



Bluestem

Plant Biology
Ecology &
Evolution

THE DEPARTMENT OF PLANT BIOLOGY, ECOLOGY, & EVOLUTION

From the Department Head

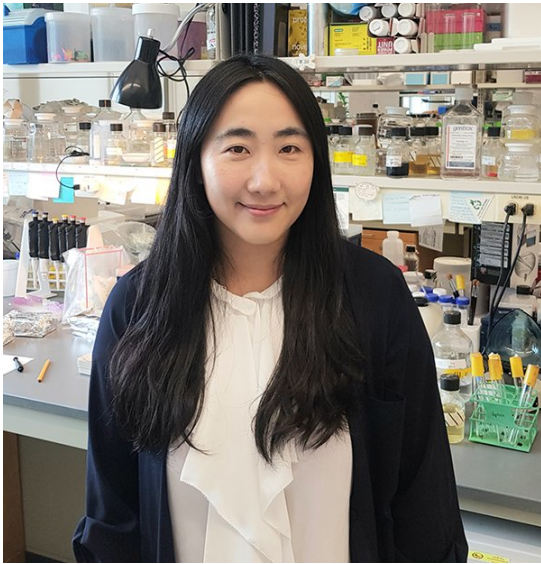
This is our end-of-summer edition. Summer is a long holiday for most undergrads but a period of intense research and scholarly activity for grad students and faculty. One highlight is grad student **Dylan Franks** (Henley lab), who recently returned from a conference in Ottawa, where he taught college teachers how to use algae in inquiry-driven undergraduate course research. **Bill Hammond** (Adams lab) is in Israel on a joint US-Israel research project on modeling tree death. And **Victor Andreev** (Fishbein lab) has funding to travel throughout the Midwest researching milkweed



hybridization zones. Both Bill and Victor, as well as two other students, are partially supported in their work by the department's McPherson Fund, a donation-supported fund for student research.

Our graduating students this past spring have also been successful in the next stages of their careers. Undergraduate and previous outstanding senior **Molly Haddox** is now working at the Oklahoma Blood Institute (see story below) and **Kelli Norton** is being trained as a recruiter for the Inceed company in Tulsa. Both credit their lab and course-work research experiences for giving them marketable skills and a belief in their abilities, enabling them to shine above the other candidates. Graduate student Mylissa Stover is now working in lab research for the biotech company NXTnano in Claremore, Ky Shen is a new Biology Instructor at Coffeyville Community College, and Qing Li has just started a Ph.D. in Genetics at Fudan University, one of the most prestigious and selective universities in China. Our new outstanding senior, Codi Sandefur, graduated in the spring and is taking a year off before applying to med school to learn molecular genetic techniques in the Doust lab (see story below).

The introductory plant biology course, PBIO 1404, is growing in size since we have moved to a larger lecture hall, and the students really love the team projects and final poster session. This year, all the plants and soil from their experiments was composting with help of landscape services, making our whole lab process much less wasteful (see story below). In the coming fall, we are trialing a new non-majors lecture and lab course, How Plants Shaped Our World, that will be a general introduction to the wonderful world of plants and human-plant interactions.



One final piece of news is that the whole department collaborated in the spring semester to search for a new assistant professor to take over the teaching of plant physiology and to promote the new Pre-Pharmacy and Pre-Forensics options. We attracted an impressive group of candidates to interview and are very pleased that in July we will welcome **Dr. Heejin Yoo** to the department. Dr. Yoo did her undergraduate training at Seoul National University, a Ph.D. in plant metabolomics at Purdue University, and is coming from a post-doc on plant-microbe interactions at Duke University. We have just been given word by the dean's office that we will be able to search for an ecologist to start fall 2020. So, the department is getting bigger and we are enthusiastic about the new opportunities and the chance for growth in majors that this will give us.

Fishbein secures nearly \$1M grant



Breaking News: **Dr. Mark Fishbein**, professor, gets \$934,000 from the National Science Foundation to digitize the specimens in the OSU herbarium and in 45 other regional herbaria, in order to capture a definitive picture of the plant biodiversity of this region at the crossroads of the USA.

Molly Haddox, former outstanding senior, gets her first job



When I initially started at OSU, I was on the pre-medical track. However, when I reached the conclusion of my first semester, I started searching for another path as this goal wasn't nearly as appealing as it had been. As I was searching for classes to take for my second semester, I came across "Introduction to Botany" (the name had not been changed yet) and I thought it could be an interesting class. What I didn't realize was my college journey had been changed for the better!

That was spring 2016 and was the start of a new lab format that stressed individual and team experimentation and experimental design. I was in a lab section of about 14 freshmen with Dr. Doust as the lead and John Hodge as the TA. The lab experience exposed me to concepts about plants and how extraordinary they were, and, when Dr. Doust offered me a position in his lab, I jumped at the opportunity.

When I began working in the Doust lab, I didn't know what to expect. Upon starting, uncertainties were racing through my mind, but I was pleasantly surprised with the experience I had. The first thing that struck me was how welcoming everyone in the department was. Everyone was so friendly and willing to go out of their way to help with problems. I made many friends here that I hope to keep for a long time. During this time, I was also given many opportunities to work on groundbreaking research while gaining skills that would later help me in my job search.

My time in the lab offered me invaluable opportunities that few undergrads have during their college career. When I was searching for jobs, many companies were impressed by the experience I had, especially as a new college graduate. The Doust lab, as well as the PBEE department provided me with the foundation I needed to jumpstart my career. As I move on to new jobs and experiences, starting with the Oklahoma Blood Institute, I am truly grateful for the lifelong friendships and opportunities the PBEE Department has provided me.



Codi Sandefur, outstanding senior 2018/2019

The Department of Plant Biology, Ecology, and Evolution's Outstanding Senior for 2019 is Codi Lynn Sandefur. Codi is a senior from Madill, Oklahoma. She and her family knew from an early age that she was destined to be a scientist. She will be graduating in May with a Bachelor of Science degree in Biological Science and a Bachelor of Science in Plant Biology: Cell Biology and Molecular Genetics with a minor in Microbiology. During her time at Oklahoma State University, she was on Dean's Honor Roll, served as a Student Ambassador for the Department of Plant Biology, Ecology, and Evolution, and has been involved in other activities across the university. Codi has also been involved in graduate research revolving around host-parasite interactions. Recently, Codi has discovered her unique admiration for extremophilic microorganisms and plans to further her education and pursue a Masters in Microbiology; she is interested in the mechanisms and molecular compounds the organisms produce under stress. Following that, Codi plans to obtain a Ph.D. in Astrobiology, focusing on the interactions of plants and microorganisms in space related conditions.

PBIO 1404 believes in giving back

One of the most interesting aspects of the PBIO 1404 lab, at least from the students' point of view, is that they get to grow their own plants. This spring, course enrollment was the largest ever, which created a lot of excitement, as well as a lot of used potting mix. Although the individual pots that students use are small, the amount added up to more than 27 cubic feet of potting mix.

Students and TAs expressed concern over the fact that the plants and potting mix were put into the trash at the end of the experiments. This semester, with the help of **John Lee** and **Holly Pasmore** at Campus Landscape Services, all of that material went into OSU's composting facility.

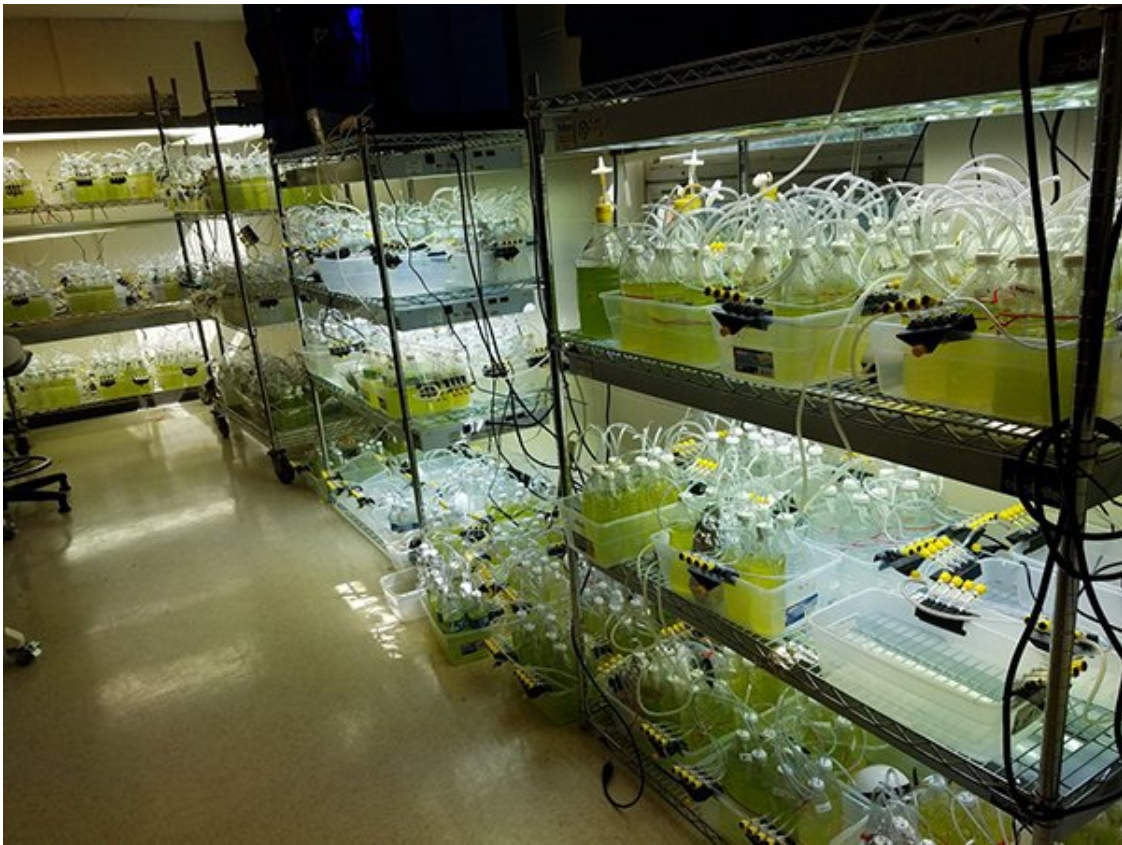


Holly Pasmore from Landscape Services and Justin Baker, a student in PBIO 1404.

2019 ABLE conference

Dylan Franks organized and presented a workshop entitled "Using Algae in Undergraduate STEM Education: A Flexible Inquiry-Based Investigation at Scale" at the Association for Biology Laboratory Education's annual conference.





Milkweeds & Monarchs

Mark Fishbein participated in “Milkweeds & Monarchs” at the Oak Spring Garden Foundation, in Upperville, Virginia, June 10-13. The meeting brought together researchers, journalists, and artists from across the U.S., as well as the U.K. and Brazil, to share information about the ecology and evolution of milkweeds and monarch butterflies, insects that feed only on milkweed species during their caterpillar phase. The meeting resulted in new research and outreach initiatives to further study and conserve this important ecological interaction.



Recent student and faculty grants

Ming Yang, OCAST, \$100,000, Title: A new leucine-rich repeat receptor-like kinase in stomatal lineage regulation

Bill Hammond, US-Israel Binational Science Foundation, \$4,000, Title: Mechanism of Mortality: Identifying the Origin and Spread of Tree-Killing Embolism During Global-Change-Type Drought

Victor Andreev, Prairie Biotic Research, Inc., \$1,500, Title: The extent and consequences of introgressive hybridization in common milkweed (*Asclepias syriaca*)

McPherson Awards: **Kaitlyn McNeill, Jeff Dudek, Victor Andreev, Bill Hammond**

Please consider supporting the department

To continue supporting grad and undergrad student research in the department, please consider donating to:

- our Botany Excellence Fund,
- the Botany Scholarship Fund, which is specifically for undergraduate student scholarships,
- or the McPherson Fund, which enables us to contribute to graduate student costs for research and conference presentations.

We look forward to seeing you this fall!



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Thanks for reading! We look forward to seeing you this fall.

Best,

Andrew Doust
Head of Department



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