

AMY LYNN TOTH

CURRICULUM VITAE

1. RESEARCH AREAS

Social Behavior, Evolutionary Genomics, Nutritional Physiology, Hymenopteran Insects, Pollinator Health and Conservation

2. EDUCATION AND POSTDOCTORAL TRAINING

USDA Postdoctoral Fellow, Department of Entomology, Pennsylvania State University, *Uncovering conserved molecular pathways for social insect reproduction and social behavior*, advisor Christina M. Grozinger, August 2008-August 2010

Postdoctoral Research Associate, Department of Entomology and Institute for Genomic Biology, University of Illinois, *Genomic analyses of insect social behavior*, advisor Gene E. Robinson, January 2007-July 2008

Ph.D., Ecology and Evolutionary Biology, *Comparative physiological and genomic analyses of division of labor in honey bee and paper wasp societies*. University of Illinois, Urbana-Champaign, advisor: Gene E. Robinson, December 2006

B.A., Biology, Bard College, Annandale-on-Hudson, NY, advisor: William T. Maple, May 2000

3. PROFESSIONAL APPOINTMENTS

Director and Chair, Graduate Program in Ecology and Evolutionary Biology, Iowa State University, July 2022-present

Professor, Departments of Ecology, Evolution, and Organismal Biology and Plant Pathology, Entomology, and Microbiology, Iowa State University, August 2021-present

Fulbright Scholar and Visiting Researcher, Instituto de Investigación en Biodiversidad y Medioambiente, Universidad Nacional del Comahue, Bariloche, Argentina, July 2018-July 2019

Associate Professor, Departments of Ecology, Evolution, and Organismal Biology and Entomology, Iowa State University, August 2016-present

Assistant Professor, Departments of Ecology, Evolution, and Organismal Biology and Entomology, Iowa State University, August 2011-July 2016

Adjunct Assistant Professor, Department of Ecology, Evolution, and Organismal Biology, Iowa State University, August 2010-August 2011

4. TEACHING AND MENTORING

4.1 COURSE INSTRUCTION

Instructor of 12 courses, 11 at Iowa State University

Co-Instructor, EEB 698 Tea time talks: Conversations around the EEOB/EEB Seminar Series, (with J. Serb) 2022

Co-Instructor, ENT 358X/BIOL 358X Bee Biology, Management, and Beekeeping, Fall 2015 (with A. Dolezal) 2020-2022 (with R. Cass) * co-developed as a new course

Instructor, EEOB 507 Advanced Animal Behavior: Genes and Behavior, Spring 2014, 2015, 2016, 2017, 2018, 2020, 2022 * developed as a new course

Instructor, BIOL 354 Animal Behavior, Fall 2013, 2014, 2015, 2016, 2019, 2020, 2021

Co-Instructor, BIOL 354L, Animal Behavior Laboratory, Fall 2013, 2014, 2015, 2016, 2019, 2020, 2021 (note that Teaching Assistant performs primary lab instruction duties)

Instructor, Genética y Comportamiento Animal [Genes and Behavior], one week intensive course (in Spanish), Universidad Nacional del Comahue, Bariloche, Argentina, 2019

Co-instructor, ENT 590D/EEB698, Graduate Seminar on Insect Systematics and Evolution (with G. Courtney), Spring 2018

Instructor, BIOL 495AT, Current Topics in Bee Biology (with members of Toth lab and ISU Bee Research Team), Spring 2018 * new half semester course

Co-Instructor, GENET 591, Workshop in Genetics: Epigenetics: More than Just DNA, Fall 2012

Co-Instructor, BCB660: Applications of Next Generation Sequencing Data Processing Software in Genomics, Fall 2011 (with V. Brendel) and Fall 2012 (with A. Severin) * co-developed as a new course

Instructor, BIOL 495: Science, Evolution, and Creationism, Iowa State University, Spring 2012 * developed as a new course

Instructor, EEB698: Genomic Applications to Ecology and Evolutionary Biology, Iowa State University, Fall 2011 * developed as a new course

Guest Lecturer in 13 courses (typically 2-3 guest lectures per year)

BCB Faculty Seminar, Primate Behavior, Ecological and Evolutionary Genomics, Evolutionary Genetics, Animal Behavior, Core Concepts in Ecology and Evolutionary Biology, Advanced Animal Behavior, Invertebrate Biology, Pollination Biology, and an undergraduate evolution seminar, Iowa State University, 2011-present

Evolution in Insect Societies, Penn State University, 2010

Introduction to Entomology, Animal Behavior, Insects & People, and Genes & Behavior classes, University of Illinois, 2002, 2003, 2004, 2007, 2008

Teaching Assistant of 3 courses

Teaching Assistant, Integrative Biology 429 Animal Behavior, University of Illinois, 2005

Teaching Assistant, Biology 120 Genetics, Evolution, and Biodiversity, University of Illinois, 2001-2002

Laboratory Teaching Assistant, Biology 102 Ecology and Organismal Biology, Bard College, 1999

Workshop Instructor for beekeeping class

Instructor, Bees and Beekeeping Two-Day Short Course, University of Illinois, yearly 2000-2003

4.2 GRADUATE PROGRAM MEMBERSHIPS (2010-present for all)

Ecology and Evolutionary Biology (EEB), Iowa State University

Bioinformatics and Computational Biology (BCB), Iowa State University

Interdepartmental Genetics and Genomics (IGG), Iowa State University

Entomology Graduate Program (ENT), Iowa State University

4.3 GRADUATE AND POSTGRADUATE MENTORING

Postdoctoral Mentor to 8 postdoc research associates at Iowa State University, 2 current

Name (role)	Years	Current Position
Dr. Susan Weiner	2010-2013	Associate Professor, Roosevelt University (Chicago, IL)
Dr. Jimena Carrillo-Tripp (co-advisor, with W.A. Miller)	2012-2015	Assistant Professor, Ensenada Center for Scientific Research and Higher Education (Mexico)
Dr. Jennifer Jandt	2012-2015	Senior Lecturer, University of Otago (New Zealand)
Dr. Adam Dolezal	2012-2017	Assistant Professor, University of Illinois at Urbana-Champaign
Dr. Harmen Hendriksma	2017-2019	Bee Research Specialist, Julius Kühn Institute, Germany
Dr. Alex Walton	2018-2022	Postdoctoral Research Associate, University of Alberta
Dr. Katherine Geist	2019-present	Postdoctoral Research Associate, Iowa State University
Dr. Ashley St. Clair	2020	Postdoctoral Research Associate, University of Illinois

Thesis Advisor to 16 graduate students at Iowa State University, 4 current

Name (Role and co-advisor)	Degree, Years	Graduate Program at ISU
Ali Berens (Major advisor, with P. Liu)	PhD, 2010-2015	Bioinformatics and Computational Biology
Melissa Telemeco (Co-advisor, with C. Kelly)	MS, 2013-2014	Ecology and Evolutionary Biology
Daniel Standage (Co-advisor, with V. Brendel)	PhD, 2010-2016	Bioinformatics and Computational Biology
Shunji Li (Co-advisor, with B. Bonning)	MS, 2015-2017	Entomology
Alex Walton (Major advisor)	PhD, 2012-2018	Ecology and Evolutionary Biology
Lindsay Rutter (Co-advisor, with D. Cook)	PhD, 2013-2018	Bioinformatics and Computational Biology
Amy Geffre (Major advisor)	MS, 2014-2018	Ecology and Evolutionary Biology
Ashley St. Clair (Major advisor, with M. O'Neal)	PhD, 2015-2019	Co-Major in Ecology and Evolutionary Biology and Entomology
Nicolette Wackerly (Co-advisor, with J. Pruetz)	MS, 2017-2019	Ecology and Evolutionary Biology
Ge Zhang (Co-advisor, with M. O'Neal)	PhD, 2015-2020	Entomology
Cameron Fay (Major advisor)	MS, 2015-2022	Genetics and Genomics
Ryan Fortune (Major advisor)	MS, 2019-2022	Ecology and Evolutionary Biology
Katherine Borchardt (Major advisor)	PhD, 2019-present	Ecology and Evolutionary Biology
Erika Ibarra-Garibay (Major advisor)	MS, 2021-present	Ecology and Evolutionary Biology
Morgan Moore (Major advisor)	MS, 2021-present	Ecology and Evolutionary Biology
Kathleen Hawks (Co-advisor, with C. Most)	MS, 2022-present	Ecology and Evolutionary Biology

-did not complete degree

Rotation Mentor for 6 graduate students at ISU

Cameron Fay, Lindsay Rutter, Ruolin Liu, Ali Berens, Srihari Radhakrishnan (Bioinformatics and Computational Biology), Kevin Quinteros (Genetics and Genomics), 2010-2015

Member of Graduate Thesis Committee (Program of Study) for 37 students (7 current), ISU

Graduate Program	Degree	Names of Students (* if completed, - if did not complete degree)
Bioinformatics and Computational Biology	PhD	Hsien-chao Chou*, Srihari Radhakrishnan*, Ruolin Liu*
Ecology and Evolutionary Biology	PhD	John Delaney*, Antonio Cordero*, Rebecca Polich*, Justin Van Goor*, Karri Folks, Tori Pocius*, Jessica Judson*, David Delaney*, Andrea Rabinowitz*, Jerilyn Calaor, Ashley Hedrick-, Elizabeth Glynne, Nathan Soley
Ecology and Evolutionary Biology	MS	David Stein*, Maggie Jones*, Ben Johnson*, Alex Mullins*, Christiana-Jo Quinata*, Colton Poore*, Simone Lord*
Entomology	MS	Michael Rausch*
Entomology	PhD	Ellie Field*, Rebekah Reynolds*, Xiaoyi Dou*, Kelsey Fisher*
Interdepartmental Genetics and Genomics	PhD	Mudith Ekanayake, Thea Gessler, Joseph Gallagher*, Garrett Janzen*, Emily Barks-
Interdepartmental Genetics and Genomics	MS	Daniela Flores*
Microbiology	PhD	Dylan Schultz
Wildlife Ecology	MS	Kelsey Shepherd
Molecular, Cellular, and Developmental Biology	MS	Katrina Lutap*

Faculty Mentor for Preparing Future Faculty Program for 6 students and postdocs, ISU

Brittany Cavazos, Manju Elmore, Brooke Bodensteiner, Karin Grimlund, Jessie Colpoys, Justin Van Goor, 2014-2022

4.4 UNDERGRADUATE MENTORING

Academic Advisor for 25 undergraduate students at ISU (19 Biology majors, 6 Genetics majors), 2011-2021

Research Mentor for 39 independent or semi-independent undergraduate research projects as part of 13 different university-wide programs, * student author on publication

Name	Years	Program (University)
Alex Kurtt	2022-present	Science with Practice Program (ISU)
Stephanie Paris	2022-present	Bee and Wasp Squad Internship (ISU Toth Lab)

Denisse Camarena	2022-present	Bee and Wasp Squad Internship (ISU Toth Lab)
Kelsey O'Brien	2020-present	Dean's High Impact Undergraduate Research Program Award (ISU)
Bee Klahs	2021	Bee and Wasp Squad Internship (ISU Toth Lab)
Danielle Holthaus	2021-present	Bee and Wasp Squad Internship (ISU Toth Lab)
Julianna Hernandez	2021-2022	ISU Honors Thesis and Bee and Wasp Squad Internship (ISU Toth Lab)
Ayrin Alexander	2021-present	Bee and Wasp Squad Internship (ISU Toth Lab)
Morgan Moore	2021--present	Bee and Wasp Squad Internship (ISU Toth Lab)
Maria Bellows	2019-2021	Independent Research Credits (ISU)
Paola Soto-Mendez	2020-2021	Independent Research Credits (ISU)
Joy Westercamp	2020-2021	Independent Research Credits (ISU)
Kavita Jain	2019-2021	Dean's High Impact Undergraduate Research Program Award (ISU), Leopold Center Undergraduate Awardee
Nashali Gonzalez	2019-2021	Science with Practice Program (ISU)
Sarah Frazier	2019-2020	Independent Research Credits (ISU)
Roslyn Gray	2016-2018	Dean's High Impact Undergraduate Research Program Award (ISU)
*Jessica Riojas	2018-2019	Honors Thesis (ISU)
Alanah Charles	2017-2018	Independent Research Credits (ISU)
Ian Warren	2017	Honors Thesis (ISU)
*Zoe Pritchard	2016-2018	Honors Thesis (ISU), Independent Research Credits
Miles Lichtenstein	2017-2018	Independent Research Credits (ISU)
Natalie Whitis	2016-2017	Honors Thesis (ISU)
Erin McCall	2015-2017	Independent Research Credits (ISU)
Caitlin Pace	2016-2017	Independent Research Credits (ISU)
*Marit Bakken	2016-2017	Honors Thesis (ISU)
Colby Behrens	2016-2017	Science with Practice Program (ISU), Honors Thesis (ISU)
Kate Hunter	2014-2015	Honors Thesis (ISU)
Amber Haritos	2014-2015	McNair Scholar Program (ISU)
Giselle Narvaez	2014-2015	McNair Scholar Program (ISU)
Carlos Vega	Summer 2012	G. W. Carver Program (ISU)
Chad Soenksen	Summer 2013	Research Experiences for Undergrads (ISU)
Mara Cuebas	Summer 2013	G.W. Carver Program (ISU)

*Jessica Thomson	Summer 2013	G.W. Carver Program (ISU)
Nicole Scavo	Summer 2013	Iowa Lakeside Lab Fellowship (ISU)
Cecile Mercado	2011-2013	Undergraduate Research Assistantship (URA) Program
*Corey Lange	2011-2012	Science with Practice Program (ISU)
David Galbraith (with C. Grozinger)	2009-2010	Honors Thesis (Penn State Univ.)
*Timothy Daugherty (with G. Robinson)	2008-2009	Honors Thesis awarded High Distinction (Univ. of Illinois)
*Adam Meisel (with G. Robinson)	2003	Hughes Undergrad. Research Fellowship (Univ. of Illinois)

Supervisor of 94 student researchers and research assistants (71 at ISU)
82 undergraduates, and 3 graduate level assistants, 3 community members, and 6 technicians, University of Illinois, Pennsylvania State University, and Iowa State University, 2001-present

Graduate Administrator of NSF Undergraduate Mentoring in Environmental Biology Program, University of Illinois, 2002

4.5 HIGH SCHOOL STUDENT AND TEACHER MENTORING

Research Mentor for 7 high school research projects as part of 3 different programs

Name	Years	Program (University)
Jacob Hall (teacher)	Summer 2022	Research Experiences for Teachers Program (ISU)
Alex Conyers (teacher)	Summer 2015	Research Experiences for Teachers Program (ISU)
Kennady Lilly (student)	Summer 2014	Young Engineers & Scientists Prog. (ISU)
Chris Dyer (teacher)	Summer 2013	Research Experiences for Teachers Program (ISU)
Ron Schuck (teacher)	Summer 2012	Research Experiences for Teachers Program (ISU)
Jon Temple (teacher)	Summers 2011-2012	Research Experiences for Teachers Program (ISU)
Vera Zhao (student)	2010-2012	Ames High School-ISU Partnership

5. PUBLICATIONS

Author of 93 publications including 87 in peer-reviewed journals, 1 book chapter, 4 encyclopedia entries, and 1 book review.

Toth in **bold**, * denotes member of Toth laboratory, + denotes undergraduate author

5.1 PAPERS PUBLISHED IN PEER-REVIEWED JOURNALS (total 87)

87. Sumner, S., Favreau, E. Geist*, K., **Toth, A.L.**, and Rehan, S.M. 2023. Molecular patterns and processes in evolving sociality: Lessons from insects. Invited review for: *Special Issue of Philosophical Transactions of the Royal Society*. In press.
86. Favreau, E., Geist, K.*, Sumner, S., and **Toth, A.L.** and, Rehan, S.A. 2022. Co-expression gene networks and machine-learning algorithms unveil a core genetic toolkit for reproductive division of labour in rudimentary insect societies. In press, *Genome Biology and Evolution*.
85. Cass, R.P., Hodgson, E.W., O’Neal, M.E., **Toth, A.L.**, St. Clair, A.L*. and Dolezal, A.G.* Beekeeper, farmer, and landowner attitudes and aspirations for bee conservation in the Midwestern US. *Journal of Integrated Pest Management*.
84. +Riojas-Schnier, J. and **Toth, A.L.** 2022. Insights into insect cognition from mirror-induced behavior in paper wasps. *Behaviour*, 1 (aop): 1-24.
83. *St. Clair, A.L., *Zhang, G., *Dolezal, A.G., O’Neal, M.E., and **Toth, A.L.** 2022. Agroecosystem landscape diversity shapes wild bee communities independent of managed honey bee presence. *Agriculture, Ecosystems & Environment*, 327: 107826.
82. *Zhang, G., *St. Clair, *Dolezal, A.G., **Toth, A.L.**, O’Neal, M.E. 2022. Can Native Plants Mitigate Climate-related Forage Dearth for Honey Bees (Hymenoptera: Apidae)? *Journal of Economic Entomology*, 115 (1): 1-9.
81. *Walton, A. and **Toth, A.L.** 2021. Resource limitation, intra-group aggression and brain neuropeptide expression in a social wasp. *Functional Ecology* 35 (10), 2241-2252.
80. *Borchardt, K.E., Morales, C.L., Aizen, M.A., and **Toth, A.L.** 2021. Plant–pollinator conservation from the perspective of systems-ecology. *Current Opinion in Insect Science*, 47: 154-161.
79. *Walton, A., **Toth, A.L.**, and *Dolezal, A.G. 2021. Developmental environment shapes honeybee worker response to virus infection. *Scientific Reports* 11 (1): 1-12.
78. Teixeira, E.W., de Paiva Daibert, R.M., Júnior, L.A.G., da Silva, M.V.G.B., Florencio Alves, M.L.T.M., Evans, J.D., **Toth, A.L.** 2021. Transcriptomic analysis suggests candidate genes for hygienic behavior in African-derived *Apis mellifera* honeybees. *Apidologie*, 52 (2): 447-462.
77. DeGrandi-Hoffman, G., Corby-Harris, V., Carroll, M., **Toth, A.L.**, Gage, S., deJong, E.W, Graham, H., Chambers, M., Meador, C., Obernesser, B. 2021. The importance of time and place: Nutrient composition and utilization of seasonal pollens by European honey bees (*Apis mellifera* L.). *Insects* 12 (3): 235.

76. *Zhang, G., *St. Clair, A.L., *Dolezal, A.G., **Toth, A.L.**, and O'Neal, M.E. 2021. North American Prairie Is a Source of Pollen for Managed Honey Bees (Hymenoptera: Apidae). *Journal of Insect Science*, 21 (1): 17.
75. Shell, W.A., Steffen, M.A., Pare, H.K., Seetharam, A.S., Severin, A.J., **Toth, A.L.**, and Rehan, S.A. 2021. Sociality sculpts similar patterns of molecular evolution in two independently evolved lineages of eusocial bees. *Communications Biology* 4 (1): 1-9.
74. +Pritchard, Z.A., *Hendriksma, H., *St. Clair, A.L., *Stein, D.S., *Dolezal, A.G., O'Neal, M.E., and **Toth, A.L.** 2021. Do viruses from honey bees endanger wild bees in native prairie habitats? *Environmental Entomology*. 50 (2): 455-466.
73. **Toth, A.L.** and Zayed, A. 2020. The honey bee genome: what *has it been good for?* Invited review for *Apidologie*, 50th anniversary special issue, In press.
72. *St. Clair, A.L., *Dolezal, A.G., O'Neal, M.E., and **Toth, A.L.** 2020. Pan traps for tracking honey bee activity-density: a case study in soybeans. *Insects*. 11(6): 366.
71. *Walton, A., Sheehan, M.J., and **Toth, A.L.** 2020. Going wild for functional genomics: RNA interference as a tool to study gene-behavior associations in diverse species and ecological contexts. *Hormones and Behavior*. 124: 104774.
70. *Stein, D.S., Debinski, D.M., Pleasants, J.M., and **Toth, A.L.** 2020. Evaluating native bee communities and nutrition in managed grasslands. *Environmental Entomology*. 49: 717-725.
69. *Geffre, A.C., Gernat, T., Harwood, G., Jones, B.C., Hamilton, A.R., Bonning, B.C., **Toth, A.L.**, Robinson, G.E., *Dolezal, A.G. 2020. Honey bee virus causes context-dependent changes in host social behavior. *Proceedings of the National Academy of Sciences USA*. 117 (19): 10406-10413.
68. *Zhang, G., *St. Clair, A.L., *Dolezal, A.G., **Toth, A.L.**, and O'Neal, M.E. 2020. Honey bee pollen forage in a highly-cultivated agroecosystem: relationships to landscape complexity and virus resistance. *Journal of Economic Entomology*. 113:1062-1072.
67. *St. Clair, A.L., *Dolezal, A.G., *Zhang, G., O'Neal, M.E., and **Toth, A.L.** 2020. Diversified farming in a monoculture landscape: effects on honey bee health and wild bee communities. *Environmental Entomology*. 49: 753-754.
66. Manfredini, F., Arbetman, M., **Toth, A.L.** 2019. A potential role for phenotypic plasticity in invasions and declines of social insects. *Frontiers in Ecology and Evolution*. 7: 375.
65. *Dolezal, A.G., *St. Clair, A.L., *Zhang, G., **Toth, A.L.**, and O'Neal, M. 2019. Native habitat mitigates feast/famine conditions faced by honey bees in an agricultural landscape. *Proceedings of the National Academy of Sciences USA*. 116 (50): 25147-25155. ** Cover Story

64. *Walton, A., Tumulty, J.P., **Toth, A.L.**, Sheehan, M.J. 2019. Hormonal modulation of reproduction in *Polistes fuscatus* social wasps: dual functions in both ovary development and sexual receptivity. *Journal of Insect Physiology*. 120: 103972.
63. Rubenstein, D.R., Ågren, J.A., Carbone, L., Elde, N.C., Hoekstra, H.E., Kapheim, K.M., Keller, L., Moreau, C.S., **Toth, A.L.**, Yeaman, S., Hofmann, H.A. 2019. Coevolution of genome architecture and social behavior. *Trends in Ecology & Evolution*. 34(9): 844. ** Editor's Choice as Top Review Paper of 2019
62. *Hendriksma, H.P., **Toth, A.L.**, Shafir, S. 2019. Individual and colony level foraging decisions of bumble bees and honey bees in relation to balancing of nutrient needs. *Frontiers in Ecology and Evolution*. 7: 177.
61. *Rutter, L., *Carrillo-Tripp, J., Bonning, B.C., Cook, D., **Toth, A.L.**, *Dolezal, A.G. 2019. Transcriptomic responses to diet quality and viral infection in *Apis mellifera*. *BMC Genomics*. 20 (1): 412.
60. *Dolezal, A.G., *Carrillo-Tripp, J., Judd, T.M., Miller, W.A., Bonning, B.C., **Toth, A.L.** 2019. Interacting stressors matter: diet quality and virus infection in honeybee health. *Royal Society Open Science*. 6(2): 181803.
59. Suryanarayanan, S., Kleinman, D.L. Gratton, C., **Toth, A.L.**, et al. (8 more authors) 2018. Collaboration matters: honey bee health as a transdisciplinary model for understanding real-world complexity. *BioScience*. 68 (12): 990-995.
58. *Walton, A., *Dolezal, A.G., +Bakken, M., and **Toth, A.L.** 2018. Hungry for the queen: Nutritional environment affects honey bee worker pheromone response in a life stage dependent manner. *Functional Ecology*. 32 (12): 2699-2706.
57. Rehan, S.A., Steffen, M., *Fay, C.R., Glastad, K., Hunt, B.G., and **Toth, A.L.** 2018. Conserved genes underlie phenotypic plasticity in an incipiently social bee. *Genome Biology and Evolution*. 10 (10): 2749-2758.
56. Miller, S.A., Bluher, S.E., Bell, E., Cini, A., DaSilva, R.C., de Souza, A.R., et al. (20 more authors), **A.L. Toth**, and M.J. Sheehan. 2018. WASPNest: A worldwide assessment of social polistine nesting behavior. *Ecology*. 99 (10): 2405-2405.
55. Dogzhantis, K.A, Harpur, B.A., Rodrigues, A., Beani, L., **Toth, A.L.**, and Zayed, A. 2018. Insects with similar social complexity show convergent patterns of molecular evolution. *Scientific Reports*. 8:10388.
54. Manfredini, F., Brown, M.J.F., and Toth, **A.L.** 2018. Candidate genes for cooperation and aggression in *Polistes dominula* wasps. *Journal of Comparative Physiology A*. 204: 449-463.
53. *Dolezal, A.G. and **Toth, A.L.** 2018. Feedbacks between nutrition and disease in honey bee health. *Current Opinion in Insect Science*. 26: 114-119.

52. Branstetter, M., Childers, A.K., Cox-Foster, D., Hopper, K.R., Kapheim, K.M., **Toth, A.L.**, Worley, K.C. 2017. Genomes of Hymenoptera. *Current Opinion in Insect Science*. 25: 65-75.
51. Weiner, S.A.*; Geffre, A.C.*; and **Toth, A.L.** 2017. Functional genomics in the wild: A case study with paper wasps shows challenges and prospects for RNA-interference in ecological systems. *Genome*. 2017: 1-7.
50. **Toth, A.L.** and Dolezal, A.G.* 2017. Editorial Overview: Integrative approaches to understanding insect sociality: Why physiology is still highly relevant. *Current Opinion in Insect Science*. 22: viii.
49. Jandt, J.M.*; Suryanarayanan, S., Hermanson, J., Jeanne, R.L., **Toth, A.L.** 2017. Maternal and nourishment factors interact to influence offspring developmental trajectories in social wasps. *Proceedings of the Royal Society B*. 284 (1857): 20170651.
48. Berens, A.J.*; Tibbetts, E.A., and **Toth, A.L.** 2017. Cognitive specialization for learning faces is associated with shifts in the brain transcriptome of a social wasp. *Journal of Experimental Biology*. 220 (12): 2149-2153.
47. **Toth, A.L.** 2017. To reproduce or work? Insect castes emerge from socially induced changes in nutrition-related genes. “News and Views” piece for *Molecular Ecology*. 26 (11): 2839-2841.
46. Geffre, A.C.*; Liu, R.*; Manfredini, F. Beani, L., Kathirithamby, J., Grozinger, C.M., and **Toth, A.L.** 2017. Transcriptomics of an extended phenotype: parasite manipulation of wasp social behavior correlates with shifting expression of caste-related genes. *Proceedings of the Royal Society B*. 284 (1852): 20170029.
45. **Toth, A.L.**, Rehan. S.M. 2017. Molecular evolution of insect sociality: an eco-evo-devo perspective. *Annual Review of Entomology*. 62: 419-442.
44. Dolezal, A.G.*; Scavo, N.A.+; Hendrix, S., Harris, M., O’Neal, M., **Toth, A.L.** 2016. Honey bee viruses in wild bees: viral prevalence, loads, and experimental inoculation. *PLoS One*. 11 (11): e0166190.
43. **Toth, A.L.**, Sumner, S., Jeanne, R.L. 2016. Patterns of longevity across a sociality gradient in vespid wasps. *Current Opinion in Insect Science*. 16: 28-35.
42. Dolezal, A.G.*; Carrillo-Tripp, J.*; Miller, W.A., Bonning, B.C. **Toth, A.L.** 2016. Intensively cultivated landscape and *Varroa* mite infestation are associated with reduced honey bee nutritional state. *PLoS One*. 11 (4): e0153531.
41. Smith, G.W.+; Debinski, D.M, Scavo, N.A.+; Lange, C.J.+; Delaney, J.T., Moranz, R.A., Miller, J.R., Engle, D.M. and **Toth, A.L.** 2016. Bee abundance and nutritional status in relation to grassland management practices in an agricultural landscape. *Environmental Entomology*. 45 (2): 338-347.

40. Carrillo-Tripp, J.*, Dolezal, A.G.*, Goblirsch, M.J., Miller, W.A., **Toth, A.L.**, and Bonning, B.C. 2016. *In vivo* and *in vitro* infection dynamics of honey bee viruses. *Scientific Reports* 6: 22265.
39. Walton, A.* and **Toth, A.L.** 2016. Individual variation in honey bee behavior shows hallmarks of personality. *Behavioral Ecology and Sociobiology*. 70 (7): 999.
38. Standage, D.S., Berens, A.J., Glastad, K., Severin, A.J., Brendel, V., and **Toth, A.L.** 2016. Genome, transcriptome, and methylome sequencing of a primitively social wasp reveal a dramatic reduction in DNA methylation in a social insect. *Molecular Ecology*. 25 (8): 1769-1784.
37. Berens, A.J., Tibbetts, E.A., and **Toth, A.L.** 2016. Candidate genes for individual recognition in *Polistes fuscatus* paper wasps. *Journal of Comparative Physiology A*. 202: 115-129.
36. Durant, D.R., Berens, A.J.*, **Toth, A.L.**, and Rehan, S.A. 2015. Transcriptional profiling of overwintering gene expression in the small carpenter bee *Ceratina calcarata*. *Apidologie*. 47 (4): 572-582.
35. Dolezal, A.G.*, Carrillo-Tripp, J.*, Miller, W.A., Bonning, B.C., and **Toth, A.L.** 2015. Pollen contaminated with field-relevant levels of cyhalothrin affects honey bee survival, nutritional physiology, and pollen consumption behavior. *Journal of Economic Entomology*. 109 (1): 41-48.
34. Sheehan, M.J., Botero, C.A., Hendry, T.A., Sedio, B.E., Jandt, J.M.*, Weiner, S.A.*, **Toth, A.L.**, and Tibbetts, E.A. 2015. Different axes of environmental variation explain the presence versus extent of cooperative nest founding associations in *Polistes* paper wasps. *Ecology Letters*. 18 (10): 1057-1067.
33. Rehan, S.M. and **Toth, A.L.** 2015. Climbing the social ladder: the molecular evolution of sociality. *Trends in Ecology and Evolution*. 30 (7): 426-433.
32. Jandt, J.M.*, Thomson, J.L.+, Geffre, A.C.* and **Toth, A.L.** 2015. Lab rearing perturbs social traits: a case study with *Polistes* wasps. *Behavioral Ecology*. 26 (5): 1274-1284.
31. Jandt, J.M.* and **Toth, A.L.** 2015. Physiological and genomic mechanisms of social organization in wasps (Hymenoptera: Vespidae). *Advances in Insect Physiology* 48: 95-130.
30. Berens, A.J.*, Junt, J.H., and **Toth, A.L.** 2015. Nourishment level affects caste-related gene expression in *Polistes* wasps. *BMC Genomics*. 16: 235.
29. Berens, A.J.*, Hunt, J.H., and **Toth, A.L.** 2015. Comparative transcriptomics of convergent evolution: Different genes but conserved pathways underlie caste phenotypes across lineages of eusocial insects. *Molecular Biology and Evolution*. 32: 690-703.
28. Rehan, S.M., Berens, A.J.*, **Toth, A.L.** 2014. At the brink of eusociality: transcriptomic correlates of worker behaviour in a subsocial bee. *BMC Evolutionary Biology*. 14: 260.
27. Skaggs, R., Jackson, J.C.+, **Toth, A.L.**, S. S. Schneider 2014. The vibration signal and ritualized aggression in the honey bee, *Apis mellifera*. *Animal Behaviour*. 98: 102-111.
26. Beani, L., Dessi-Fulgheri, F., Cappa, F. and **Toth, A.L.** 2014. The trap of sex in social insects: from the female to the male perspective. *Neuroscience & Biobehavioral Reviews*. 46: 519-533.

25. Chowdhury, N.L., Cook, D., Hofmann, H., Majumder, M., and **Toth, A.L.** 2014. Visual statistical inference for high dimension, small sample size data. *Computational Statistics*. 2014: 1-24.
24. Carrillo-Tripp, J.*, Krueger, E.N., Harrison, R.L., **Toth, A.L.**, Miller, W.A. and Bonning, B.C. 2014. Lymantria dispar iflavivirus 1 (LdIV1), a new model to study iflaviral persistence in lepidopterans. *Journal of General Virology*. 95: 2285-96.
23. Miller, W.A., Carrillo-Tripp, J.*, Bonning, B.C., Dolezal, A.G.*, and **Toth, A.L.** 2014. Letter to the Editor: Conclusive Evidence of Replication of a Plant Virus in Honeybees Is Lacking. *mBio*. 5:3 1 e00985-14.
22. **Toth, A.L.**, Tooker, J.T., Radhakrishnan, S.R.*, Menard, R., Henshaw, M.T., and Grozinger, C.M. 2014. Shared genes related to aggression, rather than chemical communication, are associated with reproductive dominance in paper wasps (*Polistes metricus*). *BMC Genomics*. 15: 75.
21. Jandt, J.M.*, Tibbetts, E.A. and **Toth, A.L.** 2014. *Polistes* paper wasps: a model genus for the study of social dominance hierarchies. *Insectes Sociaux*. 61(1): 11-27.
20. Dolezal, A.G.* and **Toth, A.L.** 2013. Honey bee sociogenomics: A genome scale perspective on bee social behavior and health. *Apidologie*. 2013: 1-21.
19. Weiner, S.A.*, Galbraith, D.A., Adams, D.C., Valenzuela, N., Noll, F.B., Grozinger, C.M., **Toth, A.L.** 2013. A survey of DNA methylation across social insect species, life stages, and castes reveals abundant and caste-associated methylation in a primitively social wasp. *Naturwissenschaften*. 100(8): 795-799.
18. Ament, S.A., Blatti, C., Alaux, C., Wheeler, M.M., **Toth, A.L.**, LeConte, Y., Hunt, G.J., Guzmán-Novoa, E., DeGrandi-Hoffman, G., Uribe-Rubio, J.L., Amdam, G.V., Page, R.E., Rodriguez-Zas, S.L., Robinson, G.E., and Sinha, S. 2012. Meta-analysis of brain gene expression reveals shared cis-regulatory mechanisms for different behavior maturation factors. *Proceedings of the National Academy of Sciences, USA*. 109(26): E1801-10.
17. Weiner, S.A.* and **Toth, A.L.** 2012. Epigenetics in social insects: a new direction for understanding the evolution of castes. *Genetics Research International*. 2012: 609810.
16. Tibbetts, E.A., Skaldina, O., Zhao, V.W., **Toth, A.L.**, Skaldin, M., Beani, L., and Dale, J. 2011. Geographic variation in status signals in *Polistes dominulus* paper wasps. *PLoS ONE*. 6 (12): e28173.
15. Daugherty, T.H.F., **Toth, A.L.**, and Robinson, G.E. 2011. Nutrition and division of labor: Effects on foraging and brain gene expression in the paper wasp *Polistes metricus*. *Molecular Ecology* 20: 5337-5347.
14. Henshaw, M.T., **Toth, A.L.**, and Young, T.J. 2011. Development of new microsatellite loci for the genus *Polistes* from publically available expressed sequence tag (EST) sequences. *Insectes Sociaux* 58: 581.585.
13. Singh, R., Levitt, A.L., Rajotte, E.G., Holmes, E.C., Ostiguy, N., vanEngelsdorp, D., Lipkin, W.I., dePamphilis, C.W., **Toth, A.L.**, and Cox-Foster, D.L. 2010. RNA viruses in hymenopteran pollinators: evidence of inter-taxa virus transmission via pollen and potential impact on non-Apis hymenopteran species. *PLoS ONE* 5: e14357.

12. Hunt, J.H., Wolschin, F., Mutti, N., Henshaw, M.T., Newman, T.C., **Toth, A.L.** and Amdam, G.V. 2010. Differential gene expression and protein abundance evince ontogenetic bias toward castes in a primitively social wasp. *PLoS ONE*, 5: e10674.
11. **Toth, A.L.**, Varala, K., Henshaw, M.T., Rodriguez-Zas, S.L., Hudson, M.E. and Robinson, G.E. 2010. Brain transcriptomic analysis in paper wasps identifies genes associated with division of labor across social insect lineages. *Proceedings of the Royal Society B*, 277:2139-2148.
10. **Toth, A.L.** and Robinson, G.E. 2010. Evo-devo and the evolution of social behavior: Brain gene expression analyses in social insects. *Cold Spring Harbor Symposium on Quantitative Biology*, LXXIV: 1-9.
9. **Toth, A.L.**, Bilof, K.J.+ Henshaw, M.T., Hunt, J.H., and Robinson, G.E. 2009. Lipid stores, ovary development, and gene expression in *Polistes metricus* females. *Insectes Sociaux*. 56:77-84.
8. Smith, C.R.*, **Toth, A.L.***, Suarez, A.V., and Robinson, G.E. 2008. Genetic and genomic analyses of the division of labour in insect societies. *Nature Reviews Genetics*, 9:735-748. * these authors contributed equally
7. **Toth, A.L.**, Varala, K., Newman, T.C., Miguez, F.E., Hutchison, S., Willoughby, D., Simons, J.F., Egholm, M., Hunt, J.H., Hudson, M.E., and Robinson, G.E. 2007. Wasp gene expression supports an evolutionary link between maternal behavior and eusociality. *Science*, 318: 441-444. (cited in “Faculty of 1000 Biology”)
6. **Toth, A.L.** and Robinson, G.E. 2007. Evo-devo and the evolution of social behavior. *Trends in Genetics*, 23: 334-341.
5. Honey bee Genome Sequencing Consortium. 2006. Insights into social insects from the genome of the honeybee *Apis mellifera*. *Nature*, 443: 931-948.
4. Kunieda, T.*, Fujiyuki, T.*, Kucharski, R.*, Foret S.*, Ament, S.*, **Toth, A.L.***, Ohashi, K., Takeuchi, H., Kamikouchi, A., Kage, E., Morioka, M., Beye, M., Kubo, T., Robinson, G.E., & Maleszka, R. 2006. Carbohydrate metabolism genes and pathways in insects: insights from the honey bee genome. *Insect Molecular Biology*, 15: 563-576. * these authors contributed equally
3. **Toth, A.L.**, Kantarovich, S.+ Meisel, A.F.+ & Robinson, G.E. 2005. Nutritional status influences socially-regulated foraging ontogeny in honey bees. *Journal of Experimental Biology*, 208: 4641-4649.
2. **Toth, A.L.** & Robinson, G.E. Nutrition and division of labor in honey bees. 2005. *Animal Behaviour*, 69: 427-435. (cited in “Faculty of 1000 Biology”)
1. Leoncini, I., Le Conte, Y., Costagliola, G., Plettner, E., **Toth, A.L.**, Wang, M., Huang, Z., Bécard J-M, Crauser, D., Slessor, K.N. & Robinson, G.E. 2004. Regulation of behavioral maturation in honey bees by a primer pheromone, *Proceedings of the National Academy of Sciences, USA*, 101: 17559-17564.

5.2 PAPERS IN PREPARATION FOR PEER-REVIEWED JOURNALS (total 7)

Walton, A.* and **Toth, A.L.** Nutritional inequalities structure worker division of labor in insects societies. In review, *Current Opinion in Insect Science*.

Zhang, G.*, Murray, C.G., St. Clair, A.L.*, Cass, R.P., Dolezal, A.G.*, Schulte, L.A., **Toth, A.L.**, and O’Neal, M.E. Enhancing corn-soybean landscapes with prairie strips improves honey bee colony health and productivity. In revision at *Journal of Applied Ecology*.

Borchardt, K.E.*, Kadelka, C., Schulte, L.A., **Toth, A.L.** An ecological networks approach reveals restored native habitat benefits wild bees in agroecosystems. Intended for: *Journal of Applied Ecology*.

Toth, A.L. Ibarra-Garibay, E.*, Zattara, E., Morales, C.L., Arbetman, M., and Aizen, M. Invasive and native Patagonian bumble bees differ in phenology and thermal physiology. Intended for: *Insectes Sociaux*.

St Clair, A.L.*, Hendriksma, H.*, Zhang, G.*, St. Clair, A.L.*, Dolezal, A.G.*, O’Neal, M.E., and **Toth, A.L.** Interactions between insecticide exposure and habitat quality affect bee health in an agricultural landscape. Intended for: *Agriculture, Ecosystems, and Environment*.

5.3 BOOK OR ENCYCLOPEDIA CHAPTERS (4) AND BOOK REVIEW (1)

Toth, A.L. and Robinson, G.E. 2020. “Genomics of Social Insects.” In: *Encyclopedia of Social Insects*. Starr, C.S, Editor, Elsevier.

Toth, A.L. and Rehan, S.A. 2019. “Evolutionary Behavioral Genetics.” In: *Encyclopedia of Animal Behavior*. Breed, M. D. & Moore, J., Editors. Academic Press, Oxford.

Hunt, J.H. and **Toth, A.L.** 2017. “Sociality in wasps”. In: *Comparative Social Evolution*. Rubenstein, D.R. and Abbot, P., Editors. Oxford University Press.

Toth, A.L. 2010. “Integrating Evolution, Development, and Behavior.” In: *Encyclopedia of Animal Behavior*. Breed, M. D. & Moore, J., Editors. Academic Press, Oxford.

Toth, A.L. 2008. Book review: *Integrating Evolution and Development: from Theory to Practice*. *American Journal of Human Biology*, 120:739-740.

5.4 CITATION INDICES

<u>Citation index</u>	<u>Total</u>	<u>Since 2018</u>
Number of citations	7524	3513
H-index	38	33
i10-index	66	66

6. GRANTS

Principal Investigator or Co-PI on 25 research grants totaling over \$6.8M with \$4.2 M to my program since coming to ISU

6.1 RESEARCH GRANTS

Pending Research Grants

Agency/Type	Years/Role	Title	Amount (Toth lab portion)
North American Pollinator Protection Campaign	2023-2024, PI (M. Moore, coPI)	Developing health biomarkers for bumble bees to inform conservation of imperiled species	\$10,000 (all)

Current Research Grants

Agency/Type	Years/Role	Title	Amount (Toth lab portion)
USDA, North Central Sustainable Agriculture Research and Education	2023-2025, coPI (M. O’Neal, PI, L. Schulte Moore, coPI)	Prairie strips for enhanced honey production: Can conservation improve apiculture?	\$250,000 (approximately a third)
US Fish and Wildlife Service, Partners for Fish and Wildlife Program	2022-2025, coPI (A. Tucker, PI)	Evaluating Rusty Patched Bumblebee Conservation Efforts to Inform Site-Specific Management Actions	\$250,000 (approximately half)
NSF-DEB Evolutionary Processes- NERC (Natural Environment Research Council, UK)	2019-2022, CoPI (S. Sumner, PI, S. Rehan, CoPI)	Evolutionary genetics of a major transition in evolution	\$1,087,057 (\$461,797)
NSF-EDGE (Enabling Discovery through Genomics) Program	2018-2022, PI (M. Sheehan, R. Reed, coPIs)	Functional genomics in <i>Polistes</i> wasps, a model for integrative organismal biology	\$815,610 (\$775, 610)
National Geographic Foundation	2019-2022, CoPI (M. Arbetman, PI, M. Aizen, C. Morales, E. Zattara, C. Galen, coPIs)	Bee Listeners: A collaborative initiative for conservation of the world’s largest bumble bee using acoustic monitoring	\$25,000 (\$2,000)
National Geographic Foundation	2019-2022, CoPI (M. Arbetman, PI, M. Aizen, C. Morales, E. Zattara, coPIs)	Is continuous importation of European bumble bees driving the Patagonian bumble bee to extinction?	\$40,000 (\$4,000)

Past Research Grants

Agency/Type	Years/Role	Title	Amount (Toth lab portion)
Foundation for Food and Agricultural Research	2017-2020, Co-PI (L. Schulte-Moore, PI, M. O'Neal, S. Bradbury, J. Tyndall, A. Dolezal, coPIs)	Impact of Prairie on Reducing Interacting Stressors on Pollinator Health	\$600,000 (approximately \$100,000)
USDA-NIFA New Frontiers in Pollinator Health: From Research to Application	2017-2021 PI (M. O'Neal, E. Hodgson, A. Dolezal, co-PIs)	Combining crop production and conservation for improved bee health	\$999,317 (approximately half)
USDA-NIFA Insects and Nematodes Foundational Program	2017-2020 Co-PI (M. Gardiner, PI)	Landscape legacy and urban agriculture: Understanding the impact of heavy metal contamination on pollinator health and pollination services	\$500,000 (\$68,181)
NSF-IOS Behavioral Systems	2015-2018 Co-PI (S. Rehan, PI)	Comparative genomics of very early stages in social evolution	\$494,275 (\$209,795)
Eastern Apicultural Society	2017-2018, CoPI (A. St. Clair, PI)	Forage and fecundity: Does landscape affect queen quality and brood production?	\$10,000 (all)
NSF-IOS Behavioral Systems (student grant)	2017-2019 PI (A. Walton, Co-PI)	DISSERTATION RESEARCH: Does resource limitation promote cooperation? Nutrition restriction and social cohesion in insect societies	\$19,466 (all)
Leopold Center for Sustainable Agriculture	2015-2018 PI (M. O'Neal, A. Dolezal, E. Hodson, CoPIs)	Effects of landscape and on-farm diversity on the health and diversity of wild and managed bees	\$103,626 (not specified, majority to Toth)
Center for Global and Regional Environmental Change	2015-2017 PI (A. Dolezal, co-PI)	Effects of chronic and acute nutritional stress on honey bee health	\$30,000 (all)
North American Pollinator Protection Campaign	2015-2016 CoPI (A. Dolezal, PI)	Viral hijackers: Do viruses manipulate honey bee behavior to increase their transmission?	\$10,000 (all)
United Soybean Board	2014-2016 Co-PI (M. O'Neal, PI, A. Dolezal, CoPI)	Do bees benefit soybeans, and vice versa?	\$200,000 (not specified, estimate half \$100K to Toth)
NSF-IOS Behavioral Systems	2013-2015 PI (A. Berens, CoPI)	DISSERTATION RESEARCH: Uncovering molecular mechanisms of facial recognition using comparative transcriptomics	\$19,233 (all)
NSF-IOS Behavioral Systems	2012-2015 PI (R. Jeanne, CoPI)	Epigenetic, transcriptomic, and behavioral impacts of a maternal signal during wasp caste development	\$439,498 (all, includes an REU supplement)

USDA-NIFA Insects and Nematodes Foundational Program	2012-2015	PI (B. Bonning, A. Miller, coPIs)	Interactions between honey bee nutrition and viral infection: An integrative approach to Colony Collapse Disorder	\$494,000 (all)
NSF-IOS Evolution of Developmental Systems	2011-2013	PI	DNA Methylation and the Evolution of Social Insect Castes	\$325,216 (all)
ISU Center for Virus-Insect Interactions	2013-2014	PI (M. Harris, M. O'Neal, CoPIs)	Understanding landscape impacts on the incidence of viruses of-concern to pollinator health in honey bees and wild bees	\$38,939 (all)
University of North Carolina- Charlotte Internal Funds	2011-2012		Molecular Basis for Ritualized Aggression and the Evolution of the Vibration Signal of the Honey Bee, <i>Apis mellifera</i>	\$12,000 (\$6,000)
ISU Center for Integrated Animal Genomics	2010-2011	PI (X. Huang, CoPI)	The social wasp genome project: <i>de novo</i> sequencing of a key species in ecology and evolution	\$21,000 (all)
USDA-NIFA Insects and Nematodes Foundational Program	2008-2010	PI (C. Grozinger, co-PI)	Postdoctoral fellowship: Using comparative genomics to uncover conserved mechanisms for insect reproduction and social behavior	\$125,000 (all)
NSF-IOS Behavioral Systems	2004-2005	CoPI (G. Robinson, PI)	DISSERTATION RESEARCH: Nutritional influences on social insect division of labor	\$10,000 (all)
University of Illinois internal funds	2002-2004	(student grants)	10 internal research and travel grants	\$21,500 in total (all)
Organization for Tropical Studies	2001	(student grant)	Post-course Research Grant	\$2000 (all)

6.2 NON-RESEARCH GRANTS

Funding received for conference and/or instructional projects

Agency/Type	Years/Role	Title	Amount
USDA-NIFA Conference Grant	2015 PI (J. Gadau, C. Grozinger, CoPIs)	Interactions, Innovations & Insights for Pollinator Research: Cold Spring Harbor Lab. Meeting on Biology & Genomics of Social Insects	\$9550
ISU, Scholarship of Teaching and Learning	2014-2015 PI (A. Worthington, A. Walton, CoPIs)	Effects of independent research on attitudes toward and understanding of science: a case study with an animal behavior class and lab	\$1200

ISU, Liberal Arts and Sciences Computer Advisory Committee	2012	High-performance computing resources for new training opportunities in genomic data analysis	\$17,901
	CoPI (A. Severin, G. Luecke, CoPIs)		

7. ACADEMIC HONORS

Award Recipient of 25 academic honors, internal and external, over all career stages

7.1 FACULTY AWARDS

Bailey Career Development Award, Iowa State University, 2023-2025

Innovation and Entrepreneurship Faculty Fellow, College of Agriculture and Life Sciences, Iowa State University, 2022

Rossmann-Manatt Faculty Development Award, College of Agriculture and Life Sciences, Iowa State University, 2021

Exemplary Faculty Mentor Award, Office of the Senior Vice President and Provost, Iowa State University, 2020

Fulbright Scholar, Science and Technology (Western Hemisphere), US-Argentina Fulbright Commission, 2019

Outstanding New Investigator Award, Animal Behavior Society, 2017

Finalist (nominated, not awarded), Women of Innovation Award, Rising Star Category, Technology Association of Iowa, 2016

Early Achievement in Research Award, College of Agriculture and Life Sciences, Iowa State University, 2014

7.2 POSTDOCTORAL AWARDS

USDA-NIFA Postdoctoral Fellowship Award (Grant), 2008-2010

Institute for Genomic Biology Fellows' Symposium, Post-doctoral Poster Award, 2007

7.3 GRADUATE STUDENT AWARDS

National Awards

Runner Up, International Union for the Study of Social Insects, George Eickwort Student Award, 2007

International Union for the Study of Social Insects Travel Award, 2006

P.E.O. Scholar Award; International Chapter of the P.E.O. Sisterhood (\$10,000), 2004

Entomological Society of America President's Prize for the Student Competition First Place, 10-Minute Oral Presentation, Section Cb/Cc, 2003

Entomological Society of America President's Prize for the Student Competition First Place, 10-Minute Oral Presentation, Section Cb/Cc, 2002

Honorable Mention; NSF Graduate Research Fellowship Competition, 2002

Animal Behavior Society Founder's Poster Award, 2002

University and Program-Wide Awards

Procter and Gamble Doctoral Student Research Award, U. Illinois, 2006

Emerson Award for Outstanding Student in School of Integrative Biology, U. Illinois, 2006

University Fellowship from Graduate College, U. Illinois, 2005

Edwin M. Banks Award for Outstanding Student in Animal Behavior, U. Illinois, 2005

Agricultural Genome Sciences and Public Policy Program Fellowship, U. Illinois, 2003-5

Incomplete List of Teachers Rated Excellent by Students, University of Illinois, 2002 & 2003

Best Doctoral Presentation Award, Graduates in Ecology & Evolutionary Biology Symposium 2002, U. Illinois, 2002

John G. & Evelyn Hartman Heiligenstein Outstanding Teaching Assistant in Biology 120, U. Illinois, 2002

Program in Ecology & Evolutionary Biology Graduate Fellowship, U. Illinois, 2000-2001

Hudsonia Award in Environmental Science; Bard College, 1999

8. SCHOLARLY PRESENTATIONS

8.1 PRESENTATIONS AT SCIENTIFIC CONFERENCES

Invited Speaker at 43 (* 2 canceled due to COVID-19) national and international conferences, with **4 plenaries and 3 keynotes**

43. Entomological Society of America, Invited Symposium Speaker, "Is there a genetic toolkit for insect sociality? A synthesis across taxa and approaches", Vancouver, BC Canada, 2022
42. International Congress of Entomology, Invited Symposium Speaker "Subtle subterfuge: Parasite manipulation of phenotypic plasticity in social insect hosts", (*canceled due to COVID-19, may be rescheduled)
41. International Union for the Study of Social Insects, Invited Symposium Speaker "Nutritional inequalities structure division of labor in insect societies", San Diego, CA, 2022
40. International Union for the Study of Social Insects, European Union Section "Is DNA Methylation Related to Sociality in Wasps?" Invited Symposium Speaker, Virtual Conference, 2021
39. World Wide Neuro Virtual Conference Series, Systems Neuroecology Section,

- “Integrative genomics of paper wasp behavior: Molecular underpinnings of complex traits and insights into social evolution” Virtual Series, 2021
38. Entomological Society of America, Invited Member Symposium Speaker, “Ethological Genomics: Integrating Sequence, Functionality, Ecology, and Evolution for a Systems Understanding of Insect Behavior”, Virtual Conference 2020
 37. Apimondia (International Federation of Beekeepers’ Associations) International Congress, “Nutritional health of honey bees in a changing world”, **Symposium Lead-Off Speaker**, Montreal, Canada 2019
 36. Animal Behavior Society, **Plenary Speaker**, “Building a superorganism: Integrative Insights into the Evolution and Regulation of Insect Sociality”, Chicago, IL 2019
 35. Cold Spring Harbor Conference on Social Insect Biology and Genomics, **Plenary Speaker**, “Molecular underpinnings of cooperation and conflict in *Polistes* wasps”, Cold Spring Harbor, NY, 2018
 34. Congress of the International Union for the Study of Social Insects, Invited Symposium Speaker, “Genomic and environmental factors influencing caste development in *Polistes* wasps”, Guarujá, Brazil, 2018
 33. Entomological Society of America, Invited Symposium Speaker, Denver CO “Flexible castes in social wasps: Nutritional and social environments shape transcriptomic fate”, Denver CO, 2017
 32. Max Planck Symposium on Epigenetics meets Organismal Biology, Invited Speaker “Epigenetics, genomic plasticity, and the evolution of castes in social insects”, Berlin, Germany 2017
 31. Symposium on Social Evolution and Genome Complexity, Invited Speaker “Genomic insights into social evolution from primitively social wasps”, Columbia University, New York, NY 2017
 30. International Congress of Entomology, Symposium Speaker “*Polistes* wasps: a model for social theory in the genomic era”, Orlando, FL 2016
 29. International Conference in Pollinator Biology, Health and Policy, **Plenary Speaker** “Landscape and diet diversity influence bee nutritional health”, State College, PA 2016
 28. Entomological Society of America, Invited Symposium Speaker “*Polistes* wasps as a neurogenomic model for complex behavior”, Minneapolis, MN 2015
 27. Howard Hughes Medical Institute, Janelia Research Campus Conference on Behavioral Epigenetics, Invited Speaker, “DNA methylation is not associated with sociality in primitively social wasps”, Ashburn, VA 2015
 26. Gordon Conference on Ecological and Evolutionary Genomics, Invited Speaker, “Genomic explorations into the evolution of social behavior using *Polistes* paper wasps”, Biddington, ME 2015
 25. Templeton Foundation Conference on Organismality, Invited Speaker, “How conflict structures cooperation in paper wasps,” St. Louis, MO 2015
 24. Bee Symposium, Mondavi Center for Honey and Pollination, Invited Speaker,

- “Interactions between nutritional stress and viruses affect honey bee health,” Davis, CA 2015
23. Cold Spring Harbor Laboratory Meeting on Biology and Genomics of Social Insects, Invited Speaker, “Genomics of *Polistes* paper wasps: Insights and opportunities for studying the evolution of sociality”, Cold Spring Harbor, NY 2015
 22. Entomological Society of America, Symposium Speaker, “Epigenetics in paper wasps: insights into the evolution of sociality?”, Portland, OR 2014
 21. USDA Honey Bee Forage and Nutrition Summit, Invited Speaker, “Honey bee nutritional stress: interactions between individual physiology, disease, and landscape”, Washington, DC, 2014
 20. International Union for the Study of Social Insects, International Congress, **Plenary Speaker**, “Genomic and epigenetic regulation of behavior in primitively eusocial paper wasps: insights into social evolution”, Cairns, Australia, 2014
 19. Gordon Research Conference on Genes and Behavior, Invited Speaker, “Epigenetics and the evolution of castes in social insects: The case of DNA methylation in primitively social wasps”, Galveston, TX, 2014
 18. Entomological Society of America, Symposium Speaker, “Genomic insights into social evolution from primitively social *Polistes* wasps: Genetic toolkits, epigenetics, and novel genes” (due to illness, slides were delivered by J. Jandt), Austin, TX, 2013
 17. Gordon Research Conference on Neuroethology, Invited Speaker, “Genomic mechanisms of social dominance in paper wasps”, Mt. Snow, VT, 2013
 16. Arthropod Genomics Symposium, **Keynote Speaker**, “Genomics of primitively social *Polistes* wasps: insights and opportunities for understanding the genomic basis of eusociality”, South Bend, IN, 2013
 15. Entomological Society of America, Symposium Speaker, “Progress on the genome of the primitively social wasp *Polistes dominula*”, Knoxville, TN, 2012
 14. Society for Social Neuroscience, Symposium Speaker, “Evolutionary insights from behavioral genomics of natural populations of social bees and wasps”, New Orleans, LA, 2012
 13. Entomological Society of America, Symposium Speaker, “Comparative physiological and genomic analyses of sociality in bees and wasps”, Reno, NV, 2011
 12. Entomological Society of America, Symposium Speaker, “Chemical and transcriptomic signatures of reproductive dominance in *Polistes* wasps”, Reno, NV, 2011
 11. Ecological Society of America, Symposium Speaker, “Evolutionary insights from behavioral genomics of natural populations of bees and wasps”, Austin, TX, 2011
 10. International Social Insect Genomics Research Conference, **Keynote Speaker**, BGI (formerly Beijing Genomics Institute), “Genomic insights into the evolution of sociality from primitively social wasps”, Shenzhen, China, 2011
 9. Center for Integrative Animal Genomics Symposium, Invited Speaker, “Behavioral genomics in natural populations: insights into the evolution of sociality from bees and wasps”, Ames, IA, 2013

8. Entomological Society of America, Symposium Speaker, “Nutritional regulation of division of labor in social bees and wasps”, San Diego, CA, 2010
7. International Union for the Study of Social Insects, International Congress, Symposium Speaker, “Conservation of gene networks associated with bee and wasp social organization,” Copenhagen, Denmark, 2010
6. Entomological Society of America, Symposium Speaker, “Genomics of behavior and sociality in non-model social insects, *Polistes* wasps,” Indianapolis, IN, 2009
5. International Congress of Entomology, Invited Oral Presentation, “Comparative genomic analyses of paper wasps and honey bees: insights into the evolution of social behavior”, Durban, South Africa, 2008
4. Behavioral Ecology of Parasitoids Workshop, **Keynote Speaker**, “Comparative genomic analyses of paper wasps and honey bees: insights into the evolution of social behavior”, Edinburgh, Scotland, 2008
3. Entomological Society of America, Symposium Speaker, “Brain gene expression patterns associated with division of labor in *Apis* and *Polistes*”, Indianapolis, IN, 2006
2. International Union for the Study of Social Insects, International Congress, Symposium Speaker, “Social regulation of foraging in *Apis* & *Polistes*: are there conserved molecular pathways?”, Washington, DC, 2006
1. International Congress of Entomology, Symposium Speaker, “Nutritional influences on age at onset of foraging and brain gene expression in honey bees”, Brisbane, Australia, 2004

Contributed Talks at 8 national and international conferences

8. BOMBUSS (Building Our Methods Using Sound Science) Meeting on Bumble Bee Conservation, Toronto, Canada, 2019
7. Animal Behavior Society Meeting, Oral Presentation, “How maternal interactions shape social fate: Transcriptomics of caste development in a social wasp”, Toronto, Canada 2017
6. International Conference on Pollinator Biology, Health, and Policy, Oral Presentation, “Conservation of gene networks regulating complex social behavior in bees and wasps”, Penn State University, University Park, PA, 2010
5. Center for Chemical Ecology/ Max Planck Institute for Chemical Ecology Mini-symposium, Oral Presentation, “A genomic approach to the evolution of queen pheromones in social insects,” University Park, PA, 2009
4. Cold Spring Harbor Workshop on Honey Bee Genomics and Biology, Oral Presentation, “Social regulation of foraging in insects: are there conserved molecular pathways?” Cold Spring Harbor, NY, 2007
3. International Union for the Study of Social Insects, North American Section Meeting, Oral Presentation, “Division of labor and nutrition: A comparative genomics perspective“, Ft. Tontozona, AZ, 2004

2. Entomological Society of America, Oral Presentation, “The influence of nutrition and social interactions on honey bee division of labor”, Cincinnati, OH, 2003
1. Entomological Society of America, Oral Presentation, “Nutrition and division of labor in honey bees”, Ft. Lauderdale, FL, 2002

Poster Presentations at 7 national and international conferences

7. Center for Behavioral Neurobiology, Poster Presentation, “Transcriptomic and chemical signatures of dominance status in *Polistes metricus* wasps”, Georgia State University, Atlanta, GA, 2010
6. Gordon Conference on Genes and Behavior, Poster Presentation, “Transcriptomic and chemical signatures of dominance status in *Polistes metricus* wasps”, Ventura, CA 2010
5. Cold Spring Harbor 74th Symposium on Quantitative Biology “Evolution: the Molecular Landscape”, Poster Presentation, “Conservation of molecular pathways related to social evolution in bees and wasps”, Cold Spring Harbor, NY, 2009
4. Institute for Genomic Biology Fellows’ Symposium, Poster Presentation, “Brain gene expression patterns associated with behavior in the social wasp *Polistes metricus*”, Urbana, IL, 2007
3. Gordon Conference on Genes and Behavior, Poster Presentation, “Division of labor and nutrition: A comparative genomics perspective”, Ventura, CA, 2006
2. Gordon Conference on Neuroethology, Poster Presentation, “Nutrition and division of labor: A comparative genomics perspective”, Oxford, England, 2005
1. Animal Behavior Society, Poster Presentation, “Nutrition and division of labor in honey bees”, Bloomington, IN, 2002

Co-Author on over 50 poster and oral presentations by my students and postdocs at national and international conferences, *since coming to ISU in 2010*

8.2 INVITED SEMINARS

Invited Seminar Speaker for 52 seminars at regional, national, and international universities, including two **featured “named” lectures**

* Planned for 2020-21, rescheduled for a later date due to COVID-19 pandemic

52. University of Rochester, Biology Seminar Series, 2022
51. University of California at Riverside, Entomology Seminar Series, 2020 *cancelled due to COVID-19, being rescheduled for 2023
50. University of Kansas, Department of Entomology, **Annual Charles Michener Lecture**, Invited Seminar, Building a superorganism: Integrative Insights into the Evolution and Regulation of Insect Sociality” 2021

49. Carleton University (Canada), Department of Biology, **Annual George Carmody Lecture**, “Building a Superorganism: Insights into the Evolution and Regulation of Sociality from Bees and Wasps” Invited Seminar, 2021, Virtual due to COVID-19
47. University of Florida, Department of Biology Seminar Series, “Building a superorganism: Molecular evolution of sociality in bees and wasps”, Gainesville, FL, 2020
46. Iowa State University, Math-Bio Seminar Series, “Building a Superorganism: Social Insects as Models for Studying Biological Complexity”, 2020
45. York University Biology Department Seminar Series, “Building a superorganism: Integrative Insights into the Evolution and Regulation of Insect Sociality”, Toronto, Canada, 2019
44. Iowa State University, Ecology and Evolutionary Biology Seminar Series “Sabbatical update: Conservation of the Giant Patagonian Bumble Bee”, 2020
43. Instituto Nacional de Tecnología Agropecuaria, Seminar for beekeepers (in Spanish), “¿Comilona o hambruna? La salud nutricional de la abeja melífera en agrosistemas”, Bariloche, Argentina, 2019
42. Universidad Nacional del Comahue, Seminar for Biology Students (in Spanish), “Construyendo un Superorganismo: La evolución y regulación de la sociabilidad en abejas y avispas”, Bariloche, Argentina, 2019
41. Instituto Nacional de Tecnología Agropecuaria, Insect Populations Laboratory Seminar (in Spanish), Bariloche, Argentina, “Exploración genómica de la evolución de la sociabilidad usando las avispas de papel *Polistes*”, 2018
40. Universidad Nacional de Río Negro, Seminar for Instituto de Investigaciones en Recursos Naturales, Agroecología, y Desarrollo Rural (in Spanish), “La salud de la abeja melífera en agrosistemas de cultivos intensivos”, El Bolsón, Argentina, 2018
39. Universidad Nacional del Comahue, Seminar for Ecotonal Laboratory Research Group (in Spanish), Bariloche, Argentina, “Genómica y evolución de sociabilidad en avispas y abejas”, 2018
38. Universidad Nacional de Río Negro (Sede Andino), Seminar for Instituto de Investigaciones en Recursos Naturales, Agroecología, y Desarrollo Rural, “La salud de la abeja melífera en agrosistemas de cultivos intensivos”, Bariloche, Argentina, 2018
37. University of Minnesota, Department of Ecology, Evolution, and Behavior Seminar Series, “*Polistes* wasps: a model genus for social behavior in the genomic era”, 2017
36. Iowa State University, Department of Genetics, Cell, and Developmental Biology Seminar Series, “*Polistes* wasps: a model genus for social behavior in the genomic era” 2017
35. The Ohio State University, Department of Entomology Seminar Series, “Landscape and diet diversity influence bee nutritional health”, 2017
34. University of Northern Iowa, Department of Biology Seminar Series, “Interacting stressors in honey bee health: landscape, diet, and disease”, 2017

33. Cornell University, Department of Neurobiology and Behavior Seminar Series, “Climbing the social ladder: Genomic insights into social evolution from bees and wasps”, 2017
32. University of Georgia, Department of Entomology Seminar Series, “Climbing the social ladder: Genomic insights into social evolution from bees and wasps”, 2017
31. Iowa State University Osborn Club (General science lectures), “A more perfect union: Lessons in cooperation from social insects”, 2016
30. University of Iowa, Department of Biology Seminar Series “Climbing the social ladder: Genomic insights into social evolution from bees and wasps”, 2016
29. University of California at Davis, Department of Entomology Seminar Series, “Molecular evolution in insect societies: Insights from primitively social wasps” 2015
28. Washington University in St. Louis, Department of Biology Seminar Series, “Genomics of *Polistes* paper wasps: insights and opportunities for understanding the evolution of sociality”, 2015
27. Indiana University, Department of Biology Seminar Series, “Genomic and epigenetic insights into the evolution of sociality from *Polistes* wasps”, 2014
26. University of Illinois at Urbana-Champaign, Program in Ecology, Evolution and Conservation Seminar, **Student Invited Speaker**, “Genomic insights into social evolution from primitively social *Polistes* wasps: Genetic toolkits, epigenetics, and novel genes”, 2013
25. University of Colorado, Department of Ecology and Evolutionary Biology Seminar, “Genomic insights into social evolution from primitively social *Polistes* wasps: Genetic toolkits, epigenetics, and novel genes”, 2013
24. Iowa Lakeside Laboratory, Summer Research Seminar Series, “Viruses and nutritional stress: the perfect storm for bee population declines?” 2013
23. Iowa State University, Department of Horticulture Seminar Series, “Interactions between honey bee nutritional stress and viruses: Implications for bee health and colony collapse”, 2013
22. University of Missouri, School of Biology Seminar Series, “Comparative physiological and genomic analyses of behavior in bees and wasps”, 2012
21. University of Minnesota, Department of Ecology, Evolution, and Behavior Seminar, “Comparative sociogenomics of bees and wasps: insights into social evolution”, 2012
20. University of Kentucky, Department of Entomology Seminar, “Comparative genomic analyses of social behavior in bees and wasps”, 2012
19. University of Kentucky, EcoLunch Seminar, “Can poor nutrition affect bee health and colony collapse?”, 2012
18. Kansas State University, Department of Entomology Seminar, “Comparative genomic analyses of social behavior in bees and wasps”, 2011
17. University of St. Thomas, St. Paul, Minnesota, Department of Biology Seminar, “Comparative physiology and genomics of sociality: evolutionary insights from bees and wasps”, 2011

16. University of Wisconsin, Madison, Department of Entomology Seminar, “Comparative physiology and genomics of sociality: evolutionary insights from bees and wasps”, 2011
15. Texas A&M University, Department of Entomology Seminar, “Comparative physiology and genomics of sociality in bees and wasps “, 2011
14. Iowa State University, Department of Entomology Seminar, “Comparative genomics of sociality in bees and wasps”, 2011
13. Universidade Estadual Paulista (Sao Jose do Rio Preto, Brazil), Department of Zoology and Botany, “Wasp and bee comparative genomics: Insights into social evolution”, 2011
12. Iowa State University, Bioinformatics and Computational Biology Program Seminar, “Wasp and bee comparative genomics: Insights into social evolution”, 2010
11. Iowa State University, Ecology, Evolution, and Organismal Biology Departmental Seminar, “Integrative analyses of behavior in bees and wasps: insights into the evolution of sociality”, 2010
10. Georgia Institute of Technology, Biology Department Informal Seminar, “Integrative analyses of behavior in bees and wasps: insights into the evolution of sociality”, 2010
9. Emory University, Neurobiology Program “Frontiers” Seminar Series, “Integrative analyses of behavior in bees and wasps: insights into the evolution of sociality”, 2010
8. Pennsylvania State University, Department of Entomology Seminar, “What can genomics and physiology reveal about social evolution? Insights from bees and wasps”, 2009
7. University of Oregon, Center for Ecology and Evolutionary Biology Seminar, “What can genomics and physiology reveal about social evolution? Insights from bees and wasps”, 2009
6. University of Michigan, Department of Ecology and Evolutionary Biology Seminar, “What can genomics and physiology reveal about social evolution? Insights from bees and wasps”, 2009
5. North Carolina State University, Department of Biology Seminar, “What can genomics and physiology reveal about social evolution? Insights from bees and wasps”2009
4. University of Texas at Austin, Section of Integrative Biology Seminar, ““What can genomics and physiology reveal about social evolution? Insights from bees and wasps”, 2008.
3. North Carolina State University, Department of Entomology Research Seminar, “Comparative physiological and genomic analyses of social behavior in honey bees and paper wasps“, 2007
2. The Ohio State University, Department of Entomology Seminar, “Comparative physiological and genomic analyses of social behavior in honey bees and paper wasps”, 2007
1. University of Illinois, Illinois Natural History Survey Seminar, “Genomic analyses of social behavior in a non-model species, the paper wasp *Polistes metricus*”, 2007

9. PROFESSIONAL AND UNIVERSITY SERVICE

9.1 LEADERSHIP POSITIONS

Director of Graduate Education, Ecology and Evolutionary Biology Interdepartmental Graduate Program, Iowa State University, 2022-present

President (3-year term including one year as President-elect, and one year as Past-President), International Union for the Study of Social Insects- North American Section, 2014-2016

Co-President, Graduates in Ecology & Evolutionary Biology, Registered Student Organization, 2005-2006

9.2 COMMITTEE APPOINTMENTS

Scientific Societies

Member of Program Planning Committee for 2022 International Congress, International Union for the Study of Social Insects, 2020-2022

Member of Diversity, Equity, and Inclusion Committee, International Union for the Study of Social Insects- North American Section, 2020-present

Chair of Nominations Committee, International Union for the Study of Social Insects- North American Section, 2012

Member of Nominations Committee, International Union for the Study of Social Insects- North American Section, 2011

Departmental Service

Chair of EEOB Diversity, Equity, and Inclusion Committee, 2020-present

Chair of Seminar Committee, Ecology, Evolution, and Organismal Biology, 2016-2018

Chair of Promotion and Tenure Committee for Dr. Eric Riddell, 2020-present

Chair of Promotion and Tenure Committee for Dr. Grace Wilkinson, 2017-2020

Chair of Advancement and Retention Committee for Dr. Corinna Most, 2018-present

Ecology, Evolution, and Organismal Biology Seminar Committee, ISU, 2014- 2018

Ecology, Evolution, and Organismal Biology Social Committee, ISU, 2010-2014

Member of five search committees (plant evolutionary genomics (EEOB), macroecology (EEOB), animal physiology (EEOB), biological anthropology (World Languages and Cultures Department), and plant-insect-microbe interactions (ENT), 2012, 2015, 2017, 2018, 2019, 2020, 2021, 2022

Biology Program Committee, ISU, 2016-2018

Graduate Program Service

Director of Graduate Education, Ecology and Evolutionary Biology Graduate Program, 2022-present

Recruitment Committee, Ecology and Evolutionary Biology, 2019-2022

Chair of Curriculum Committee, Bioinformatics and Computational Biology, 2016-2018

Curriculum Committee, Bioinformatics and Computational Biology, 2013-2018

Chair of Curriculum Committee, Ecology and Evolutionary Biology, 2015-2016

Curriculum Committee, Ecology and Evolutionary Biology Graduate Program, 2012-2018

Bioinformatics and Computational Biology Graduate Admissions Committee, 2012

University-wide Service

Member of College of Agriculture and Life Sciences Diversity, Equity, and Inclusion Committee, 2021-present

Member of Search Committee, College of Agriculture and Life Sciences Entomology and Plant Pathology and Microbiology Department Chair Search, 2020

University Farms Committee, 2018-present

Faculty Advisor, Undergraduate Entomology Club, 2016-2018

DNA Facility Users Committee, ISU, 2013-2018

Genome Informatics Facility Users Committee, ISU, 2013-2018

University Child Care Committee, ISU, 2010- 2017

9.3 EDITORIAL BOARDS AND PEER REVIEWING

Associate Editor (Board Member), *Proceedings of the Royal Society B*, 2020-present

Associate editor, *Behavioral Ecology and Sociobiology*, 2019-present

Guest editor for *Current Opinion in Insect Science*. 2017. Organized special issue on Integrative Social Insect Physiology, with A. Dolezal (co-editor).

Peer Reviewer for 45 different journals (average 10 reviews per year since 2010)

<i>Animal Behaviour</i>	<i>Insectes Sociaux</i>
<i>Annales Zoologici Fennici</i>	<i>Integrative and Comparative Biology</i>
<i>Apidologie</i>	<i>International Journal of Biological Sciences</i>
<i>Behavioral Ecology</i>	<i>iScience</i>
<i>Behavioral Ecology and Sociobiology</i>	<i>Journal of Apicultural Research</i>
<i>Biological Reviews</i>	<i>Journal of Economic Entomology</i>
<i>Biology Letters</i>	<i>Journal of Experimental Biology</i>
<i>BMC Ecology</i>	<i>Journal of Experimental Zoology</i>

<i>BMC Genomics</i>	<i>Journal of Heredity</i>
<i>Cell and Tissue Research</i>	<i>Journal of Insect Physiology</i>
<i>Current Opinion in Insect Science</i>	<i>Journal of Insect Science</i>
<i>Ethology</i>	<i>Journal of Invertebrate Pathology</i>
<i>Evolution</i>	<i>Molecular Biology and Evolution</i>
<i>Frontiers in Behavioral Neuroscience</i>	<i>Molecular Ecology</i>
<i>Frontiers in Ecology and Evolution</i>	<i>Nature Communications</i>
<i>Gene</i>	<i>Nature Ecology and Evolution</i>
<i>Genetics Research International</i>	<i>Naturwissenschaften</i>
<i>Genome</i>	<i>PLoS Genetics</i>
<i>Genome Biology</i>	<i>PLoS One</i>
<i>Genome Biology and Evolution</i>	<i>Proc. of the National Academy of Sciences USA</i>
<i>Genome Research</i>	<i>Proceedings of the Royal Society B</i>
<i>Hormones and Behavior</i>	<i>Science</i>
<i>Insect Molecular Biology</i>	

Peer reviewer of grant proposals for NSF, USDA, Biotechnology and Biological Sciences Research Council (BBSRC), and Genome Canada, 2012-present

USDA-NIFA Insects and Nematodes Foundational Programs review panelist, 2021

NSF-Integrative Organismal Systems grant proposal review panelist, 2017 and 2022

External thesis examiner, Macquarie University (2015), University of Sydney (2020)

USDA-NIFA grant proposal review panelist, 2011 and 2021

9.4 CONFERENCE AND SYMPOSIUM ORGANIZING

International Union for the Study of Social Insects, International Congress, Symposium Co-organizer “Major transitions revisited: the how, why, and when of social transitions in insects” (with S. Sumner and S. Rehan), 2022

Animal Behavior Society Symposium “Resource Limitation: A tie that binds in the evolution of sociality?”, Symposium Co-organizer (with L. Avilés and S. Rehan), 2021 (Virtual)

International Union for the Study of Social Insects, International Congress, Symposium Co-organizer for two symposia on social insect neuroethology and social insect ecophysiology (with F. Mora-Kepfer Uy and A. Walton, respectively), 2018

International Union for the Study of Social Insects, North American Section, Meeting Co-organizer (with K. Kapheim, S. O’Donnell, C. Brent), 2016

International Congress of Entomology Symposium Co-Organizer (with A. Zayed), “Evolution

- of insect sociality: From theory to genomes and back again”, 2016
- Entomological Society of America, Program Symposium Co-organizer (with S. Rehan)
“Molecular Evolution in Social Insects: Insights from the synergy of natural history, diversity, and genomics”, Minneapolis, MN, November 2015
- Entomological Society of America, Section Symposium Co-organizer (with J. Jandt and S. O’Donnell) “Social Wasps, the model "non-model" organisms: Celebrating the synergistic contributions of Robert L. Jeanne (Professor Emeritus, University of Wisconsin-Madison)”, Minneapolis, MN, November 2015
- Co-organizer (with J. Gadau and G. Bloch) of an international conference on Biology and Genomics of Social Insects, Cold Spring Harbor Laboratory, 2015
- Entomological Society of America, Section Symposium Co-organizer (with A. Dolezal and S.H. Woodard) “Nutrition and the health of wild and managed bees”, Portland, OR 2014
- Entomological Society of America, Section Symposium Co-organizer (with J. Brisson)
“Epigenetics, phenotypic plasticity, and insect evolution: First insights from an emerging field”, Reno, NV, 2011

9.5 WORKSHOP PARTICIPATION

- University of Minnesota Bumble Bee Identification Workshop, 2021 (Virtual)
- UC Davis Honey and Pollination Center, Honey Sensory Workshop, 2020 (Virtual)
- Participant in Insect Genetic Technologies Workshop, University of Maryland Insect Transformation Facility, 2017
- Invited participant in working group on social evolution and genome complexity, Columbia University, 2017
- Participated in deliberations about bee health as part of NSF-funded beekeeping sociological study (PIs: S. Suryanarayanan and D. Kleinman, at University of Wisconsin-Madison), 2013-2015
- Participant in catalysis group on evolution of eusociality at NESCent (National Evolutionary Synthesis Center), 2010
- Discussion leader for symposium on “Gene- behavior studies in natural populations”, Gordon Conference on Genes and Behavior, 2010

9.6 PROFESSIONAL MEMBERSHIPS

Scientific Societies

- Entomological Society of America, 2002- present
- International Union for the Study of Social Insects, 2002- present
- Animal Behavior Society, 2002-present
- Ecological Society of America, 2011-2012

Research Workgroups

Member of Leadership Team for STRIPS (Science-Based Trials of Rowcrops Integrated with Prairie Strips), 2021- present

Member of strategic planning group based at Pennsylvania State University, for National Center for Pollinator Research, 2018-2020

Founding Member of ISU Pollinator Working Group, 2013-present

Member of ISU Center for Virus-Insect Interactions (2011-2014)

Member of ISU Center for Integrated Animal Genomics (2010-2013)

Member of NSF Research Coordination Network: Sociogenomics, 2013-2019

Member of NSF Research Coordination Network: Insect Genetic Technologies, 2013-2019

Member of Center for Global and Regional Environmental Research, University of Iowa, 2014-present

10. OUTREACH AND PUBLIC EDUCATION

10.1 PUBLIC EDUCATION AND OUTREACH EVENTS

Iowa Learning Farms Webinar “Promoting Bee Productivity with Prairie Strips”, 2022

Iowa Learning Farms Video “[What's The Buzz? Exploring The Impact Of Prairie Strips And Pollinators | Building a Culture of Conservation](#)”, 2021

Co-organizer (with N. Brockman and R. Cass) of Pollinator Fest, an outreach program at Reiman Gardens to celebrate and educate for National Pollinator Week, 2015-2019, 2021-22 * up to 1000 attendees yearly between 2017-2022.

Participant in Public Outreach Activity related to honey bees, “Día Nacional de la Miel”, Bariloche, Argentina, 2019

Scientist consultant for two “Lego League” teams consisting of groups of 6-8 schoolchildren who designed a project on “animal allies” with the goal of helping bees, 2016-2017

Display on Bees and Wasps, ISU Bug Village, insect outreach event, 2016

Speaker for session on “Getting Started with Bees” at Small Farms Conference, Iowa State University, 2016

Biodiversity field outreach “BioBlitz” leader on insect collecting and identification activities, 2012 (Iowa Wildlife Center), 2014, 2015, 2016 (Whiterock Conservancy)

Horticulture Farm Field Day; tours of Bee and Wasp Research Facility to Fruit and Vegetable Growers Association and Practical Farmers of Iowa, 2012-2015

Panel discussion on honey bee health with commodity groups, industry, and beekeepers, World Food Prize Meeting, Des Moines, IA 2014

Bayer’s Bee Tour, Panel discussion participant, Ames, Iowa, 2013

Member of NSF “Portal to the Public” Program with the Science Center of Iowa, Des Moines, 2013-2014

Assisted with Honey Bees and Pollinators Exhibit, Great Insect Fair, Pennsylvania State University, 2009

Contributed to an exhibit on bee social behavior for the University of Illinois’ Pollinarium, a museum to educate the public about the importance of pollinators, 2008

Exhibit on bees for University of Illinois’ National Pollinator Week, 2008

Created an informational webpage on bee social behavior for inclusion in “Beespotters”, a web interface for the monitoring of bee populations in Illinois, 2008

10.2 NON-TECHNICAL LECTURES

Central Iowa Beekeepers Association January Meeting, 2023

Des Moines Botanical Garden, Public talk on bee conservation in Iowa and Patagonia, 2022

Talk and discussion with national association of Italian beekeepers (Unione Nazionale Associazioni Apicoltori Italiani, 2021 (Virtual)

Undergraduate Conservation Club, ISU, 2020

Central Iowa Beekeepers’ Association, Research Presentation, 2018

Undergraduate Biosciences Club, ISU, 2017

Beta Beta Beta Fraternity, Guest lecture on social insects, 2016

Undergraduate Entomology Club, ISU, 2015

Iowa Honey Producers’ Association, Regular lectures at annual meetings in Marshalltown, IA, 2012, 2013, 2014

Science Center of Iowa’s “Café Scientifique”, Non-technical talk on social insects, Des Moines, Iowa, 2013

Central Iowa Beekeepers’ Association, Informal Research Presentation, 2012

“Day of Insects” at Reiman Gardens, Lecture on social insects, Ames, IA 2011

Undergraduate Biosciences Club, ISU, 2010

Northern Illinois Beekeepers’ Association, Nontechnical research presentation, 2005

Indiana State Beekeepers’ Association, Nontechnical research presentation, 2003

Illinois State Beekeepers’ Association, Nontechnical research presentation, 2002

10.3 PRESENTATIONS TO SCHOOL GROUPS

Presentation to 5th grade students on bumble bee conservation, Sawyer Elementary, Ames IA, 2019

Presentation to first and fourth grade school children about pollination and bee conservation, Colegio San Patricio, Bariloche, Argentina, 2018

Getting to know Insects presentation and activity with preschoolers, Child Development Laboratory School, 2016 and 2017

Provided annual tours of my research facilities to Ames High School Biology classes, Junior Lego League, Agricultural Leadership Program high school students, 2013-2016

Interactive presentation on honey bees to 1st grade class, Sawyer Elementary School, Ames, IA, 2014

Discussion with NSF Research Experiences for Teachers Participants on evolution education, 2012

Pollinator presentation to preschool class at ISU Child Development Laboratory, 2012

“Insects and Bees” presentation to 1st-5th graders, St. Mary’s School, Chicago, IL, 2004

“Bees and Wasps” exhibit at Orpheum Children’s Museum, Champaign, IL, 2004

“Evolution and Genetics in Bees” presentation to middle schoolers, BeeSpace Education Outreach, University of Illinois, 2007

After-School Bee Program for K-5 Students, Washington Elementary School, Champaign, IL, 2005

10.4 MEDIA FEATURES

Media coverage of Geffre et al. 2020 PNAS Article: (first author Amy Geffre, former grad student in Toth lab) was highlighted in various media outlets including [Science](#), [“In this Issue” PNAS](#), [Nature Reviews Microbiology](#), [NPR’s Science Friday](#), [Scientific American Podcast](#), [Smithsonian Magazine](#), [Ecowatch](#), and [IFL Science Blog](#), among others

Media coverage of Dolezal et al. 2019 PNAS Article (first author Adam Dolezal former postdoc in Toth lab), [American Bee Journal Notes from the Lab](#), [New Food Economy](#)

Interviewed as featured scientist in chapter entitled “Saving *Bombus dahlbomii*” in book “The Beekeepers” by Dana Church, Scholastic Press, 2021

Featured scientist in video “The largest bumblebee in the world - *Bombus dahlbomii* -World Bee Day 2020” for *Inside the Hive* TV on YouTube, 2020

Interviewed about bee health and new research project on prairies for local radio station KHOI in Ames, IA 2017

Featured article in “Science Journal for Kids” called “Do bees get the flu?” based off of Dolezal et al. 2016 *PLoS One* article on honey bee viruses in wild bees.

Featured scientist for podcast series “The People Behind the Science”, available at <http://www.peoplebehindthescience.com/dr-amy-toth/>, 2014

Interviewed about bee health and pollinator population declines for local radio stations including WHO in Des Moines, IA and Iowa Public Radio, 2013-2014

Interviewed and/or research featured in newspapers and magazines (including *Ames Tribune*, *Crops and Soils*, *Visions*, *The Grower*, *Wired*), 2010-2014