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**From:** Soto, Lauran

## **KECK SCIENCE DEPARTMENT SEMINAR**

*"Antibiotics from Ants: Molecular Defenses from Specialized Insect Microbiomes"*

Ethan Van Arnam  
Keck Science Department

Friday, October 6th, 2023  
12:15PM - 1:15PM  
Keck Science Department  
Burns Lecture Hall, Room B31

**ABSTRACT:** This seminar will share key findings in chemical discovery and chemical ecology from the Van Arnam lab over the past six years at Keck. Our focus is on the chemistry of defensive symbioses, ecological partnerships built around a type of pharmaceutical exchange; a host animal is protected by antibiotics or other defensive molecules produced by symbiotic microbes. Now appreciated to be widespread in nature, defensive symbioses are largely untapped sources of novel bioactive molecules with therapeutic potential for human use and are ideal systems to understand antibiotic use in nature. Toward these aims of antibiotic discovery and contextualizing ecological antibiotic use, we have characterized the molecular defenses from symbiotic bacteria associated with North American *Trachymyrmex* fungus-growing ants. We have established that these ants host a unique set of microbial interactions mediated by antibiotics. These antibiotics include both novel molecules and previously known antibiotics that we now are able to place in an ecological context. Through genomic analyses, we have also been able to trace the evolutionary path of these molecules from the outside environment into this specialized niche. Our findings establish this system as a productive reservoir of novel molecules and as a valuable window into antibiotic use in nature.

Find additional seminars here: <https://www.kecksci.claremont.edu/seminars/>

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