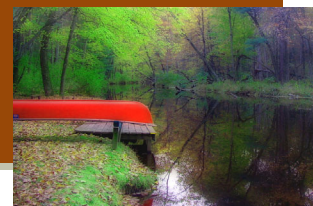


# ASPB MIDWESTERN SECTION NEWSLETTER



States included: IA, IL, IN, KS, KY, MI, MN, MO, ND, NE, OH, OK, SD, WV, WI Canada - MB, ON

## Current Coronavirus Section Plans...

Normally in this section we welcome our incoming section officers. This past year COVID disrupted our annual meeting requiring it to be postponed which has led us to maintain our leadership structure for an additional year.

**Chair:** Harkamal Walia, Associate Professor at University of Nebraska–Lincoln. Harkamal’s lab is interested in drought–regulated gene expression during reproductive development. He has served as vice chair since 2018.

**Vice Chair:** Senthil (Sen) Subramanian, Associate Professor at South Dakota State University, Brookings, SD. Sen’s lab is interested in plant–microbe interactions, in particular the roles of plant hormones and small RNAs in soybean nodule development. Another focus area of his lab is to evaluate and identify plant factors and mechanisms that determine rhizosphere microbiome composition and activity. Sen organized the 2016 Midwest sectional meeting at Brookings, SD and has served as treasurer since 2017.

**Secretary/Treasurer:** Mike Mickelbart, Associate Professor, Purdue University. His lab focuses on applied and basic aspects of plant water and nutrient physiology and management.

**Early Career Representative:** Rachel Hiles, Phd Candidate, Purdue University. Her research focuses on the bacterial pathogen, *Ralstonia solanacearum*, and how its virulence proteins, type III effectors (T3Es), influence pathogenicity in tomato. She is a new member of ASPB Midwest section, having joined in February 2019.

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**Executive Committee Representative:** Gustavo MacIntosh, Associate Professor of Biochemistry, Biophysics and Molecular Biology at Iowa State University. Gustavo’s research focuses on how plants respond to insect attacks and the mechanisms used by insects to avoid plant defenses, as well as rRNA degradation through vacuolar mechanisms. Gustavo is also a member of the ASPB Minority Affairs Committee and previously served as Secretary/Treasurer from 2014–2015 and Vice Chair for the ASPB Midwest Section in 2015–2016.

**Annual Meeting Organizer:** Sarah Refi Hind, Assistant Professor of Crop Sciences at the University of Illinois at Urbana–Champaign. Sarah’s research focuses on understanding the plant immune system, with a current emphasis on bacterial pathogens of vegetable crops. Ongoing projects in the laboratory study the causal agents of bacterial spot disease of Solanaceae (tomato) and Cucurbitaceae (pumpkin) plants. Sarah has been a member of ASPB since 2008, and is excited to be involved in organizing the Midwest section meeting for 2020.

**Publications Manager:** Jennifer Robison, Assistant Professor at Manchester University. Her research focuses on how the effect of cold stress on soybean physiology. She has been the Publications Manager for the Midwest section since 2016, and is currently Vice Chair of the EPPP section.

## Five Questions with Midwest Section member...

**Lisa Ainsworth:** Lisa is a Research Leader and Adjunct Professor with the USDA ARS at University of Illinois at Urbana-Champaign. Lisa was recently elected to the National Academy of Science

<https://community.plantae.org/article/5551246059151296468/elizabeth-ainsworth-elected-to-the-national-academy-of-sciences>

**1) What is your favorite thing about living and working in the Midwest?** Living: I grew up in Illinois and am grateful that my parents live close enough that we can see them regularly. It's fun to watch my parents play tennis or soccer or scrabble with my kids.

**Working:** I study crop responses to global climate change and much of my research has focused on soybeans and corn, which are important to the economy of the state and the Midwest, which provides relevance and motivation for the research.

**2) What has been the benefit to you of belonging to the Midwest section of ASPB?** The Midwest ASPB section has provided many people in my lab an opportunity to present their research at a local meeting, and to meet other students and post-docs in plant sciences in their early career stages. It also provides a steppingstone to the national organization and a chance to learn about how ASPB contributes to the advancement of plant sciences through publications, meetings, education, outreach, advocacy and policy.

**3) What projects are you excited about working on in the future?** I am excited by all of the projects in the lab and work with a tremendous group of graduate



*"I am also excited to investigate genetic variation in leaf anatomy and canopy architecture in a number of crops and how leaf anatomical traits and canopy architecture impact photosynthesis and yield."*

students, post-docs and technicians. The soybean free air concentration enrichment (SoyFACE) facility continues to provide an excellent testbed for studying crop responses to global atmospheric change, and we have just started to investigate the interactive effects of drought and ozone in soybean. I am also excited to investigate genetic variation in leaf anatomy and canopy architecture in a number of crops, and how leaf anatomical traits and canopy architecture impact photosynthesis and yield.

**4) What's your favorite non-science activity and why?** I enjoy running – especially with my sister when we are together and early in the morning. Running provides a great mental break and physical challenge and helps me stay patient and focused during the day.

**5) What is one of your hidden talents?** Backflips. Although those are mostly into the pool these days.

## How Retrieval Practice Transformed My Classroom

By Katelyn J. Butler, PhD  
Assistant Professor  
Anderson University, Anderson, IN

One of my favorite aspects about teaching at a liberal arts university is the opportunity to interact with faculty outside my specialty. Over lunch in the cafeteria (and likely some delicious AU brownies), a cognitive science professor introduced me to the teaching strategy of retrieval practice. I eagerly began to do more research including reading the book *Powerful Teaching* by Pooja K. Agarwal, Ph.D. and Patrice M. Bain Ed.S.. This book summarizes the research and implementation of four cognitive-science-based teaching strategies, including retrieval practice. The data were so convincing, I was hooked! I immediately began to implement these strategies in my classroom. It improved my teaching, and my students loved it.

To put it simply, retrieval practice is getting the information out of students' heads. Research has shown that when students retrieve information (and truly retrieve it - no notes!) they remember it longer. This is why flash cards are better than rewriting notes, practice tests are more effective than rereading, and teaching your friend is better than re-watching a video. This seems like common sense, but I wanted to intentionally incorporate these ideas into my classroom.

Integrating retrieval practice into my classes was fairly easy - it required minimal prep and no extra grading. When I design a retrieval practice activity, there are two key aspects I keep in mind: 1) keep it no-stakes so students feel okay messing up and 2) no notes! These principles (and ideas from *Powerful Teaching*) have helped me develop some strategies I use consistently in my classes. Here are a few of the ways I have incorporated retrieval into my classroom.

1. **Brain Dumps:** For this strategy, students write down everything they remember about a topic. For example, before a photosynthesis lab, I have students fill a blank sheet of paper with everything they remember about photosynthesis from class. They write/draw/diagram for a set time and then compare with neighbors. This activity improves memory and allows students to see what they know and what they don't. This is also a great strategy for review sessions. I have students rotate around the room to different topics (written on the board or giant Post-its) writing anything they remember about the topic. Afterwards, I review what they've written on the board. To

paraphrase a student, "It was awkward, but it actually helped!"

2. **Retrieval Guides:** Some students and professors have aversions to worksheets - but I find them to be immensely helpful and well-received by students. These worksheets can take many forms, such as the one pictured here from my plant pathology class. Worksheets with application questions or empty comparison tables are fairly simple to make and provide structured in-class practice and review of basic recall and higher-order thinking. Remember - no notes! I make sure to explain why we do these worksheets and most students buy in easily. I do not collect the worksheets for grading, but I do provide feedback during class.

3. **Clicker Questions:** This may be the most common form of retrieval practice used in classrooms. Clicker questions during lecture provide no-stakes opportunities for practice. They not only help my students check their own understanding, but it also helps me know what needs to be reviewed - even if no one asks questions. I redesigned my classes to have clicker questions every session. There was some effort in learning the clicker system and creating questions, but now I know I have built-in practice for every class.

These strategies can be effective for virtual learning as well. During the COVID-19 chaos this semester, I posted retrieval guides, instructed students to brain dump, and created practice quizzes. While it is the student's initiative to complete these activities, I had many students report they did and found them helpful.

Incorporating intentional retrieval practice into my classroom transformed my teaching and improved my students' learning. Try it in yours - take five minutes to do a brain dump, add a virtual practice quiz, or whip up a retrieval guide. Maybe even try to use it with your lab group- after a conference, everybody brain dump! You'll be sure to remember what you learned longer.

For more information and a lot of great resources check out [powerfulteaching.org](http://powerfulteaching.org). I have no connection to the authors, I just found these resources valuable.

## Summer Webinar Series 2020 by Collective Research Organization of Plant Scientists

By CROPS Officers

University of Nebraska Lincoln

Normally, the closing of a spring semester brings along with it graduate students as they finish their first publications, as well as postdocs submitting papers that will set them on the path to their long term goals. Exciting times at the beginning of any career. However, the spring of 2020 had other plans. The Coronavirus spread across the world like wildfire, crippling everyone in its path. And hot on its heels, conference after conference canceled, and with them, the dreams of many grad students and postdocs hoping for exposure of their work.

We felt that pain because we are them and we experienced it just as much. We are CROPS: [The Collective Research Organization of Plant Scientists](#). We are an organization made of graduate students and postdocs studying plant sciences at the University of Nebraska-Lincoln (UNL). We were founded in 2018 with support from the Center for Plant Science Innovation (PSI) at UNL with one of our goals being to bring science from across the world to UNL. However, this past year, we weren't so sure we could.

As the world took a turn for the worse, we commiserated. Then, we quarantined. But then, we had an idea. We couldn't fix the pandemic - we're plant researchers. And, we couldn't bring back our canceled conferences. But we could MAKE a virtual conference and invite everyone in our shoes to be a part of it.

So we did.

It was already May when we got our idea for the CROPS Summer Webinar Series together and we knew we had a busy month ahead if we wanted to make our start date in the first week of June. After countless emails, phone calls, Zooms, and Tweets, we assembled a group of 20 speakers from Iowa State University, South Dakota State University, University of Missouri-Columbia, and Kansas State University to join us on our journey. While none of us knew exactly what would happen at 11 am on Tuesday, June 2nd, we all logged on and began what we can now say was one of the best CROPS events we have created to date. Over the course of the summer, we heard from 14 graduate students and 6 postdocs. With topics ranging from biotic and abiotic stress response, central metabolism, multi-omics, to bioinformatics, there was never a dull moment.

For one hour every week, we connected with over 200 people across the globe and brought back the chance for our colleagues to get exposure in their fields. For one hour every week, we gave people something to look forward to, a chance to virtually connect with those who some only see once every few years in person.

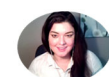
But most importantly, for one hour every week, COVID-19 wasn't stopping us from sharing our research.

We were also fortunate to be able to award the best presentations with monetary support from the PSI and Agriculture Research Division (ARD) at UNL. The overall best presentation was awarded funds to support travel for a future conference by PSI-UNL. 1st, 2nd, and 3rd prizes for graduate students and postdoc presenters were given monetary awards.

The recordings of presentations are available on the CROPS website [here](#) For more information follow us on Twitter [@CropsUNL](#)

The CROPS 2020 Board

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 Jaspreet Sandhu, Vice President  
 Dr. Lise Pingault, Treasurer  
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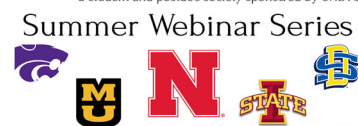
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Exp Grad 2022



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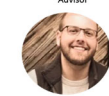
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<https://unlcrops.wixsite.com/psi-crops>



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Exp Grad 2023



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Exp Grad 2020

## Announcements

### Plant Cell Issues Call for Letters on Eradicating Racism in STEM

The Plant Cell encourages the submission of Letters to the Editor from members of the plant science community that deal with the Black experience in academia and STEM and suggest approaches or activities that might contribute towards reaching this goal. We are emphasizing a call for letters that focus on anti-Black racism, including its expression in colonialism globally, as this is one of the most pernicious and pressing issues of our time. Letters should be no more than about 2000 words of main text and may be accompanied by a figure if it clearly adds to the arguments presented. For full details visit:

<http://www.plantcell.org/content/early/2020/09/01/tpc.20.00589> Read the first installment by Beronda Montgomery here <http://www.plantcell.org/content/early/2020/09/01/tpc.20.00589>

### Postdoc position available

A postdoctoral position is open in the Theg laboratory in the Department of Plant Biology at UC-Davis to study the mechanism of protein translocation across membranes on the Tat pathway. The position is available starting in March 2020.

Qualifications: The ideal candidate will be a highly motivated and hard-working scientist, and will have a pending or recently awarded Ph.D. in Biochemistry, Biophysics, Molecular Biology, Cell Biology or a related field. Experience in protein targeting and/or molecular plant biology is preferred, though not strictly required; experience with membrane-related phenomena is highly desirable.

Application instructions: To apply send a C.V., statement of research and career plans, and the names, email addresses and telephone numbers of three references to Steven Theg at [smtheg@ucdavis.edu](mailto:smtheg@ucdavis.edu). Applications will be reviewed as received and the position will remain open until filled.

For more information about the position or the lab visit the lab webpage at <http://www-plb.ucdavis.edu/labs/theg/> or contact Steven Theg 530-752-0624 or [smtheg@ucdavis.edu](mailto:smtheg@ucdavis.edu)

### ASPB BLOOME Grant Awarded to Danforth Center Researchers

Dr. Renee Dale, Dr Callis-Duehl and Dr Arango-Caro were recipients of ASPB's plant BLOOME education and outreach grant this summer. They will be developing a math and plant science video game. Read more at <https://www.danforthcenter.org/news/plant-science-meets-gaming-scientists-begin-developing-math-and-plant-biology-video-game/>

### Early Career Modeling Online Community

Dr. Renee Dale is the co-developer of an online community for early career modelers who want to connect and learn with other early career modelers. Visit their github page to learn more <https://amoghpi.github.io/modeling-and-beyond/>

### A brief synopsis on pennycress development.

Pennycress is being developed as a new crop for Midwest agriculture and the speedy domestication of this crop has been enabled by the decades on research in Arabidopsis. Dr. David Marks lab members efforts from genome development through trait discovery in pennycress have shown a high degree of similarity at the gene and phenotype levels. As a result, we were able to identify many crucial domestication traits described in the Nature Food article and are well on our way to make this a viable crop. Traits described in the study included the development of reduced shatter lines for decreasing the yield loss during mechanical harvest and reduction of anti-nutrients to allow for the production of edible oil and meal for food and feed purposes. Read their latest publication here

<https://www.nature.com/articles/s43016-019-0007-z>

**Want to advertise a position, announce some big news, share a lab or teaching technique, or be featured in 5 questions with a Midwest Member in our next newsletter?**

Please send items to Jennifer Robison no later than December 15, 2020: [JDRobison@manchester.edu](mailto:JDRobison@manchester.edu)