

# GRADUATE AG RESEARCH SPOTLIGHT



## Josh Kraft

*“One of the interesting things about plants is how they deal with different stressors in their environments. They can’t just leave when things get uncomfortable.”*

*—Joshua Kraft, PhD student, Department of Botany and Plant Pathology*

**THE STUDENT:** After graduating from high school in his hometown of West Lafayette, Josh Kraft went to culinary school. Over his next 10 years in kitchens, from mom-and-pop delis to large steakhouses, he spent time in nature to “escape” from work. Biology, he thought, might even offer an alternative career. The avid fly fisherman enrolled in an associate degree program at Nashville State Community College toward becoming a fish and wildlife biologist. Once he started tutoring his peers, he says, “I fell in love with helping other students learn, which planted the idea of getting a PhD.” He transferred to Austin Peay State University, where research opportunities introduced him to plant physiology on his way to a BS in biology. In searching out doctoral programs, Kraft contacted Chris Oakley, assistant professor of botany and plant pathology. “Our interests lined up pretty well, and we kept talking,” Kraft recalls. He came to Purdue in May 2018 as a summer technician in Oakley’s lab and began his doctoral program in the fall. “Chris is great about interjecting when he notices a problem, but one thing I appreciate about him is that once we develop a plan, he’ll let me run with it,” Kraft says.

**THE RESEARCH:** Kraft studies the ecological and evolutionary genetics of plants by crossing native populations of the small flowering plant *Arabidopsis thaliana* from two distinct habitats, in Sweden and Italy, to detect the genetic interactions underlying

local adaptation. Learning how traits develop in plants can help researchers better understand how the plants respond to climate change — what Kraft calls “their elegant responses” to environmental stressors. Kraft says this less studied area of genetics, especially as it relates to ecology and evolution, offers an appealing mix of lab, field, greenhouse and computational research. Last spring he received a prestigious National Science Foundation Graduate Research Fellowship.

**OPPORTUNITIES:** Kraft is collaborating on a paper with a fellow researcher in biology. “We have a lot of cross-talk across departments that expands my opportunities to discuss evolution,” he explains. Another valuable connection is a reading group in the botany department whose members work in different areas but all benefit from sharing research topics.

**FUTURE PLANS:** Although still early in his program, Kraft would eventually like to join a faculty, possibly at a smaller school. “When I was an undergraduate, I had a mentor who helped me get the skills I would need to be successful in graduate school,” he says. “I see helping undergraduate students as repaying a favor.” In his spare time, he still fly fishes — Wildcat Creek and Big Pine Creek are favorite spots — and enjoys golfing. He remains “Chef Josh” to his friends and has had success in local barbeque competitions.