

# GRADUATE AG RESEARCH SPOTLIGHT



## Rachel Koch

*"I'll put up with bug bites. The possibilities for what you can find out there are way cooler than any short-term discomfort."*

*Rachel Koch, Ph.D. candidate, Botany and Plant Pathology*

**THE STUDENT:** A professor who supervised Rachel Koch's undergraduate research at the University of Notre Dame sparked her interest in evolutionary biology. After graduating, the native of St. Cloud, Minnesota, applied to graduate programs "all along the coasts," determined to live somewhere other than the Midwest. Although Koch's academic interests didn't align with the biology department at Louisiana State University, someone there passed her application along to then-LSU mycologist Cathie Aime, who offered Koch a position on her lab team. Koch had little experience with Aime's primary research interest, fungi: "Now I think fungi are the best organisms on the planet," Koch says. When Aime moved from LSU to Purdue in August 2012, Koch moved as well, returning—she laughs—to the Midwest. But the geography is tempered by Koch's enthusiasm for the work setting: "The lab is extraordinarily diverse," she says. "And everyone goes above and beyond trying to help others in the lab."

**THE RESEARCH:** Koch studies the biology and ecology of a particular fungus—*Guyanagaster necrorhizus*—found in the tropical rainforest of Guyana and has discovered characteristics in it that are not known in other fungi. She is particularly interested in how the fungus disperses its reproductive propagules; her findings suggest that termites act as the dispersal agent after they consume the fungus, which is significant because "termites have never been recorded to preferentially feed on the fruiting body of a specific fungus" she notes. With this finding, she wants to expand upon her research and determine

how this fungus attracts and rewards its termite dispersal agents.

**AT WORK IN THE RAINFOREST:** Aime has been cataloging the fungal composition of Guyana's rainforest for more than 15 years. Koch returned from her fifth trip there this summer. "No one is working in this area. There's a high chance that everything that's discovered there is new to science," Koch says. During a month deep in the forest's interior she collects samples of "her" fungus to bring back to Purdue. This trip, she wore a GoPro camera and hopes to compile her videos and photos to give others, especially her parents, a sense of the experience.

**NIGHTS ON THE EQUATOR:** Koch finds the long nights and ambient noise of the rainforest especially restful. "Once I figured out how to sleep in a hammock, it was the best sleep I ever got," she says. "I always had an appreciation for the outdoors, but my family never camped or hiked. The science has definitely led me to this. I do well out there."

**FUTURE PLANS:** "My advisor has taught me about writing and how to do good science—but above all else, she has instilled in me an overwhelming appreciation for the microbial world," Koch says of Aime. Koch will likely complete her degree in February 2017. "My goal is to be a faculty member at a university but I'm not ruling out anything," she says. "I just want to stay involved in the science." In her spare time, she enjoys politics, catching up with friends and family, and "eating good food and drinking good beer."