

## Tobin J. Hammer

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NMS 4.216  
2506 Speedway  
Austin, TX 78712

tobin.hammer@utexas.edu  
www.tobinhammer.com  
(512) 232-9419

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

### Education

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

### Publications

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**Hammer, T.J.**, Le, E., Moran, N.A. Thermal niches of specialized gut symbionts: the case of social bees. Resubmitted. *bioRxiv* preprint: <https://doi.org/10.1101/2020.06.16.155309>.

**Hammer, T.J.**, De Clerck-Floate, R., Tooker, J.F., Price, P.W., Miller, D.G., Connor, E.F. Are bacterial symbionts associated with gall induction in insects? Resubmitted.

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. Submitted.

**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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|  |             |
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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*

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| Entomological Society of America Annual Meeting                                    | 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 *Heliconius* 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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|---|-------------------|
| Eli Le (UT Austin)                            | 10/2018 – Present |
| Alexia Martin (UT Austin)                     | 10/2018 – Present |
| Hadis Askari (UT Austin)                      | 11/2019 – 5/2020  |
| Nickole Villabona (Universidad de los Andes)  | 5/2019 – 9/2019   |
| 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 |

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## Service

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### *Professional Activities*

Postdoctoral representative for departmental diversity and inclusion committee at UT Austin  
 Member of departmental diversity and inclusion working group at CU Boulder  
 Symposium co-chair, 2020 International Congress of Entomology  
 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*

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|--|------------------------|
| 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.*