

Dr. Hollis Woodard

by Elise Malone

Hollis Woodard obtained her bachelor's degree in 2005 from the University of North Carolina at Wilmington. She initially did not know what she wanted her life path to be—switching her major about 6 or 7 times—and credits E.O. Wilson's *Naturalist* with pushing her to take biology classes. It was in one of these biology classes that Woodard fell in love with social insects. Though Woodard had already begun working with primates at sanctuaries, she changed her projected career path from primatology to sociobiology. She then went on to receive her PhD in Biology from the University of Illinois at Urbana-Champaign in 2012. Since 2015, she has been teaching as an assistant professor of Entomology at U.C. Riverside.



Photo from Dr. Woodard's website:
woodardlab.com

Growing up in a poor, rural area in southeastern North Carolina, Woodard is passionate about improving access to science education in impoverished areas. Furthermore, she recognizes the barriers women in STEM often face and as such has comprised her lab of mainly women!

Woodard currently studies ecology and evolution (specifically, social interactions and the evolution of conflict and genomics & behavior). Her lab, [the Woodard lab](http://the.woodardlab.com), focus on the nutritional biology, social organization, and foraging ecology of bumblebees. Though they may seem a small choice, bees are excellent research subjects for sociality as they undergo solitary and social stages, are dominant pollinators in many systems, inhabit odd ecosystems (like the Arctic!), and have evolved sociality multiple times.

In 2013, Woodard investigated the social regulations (when individuals in a society regulate the behavior of other group members as a method to foster cohesion) of worker bees and queen bees during Spring nesting seasons. The experiment focused on the impact worker bees have on the maternal care behavior of the queens. Under normal conditions, queens will do all work-related tasks in the nest until the worker bees emerge, at which point queens focus on egg laying. So to test that worker bees regulate queen bees nesting behavior, Woodard and her research team conducted a social manipulation experiment in which they either removed or added worker bees to late and early stage nests. They found that queens with workers in their nest fed their brood significantly less and laid more eggs compared to queens without workers. They also found that the genes in queens' brains were differentially expressed in the presence or absence of workers—with larger differences being seen in late-stage founding queens. This study opens the door to more research comparing brain gene expression between eusocial and non-eusocial insects in hopes of understanding the evolutionary transition between the two types of social behavior. Dr. Woodard is so certain of the possibilities for molecular & evolutionary research in this field that if you were to ask her what the key to understanding life is, she just might say "bumblebees!" Her advice to young people hoping to engage in social science is to "pick an organism and learn it well, then the specific research questions will follow."

Works Cited

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