

ASPB MIDWESTERN SECTION NEWSLETTER

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Report from the Midwest Section Meeting at Iowa State

By Amanda Koenig
PhD Candidate, Michigan State University
Photo credit Bhanu Petla, South Dakota State University

This year's meeting had over 200 attendees from 46 institutions. From pollination to pathogen-plant interaction, from ecology and agronomy to molecular biology and biochemistry, researchers expertly shared their groundbreaking science at the American Society of Plant Biologists Midwest meeting at Iowa State University. As my first professional conference during my PhD career, the 2018 meeting was an accessible, welcoming, and enlightening experience, with an engaging lineup of speakers spanning a well-rounded breadth of topics. The meeting was a productive, collaborative, and supportive environment for inspiring science and professional development.

Among a diverse career panel of plant scientists, a consensus arose that leadership, communication, and collaboration are critical in any career path for PhD trainees. At the 2018 ASPB Midwest sectional meeting, Dr. William Serson, Dr. Crispin Taylor, Dr. Anna Block, and Dr. Clayton Larue engaged with young scientists like myself about our blossoming careers. As a PhD student, early in my training, career panels like these are invaluable as I explore the opportunities ahead of me. Whether young scientists hope to pursue a career as a liberal arts university professor or a CEO of a professional society, the panelists encouraged honing skills like agility and flexibility in research and communication. As scientists, we must be able to react and pivot in response to changing attitudes and priorities.

INSIDE THIS ISSUE

Midwest Section Meeting Recap	1
Five questions with...	2
Plantae Protocol Network	3
Benning Lab Meeting Winners Interview	4
Announcements	5

When asked how the panelists would recommend trainees make the most of their years in a PhD program, they emphasized diversity of experiences, both in and out of the lab. Take advantage of the immense learning opportunities to become well-versed in multi-disciplinary techniques. Consistently sharpen statistical skills, particularly making use of programming in languages like R and Python. Additionally, participation in leadership roles, outreach efforts, and science communication writing supports a well-rounded PhD experience. Whether it be engaging with the public to dispel misinformation about GMO foods and gene editing technologies or advocating for sensible policy and funding for science research by contacting political leaders, scientists have an opportunity to be leaders in precipitating change. Start a blog, become an ASPB Ambassador, and embrace leadership positions: we have the capacity to be both researchers and communicators.

We can publish papers, master techniques, communicate our work, and prepare thoroughly for our dream careers, however we must always be open-minded. The panelists attested to the serendipity of their career paths, ending up in positions they may have never anticipated. Often...

Congratulations to all our award recipients!

Undergraduate Poster Presentation

1. Matt Cook, Iowa State University
2. Terra Willard, Truman State University
3. Jacob Johnson, Iowa State University

Graduate Poster Presentation

1. Tomomi Takeuchi, Michigan State University
2. Elizabeth Carino, Iowa State University
3. Antony Chapman, Iowa State University

Undergraduate Oral Presentation

1. Amanda Blythe, University Missouri, Columbia
2. Nick Fekaris, Michigan State University
3. Clarissa Lewis, Iowa State University & Kyle Weingartner, Kansas State University

Graduate Oral Presentation

1. Alan Culbertson, Iowa State University
2. Maria Sorkin, Washington University, St. Louis
3. Ryan Kessens, University of Wisconsin, Madison



...continued on page 2...

Five Questions with Midwest Section member...

Jennifer Robison: Jennifer is a PhD Candidate at Indiana University Purdue University Indianapolis and publications manager for the Midwest section.

1) What is your favorite thing about living and working in the Midwest? The Midwest has four seasons, occasionally all in the same day, lol. As a teenager, I grew up in southern California, which means snow was novel to me when I first moved back to the Midwest. Additionally, working with plants in the Midwest is an easy connection with the community as we are all aware of agriculture and the important roles plants play in food and feed.

2) What has been the benefit to you of belonging to the Midwest section of ASPB? The community. ASPB Midwest is full of incredible scientists that are also fantastic people. I have made many connections at the Midwest meetings which have extended to the national meetings and beyond. I have several people that I met in the Midwest Section meetings years ago that I feel we have move beyond colleagues to friends. We keep in touch throughout the year, providing advice and encouragement. I do not think I would have been able to come as far as I have without having met these people early in my PhD.

3) What projects are you excited about working on in the future? I have several projects I am working on right now that I am very excited about. The first is a continuation of my cold stress in soybean research. Before my research was using soybean seedlings, examining physiological and molecular responses to cold stress. This next, and final, phase of my PhD research is diving into some serious biochemistry. I am currently expressing and purifying two different cold responsive transcription factors from soybean in *E. coli*. Once I have completed the purification, I will start characterizing their DNA binding capability and affinity. I am hoping to understand how these transcription factors might interact in vitro to predict what is occurring in vivo. The second is an educational research project to bring more stories behind the science into laboratory classrooms. If you're interested in either of these projects come see me in Montreal! My educational research project is going to be presented as a talk and a poster.

4) What advice do you have for budding scientists? Take care of yourself. Self-care is critical in life and this is true in science as well. If you've ever taken a first aid course the first thing they teach you is to evaluate the scene for any potential dangers to your person. If you are putting yourself in danger, you should not attempt a rescue. This is something you should apply to your own



"If you complete all of your daily tasks, GO HOME. Even if you have time to start on tomorrow's work. Reward yourself..."

life, especially in science. There are always deadlines, experiments to do, data to analyze, writing to be done. One of the best pieces of advice I heard as a first semester PhD student was every Sunday make a list of the week's goals, then break them down to daily tasks. If you complete all of your daily tasks, GO HOME. Even if you have time to start on tomorrow's work. Reward yourself for efficiency.

5) What's your favorite non-science activity and why? I love to write fiction. For the past decade I have set time aside to participate in National Novel Writing Month (NaNoWriMo) in November. This has been especially important as a grad student since most of our writing time is focused on our scientific writing that I don't always take the time to write for fun. By participating in NaNoWriMo I ensure I won't completely lose my fiction writing hobby. Currently, I have two novels which have been read by beta readers and I am considering publishing them. For me, fiction writing lets me express my creative side and delve into depths of my imagination. Right now my project is my own spin on mermaid lore. It might not be the most scientific, but it is a lot of fun.

Section Meeting continued...

...our peers and mentors see skills and strengths in us that we do not see in ourselves. While it is pivotal that we remain purposeful and intentional with our goals and our research, there is merit in welcoming new, unique, unforeseen opportunities that divert our career paths in directions we may have never imagined. Skills learned and refined over the course of our PhD and Postdoctoral training—critical and strategic thinking, flexibility, collaboration, adaptability, resilience—are translational, marketable and valued in many spheres. As early career scientists, we should engage in a variety of experiences and then welcome and embrace new opportunities, however unexpected, as they present themselves.

Using Plantae to upload and share protocol videos

By Dr. David Horvath
Senior Research Scientist
USDA Agricultural Research Service

Have you ever tried to follow a protocol from a manuscript and wondered if the pellet you were getting was the correct color, size, etc.? Have you ever read that you should “dry the pellet” and wondered if that meant air drying, vacuum drying, if heating was required, etc.? As a grad student in the Thomashow lab back in the 80s, I remember have a terrible time repeating the results of a fellow lab mate (Chen Tao Lin) when attempting to get sequence a large plasmid, only to learn that the only reason my reactions were failing was because I was flicking the tube to resuspend the pellet instead of scrapping the tube and pipetting the solution up and down.

Once I watched him do it and made that small-seemingly insignificant alteration, every reaction I did thereafter worked perfectly. It is almost impossible to write a protocol for lab use that accurately and adequately describes all of the important steps in any given procedure, and even if that were possible, there is not often sufficient space to include such detail in a manuscript.

Have you ever worked out a protocol yourself, and noted some small changes that improved the outcome? Have you ever read a protocol from a manuscript and wanted to ask the author a question about a particular step, or noted a possible mistake and wished you could comment on it for the benefit of others who might be doing it in the future?

If so, then Plantae has a network group you should be following and using. A new group, Methods and Protocols was started on the Plantae network for sharing videos of procedures and protocols for the purpose of avoiding some of the problems described above.

To find it, log on to Plantae (<https://plantae.org/>), then <https://community.plantae.org/organizations> and look for the group Methods and Protocols (currently the second row down and among a number of excellent resources available on the Plantae network).

It is currently pretty sparsely populated, but that is where you come in. The next time you are doing some experiment – particularly if you plan on publishing work based on that procedure, have your lab mate take a video with their cell phone. Then, upload it to YouTube and link it to the Methods and Protocols group. It doesn't have to be professionally edited or fancy, but do try to include good footage or photos of important steps and expected products. Then, log in to Plantae, click the plus sign in the upper right corner of the screen, select video, and paste in the YouTube or Vimeo link in the box and then select “methods and protocols for the network, and finish by clicking the create button. Then add a tag and click publish.

If that sounds complicated or vague, just watch the video

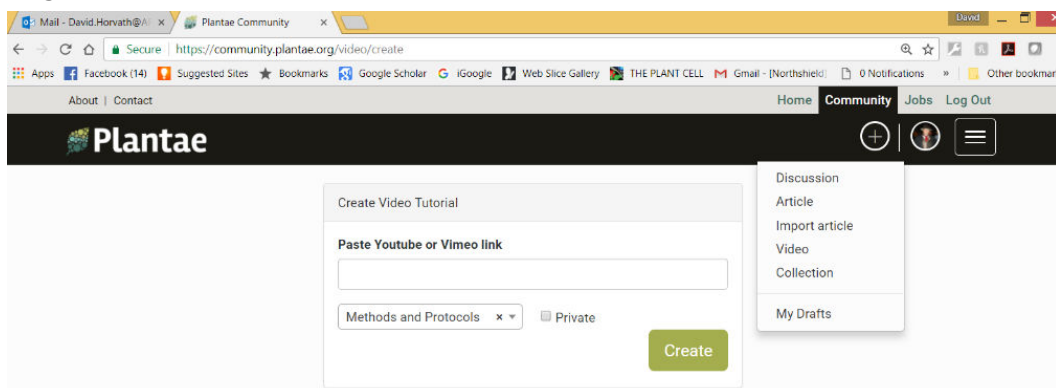
<https://www.youtube.com/watch?v=CnmA8A4OdiE>

or

<https://community.plantae.org/video/4954488979849217709/loading-protocol-videos-onto-plantae>

While you are in there, feel free to comment on any of the other protocols of interest. I happen to know there is a small mistake in the RNA extraction video near the end that should probably be noted for any other users.

If “a picture is worth a thousand words,” a video is worth a million!



Benning lab students win at 2018 ASPB Midwest Meeting

By Igor Houwat
Communications Coordinator
MSU-DOE Plant Research Lab

Two students in the lab of Christoph Benning have won awards for presenting their research at the 2018 Annual Meeting – Midwestern Section of the American Society of Plant Biologists. Nick Fekaris, an undergrad student in the Department of Biochemistry and Molecular Biology (BMB), won second place for his oral presentation. Tomomi Takeuchi, a grad student in BMB, and Nick's student mentor, won first place for her poster presentation. The ASPB Midwest meeting, which took place at Iowa State University, "provides scientists at all career stages opportunities to discuss research efforts, teaching programs, funding scenarios, and career designs," in the field of plant biology. It is also an opportunity for students to practice presentation skills, which is why 9 members from the Benning and Hoffmann-Benning labs packed into a van and drove to Iowa from Michigan State University. Below are excerpts from an interview with the two winners.

What is your research on?

Nick: I work on a protein found in algae which supports them through stressful times, like when food is scarce. The protein helps them hibernate until the stress blows over. It's basically a survival mechanism. My project is to figure out which parts of this protein are important for it to work. At the meeting, I presented on one of these portions and reported that it is not essential for the protein to function fully. The way we found that out was to remove that portion from the protein and see if the algae were still able to go into hibernation. They did!

Tomomi: I work on the same protein. We think that, during the hibernation period, the protein blocks normal algae functions, like growth and cell division. In fact, without this protein, the algae have trouble doing cell division and coming out of their hibernation.

Tell us about your experience presenting at the meeting.

Nick: I've never given a formal scientific talk. I was nervous going in, as there were anywhere between 150 and 200 people in the lecture hall! But after watching other presenters, and seeing it was a hospitable environment, I wasn't worried as much. The opportunity to present ended up being the most unique thing for me.

Tomomi: I agree with Nick that the meeting was a friendly setting to present and discuss science, and in terms of my poster talk, I was essentially giving a summary of my work to whomever came up to my poster. It was enjoyable to share my work with others and see other research, and some of the professors gave me good suggestions on how to proceed with my research. I also met with some of my collaborators for the first time in person. That was pretty cool!

What did it feel like to win?

Tomomi: I was very surprised. I was just sitting there and being myself, and then I heard my name being called. I got first place among around 100 other presenters! Winning made me feel good about myself, since this is the first competitive award I have won in graduate school in terms of presentation skills.

Nick: Going into it, I wasn't sure there were awards for my category. I was quite surprised to hear my name called when they announced the awards and ecstatic to go down there and get it. Plus, there was a monetary gift!

How would you present differently next time?

Tomomi: I'm happy with how I presented. But, I spent too much time talking to my collaborators and didn't interact with other people as much or look up more posters as I would have wanted.

Nick: I think my presentation was a bit bland. I could have made it more colorful by adding figures and animating it, especially after I saw some people do things that I liked. Also, I would have practiced my presentation more.

How does your lab environment help you develop as a scientist?

Tomomi: Christoph [Benning] has always been there to offer valuable suggestions while giving me enough independence to pursue what I want, and I think it has helped me greatly in becoming a better scientist. Everyone who came on this trip from the Benning and Hoffmann-Benning lab did a great job, and it was a fantastic adventure.

Nick: I joined the lab looking to develop fundamental skills necessary to become a successful scientist, and that is exactly what I have gotten under Tomomi's mentorship. I greatly appreciate her guidance and knowledge and believe the success we both achieved at this event was the result of working in a great environment.

Announcements

ASPB Midwest Vice-Chair Nominations

The Midwest is looking for a Vice-Chair to join the committee next year. If you are interested in nominating someone, or yourself, please email Sen Subramanian at Senthil.Subramanian@sdstate.edu

ASPB Midwest 2019 Conference –Save the Date!

March 16 – 17, 2019 at West Virginia University in Morgantown, West Virginia. Watch your email for more details!

PlantBio18 in Montreal!

We look forward to seeing everyone at PlantBio18 in Montreal July 13 – 18th. Hopefully, everyone has already registered but if not posters are still being accepted! <http://plantbiology.aspb.org/>

Arabidopsis Teaching Resources

The Arabidopsis Biological Resource Center (ABRC) is pleased to announce a recent publication in the April issue of The American Biology Teacher. Following Phenotypes: An Exploration of Mendelian Genetics Using Arabidopsis Plants provides in-depth laboratory protocols for teaching Mendelian genetics at the middle and high school level. This article is based on one of ABRC's many education kits, which are available via the ABRC Outreach website (<https://abrcoutreach.osu.edu/>). Kits include downloadable protocols and supporting documents, with seeds available for order through ABRC.

New Plant Science Education Resources

The Center for Applied Plant Sciences (CAPS) recently released four short, educational videos highlighting plant science from various perspectives. The videos, which are available on the education section of the CAPS website (<https://caps.osu.edu/>), represent one part of a larger project funded by an ASPB Plant BLOOME grant. Through this project CAPS partnered with the local science center, COSI, to develop a new interactive videoconference program for middle and high school students. This new program, Plant Solutions for Global Problems, virtually connects classroom across the country with a COSI educator

and a PhD student from The Ohio State University for a one-hour hands on exploration of plant science.

Contact Courtney Price (price.1217@osu.edu) for more information about this project.

ASPB Members Honored at Annual Maize Genetics Conference

ASPB members Robert Martienssen (Cold Spring Harbor), Michael Scanlon (Cornell University), and James Schnable (University of Nebraska-Lincoln) were honored at the 60th annual maize genetics conference in St. Malo, France on March 24th, 2018. Robert Martienssen received the Barbara McClintock Prize for Plant Genetics and Genome Studies for his contributions to improving our understanding of epigenetic mechanisms of gene regulation and inheritance. The McClintock Prize is awarded each year to one or more of the most creative minds and productive scientists in the study of plant genome structure, function and evolution, including the analysis of gene regulation and epigenetics. Michael Scanlon received the Lewis Stadler Mid-Career award in maize genetics for his investigation of the narrow sheath genes in maize and elucidation of quantitative genetic variation controlling meristem morphology. James Schnable received the Marcus Rhoades Early Career award in maize genetics for delineating the functionally distinct subgenomes of maize and separate patterns of selection across orthologous regions of the maize, sorghum, and foxtail millet genomes.



Want to advertise a position or grant, share some exciting news, be featured in our next newsletter, or have an article that would be helpful to other Midwest plant scientists? Please send items to Jennifer Robison no later than August 30, 2018: jenrobis@iupui.edu