

## Tobin J. Hammer

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### Research Interests

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Evolution of symbiosis, microbial ecology, plant-insect interactions, bees, tropical biology

### Professional Employment

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Assistant Professor Department of Ecology & Evolutionary Biology University of California, Irvine	1/2022 –
Postdoctoral Researcher University of Texas at Austin <i>Advisor: Nancy A. Moran</i>	9/2018 – Present

### Education

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Ph.D. in Ecology and Evolutionary Biology University of Colorado Boulder <i>Advisors: Noah Fierer and M. Deane Bowers</i>	8/2012 – 5/2018
B.S. in General Biology University of California, San Diego Magna Cum Laude, with Distinction <i>Honors Thesis Advisor: Eric E. Allen</i>	9/2005 – 6/2009
UC Education Abroad Program Tropical Biology and Conservation Monteverde Institute, Costa Rica	10/2007 – 12/2007

### Publications

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Silva Cerqueira, A.E., **Hammer, T.J.**, Moran, N.A., Cristiano Santana, W., Megumi Kasuya, M.C., Canêdo da Silva, C. Extinction of anciently associated gut bacterial symbionts in a clade of stingless bees. In revision.

**Hammer, T.J.**, Le, E., Moran, N.A. Thermal niches of specialized gut symbionts: the case of social bees. Accepted at *Proceedings of the Royal Society B*.

**Hammer, T.J.**, De Clerck-Floate, R., Tooker, J.F., Price, P.W., Miller, D.G., Connor, E.F. 2021. Are bacterial symbionts associated with gall induction in insects? *Arthropod-Plant Interactions* <https://doi.org/10.1007/s11829-020-09800-6>.

**Hammer, T.J.**, Dickerson, J.C., McMillan, W.O., Fierer, N. 2020. *Heliconius* butterflies host characteristic and phylogenetically structured adult-stage microbiomes. *Applied and Environmental Microbiology* 86, e02007-20.

Danielsson, R., Lucas, J., Dahlberg, J., Ramin, M., Agenäs, S., Bayat, A., Tapio, I., **Hammer, T.J.**, Roslin, T. 2019. Compound- and context-dependent effects of antibiotics on greenhouse gas emissions from livestock. *Royal Society Open Science* 6, 182049.

**Hammer, T.J.**, Moran, N.A. 2019. Links between metamorphosis and symbiosis in holometabolous insects. *Philosophical Transactions of the Royal Society B* 374, 20190068.

Moran, N.A., Ochman, H., **Hammer, T.J.** 2019. Evolutionary and ecological consequences of gut microbial communities. *Annual Review of Ecology, Evolution, and Systematics* 50, 451-475.

Keiser, C.N., **Hammer, T.J.**, Pruitt, J.N. 2019. Social spider webs harbour largely consistent bacterial communities across broad spatial scales. *Biology Letters* 15, 20190436.

**Hammer, T.J.**, Sanders, J.N., Fierer, N. 2019. Not all animals need a microbiome. *FEMS Microbiology Letters* 366, fnz117.

Ravenscraft, A., Berry, M., **Hammer, T.J.**, Peay, K., Boggs, C. 2018. Structure and function of the bacterial and fungal gut microbiota of Neotropical butterflies. *Ecological Monographs* 89, e01346.

**Hammer, T.J.**, Janzen, D.H., Hallwachs, W., Jaffe, S., Fierer, N. 2017. Caterpillars lack a resident gut microbiome. *Proceedings of the National Academy of Sciences* 114, 9641-9646.

**Hammer, T.J.**, Fierer, N., Hardwick, B., Simojoki, A., Slade, E., Taponen, J., Viljanen, H., Roslin, T. 2016. Treating cattle with antibiotics affects greenhouse gas emissions, and microbiota in dung and dung beetles. *Proceedings of the Royal Society B* 283, 20160150.

Barberán, A., **Hammer, T.J.**, Madden, A., Fierer, N. 2016. Microbes should be central to ecological education and outreach. *Journal of Microbiology & Biology Education* 17, 23-28.

Planet, P.J., Parker, D., Cohen, T.S., Smith, H., Leon, J.D., Ryan, C., **Hammer, T.J.**, Fierer, N., Chen, Emily I., Prince, A.S. 2016. Lambda interferon restructures the nasal microbiome and increases susceptibility to *Staphylococcus aureus* superinfection. *mBio* 7, e01939-15.

**Hammer, T.J.**, Dickerson, J.C., Fierer, N. 2015. Evidence-based recommendations on storing and handling specimens for analyses of insect microbiota. *PeerJ* 3, e1190.

**Hammer, T.J.**, Bowers, M.D. 2015. Gut microbes may facilitate insect herbivory of chemically

defended plants. *Oecologia* 179, 1-14.

**Hammer, T.J.**, Van Bael, S.A. 2015. An endophyte-rich diet increases ant predation on a specialist herbivorous insect. *Ecological Entomology* 40, 316-321.

**Hammer, T.J.**, McMillan, W.O., Fierer, N. 2014. Metamorphosis of a butterfly-associated bacterial community. *PLoS One* 9, e86995.

**Hammer, T.J.**, Hata, C., Nieh, J.C. 2009. Thermal learning in the honey bee, *Apis mellifera*. *Journal of Experimental Biology* 212, 3928-3934.

### **Fellowships, Grants, and Awards**

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Travel Fellowship from the NIH Social Dimensions of Aging Research Network	2020
USDA NIFA Postdoctoral Fellowship (\$164,850)	2019 – 2021
Texas Ecolab Program Research Grant (\$8,691)	2018
National Geographic Society Early Career Grant (\$5,415)	2018
CU Boulder / CIRES Graduate Student Research Award (\$39,539)	2017 – 2018
NSF Graduate Research Fellowship Program (\$132,000)	2014 – 2017
NSF Doctoral Dissertation Improvement Grant (\$16,113)	2016
Grants Supporting Undergraduate Research, CU Boulder (\$4,789)	2015, 2016
Departmental Research Grants, CU Boulder (\$4,613)	2014, 2016
Lewis and Clark Fund for Exploration and Field Research Grant (\$2,900)	2015
CU Boulder Chancellor's Fellowship	2012 – 2014
Smithsonian Tropical Research Institute Short-Term Fellowship	2011
Fulbright Grant, Max Planck Institute for Marine Microbiology	2009 – 2010
American Society for Microbiology Undergraduate Research Fellowship	2008 – 2009
Robins Scholarship for Undergraduate Research in Marine Sciences	2008 – 2009
Phi Beta Kappa Honors	2009
NSF REU Program at Woods Hole Oceanographic Institution	2008
Amgen Scholars Summer Research Program at UC Berkeley	2007

### **Presentations**

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#### *Invited Talks*

Entomological Society of America Annual Meeting	2020
Virtual Presentation at Sadd Lab Group Meeting, Illinois State University	2020
Tupper Seminar, Smithsonian Tropical Research Institute (canceled due to Covid-19)	2020
Seminar, Department of Entomology, Purdue University	2019
Ecological Society of America Meeting, Organized Oral Session	2019
Tropical Microbial Ecology Symposium, Smithsonian Tropical Research Institute	2016

International Congress of Entomology	2016
European Congress of Entomology	2014

### *Contributed Talks*

Virtual Symbiosis Seminar Series	2020
BOMBUSS Bumble Bee Monitoring and Conservation Meeting	2019
Population Biology Seminar, Department of Integrative Biology, UT Austin	2018
The Lepidopterists' Society Annual Meeting	2017
Yosemite Symbiosis Workshop	2017
10 <sup>th</sup> International <i>Heliconius</i> Meeting	2015
Entomological Society of America Annual Meeting	2013
High Country Lepidopterists' Meeting	2013
Smithsonian Tropical Research Institute Fellows Symposium	2011
American Society for Microbiology General Meeting	2009

### *Contributed Posters*

Gordon Research Conference on Animal-Microbe Symbioses	2019
Meeting of the Guild of Rocky Mountain Ecologists & Evolutionary Biologists	2017
Gordon Research Conference on Animal-Microbe Symbioses	2017
International Society for Microbial Ecology	2016
Gordon Research Conference on Plant-Herbivore Interactions	2013
International Society for Microbial Ecology	2010

## **Teaching Experience**

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### *Courses Taught*

Principles of Ecology, CU Boulder (Sole Instructor, Summer Term)	7/2018 – 8/2018
Insect Biology, CU Boulder (Lecture Co-Instructor and Lab TA)	8/2017 – 12/2017
Microbiology, CU Boulder (Lab TA)	1/2015 – 5/2015
Introductory Organismal and Evolutionary Biology, UCSD (TA)	4/2009 – 6/2009
Introductory Molecular and Cell Biology, UCSD (TA)	9/2008 – 12/2008

### *Guest Lectures*

Insect Declines & Conservation (Biodiversity Course, UT Austin)	9/2019
Insect-Microbe Interactions (Lepidoptera Field Course, Southwestern Research Stn.)	8/2017
Host-Microbe Symbiosis (Microbial Ecology Course, CU Boulder)	10/2016

### *Pedagogical Training and Recognition*

Award for Outstanding Contributions to Undergraduate Teaching (CU Boulder)	5/2018
Graduate coursework in Science Education Teaching & Learning	8/2017 – 12/2017
Graduate coursework in Pedagogy for Future Faculty	1/2017 – 5/2017

## Undergraduate Mentees

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Nickole Villabona (Universidad de los Andes)	5/2019 – Present
Eli Le (UT Austin)	10/2018 – Present
Alexia Martin (UT Austin)	10/2018 – Present
Hadis Askari (UT Austin)	11/2019 – 5/2020
Lady Grant (Metro State University of Denver)	5/2018 – 6/2018
Jacob Dickerson (CU Boulder)	2/2013 – 6/2016
Kristen Vaccarello (CU Boulder)	4/2015 – 1/2016
Evelyn Beaury (CU Boulder)	10/2015 – 12/2015

## Service

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### *Professional Activities*

Symposium co-chair, 2021 International Congress of Entomology  
Postdoctoral representative for departmental diversity and inclusion committee at UT Austin  
Member of departmental diversity and inclusion working group at CU Boulder  
Volunteer judge, 2019 UT Symposium for Undergraduate Research Exploration  
Volunteer judge, 2019 UT Fall Undergraduate Research Symposium  
Session presider, 2019 Ecology Society of America Annual Meeting  
Discussion leader, 2019 Gordon Research Seminar on Animal-Microbe Symbioses  
Lead organizer for weekly departmental Lunch & Learn seminar series at CU Boulder

### *Public Outreach*

Lunch & Learn webinar on social insects, Austin Nature & Science Center	5/2021
Talk for the BEEMAS group at Universidad de los Andes, Colombia	11/2020
Explore UT campus exhibition for Texas high school students	3/2019
Talk for the Alamo Area Beekeepers' Association Meeting	3/2019
Pollination Exhibit at the San Antonio Rodeo Wildlife Expo	2/2019
Teen Science Cafe, CU Boulder Natural History Museum	4/2018
Talk for the CU Boulder STEMinar series	3/2018
Evolution Outreach Family Day, CU Boulder Natural History Museum	2/2018
Public research talks for the Portal, Arizona community	8/2016, 8/2017
Family Science Day, CU South Denver	2/2017, 5/2017
Student BioBlitz, Denver Museum of Nature and Science	10/2016
Moth Mania, CU Boulder Natural History Museum	9/2014, 9/2015, 9/2016
Mysterious Microbes Workshop, CU Boulder / CIRES	5/2016

### *Peer Review*

Reviewer for: *Molecular Ecology* (x 6), *International Society for Microbial Ecology Journal* (x 3), *Proceedings of the Royal Society B* (x 2), *Oecologia* (x 2), *PLoS One* (x 2), *Ecological*

*Entomology (x 2), Current Biology, mBio, Ecology Letters, Philosophical Transactions of the Royal Society B, Functional Ecology, FEMS Microbiology Ecology, Frontiers in Microbiology, Journal of Animal Ecology, Journal of Applied Microbiology, Royal Society Open Science, Environmental Microbiology Reports, Scientific Reports, Insectes Sociaux, BMC Microbiology, NPJ Biofilms and Microbiomes, Journal of Crustacean Biology, Malacologia, Biology Letters, Animal Microbiome, Current Opinion in Insect Science.*