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## **Stephanie S.L. Birnbaum**

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### **Professional Appointments**

<b>Visiting Assistant Professor</b> Occidental College, Biology Department	2022 – present
<b>Postdoctoral Fellow</b> Vanderbilt University, Biological Sciences Department, PI: Dr. Ann Tate	2019 – 2022

### **Education**

<b>Vanderbilt University</b> Ph.D., Biological Sciences Department, PI: Dr. Patrick Abbot	2014 – 2019
<b>Emory University</b> B.S. Biology, Highest Honors in Biology	2008 – 2010
<b>Oxford College of Emory University</b> A.A. Arts and Sciences	2006 – 2008

### **Teaching Experience**

<b>Visiting Assistant Professor, Occidental College</b> - Introductory Biology: Biodiversity, Ecology, & Evolution (Bio 110) - General Zoology (Bio 115) - Evolutionary Biology (Bio 280) - Microbial Symbiosis Lab (Bio 350L) - Senior Seminar (Bio 490) - First Year Seminar: Science, Society, and You (FYS 75)	2022 – present
<b>Co-instructor, Summer Academy at Vanderbilt for the Young (SAVY)</b> - ‘Land, Air, and Sea: Field Ecology and the Natural World’	2018

### **Fellowships, Grants, and Scholarships**

<b>NIFA Postdoctoral Fellowship</b> U.S. Department of Agriculture, Award No. 2019-67012-29659	2019 – 2021
<b>Graduate Research Fellowship</b> National Science Foundation	2014 – 2019
<b>SIRE Fellowship</b> Scholarly Inquiry and Research at Emory University	2009 – 2010
<b>Dean’s Scholar Scholarship</b> Emory University	2006 – 2010

## Peer-Reviewed Publications

- Schulz NKE, Asgari D, Liu S, **Birnbaum** SSL, Williams AM, Prakash A, Tate AT. 2025. Resources Modulate Developmental Shifts but Not Infection Tolerance Upon Co-Infection in an Insect System. *Molecular Ecology*, 20:e17726.
- Birnbaum, S.S.L.** and Abbot, P. 2020. Gene expression and diet breadth in plant-feeding insects: summarizing trends. *Trends in Ecology and Evolution*, 35(3): 259-277.
- Birnbaum, S.S.L.**, Rinker D.C., and P. Abbot. 2018. Efficient Methods for Maintaining Biological Cultures and Measuring Gene Expression in *Aphis nerii*: A Non-Model System for Plant-Insect Interactions. *Journal of Visualized Experiments*, (138), e58044.
- Birnbaum, S.S.L.** and Abbot, P. 2018. Insect adaptations towards plant toxins in milkweed-herbivores systems. *Entomologia Experimentalis et Applicata*, <https://doi.org/10.1111/eea.12659>.
- Birnbaum, S.S.L.**, Rinker D.C., Gerardo N.M., and P. Abbot. 2017. Transcriptional profile and differential fitness across a toxicity gradient in a specialist milkweed insect. *Molecular Ecology*, 26(23): 6742-6761.
- Birnbaum, S.S.L.** and Gerardo, N. 2016. Patterns of specificity of the pathogen *Escovopsis* across the fungus-growing ant symbiosis. *The American Naturalist*, 188(1): 52-65.
- de Man, T.J.B., Stajich J.E., Kubicek C.P., Teiling C., Chenthamara K., Atanasova L., Druzhinina I.S., Levenkova N., **Birnbaum S.S.L.**, Barribeau S.M., Bozick B.A., Suen G., Currie C.R., and N.M. Gerardo. 2016. Small genome of the fungus *Escovopsis weberi*, a specialized disease agent of ant agriculture. *PNAS* 113(13): 3567-3572.
- Searle, C.L., Housley Ochs, J., Caceres, C.E., **Chiang, S.S.L.**, Gerardo, N.M., Hall, S.R., and M.A. Duffy. 2015. Plasticity, not genetic variation, drives infection success of a fungal parasite. *Parasitology* 142: 839-848.
- Garcia, J., Laughton, A., Malik, Z., Parker, B., Trincot, C., **Chiang, S.S.L.**, Chung, E., and N.M. Gerardo. 2014. Partner associations across sympatric broad-headed bug species and their environmentally acquired bacterial symbionts. *Molecular Ecology* 23: 1333-1347.

## Pre-print Manuscripts

- Birnbaum, S.S.L.**, Schulz N.K.E., A.T. Tate. 2023. Interactions between evolved pesticide resistance and pesticide exposure influence immunity against pathogens. *In revision*, bioRxiv, <https://doi.org/10.1101/2022.02.04.479151>.
- Birnbaum, S.S.L.**, Schulz N.K.E., Garrett D.S., A.T. Tate. 2021. Experimental evolution of insect resistance to two pesticide classes reveals mechanistic diversity and context-dependent fitness costs. *In revision*, bioRxiv, <https://doi.org/10.1101/2021.09.03.458899>.
- Birnbaum, S.S.L.** and Abbot, P. 2020. Trans-generational transcriptomic response to natural variation in host plant toxicity and insecticides in a specialist insect. *In revision*, bioRxiv, <https://doi.org/10.1101/541904>.

## Students Mentored and Departmental Service Positions

- Occidental College, 2023-present
  - Zoe Bush, Milan Coleman, Andrew Levy, Marielle Mandeville, Emma McLaughlin, Olivia Plumb, Richter Faculty-led Research in Costa Rica, Summer 2025
  - Emma McLaughlin, Multi-site Research Project (RESCUE-Net), Spring 2024
  - Mari Pokorny, Summer Research Program 2023
- Occidental College, 2023-present
  - Biology Club Faculty Advisor

## Honors and Awards

<b>Oral Presentation Award</b>	2019
International Society of Chemical Ecology	
<b>Ann Bernard Martin Award for Excellence in Graduate Research</b>	2017
Vanderbilt Biological Sciences Department	
<b>Best Poster Award</b>	2015
Vanderbilt Biological Sciences Department	
<b>Outstanding Candidate Award</b>	2014
Vanderbilt Biological Sciences Program	
<b>Highest Honors in Biology</b>	2010
Emory University	
<b>Honorable Mention Award</b>	2010
SIRE Poster Session, Emory University	
<b>Dean's List</b>	2007 – 2010
Emory University	

## Selected Presentations

- Birnbaum, S.S.L.** Evolution under chemical warfare: Lessons learned from insect systems. *Biology Seminars*: Occidental College, Los Angeles, CA. February 7, 2023.
- Birnbaum, S.S.L.** and A.T. Tate. Evolution under chemical warfare: Variation in combat strategies. *Evolution at Vanderbilt Seminar Series*: Vanderbilt University, Nashville, TN. March 3, 2021. <https://www.youtube.com/watch?v=yFoTQH2jHao>
- Birnbaum, S.S.L.** and P. Abbot. Aphid transcriptional profiles converge after exposure to toxic host plants and insecticides. *International Society of Chemical Ecology Conference*: Atlanta, GA. June 6, 2019.
- Birnbaum, S.S.L.** and P. Abbot. Trans-generational transcriptomic response to natural variation in host plant toxicity and insecticides in a specialist insect. *Gordon Research Conference: Plant-Herbivore Interactions*: Ventura, CA. March 25, 2019. (Poster)

## Selected Presentations

- Birnbaum, S.S.L.** and P. Abbot. Trans-generational transcriptomic response to increased toxicity host plants and xenobiotic chemicals. *Evolution Conference*: Montpellier, France. August 19, 2019. (Poster)
- Birnbaum, S.S.L.** Effects of increased host plant toxicity in a specialist milkweed insect. *Department of Biological Sciences Seminar Series*: Vanderbilt University, Nashville, TN. October 9, 2017.
- Birnbaum, S.S.L.** Effects of increased host plant toxicity in a specialist milkweed insect. *Ecology and Evolution of Species Interactions at Emory Seminar Series*: Emory University, Atlanta, GA. September 15, 2017. (Invited Seminar)
- Birnbaum, S.S.L.**, Rinker D.C., Gerardo N.M., and P. Abbot. Transcriptional profile and differential fitness across a toxicity gradient in a specialist milkweed insect. *Ecological Society of America Conference*: Portland, OR. August 11, 2017. (Poster)
- Chiang, Stephanie S.L.** and Gerardo, N.M. Non-immunological defenses in milkweed aphids against a fungal pathogen. *Evolution: Snowbird*, Utah, USA. June 23, 2013.
- Chiang, Stephanie S.L.** and Gerardo, N.M. Specificity of the parasite *Escovopsis* among two sympatric species of *Cyphomyrmex* fungus-growing ants. First Joint Congress on Evolutionary Biology: Ottawa, Ontario, Canada. July 7, 2012.

## Training Workshops

- At-Risk Mental Health for Faculty & Staff Course. Kognito. 2023.
- Online Teaching Specialization Course. Center for Teaching, Vanderbilt University, Nashville, TN. 2020
- Certificate in College Teaching. Center for Teaching, Vanderbilt University, Nashville, TN. 2018
- Workshop on Genomics. Cesky Krumlov, Czech Republic, January 8-20, 2017

## Invited Peer Review

- *Molecular Ecology*
- *Functional Ecology*
- *Philosophical Transactions B*
- *Journal of Insect Physiology*
- *Plos One*
- *Journal of Economic Entomology*
- *Myrmecological Review*

### **Selected Service to the Community**

- Monday at the Mission, Union Rescue Mission, 2023 – present
- Advisory Council, Boundless Brilliance, 2022 – 2024
- Leader of “Solving a Disease Outbreak with the BCDC”, Tennessee Women in Science, Technology, Engineering, and Research (TWISTER), JFK Middle School, Antioch, TN, November 2019
- Interview a Scientist, JC Mitchell Elementary Schools, Boca Raton, FL, November 2019
- Co-leader of “It’s a Bug’s World”, MegaMicrobes, Vanderbilt University, Nashville, TN, October 2019
- Speaker, “What we can learn from the evolution of toxic plant-insect interactions”, Nashville Science Club, Nashville, TN, July 2019
- Co-leader of “The Mycrobies Around You”, MegaMicrobes, Vanderbilt University, Nashville, TN, October 2018
- Co-leader of “The Evolutionary Tree of Life”, TWISTER, Adventure Science Center, Nashville, TN, February 2017 & 2018
- Leader of “The Mycrobies Around You”, MegaMicrobes, Vanderbilt University, Nashville, TN, October 2017
- Leader for “Animal Habitats” badge for Girl Scouts Troop # 1347, Nashville, TN, September 2017