

Patrick Abbot

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Academic Appointments	Associate Professor, Vanderbilt University Assistant Professor, Vanderbilt University	2011 – 2004-11
Education	Postdoctoral Fellow, 2004; Integrative Biology, University of Texas at Austin Ph.D, 2001; Department of Ecology and Evolutionary Biology, University of Arizona M.Sc., 1994; Department of Biological Sciences (with emphasis in behavioral ecology), Simon Fraser University B.A.1989; Department of Zoology, University of Georgia	
Awards & Honors	Southeastern Conference Travel Award, <i>Collaborative research on sterol physiology in natural populations of aphids</i> . Dr. Spencer Behmer (co-PI), Texas A & M, College Station Jeffrey Nordhaus Award for Excellence in Undergraduate Teaching, Vanderbilt University Best Mentor Award, Department of Biological Sciences, Vanderbilt University NSF Postdoctoral Fellowship in Microbial Biology Robert W. Hoshaw Memorial Scholarship, University of Arizona	2014 2013 2011 2002 2001
Invited Reviews/ Review Proposals	Abbot, P. Defense in social insects. <i>Annual Review of Entomology</i> . Birnbaum SL & Abbot P. Gene expression and plant-insect interactions. <i>Trends in Ecology and Evolution</i> Capra JA, Abbot P. , & Rokas A. The influence of evolutionary history on human health and disease. <i>Nature Reviews Genetics</i>	
Publications (as Associate Professor)	Eidem HR, Steenwyk J, Wisecaver J, Capra JA, Abbot P. , & Rokas A. integRATE: a desirability-based data integration framework for the prioritization of candidate genes across heterogeneous omics and its application to preterm birth. <i>BMC Medical Genomics</i> , in press. Birnbaum SL, Rinker DC, & Abbot P. 2018. Maintaining biological cultures and measuring gene expression in <i>Aphis nerii</i> : A Non-model System for plant-insect interactions. <i>J. Vis. Exp.</i> (138), e58044, doi:10.3791/58044 Abbot P & Rokas A. 2018. Preterm Birth. <i>Encyclopedia of Evolutionary Psychological Science</i> . Springer, in press. Fewell J & Abbot P. 2018. Insect sociality. IN: <i>Insect Behavior: From Mechanisms to Ecological and Evolutionary Consequences</i> . Córdoba-	

- Aguilar A, González-Tokman D & González-Santoyo I (eds), Oxford: Oxford University Press.
- Abbot P**, Tooker J, Lawson SP. 2018. Chemical ecology and sociality in aphids: Opportunities and directions. *Journal of Chemical Ecology*, 16, <https://doi.org/10.1007/s10886-018-0955-z>.
- Heath J, **Abbot P**, & Stireman JO. 2018. Adaptive divergence in a defense symbiosis driven from the top down. *The American Naturalist* 192, E21-E36.
- Birnbaum SSL & **Abbot P**. 2018. Insect adaptations towards plant toxins in milkweed-herbivore systems – a review. *Entomologia Experimentalis et Applicata*, 58, 579-589.
- Moon JM, Aronoff DM, Capra JA, **Abbot P**, Rokas A. 2018. Genes involved in human sialic acid biology do not harbor signatures of recent positive selection. *G3: Genes, Genomes, Genetics* g3.200035.2018–11.
- Abbot P** & Chapman TC. 2017. Sociality in aphids & thrips. IN: Rubenstein D & Abbot P. (eds) *Comparative Social Evolution*. Cambridge: Cambridge University Press, Cambridge.
- Rubenstein D & **Abbot P**. 2017. The evolution of social evolution. IN: Rubenstein D & Abbot P. (eds) *Comparative Social Evolution*. Cambridge: Cambridge University Press.
- Rubenstein D & **Abbot P**. 2017. Social synthesis: Opportunities for comparative social evolution. IN: Rubenstein D & Abbot P. (eds). *Comparative Social Evolution*. Cambridge: Cambridge University Press.
- Abbot P** & Capra JA. 2017. What is a placental mammal anyway? *eLife*, 6:e30994.
- Abbot P** & Rokas A. 2017. Quick guide: Mammalian Pregnancy. *Current Biology* 27, R123–R138
- Birnbaum SSL, Rinker D, Gerardo N, & **Abbot P**. 2017. Transcriptional profile and differential fitness across a cardenolide gradient in a specialist milkweed insect. *Molecular Ecology*, 26, 6742-6741.
- Eidem H, McGary KL, Capra JA, **Abbot P**, & Rokas A. 2017. The transformative potential of an integrative approach to pregnancy. *Placenta*, 57: 204–215.
- Lawson SP, Sigle L, Legan A, Lind A, Mezzanote JN, Honegger WH, & **Abbot P**. 2017. An alternative pathway to eusociality: Exploring the molecular and functional basis of fortress defense. *Evolution*, 71, 1986-1998.
- Eidem H., Rinker DC, Ackerman WE IV, Buhimschi IA, Buhimschi CS, Dunn-Fletcher C, Kallapur SG, Pavlicev M, Muglia LJ, **Abbot P**, & Rokas A. 2016. Comparing human and macaque placental transcriptomes to disentangle preterm birth pathology from gestational age effects. *Placenta*: 41, 71-82.
- Kim, M., Cooper BA, Venkat R, Phillips JB, Eidem HR, Hirbo J, Nutakki S, Williams SM, Muglia LJ, Capra JA, Petren K, **Abbot P**, Rokas A, McGary KL. 2016. GENE STATION 1.0: a synthetic resource of diverse evolutionary and functional genomic data for studying the evolution of pregnancy-associated tissues and phenotypes. *Nucleic Acids Research* 44, Database issue: D908-916.

- Abbot P.** 2015. The physiology and genomics of social transitions in aphids. In: Zayed A, Kent CF, editors. *Genomics, Physiology and Behaviour of Social Insects*. Vol. 48. *Advances in Insect Physiology*. Elsevier. pp. 163–188.
- Eidem HR, Ackerman WE, McGary KL, **Abbot P**, Rokas A. 2015. Gestational tissue transcriptomics in term and preterm human pregnancies: a systematic review and meta-analysis. *BMC Medical Genomics* 8, 529–13.
- Phillips JB, **Abbot P**, Rokas A. 2015. Is preterm birth a human specific syndrome? *Evolutionary Medicine and Public Health* 2015:136–48.
- Hirbo J, Eidem HR, Rokas A, **Abbot P**. 2015. Integrating diverse types of genomic data to identify genes that underlie adverse pregnancy phenotypes. *PLoS ONE* 10: e0144155.
- Miller DG, Lawson SP, Rinker DC, Estby H, **Abbot P**. 2015. The origin and genetic differentiation of the socially parasitic aphid *Tamalia inquilinus*. *Molecular Ecology* 24, 5751–5766.
- Abbot P.** 2014. *Ecological Genomics*. *Oxford Online Bibliography: Ecology*.
- Lawson SP, Christian N, & **Abbot P**. 2014. Comparative analysis of the biodiversity of fungal endophytes in insect-induced galls and surrounding foliar tissue. *Fungal Diversity* 66, 89–97.
- Lawson SP, Legan AW, Graham C, & **Abbot P**. 2014. Comparative phenotyping across a social transition in aphids. *Animal Behaviour* 96, 117–125.
- Cobbs C., Heath J, Stireman JO, & **Abbot P**. 2013. The evolution of laterally-transferred genes for carotenoid biosynthesis in gall midges. *Molecular Phylogenetics & Evolution*, 68, 221-228.
- Stireman JO, Devlin H, & **Abbot P**. 2012. Rampant host and defensive phenotype associated diversification in a goldenrod gall midge. *Journal of Evolutionary Biology* 25, 1991-2004.
- Erickson DM, Wood EA, Oliver KM, Billick I, & **Abbot P**. 2012. The effect of ants on the population dynamics of a protective symbiont of aphids, *Hamiltonella defensa*. *Annals of the Entomological Society of America* 105, 447-453.
- Abbot P.** 2011. A closer look at the spatial architecture of aphid clones. *Molecular Ecology* 20, 4587-4589.
- Cafaro MJ, Poulsen M, Little AEF, Price SL, Gerardo NM, Wong B, Stuart AE, Larget B, **Abbot P**, and Currie CR. 2011. Specificity in the symbiotic association between fungus-growing ants and protective *Pseudonocardia* bacteria. *Proceedings of the Royal Society of London B* 278, 1814-1822.
- Abbot P**, Abe J, Alcock J, et al. **2011**. Inclusive fitness theory and eusociality. *Nature* 471, E1-E4.
- 2010 and earlier: see
<https://www.ncbi.nlm.nih.gov/pubmed/?term=abbot+patrick>

Books/Edited Volumes	<p>Abbot P & Kocher S. (editors). <i>COIS Social insects (2019): A major transition in the 21st Century</i>. Current Opinions in Insect Science. <i>forthcoming</i>.</p> <p>Rubenstein DR & Abbot P. 2017. <i>Comparative Social Evolution</i>. Cambridge University Press, Cambridge, UK.</p>	
Invited Presentations & Conferences (as Associate Professor)	<p>41st Winter Animal Behavior Conference, Steamboat Springs, Co. 2019 forthcoming</p> <p><i>Taking stock: Comparative social evolution</i>. Entomological Society of America meeting 2017</p> <p><i>Transcriptional profile and differential fitness across a cardenolide gradient in a specialist milkweed insect</i>. Symposium on Insect-Plant Interactions, Society for the Study of Plant-Insect Interactions 2017</p> <p><i>Detoxification and sequestration in a specialist aphid: functional mechanisms and eco-evolutionary patterns: ecological specialization and expression plasticity</i>. Gordon Research Conference. Plant-Insect Interactions. 2017</p> <p><i>Division of labor from 50,000 evolutionary feet</i>. Entomological Society of America 2015</p> <p><i>Sociality at the plant-insect interface</i>, University of Southern Mississippi, Department of Biological Sciences. 2015</p> <p><i>Predation, polymorphism and diversifying selection in a defense symbiosis</i>. Gordon Research Conference, Animal Microbe Symbioses 2015</p> <p><i>Sociality at the plant-insect interface</i>, Columbia University, Department of Ecology, Evolution, and Environmental Biology 2014</p> <p><i>Sociality at the plant-insect interface</i>, Simon Fraser University, Department of Biological Sciences 2014</p> <p><i>The transition to sociality at the plant-insect interface</i>. University of Tennessee, Chattanooga, Department of Biology 2014</p> <p><i>Viruses and the functional toolkit in social evolution</i>, International Union for the Study of Social Insects, Cairns, Australia 2014</p> <p><i>Sociality at the plant-insect interface</i>. Occidental College, Department of Biology 2014</p> <p><i>Mutualisms between animals and microbes, and the shape of evolution</i>. University of Memphis, Department of Biological Sciences 2014</p> <p><i>Cooperation and conflict at the plant-insect interface</i>. University of California, Davis, Department of Entomology 2013</p> <p><i>How co-evolution and conflict drive cooperation at the plant-insect interface</i>. North Carolina State University, Department of Entomology. 2013</p> <p><i>How co-evolution and conflict drive cooperation at the plant-insect interface</i>. University of Montana, Department of Biology. 2013</p> <p><i>How co-evolution and conflict drive cooperation at the plant-insect interface</i>. University of Alabama-Huntsville, Department of Biology. 2012</p> <p><i>Optimism, skepticism and history lessons in the age of “-omics”</i>. Keynote address, Annual Graduate Student Symposium, Oklahoma State University. 2012</p> <p><i>Lateral gene transfer, carotenoids and gall midges</i>. International Congress of Entomology, Daegu, South Korea. 2012</p> <p><i>Cautionary tales on the road to adaptation in the age of -omics</i>. Summer workshop, Okinawa Institute of Science and Technology. 2012</p> <p><i>Fungal partners in the diversification of gall midges</i>. Annual meeting, Society of 2012</p>	

	General Microbiology, Harrogate, UK.	
	<i>Competition, coevolution, and cooperative alliances (or how to build a social aphid)</i> . Indiana University, Bloomington, Department of Biology.	2011
	<i>Social aphids, gall midges, and the evolution of cooperation and defense</i> . University of Georgia, Athens, Department of Entomology	2011
	2010 and earlier: see https://my.vanderbilt.edu/theabbotlab/	
External Funding	March of Dimes, <i>The March of Dimes Prematurity Research Collaborative of Ohio: The Genomics of Pre-Term Birth</i> (Dr. Lou Muglia, PI)	2013-18
	National Science Foundation, IOS-1147033, <i>The transition to sociality at the plant-insect interface</i>	2012-16
	National Science Foundation, Research Experience for Undergraduates, supplementary award, <i>The transition to sociality at the plant-insect interface</i>	2013
	National Science Foundation, DEB EPE-0614483, Research Opportunity Award, <i>Collaborative Research: Adaptive radiation of a gall midge-fungus mutualism in a multitrophic context</i>	2010-12
	National Science Foundation, DEB EPE-0614483, <i>Collaborative Research: Adaptive radiation of a gall midge-fungus mutualism in a multitrophic context</i>	2006-10
	National Science Foundation, IOB-0417006, <i>Biology of intruders & cheating in social aphids</i>	2004-8
	National Science Foundation, Starter Grant, (with DBI #0102094): <i>The Evolutionary Genetics of a Vector-Borne Zoonotic Pathogen in Natural Populations: Bartonella in the Coastal Plain and Barrier Islands of the Southeastern United States</i> .	2004
	National Science Foundation, Postdoctoral Fellowship in Microbial Biology, DBI #0102094: <i>"Evolutionary patterns and processes in symbiotic fungi associated with fungus-growing ants."</i>	2002-4
Intramural Funding	Vanderbilt University Central Discovery Grant, <i>Soldiers who want to be monarchs: The role of plant chemistry in social evolution</i> ; 2012-2014.	2012-14
	Vanderbilt University Central Discovery Grant, <i>Spatial and molecular ecology of conditional mutualisms between ants and membracids</i> ; 2005-2007.	2005-7
Teaching	BSCI 3239 Evolution of Behavior. <i>I developed this course in 2016 (3 credits). Both undergraduates and graduate students enrolled in 2016, with an enrollment of 21 students.</i>	
	BSCI 3289, Ecology. <i>I have been the instructor in Ecology (3 credits) since 2005. The course has a typical enrollment of about 30 upper-level, and in addition to biological sciences, draws from several majors across campus. In 2016, I will begin teaching a course on the evolution of behavior, in lieu of Ecology.</i>	
	BSCI 1511, Introductory Biology. <i>I have shared a section of Introductory Biology (3 credits) since 2007. The course has a typical enrollment of about 200+ students, most of whom are freshmen and sophomores, many of whom are interested in careers in medicine and health.</i>	
	Interdisciplinary Graduate Program FOCUS. <i>This is a graduate level course</i>	

that involves discussing key papers in molecular and cell biology, and genetics.

BSCI 3860/3861. *These courses comprise our introduction to research for BSCI majors.*

BSCI 3965, Undergraduate Seminar. *For several semesters from 2004 to 2006, I taught an undergraduate seminar (1 credit) in conservation biology, covering such topics as climate change and river and wetland ecology. I recently taught a collaborative seminar on comparative social evolution with Dr. Dustin Rubenstein (Columbia), Dr. Eileen Lacey (Berkeley), and Dr. Jennifer Fewell (Arizona State). This course met simultaneously at the four universities, with students working collaboratively across each. The culmination was a video lecture to the entire group by Dr. Bert Hoelldobler.*

BSCI 6336, Graduate Seminar in Ecology and Evolution. *This course is taught on a rotating basis each semester by faculty in the ecology and evolution group in Biological Sciences. It involves readings, presentations, and discussions by graduate students and faculty on current topics and literature. In 2012, I organized a special version of this seminar, and recruited researchers from nearby universities to come each week to speak to a broad group of researchers and students throughout the university with interests in ecology and evolution.*

Vanderbilt Summer Academy, 2011 & 2013. *This is a week-long ecology field course for high school students.*

Various guest lectures in courses ranging from Vector Biology to the Neurobiology of Behavior

Graduate Students & Postdoctoral Associates	Michelle Moon	2014 -
	Stephanie Birnbaum	2014 -
	Jibril Hirbo	2013-15
	Sarah Lawson	2009-14
	Cassidy Cobbs	2009-14
	Eric Janson	2004-10
	Dan Erickson	

Undergraduate Student Researchers	Dan O'Connell (2006)	Brittany Pidgeon (2011)
	Allison Bray (2006)	Natalie Christian (2012)
	Lauren Eller (2006)	Hayden Hill (2012)
	Julia Brown (2007)	Heather Estby (2013)
	Charles Hassett (2007)	Andrew Legan (2014)
	Katie Grogan (2008)	Max Kushner (2015)
	Emily Peeden (2008)	Joan Coker (2015)
	Jessica Mezzanote (2010)	Emily Neil (2015)
	Jessie Cox (2010)	Catie Mitchell (2017)
	Elizabeth Wood (2011)	Daniel Shaykevich (2018)
	Robin Frede (2011)	Ansley Petherick (2019)

Professional and University Service	Chair, Faculty Council, College of Arts & Sciences, Vanderbilt University	2018-
	Associate Chair, Department of Biological Sciences, Vanderbilt University	2014-
	Director of Undergraduate Studies, Department of Biological Sciences	2017-
	Faculty Council, College of Arts & Sciences, Vanderbilt University	2017-
	Chair, Curriculum Committee, Department of Biological Sciences	2015-18
	Special Section Editor, <i>Social Insects</i> , Current Opinions in Insect Science	2018
	Member, Search Committee, Lecturer in Biological Sciences	2017-18
	Member, College of Arts & Sciences Curriculum Committee	2017-
	Member, Nance Prize Committee, Vanderbilt University Medical Center,	2016-
	Member, Science & Engineering Library Director Search Committee, Vanderbilt University	2017
	Chair, Graduate Policy Committee, Biological Sciences, Vanderbilt University	2009-13
	Departmental Seminar Committee, Biological Sciences, Vanderbilt University	2005-8
	Faculty search committees, Department of Biological Sciences, Vanderbilt University	2011-
	Organizer, <i>Annual Darwin Day at Vanderbilt</i>	2012-15
	Bugs for 3 rd graders! Una Elementary School, Nashville, Tennessee	
	Member, Junior Advisory Research Committee, College of the Arts and Sciences, Vanderbilt University	2012 2012
	Panelist, Program in Career Development, Vanderbilt University,	
	Panelist, National Science Foundation, IOS & DEB	2014
	Working group member, National Evolutionary Synthesis Center	2012-13
	Associate editor, <i>Evolution</i> .	2010-13
Chair, Board of Directors, Highlands Biological Station, Highlands, North Carolina	2007-9 2014-	
Co-organizer, Member Symposium: <i>Ecological and Evolutionary Origins of Sociality: Connecting Commonalities of Social Behavior Across Diverse Insect Taxa</i> . Annual meeting of the Entomological Society of America, Austin, Texas	2013	
Co-organizer, Member Symposium: <i>Social evolution in other taxa</i> . Annual meeting of the Entomological Society of America, Indianapolis, Indiana.	2010	
Organizer & developer, <i>Workshop on biotechnology for secondary school instructors and non-biologists</i> ; Vanderbilt University and Nashville Metro Schools, Nashville, TN	2006	