data, which can be tempting given the vast knowledge-base required to interpret such large datasets.

Congratulations to all our award recipients!

Undergraduate Poster Presentation

1. Helen Liu, University of Illinois at Urbana-Champaign
2. Michelle Thole, Southern Illinois University Edwardsville
3. Bianca Castaneda, Michigan State University

Graduate Poster Presentation

1. Norman Groves, The Ohio State University
2. Rachel McCoy, Purdue University
3. Daniel Jones, The University of Oklahoma
3. Anna Newman-Griffis, The Ohio State University

Undergraduate Oral Presentation

1. Matthew Hill, Purdue University
2. Jeremy Held, Ohio University
3. Kyle Weingartner, Kansas State University

Graduate Oral Presentation

1. Brian Rutter, Indiana University
2. Zach Myers, University of Oklahoma
3. Jennifer Robison, Indiana University Purdue University Indianapolis

A number of talks focused on non-model species: *Digitaria exilis* or fonio is an ancient grain grown in the Sahel region of West Africa. Kat Kuchin and Spencer Luedtcke spoke about the potential fonio has to provide nutrition in the region...

...continued on page 2...

Five Questions with Midwest Section member...

Helen Liu: Helen is an undergraduate student at University of Illinois at Urbana-Champaign.

1) What is your favorite thing about living and working in the Midwest? The weather, surprisingly. I am a California girl, born and raised in the constant fog and ocean breezes of the San Francisco Bay Area. Coming to the Midwest was my first chance to experience four seasons. In the fall, I get to see my surroundings change into every shade of orange, yellow, and red as the leaves change color. In the winter, I get blinded by the snowflakes that land on my eyelashes. In the spring, I get to see first the daffodils bloom, then the magnolias, then the cherry blossoms, and finally the peonies. In the summer, I get to see the corn and soybeans tower over me by the hour and the fireflies flickering at night. This is why the weather is my favorite thing about the Midwest, though I wish it could make up its mind sometimes.

2) What has been the benefit to you of belonging to the Midwest section of ASPB? I could say that the Midwest section of ASPB has put me into contact with many of the top researchers in plant biology and taught me many branches of plant biology, but it has benefited me more beyond those two attributes. In freshman year at the 2015 Midwest section meeting, the judges at that meeting decided to give me a poster prize. What little is known is that I had hit a low point during that time where most of my experiments failed. I believed that I was not capable of doing research. When the judges announced my name for the poster prize in their belief that I could do research, I started to gain confidence in that I could conduct research. I wouldn't be still researching and come to love the frustration and successes of research if it wasn't for the members of the Midwest section of ASPB.

3) What projects are you excited about working on in the future? With summer break around corner and becoming a rising senior, I am excited for two different projects. For the first project, I will be spending my summer at the University of California, Berkeley, doing an independent research project in Prof. Krishna Niyogi's lab. I will be studying a new branch of photosynthesis for me, adding more biochemical techniques into my tool box, working with a new model organism, and meeting new people. My second project is narrowing down graduate school programs and getting ready to apply for graduate school in the fall. I am excited to look at what each university and department has to offer in terms of research topics. So, I'm looking forward to spending many sunny afternoons reading each lab's recent publications and begin writing my personal statements with a cup of tea.



"Leave from the opportunity saying that you tried for it but didn't get it, rather than you didn't try at all."

4) What's your favorite non-science activity and why? My favorite activity is growing orchids. When I was a freshman in high school, I was bitten by the orchid bug and I've been infected with the fever ever since. Now, I spend my free time cleaning and watering my collection of over 40 orchid species and hybrids and finding various reasons to buy another orchid. There's always room for one more, I lie to myself. I grow orchids for the challenge it presents me. To be honest, it's a masochistic cycle of trying to do everything in my ability to make this orchid happy for the year or two for the few days or months that it gives me flowers. Once the flowers drop, I must start the cycle again. I look forward to the few days that the orchid flowers for me, because that means that my hard work paid off.

5) What advice do you have for budding scientists? Just do it. If there is a scholarship or grant or job opportunity, apply for it no matter how unqualified you think you are. "You are your greatest critic" is the cliché that comes to mind, but it's true. Leave from the opportunity saying that you tried for it but didn't get it, rather than you didn't try at all. Who knows? You might just get the opportunity. Life works in mysterious ways.

Section Meeting continued...

... as a widespread food source. The team is working to streamline crossing methods, using foxtail millet protocols, so it can more easily be observed in the lab. Binaya Adhikari spoke about work focused on Cytoplasmic Male Sterility (CMS) genes in a non-model gynodioecious wildflower, *Lobelia siphilitica*. The objective was to investigate the preference for CMS expression in flowering species.

For a recap of #ASPBW17 on social media visit: <https://storify.com/OshnGirl/aspbmw17>

The Midwest Committee hopes to see everyone at Plant Biology 2017 June 24 -27 in Honolulu Hawaii <http://plantbiology.aspb.org/>

Parenting in Graduate School: The Good, the Bad, and the Areas for Improvement

By Jennifer Robison
PhD Candidate
Indiana University-Purdue University Indianapolis

Parenting is not a journey for the faint of heart; it can be exhausting, demanding, crazy, and amazing all in the same moment. Graduate school is also not a journey for the faint of heart, often exhausting, demanding, crazy, and amazing. Doing both of these things at the same time adds a special layer to life that only those who have experienced it can truly understand.

As the only single Mom and one of very few graduate student parents in my department, it is easy to forget that parents in graduate school are not as rare as one might believe. Thus I decided to write an article that highlights graduate student parenting. When I decided to write this article, I wanted to have as many perspectives as I could thus I put the call out at the Midwest meeting, via email on the Midwest listserver, and also globally via Twitter. Four brave parents reached out to share their thoughts and feelings. I have woven their tales with mine to craft this article which I hope is both enlightening and inspiring. Three of our parents have earned their PhD and are reflecting on the journey passed passed while two of us are still in the thick of their PhDs, you can find their biographies on page 5.

Everyone seemed to agree that the best part of parenting during graduate school was the flexibility afforded to graduate students as they often set their own working hours. Erin recalls that “my schedule was more flexible in graduate school than it has ever been since. Yes, I had to make sure that I was getting everything accomplished, but I had the flexibility to work hours that fit my schedule. Sometimes that meant coming into the lab at 5:30 AM so that I could get experiments started when I had the lab all to myself. On other days, that meant working afternoons and evenings or weekends so that I could juggle child care with my working husband.” Another benefit of flexibility is caring for sick kids, as Jodie pointed out, “my youngest child requires a great deal of medical care and the flexibility of graduate school allows me to structure my work schedule such that I am present for medical treatments. It’s hard, it’s unbelievably hard, but I can’t imagine doing anything else with my life, and I’m so grateful that I get to do both.”

Another positive aspect of parenting in graduate school is the newly added focus on work-life balance, increasing the drive to be fully engaged as a researcher in the lab and a parent at home. “Before having my son, there were days when I just couldn’t get motivated in the lab; I’d waste time or worry about experiments that were failing. Once I became a parent, I quickly realized that my time away from my son should be productive so that I wasn’t wasting any time away from him. I streamlined experiments, focused on my work and studies, and tried to accomplish as much work as possible on campus so that when I was home, I could focus on being the best mom I could be,” Erin commented. Additionally, Joshua reported “I found that I became a lot more efficient when I was in the lab. My advisor told me that he saw a big jump in my maturity once I became a father. Mostly I stopped procrastinating and started multitasking more out of necessity. As I became accustomed to doing this, it became my standard mode of operation. I would also say learning to compartmentalize aspects of my life. As soon as I would pick up my son from daycare, I was dad. This gave me a scheduled opportunity to turn off the stress from the lab. In addition to the often needed mental break, when I would come back to an issue later in the evening or the next day, I was doing so with a fresh look on the problem.”

“It’s hard, it’s unbelievably hard, but I can’t imagine doing anything else with my life, and I’m so grateful that I get to do both.” - Jodie

Despite feeling like they were being more productive in lab as parents, most parents reported they felt like an outsider during their graduate school journey. “The worst part of being a parent in graduate school was being different from the majority of other graduate students. I had more in common with post docs and faculty members than the cohort of graduate students that were there at the same time,” Paul reflected. “I missed out on a lot of the social aspects of graduate school. I rarely ever did anything outside of the lab with other graduate students who didn’t have kids,” Joshua remembered. Additionally, Joshua stated “Nobody ever outright said anything to me, but I often felt judged for getting married and having kids as a graduate student.” Jodie similarly said “When I...

...continued on page 4...

Parenting in Graduate School (cont.)

...started my PhD it quickly became apparent to me that graduate students with children were seen as a liability. I was expected to perform at a lower level than my “non-parent” peers.”

Another common issue shared by our graduate student parents was the lack of resources. “My biggest challenges as a parent in grad school were related to time and finances. My husband is a public school teacher, which combined with my graduate school stipend, was barely sufficient to pay for the expenses associated with supporting our growing family,” mused Erin. “Health insurance for graduate students is acceptable and affordable for a single person. With a family the added cost becomes too much to afford,” Paul said.

So how can the academic community help? Supportive advisors seem to be the key to success! Jodie’s “...success in graduate school has hinged on advisors that are focused on the quality of my work rather than the number of hours they see me in the lab or the office.” Personally (Jennifer), my advisor has let my sick kid lay in his office so I can collect data for a time point. This kind of support is invaluable! Additionally, Erin came up with a list which was echoed by several other parents. “I would like to see additional support for parents, including maternity/paternity leave, flexible hours, and on-campus (affordable/subsidized) child care. In addition, having a local group of grad school parents would have been nice. Other than our primary caregiver, we didn’t have many options for back-up care, so it would have been nice to be able to network with other student parents and share information or resources.”

I’d like to challenge the community to consider ways to help your local grad school parents. If there are parents in lab, ask how to best support them in their unique parenting situation and understand the extra complexities that exist in their lives. When arranging graduate student socials, consider having a lunch social so parents can attend without extra childcare demands. At the faculty/administration level fight for parental leave, affordable on-campus care, and additional sources of support for healthcare, grants, and stipends.

The demands of parenting and graduate school can feel additive and overwhelming. I know personally (Jennifer) I never feel like I’m an awesome Mom AND an awesome PhD candidate. It’s usually an OR, and that’s ok! It all balances out in the long run. So if you need to feed your kid Easy Mac for a week with

dishes piled up in the sink while you study for qualifying exams, do it. Alternatively, if your kid is sick for a week and you need to stay home and snuggle them back to health, do it.

“Additional support for parents, including maternity/paternity leave, flexible hours, and on-campus (affordable/subsidized) child care. In addition, having a local group of grad school parents would have been nice. Other than our primary caregiver, we didn’t have many options for back-up care, so it would have been nice to be able to network with other student parents and share information or resources.” - Erin

I asked each parent for their best advice about surviving this parenting in grad school journey and I will leave you with each of their comments.

Erin – “My best advice is that it’s never the perfect time to start a family. Parenting during grad school has its challenges, but it also has its rewards. After a long or frustrating day in the lab, I couldn’t wait to come home to my family. Whether you start graduate school as a parent or begin your parenthood journey while in school, it’s possible to do. You’ll need to be organized and motivated, but you don’t have to put your life on hold just because you’re a grad student.”

Paul – “It’s imperative that one sets short- and long-term goals and finds ways to hold him/herself accountable. Self accountability is difficult, but by starting a writing group and setting deadlines to give each other manuscript drafts, for example, is one option.”

Joshua – “My best advice to someone who is a parent and is thinking about going, or is already in graduate school is to go for your goal and you can make it work. With a family, I was able to be very focused on what I wanted to accomplish in graduate school and became very good at time management.”

Jodie – “Do not accept the lie that by being a dedicated parent you are not dedicated to your career. Do not allow anyone to make you feel lesser because of your beautiful children. Do your work, do it because you love it, do it well, then go home and love on your kids.”

Announcements

World Soybean Research Conference 10 & 17th Biennial Conference on Molecular and Cellular Biology of Soybean.

For the first time these two meetings about all things *Glycine max* will be held concurrently! The meeting will take place September 10 – 15, 2017 in Savannah GA. Abstract submissions are open! For more information visit <http://wsrsc10.net/>.

Graduate Student Opportunities at University of Western Ontario

Two graduate student opportunities are available at the Department of Biology of the University of Western Ontario, and Agriculture and Agri-Food Canada, London Research and Development Centre in London, Ontario, in Frédéric Marsolais' laboratory. The preferred start date is September 2017.

One Graduate Student Position: Effects of Common Bean Peptides on Health - Common bean is the most important grain legume crop worldwide. This project seeks to identify and characterize biological effects of bean derived peptides on a murine adipocyte cell line (3T3-L1). For this work, we propose to use bean genetically related lines differing in protein composition, as well as purified proteins. Effects will be monitored with specific biomarkers as well as with transcriptomic, metabolomic and proteomic approaches. Peptide bioavailability will be studied using intestinal CaCO-2 cells. This work is part of a project funded by the Ontario Research Fund – Research Excellence Round 8 entitled “Applying Genomic Ideotype Breeding to Increase Bean Productivity, Healthfulness and Sustainability”. Knowledge and experience of protein biochemistry and mammalian cell culture is an asset.

One (1) Graduate Student Position: Genetic Improvement of Protein Quality in Edible Beans - Protein quality of common bean is limited by the low levels of sulphur amino acids. This is an important barrier to the incorporation of bean ingredients in food manufacturing. A unique characteristic is the accumulation of the non-protein amino acid S-methylcysteine which cannot substitute for cysteine or methionine in the diet. We have shown that it is possible to modify storage protein composition so that sulphur is reallocated from S-methylcysteine to sulphur amino acids in the protein pool. The present project seeks to characterize chemically mutagenized lines having a reduced concentration of S-methylcysteine. The project involves conducting allelism tests, and developing a mapping population for bulk segregant analysis and next generation sequencing. This work is part of an AAFC project entitled “Improvement of protein quality and seed coat color stability in dry bean”. Knowledge

and experience of plant molecular biology, genetics and metabolic biochemistry is an asset.

Research will be conducted at the London Research and Development Centre (<http://www4.agr.gc.ca/AAFC-AAC/display-afficher.do?id=1180640801098&lang=eng>), a state of the art facility offering a full range of instrumentation and expertise for research in genetics, genomics, bioinformatics and chemistry. The Centre is located within a short distance from the University of Western Ontario. A successful application to the Faculty of Graduate Studies at the University of Western Ontario is required http://grad.uwo.ca/prospective_students/index.html. The candidates may be expected to participate in regular teaching assistantship at the Department of Biology. For the AAFC-funded position, a successful application to the Research Affiliate Program of the Public Service Commission of Canada will be required (<https://www.canada.ca/en/public-service-commission/jobs/services/recruitment/students/research-affiliate-program.html>). For more information, please send a detailed CV with cover letter, summary of research activities and technical expertise along with contact of references to Dr. Frédéric Marsolais Frederic.Marsolais@agr.gc.ca

Parent Biographies

Dr. Erin Friedman is an Assistant Professor in Biology at Lynchburg College in Virginia. She has 2 sons currently ages 7 and 4 years of age. Her first son was born during her graduate career and was 2 years old when she earned her PhD.

Dr. Paul South is a research molecular biologist for the USDA/ARS at the Carl R Woese Institute for Genomic Biology in Illinois. He has 3 children, currently 12, 10 and 6 years of age. When he started graduate school his first born was 18 months and the other two arrived during his PhD journey.

Jennifer Robison is a PhD Candidate at Indiana University-Purdue University Indianapolis in Indiana. She is a single mother to a 10 year old son who was 7 when she began her PhD.

Dr. Joshua Widhalm is an Assistant Professor at Purdue University in Indiana. He has 2 children aged 7 and 3. His first child was born during his third year of graduate school and was 2 when he earned his PhD.

Jodie Wiggins is a PhD Candidate at Oklahoma State University in Oklahoma. She currently has 2 children who are 11 and 3 years old. Her eldest was 1 when she started her master's degree as a single mother. Her second child was born during her PhD Candidacy.

Want to advertise a position, share some exciting news, or be featured in our next newsletter?

We are also looking for “Tips and Tricks” you have for any/all aspects of plant science!

Please send items to Jennifer Robison no later than **August 15, 2017**: jenrobis@iupui.edu