

Clint Penick PHD

Kennesaw State University
Department of Ecology, Evolution & Organismal Biology
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Kennesaw, GA 30144
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EDUCATION

- 2012 **Ph.D. Biology**
Arizona State University
School of Life Sciences, Tempe, AZ
Advisor: Jürgen Liebig
- 2005 **B.S. Biology**
Florida State University
Department of Biology, Tallahassee, FL
Thesis advisor: Walter Tschinkel

PROFESSIONAL APPOINTMENTS

- 2019 **Assistant Professor** (2019-present)
Kennesaw State University
Department of Ecology, Evolution & Organismal Biology
Kennesaw, GA
- 2017 **Assistant Research Professor** (2017-2019)
Arizona State University
Biomimicry Center, Tempe, AZ
- Senior Sustainability Scientist** (2017-present)
Julie Ann Wrigley Global Institute of Sustainability, ASU
- 2013 **Postdoctoral fellow** (2013-2017)
NC State University & NC Museum of Natural Sciences
Department of Applied Ecology, Raleigh, NC
PI: Robert R. Dunn

PUBLICATIONS – 31

- 2019 Lucas J, Madden AA, **Penick CA**, Epps MJ, Marting PR, Stevens JL, Fergus DJ, Dunn RR, Meineke EK. *Azteca* ants maintain unique microbiomes across functionally distinct nest chambers. *Proceedings of the Royal Society B* 286 [cover article]
- 2019 Bhate D, **Penick CA**, Ferry LA, Lee C. Classification and selection of cellular materials in mechanical design: engineering and biomimetic approaches. *Designs* 3:19
- 2019 Lau MK, Ellison AM, Nguyen AD, **Penick CA**, DeMarco BB, Gotelli NJ, Sanders NJ, Dunn RR, Cahan SH. Expanded view of the ecological genomics of ant responses to climate change. *PeerJ* 7:e6447

- 2018 Ellison AM, LeRoy CJ, Landesbergen KJ, Bosanquet E, Borden DB, CaraDonna P, Cheney K, Crystal-Ornelas R, DeFreece A, Goralnik L, Irons E, Merkle BG, O'Connell KEB, **Penick CA**, Rustad L, Schulze M, Waser NM, Wysong L. Art/Science collaborations: New explorations of ecological systems, values, and their feedbacks. *Bulletin of the Ecological Society of America* 99:180-191
- 2018 Beasley DE, **Penick CA**, Boateng NS, Menninger HL, Dunn RR. Urbanization disrupts latitude-size rule in 17-year cicadas. *Ecology and Evolution* 8:2534-254
- 2018 **Penick CA**, Halawani O, Pearson B, Mathews S, López-Urbe MM, Dunn RR, Smith AA. External immunity in ant societies: Sociality and colony size do not predict investment in antimicrobials. *Royal Society Open Science* 5:171332 [cover article]
- 2018 Epps MJ, **Penick CA**. Facultative mushroom feeding by common woodland ants (Formicidae, *Aphaenogaster* spp.). *Food Webs* 14:9-13
- 2017 Gospocic J, Shields E, Glastad KM, Lin Y, **Penick CA**, Yan H, Mikheyev A, Linksvayer T, Garcia BA, Berger S, Liebig J, Reinberg D, Bonasio R. The neuropeptide corazonin controls social behavior and caste identity in ants. *Cell* 170: 748-759
- 2017 Yan H, Opachaloemphan C, Mancini G, Yang H, Gallitto M, Mlejnek J, Haight K, Ghaninia M, Huo L, Perry M, Leibholz L, Slone J, Zhou X, Traficante M, **Penick CA**, Dolezal K, Gokhale K, Stevens K, Fetter-Pruneda I, Bonasio R, Zwiebel LJ, Berger S, Liebig J, Reinberg D, Desplan C. An engineered *orco* mutation produces aberrant social behavior and defective neural development in ants. *Cell* 170:736-747
- 2017 MacClean HJ, **Penick CA**, Dunn RR, Diamond SE. Experimental winter warming increases thermal performance and primes species for spring activity. *Journal of Insect Physiology*. 100:77-81
- 2017 **Penick CA**, Liebig J. A larval 'princess pheromone' identifies future ant queens based on their juvenile hormone content. *Animal Behaviour* 128:33-40
- 2017 Diamond SE, Chick L, **Penick CA**, Nichols LM, Cahan SH, Dunn RR, Ellison AM, Sanders NJ, Gotelli NJ. Heat tolerance predicts the importance of species interaction effects as the climate changes. *Integrative and Comparative Biology* 57:112-120
- 2017 **Penick CA**, Diamond SE, Sanders NJ, Dunn RR. Beyond thermal limits: Comprehensive metrics of performance identify key axes of thermal adaptation in ants. *Functional Ecology* 31: 1091-1100
- 2017 Cahan SH, Nguyen AD, Stanton-Geddes J, **Penick CA**, Hernáiz-Hernández Y, DeMarco BB, Gotelli NJ. Modulation of the heat shock response is associated with acclimation to novel temperatures but not adaptation to climatic variation in the ants *Aphaenogaster picea* and *A. rudis*. *Comparative Biochemistry & Physiology A* 204:113-120
- 2016 Diamond SE, Nichols LM, Pelini SL, **Penick CA**, Barber GW, Cahan SH, Dunn RR, Ellison AM, Sanders NJ, Gotelli NJ. Climatic warming destabilizes forest ant communities. *Science Advances* 2:e1600842
- 2016 Karlik J, Epps MJ, Dunn RR, **Penick CA**. Life inside an acorn: How microclimate and microbes influence nest organization in *Temnothorax* ants. *Ethology* 122:790-797
- 2016 Brent CS, **Penick CA**, Trobaugh B, Moore D, Liebig J. Induction of a reproductive-specific cuticular hydrocarbon pattern by juvenile hormone in the termite *Zootermopsis nevadensis*. *Chemoecology* 26:195-203
- 2016 **Penick CA**, Crofton CA, Appler RH, Frank SD, Dunn RR, Tapy DR. The contribution of human foods to honey bee diets in a mid-sized metropolis. *Journal of Urban Ecology* 2:juw001
- 2016 Sasaki T, **Penick CA** [co-first authors], Shaffer Z, Haight KL, Pratt SC, Liebig J. A simple behavioral model predicts the emergence of complex animal hierarchies. *The American Naturalist* 187:765-775

- 2015 **Penick CA**, Smith AA. The true odor of the odorous house ant. *American Entomologist* 61:85-87
- 2015 **Penick CA**, Savage AM, Dunn RR. Stable isotopes reveal links between human food inputs and urban ant diets. *Proceedings of the Royal Society B* 282:20142608
- 2014 **Penick CA**, Brent CS, Dolezal K, Liebig J. Neurohormonal changes associated with ritualized combat and the formation of a reproductive hierarchy in the ant *Harpegnathos saltator*. *Journal of Experimental Biology* 217:1496-1503 [cover article]
- 2014 **Penick CA**, Ebie J, Moore D. A non-destructive method for identifying the sex of ant larvae. *Insectes Sociaux* 61:51-55
- 2013 Diamond SE, **Penick CA**, Pelini SL, Ellison AM, Gotelli NJ, Sanders NJ, Dunn RR. Using physiology to predict the responses of ants to climatic warming. *Integrative and Comparative Biology* 53:965-974 [Faculty of 1000 Prime recommended]
- 2013 **Penick CA**, Trobaugh B, Brent CS, Liebig J. Head-butting as an early indicator of reproductive disinhibition in the termite *Zootermopsis nevadensis*. *Journal of Insect Behavior* 26:23-34
- 2012 **Penick CA**, Prager SS, Liebig J. Juvenile hormone induces queen development in late-stage larvae of the ant *Harpegnathos saltator*. *Journal of Insect Physiology* 58:1643-1649
- 2012 **Penick CA**, Copple RN, Mendez RA, Smith AA. The role of anchor-tipped larval hairs in the organization of ant colonies. *PLOS One* 7: e41595
- 2012 **Penick CA**, Liebig J. Regulation of queen development through worker aggression in a predatory ant. *Behavioral Ecology* 23:992-998
- 2011 **Penick CA**, Liebig J, Brent CS. Reproduction, dominance, and caste: endocrine profiles of queens and workers of the ant *Harpegnathos saltator*. *Journal of Comparative Physiology A* 197:1063-1071
- 2010 Holbrook CT, Clark RM, Moore D, Overson RP, **Penick CA**, Smith AA. Social insects inspire human design. *Biology Letters* 6:431-433 [Top 10 most downloaded article of 2010]
- 2008 **Penick CA**, Tschinkel WR. Thermoregulatory brood transport in the fire ant, *Solenopsis invicta*. *Insectes Sociaux* 55:176-182

Book chapters, other

- 2019 Fehler M, **Penick CA**. Hidden treasures: Discovering the design potential of natural history collections. *The Design Journal* 22(sup1):2189-2195
- 2018 Taffe M, Goethals S, **Penick CA**, Smith AA. Rate of allogrooming vigilance in ant species as it relates to exoskeleton morphology. *National High School Journal of Science*, Summer 2018
- **Penick CA** (*revision submitted*) Urban social insects, in *Encyclopedia of Social Insects*. Starr CK (ed.), Springer: New York
- **Penick CA**, Boradkar P (*revision submitted*) Bio-inspired bat-wing umbrella, in *Design and Science: Catalyzing Collaborations*. Atzmon L (ed.), Bloomsbury Publishing: London
- Bhate D, Grishin A, **Penick CA** (*invited*) Bio-Inspired Design and Additive Manufacturing of Cellular Materials for Aerospace Applications, in *Biomimicry for Aerospace*. Help AF, Eggermont M, Shyam V (eds.), Elsevier: Amsterdam

**Undergraduate student authors underlined*

GRANTS & AWARDS – \$498k received

Grants

- 2018 NASA STTR, *Bio-inspired cellular material optimization for the design of additively manufactured multi-functional lightweight structures*, PI's: Grishin A, Bhate D, Penick CA - **\$127,000** (ASU portion, \$68,733)
- 2017 Google Inc., *Biomimicry for sensory communication*, PI's: Boradkar P, Penick CA - **\$288,367** (personal recognition, \$57,187)
- 2016 Triangle Center for Evolutionary Medicine (TriCEM), *Finding the next antibiotics: Putting evolutionary theory into practice*, PI's: Smith AA, Penick CA, Mathews S, Lopez-Uribe M - **\$20,000**
- 2012 Graduate and Professional Students Association, ASU, *Seasonal cues and timing of ant queen production*, PI: Penick CA - **\$500**
- 2009 NSF conference organization grant, (PI: Jennifer Fewell; I was a graduate student and could not officially be listed as a Co-PI), award #0964277, **\$16,838**
- 2009 Conference organization grant, Frontiers in Life Sciences workshop, *Social Biomimicry: Design insights from insect societies*, PI's: Clark RM, Holbrook CT, Moore D, Overson RP, Penick CA, Smith AA - **\$30,000**
- 2009 Graduate and Professional Students Association, ASU, *Neurochemistry of aggression in a social insect*, PI: Penick CA - **\$2,000**
- 2009 Graduate and Professional Students Association, ASU, *Evolution of nest architecture in desert ants*, PI's: Penick CA, Smith AA - **\$750**

Undergraduate support

- 2016 NCSU undergraduate research grant (mentor to Omar Halawani), NCSU, *Microbiology of ant cuticle and the role in disease defense*, **\$1,000**
- 2016 NCSU undergraduate research team grant (mentor to Omar Halawani and Bria Pearson), NCSU, *Investigating the role of public health in social insect societies*, **\$2,000**
- 2015 NCSU undergraduate research grant (mentor to Jacquelyn Fitzgerald) - NCSU, *Are spring species more vulnerable to climate warming?* - **\$3,000**
- 2014 NCSU undergraduate research grant (mentor to Joseph Karlik), NCSU, *Microbiome of an acorn: How acorn-nesting ants thrive in a tight environment* - **\$1,000**
- 2014 NCSU undergraduate research grant (mentor to Jacquelyn Fitzgerald), NCSU, *Can large-scale climate manipulations help predict changes in arthropod communities with global warming?* - **\$1,000**

Other Funding

- 2014 W.M. Keck Center for Behavioral Biology competitive travel award, **\$430**
- 2013 Biomimicry 3.8: Education Summit and Global Conference travel award, **\$400**
- 2012 North American Section of the IUSI competitive travel award, **\$100**
- 2011 Graduate and Professional Students Association competitive travel award, ASU, **\$717**
- 2009 Training award for California Academy of Sciences' *Ant Course*, Graduate Initiative Fellowships for Training, ASU, **\$1,000**
- 2008 North American Section of the IUSI travel award, **\$250**

Awards

- 2019 GaphPad Prism Data Visualization award, **\$100**

- 2014 Award, YouTube *Your Entomology* award for best science outreach video (*Termite Hunter*, with Adrian Smith & Martin Hoogeboom) from the Entomological Society of America, **\$200**
- 2013 George C. Eickwort Student Research Award – recognizes outstanding dissertation research in the field of social insect biology, awarded by North American Section of the IUSI, **\$1,000**
- 2013 Best talk, W.M. Keck Center for Behavioral Biology Student/Postdoc Symposium.
- 2012 Best poster, session II, North American Section of the IUSI Breakout Meeting.
- 2011 Nominated, Design Excellence Award, Herberger Institute for Design and the Arts, ASU
- 2010 Award, Best in show for *Nest cast of the desert harvester ant*, *Pogonomyrmex rugosus*. Arizona State Fair, outreach section.

INVITED TALKS – 27

- 2019 Featured speaker, Sustainable Brands Conference, Detroit, MI
- 2019 Department seminar, Department of Ecology, Evolution, and Organismal Biology, Kennesaw State University, Kennesaw, GA
- 2019 Department seminar, Department of Biochemistry, Molecular Biology, Entomology and Plant Pathology, Mississippi State University, Starkville, MS
- 2019 Department seminar, Department of Biological Sciences, Auburn University, Auburn, AL
- 2019 Department seminar, Department of Biology and Biochemistry, University of Houston, TX
- 2018 Department seminar, School of Integrative Biology, University of Illinois Urbana-Champaign, IL
- 2018 Department seminar, CUNY Baruch, New York, NY
- 2017 Symposium speaker, Ecological Society of America meeting, Portland, OR
- 2017 Featured speaker, RTP180 sponsored event, Research Triangle Park, NC
- 2017 Department seminar, The University of North Carolina, Pembroke, NC
- 2017 Humphrey's lecture, Mary Baldwin University, Staunton, VA
- 2017 Department seminar, University of Massachusetts, Dartmouth, MA
- 2017 Department seminar, Rutgers University, Camden, NJ
- 2016 Symposium speaker, International Conference of Entomology (ICE) XXV, Orlando, FL
- 2016 Department seminar, University of the Ryukyus, Okinawa, Japan
- 2016 Featured speaker, Science communication workshop, The Graduate School, NC State University, Raleigh, NC
- 2016 Keynote symposium speaker, Georgia Entomological Society meeting, Pine Mountain, GA
- 2016 Symposium speaker, SE Branch Meeting, Entomological Society of America, Raleigh, NC
- 2016 Department seminar, Entomology, NC State University, Raleigh, NC
- 2016 Department seminar, Research in Progress, Eastern Carolina University, Greenville, NC
- 2015 Featured speaker, Carolina Science Café series, UNC, Chapel Hill, NC
- 2015 Featured speaker, North Carolina Museum of Natural Sciences, Raleigh, NC
- 2015 Featured speaker, Wild West Naturalist Association, Raleigh, NC
- 2015 Symposium speaker, Experimental Biology meeting, Boston, MA
- 2015 Symposium speaker, Entomological Society of America Annual Meeting, Portland, OR
- 2013 Symposium speaker and panelist, Biomimicry 3.8: Education Summit and Global Conference, Boston, MA
- 2011 Featured speaker, Arizona Audubon Society, Phoenix, AZ

2011 Symposium speaker, Managing the Hive: Organization of Work in Business and Eusocial Colonies, Tempe, AZ

TEACHING

Instructor

2019 Innovation Space, Spring (co-instructor), The Design School, ASU
 2018 Innovation Space, Fall (co-instructor), The Design School, ASU
 2018 Innovation Space, Spring (co-instructor), The Design School, ASU
 2017 Innovation Space, Fall (co-instructor), The Design School, ASU
 2017 Bio-inspired Design (co-instructor), Biological Sciences and College of Design, NCSU
 2016 Traveling Design Studio: Hawaii (visiting instructor), The Design School, ASU
 2015 Public Health: From Humans to Social Insects (co-instructor), Biological Sciences, NCSU
 2012 Bio-inspired Design, The Design School, ASU
 2012 Innovation Space (co-instructor), The Design School, ASU

Field course instructor

2018 Ants of the Southwest 10-day field course (co-instructor), Southwest Research Station, AMNH

Guest lecturer

2019 Design for Additive Manufacturing, Ira A. Fulton Schools of Engineering, ASU
 2019 Sustainable World (introduction to sustainability), School of Sustainability, ASU
 2018 Traveling Design Studio: Galapagos, The Design School, ASU
 2018 Artistic Expression of Original Research, School of Life Sciences, ASU
 2018 Biomimicry in Practice, College of Architecture & Planning, University of Colorado, Denver
 2018 Design for Additive Manufacturing, Ira A. Fulton Schools of Engineering, ASU
 2018 Nanoscale Biomimicry, Fashion Institute of Technology, SUNY
 2017 Artistic Expression of Original Research, School of Life Sciences, ASU
 2017 Advanced Architectural Studio III, The Design School, ASU
 2017 Biomimetic Design and the Sonoran Desert, The Design School, ASU
 2016 Applied Biogeography, Department of Applied Ecology, NCSU
 2013 The Ecology and Evolution of Daily Life, Biological Sciences, NCSU

Teaching Assistant

2011 Anatomy and Physiology Lab, School of Life Sciences, ASU
 2010 General Genetics, School of Life Sciences, ASU
 2009 Techniques in Animal Behavior, School of Life Sciences, ASU
 2008 The Living World Lab (Biology for Non-Majors), School of Life Sciences, ASU
 2007 General Biology Lab, School of Life Sciences, ASU
 2006 The Living World Lab (Biology for Non-Majors), School of Life Sciences, ASU

Student diversity programs

2015 Initiative for Maximizing Student Diversity, NCSU (2014-2015)
 2009 Graduate Partners in Science Education, ASU (2008-2009)

2006 Upward Bound Program, FSU

Mentorship

Undergraduate thesis committee member

2019 Alayzha Turner-Rodgers, “Determining the correlation between dragonfly wing morphology and flying maneuverability,” Arizona State University

Graduate students (2)

Meredith West, Andrew Jansen

Undergraduate students (24, including 14 students from underrepresented groups)

Steven Prager, Beth Trobaugh, Neale Copple, Joseph Karlik, Jacquelyn Fitzgerald, Catherine Crofton, Bria Pearson, Omar Halawani, Alayzha Turner-Rodgers, Nikki Knapp, Tiara Butler-Smith, Abdul Matin, Kaetlyn Ryan, Samantha Dietz, Matt Farrell, Chris Williams, Jakini Kauba, Mary Vincent, Natavia Ray, Victoria Figueiredo Paixao, Barbara Birtcil, Jordan Bednarz, Violet Konopka, and Derek Guy.

High school students (3)

Michael Taffe, John Delpapa, and Lowell Hensgen

**Underlined students were co-authors on papers and/or funded grants.*

SCIENCE WRITING & OUTREACH

Popular science writing (selected)

- 2019 “So I discovered a new species. Now what?” [Experience Magazine](#) (upcoming)
- 2019 “[Wisdom of the hive](#)” The Cactus Wren•dition, Maricopa Audubon Society
- 2018 “[Why is a 45 year-old pesticide back in the news? The story of Glyphosate](#),” *Survivors’ Table*
- 2017 “[Strange Worlds in Familiar Places](#),” *Zygote Quarterly* (cover feature)
- 2017 “[Illustrating Insect Diversity with the New Species Scape](#),” *Verve* postdoc magazine
- 2016 “[High-fructose Honey and the Diet of Urban Bees](#),” *Oxford University Press* blog
- 2016 “[The World’s Coolest Ants](#),” *North Carolina Naturalist*
- 2015 “[The Secrets of Insect ‘Skin’](#),” *Journal of Investigative Dermatology* blog
- 2014 “[Fifth Avenue and the Entangled Bank: Fashion in Field Biology](#),” *Your Wild Life* blog
- 2014 “[The Art and Science of Life After Chernobyl](#),” *Your Wild Life* blog
- 2013 “[The Best Thing About Baby Ants](#),” *Buzz Hoot Roar* (illustration)
- 2013 “[The Odor of the Odorous House Ant](#),” *Your Wild Life* blog
- 2013 “[Seeking Intelligence Inside the Swarm](#),” *Zygote Quarterly*
- 2013 “[Top 10 Ways an Ant’s House is Similar to Your House](#),” *Your Wild Life* blog
- 2012 “[I, For One, Welcome Our Robot Overlords](#),” *SOLS* magazine
- 2011 “[Conservation: The Great Bustards of Mongolia](#),” *SOLS* magazine (cover feature)
- 2010 “[Amazon’s Small Reserve Reveals Largest Biodiversity on Earth](#),” *SOLS* magazine

Television and video appearances (selected)

- 2019 “[Catalyst](#),” Arizona PBS
- 2018 “[Cities: Nature’s New Wild](#),” BBC
- 2016 “[Ants Fight to Share Dominance](#),” *Explained by the Author* web series
- 2015 “[Scientists Create Tiny Zones of Climate Change](#),” National Geographic online

- 2015 “[NC State Researchers Explore Future of Climate Change on Ecosystems](#),” WRAL
 2015 “[The Incredible Indian Jumping Ant](#),” *Strange Truth*, National Geographic Channel
 2014 “[Ant Battles Offer Insights to Gene Expression](#),” Reuters online
 2014 “[The Ant Queen is Dead. Let the Battles Begin.](#),” *ScienceTake*, New York Times

Radio and podcast appearances (selected)

- 2019 “[What Do an Army of Ants and an Online Encyclopedia Have in Common?](#)” *Plays Well With Others* podcast
 2016 “[City Bees Forego Fast Food to Feed on Flowers](#),” *All Things Considered*, WUNC NPR
 2016 “[How Do Animals Choose Their Leaders](#),” *Completely Optional Knowledge* podcast
 2015 “[This Ant Stinks](#),” *Science Friday*, NPR
 2015 “[Pests in the City](#),” *Science for the People* podcast, NSF Science360
 2014 “[Ant-agonist Play Game of Thrones](#),” *Quirks & Quarks*, CBC Radio

Print and online interviews (selected)

- 2019 “[An ASU Researcher Spends His Time With Ants](#),” *AZ Central*
 2019 “[Ant-patterned Pillows Raise Biodiversity Awareness](#),” *ASU Thrive Magazine*
 2018 “[Drugs From Bugs: Bioprospecting Insects to Fight Superbugs](#),” *Discover Magazine*
 2017 “[Get Ready for More Mosquitoes and Ants Thanks to Climate Change](#),” *Vice*
 2017 “[These Ants Do a Lion King-Like Ritual but With Chemicals](#),” *Gizmodo*
 2016 “[How Wild Animals Are Hacking City Life](#),” *National Geographic*
 2016 “[City Bees Stick to a Flower Diet Rather Than Slurp Up Soda](#),” *New York Times*
 2016 “[Inside an Ant Royal Rumble](#),” *Discover Magazine*
 2016 “[City Bees Feed On Flowers, Not Junk Food](#),” *Newsweek*
 2015 “[Movies and Other Media Inspire Interest in Scientific Concepts](#),” *Alaska Airlines Magazine*
 2015 “[NC State Scientists Study the Odor of Ants](#),” *Raleigh News and Observer*
 2015 “[NC State Researcher Is Fascinated By Aromas Of Ants](#),” *Charlotte Observer*
 2015 “[From Punk Guitarist to Research Entomologist](#),” *NC State News*
 2015 “[Ants On New York City's Streets Survive On Junk Food And Meat](#),” *The Guardian*
 2015 “[These Urban Ants Love Junk Food As Much As We Do](#),” *Fast Company*
 2015 “[The Ants That Smell Like Blue Cheese—Or Is That Pine-Sol?](#)” *WIRED*
 2015 “[Junk Food is Making NYC Ants More Like Humans](#),” *LiveScience*
 2015 “[Our Cheeseburgers Are Changing Ants' Bodies](#),” *Mental Floss*
 2014 “[Ants of New York](#),” *New Yorker*
 2014 “[Ants...In...Space](#),” *NC State News*

Other media coverage

[Associated Press](#), [ASU Now](#), [CBS New York](#), [Chromatography Today](#), [The Citizen](#), [The Conversation](#), [Cronkite News](#), [Culture: The Word on Cheese](#), [Daily Kos](#), [Daily Mail \(2\)](#), [EGU Biogeosciences blog](#), [El País](#), [Entomology Today](#), [Food Network Magazine](#), [Food & Wine](#), [Huffpost UK](#), [Improbable Research](#), [IFL Science \(2\)](#), [Mitchell News-Journal](#), [Myrmecos](#), [Nature](#), [Nature World News](#), [New Atlas](#), [New York Post](#), [NC State Alumni Magazine](#), [NCSU Technician](#), [Pest Control Technology](#), [SciArt Magazine](#), [Seeker](#), [Science](#), [Scientific American](#), [Science News](#), [The Sun](#), [TIME](#), [Washington Post](#), [The Wildlife Society](#), [KWMU St. Louis Public Radio \(NPR affiliate\)](#), [3D Printing Industry](#), [KCBS San Francisco](#), [1010 WINS NYC](#), [WFVU Cityscape NY](#), and [WKNC Raleigh](#).

Service and outreach

Program coordinator

- 2019 Manager of the Biomimicry Seed Grants program - *Biennial program awarding \$15,000-30,000 to interdisciplinary teams to develop research projects in biomimicry. (2018-2019)*
- 2019 Manager of the Biomimicry Center faculty Affiliates program - *Includes 44 faculty from 18 departments on ASU's campus. (2018-2019)*

Conference organizer

- 2019 Workshop co-organizer, "Hidden treasures: Discovering the design potential of natural history collections," 13th European Academy of Design conference, University of Dundee, Scotland, UK
- 2018 Workshop co-organizer, "Developing partnerships for interdisciplinary design-based learning," 48th Annual Conference of the International Society for Exploring Teaching and Learning (ISETL), Tempe, AZ.
- 2018 Symposium co-organizer, "Social insect eco-physiology across scales," 18th Congress of the International Union for the Study of Social Insects (IUSSI), Guarujá, Brazil – *10 speakers from 7 international institutions*
- 2018 Conference co-organizer, "Generous Cities Summit," two-day international conference, Tempe, AZ – *100 attendees from more than 20 public organizations and private industries.*
- 2016 Meeting organizer, "Warm Forests/Warm Cities" breakout meeting, Hunt Library, Raleigh, NC – *30 attendees from 9 institutions*
- 2010 Conference co-organizer, "Social Biomimicry: Insect Societies and Human Design," international conference, Arizona State University, Phoenix, AZ – *80 attendees from 18 institutions*

Outreach event organizer

- 2018 Co-organizer, *Designed to Move: How Seeds Fly, Float, and Hitchhike through the Desert Southwest*, photography exhibit, ASU Gallery of Design, Tempe, AZ
- 2017 Science content developer, DOTS: Biomimicry Kits educational project, Tempe, AZ – *Funded by the Walton Family Foundation to send educational kits to 50 museums on five continents*
- 2016 Co-organizer, *The Insects of M.C. Escher* outreach exhibit, college night at the North Carolina Museum of Art, Raleigh, NC – *1,600 attendees*
- 2015 Co-organizer, *The Physics of Ant Colonies* outreach exhibit. BugFest, North Carolina Museum of Natural History, Raleigh, NC – *35,000 attendees*
- 2015 Co-organizer, *Ants In Space* outreach exhibit at the *Cocktails and Cosmonauts* event, Museum of Life and Science, Durham, NC – *150 attendees*
- 2014 *Ants In Space*, an education project through BioEdOnline and NASA; provided pavement ant colonies that traveled to the International Space Station
- 2014 Co-organizer, *School of Ants* outreach exhibit for the NSF section NSF, USA Science and Engineering Festival, Washington, DC – *350,000 attendees*
- 2014 Co-organizer, *Social insect biology* outreach exhibit at BugFest, North Carolina Museum of Natural History, Raleigh, NC – *35,000 attendees*
- 2013 Organizer, *What is that smell?* outreach exhibit and event on identifying ants by smell at BugFest, North Carolina Museum of Natural History, Raleigh, NC – *40,000 attendees*
- 2010 Co-organizer, Social Insect Science EXPO, community event, Phoenix Desert Botanical Gardens, Phoenix, AZ – *150 attendees*

Department service

2011 Facilities committee member (2011-2012), graduate student representative, School of Life Sciences, ASU

Reviewer

The American Naturalist, Animal Behaviour, Annals of the Entomological Society of America, Behavioral Ecology and Sociobiology, Biological Invasions, Biology Letters, BioScience, Conservation Physiology, Current Zoology, Ecography, Ecological Entomology, Ecology, Ecology Letters, Entomological Science, Environmental Conservation, F1000Research, Global Ecology and Biogeography, Insect Conservation and Diversity, Insectes Sociaux, Insects, iScience, Journal of Animal Ecology, Journal of Agricultural Biotechnology and Sustainable Development, Journal of Behavior, Journal of Economic Entomology, Journal of Experimental Biology, Journal of Insect Science, Journal of Thermal Biology, Methods in Ecology and Evolution, Molecular Ecology, Myrmecological News, Naturwissenschaften–The Science of Nature, Oikos, PeerJ, Physiological Entomology, PLOS One, Proceedings of the Royal Society B, Urban Ecosystems.

Book reviewer

University of Chicago Press

Grant reviewer

National Science Foundation (NSF), Graduate & Professional Student Association ASU (GPSA), Biomimicry Center ASU

Conference presentations

2019 Biocene Tools Workshop, NASA Glenn Research Center, Cleveland, OH (*upcoming*)
 2019 13th European Academy of Design conference, University of Dundee, Scotland, UK
 2019 Workshop on Insect Inspired Models for Social Behavior, Tempe, AZ
 2018 48th Annual Conference of the ISETL, Tempe, AZ
 2018 IUSSI XVIII International Congress, Guarujá, Brazil
 2018 Generous Cities Summit, Tempe, AZ
 2017 Ecological Society of America meeting, Portland, OR
 2016 International Conference of Entomology (ICE) XXV, Orlando, FL
 2016 Georgia Entomological Society Meeting, Pine Mountain, GA
 2016 Southeastern Branch Meeting of the Entomological Society of America, Raleigh, NC
 2015 Experimental Biology meeting, Boston, MA
 2015 W.M. Keck Center for Behavioral Biology student/postdoc symposium, Raleigh, NC
 2014 Entomological Society of America annual meeting, Portland, OR
 2014 IUSSI XVII International Congress, Cairns, Australia
 2014 Evolution meeting, Raleigh, NC
 2014 NC State Postdoc Association research symposium, Raleigh, NC
 2013 Entomological Society of America annual meeting, Austin, TX
 2013 Biomimicry 3.8: Education Summit and Global Conference, Boston, MA
 2013 W.M. Keck Center for Behavioral Biology student/postdoc symposium, Raleigh, NC
 2012 IUSSI breakout meeting of the North American section, Greensboro, NC
 2011 Entomological Society of America annual meeting, Reno, NV
 2011 Animal Behavior Society meeting, Bloomington, IN

- 2010 Entomological Society of America annual meeting, San Diego, CA
- 2010 IUSSI XVI International Congress, Copenhagen, Denmark
- 2010 Social Biomimicry: Insect Societies and Human Design conference, Tempe, AZ
- 2009 Graduates in Earth, Life, and Social Sciences, Tempe, AZ
- 2008 IUSSI breakout meeting of the North American section, Puerto Rico
- 2008 RISE symposium, Tempe, AZ
- 2006 IUSSI XV International Congress, Washington D.C.
- 2005 Entomological Society of America annual meeting, Miami, FL