Curriculum Vitae

Cassondra L. Vernier
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EDUCATION

2019 – PhD, Evolution, Ecology and Population Biology, Washington University in St. Louis
Dissertation title: Mechanisms of Nestmate Recognition Cue Production in the European Honey Bee, *Apis mellifera*.
Advisor: Dr. Yehuda Ben-Shahar

2012 – Bachelor of Science in Ecology and Evolutionary Biology, University of Michigan, Ann Arbor
High Distinction, High Honors
Honors Thesis: The influence of ploidy and condition dependence on fluctuating asymmetry in a paper wasp *Polistes dominulus*.
Advisor: Dr. Elizabeth A. Tibbetts

ACADEMIC POSITIONS

2024 – present: Assistant Professor, Biology Department, University of Wisconsin – Stout
2019 – 2024: Postdoctoral Research Associate, University of Illinois Urbana-Champaign
Advisor: Dr. Gene E. Robinson

GRANTS & SCHOLARSHIPS

2025 – University of Wisconsin-Stout LabMod, **$61,226.**
2024 – University of Wisconsin-Stout DIN, Microbiome function in honey bee behavior, **$7,808.**
2021 – NSF IOS 21-20378, Gut Microbiome Effects on Brain and Behavior (PI: G.E. Robinson, spearheaded and co-written by me), **$753,120.**
2018 – USDA-AFRI travel award, IUSSI 2018, **$1,500.**
2018 – Travel award, Biology and Genomics of Social Insects, Cold Spring Harbor, **$150.**
2014 – 2017: NSF Graduate Research Fellowship, **$102,000.**
2013 – Fiat Chrysler Awards, Chrysler Group LLC Auburn Hills, MI, **$8,000.**
2011 – Charles H. Turner Award, Animal Behavior Society/International Ethological Conference, **$2,000.**
2009 – 2011: Michigan Competitive Scholarship, **$3,000.**

HONORS & AWARDS

2017 – Honorable Mention, Dean's Award for Teaching Excellence, Washington University in St. Louis
2017 – BioSURF (Biology Undergraduate Research Fellowship) with Iris Chin
2017 – BioSURF (Biology Undergraduate Research Fellowship) with Katelyn Marcus
2012 – High Distinction, High Honors, University of Michigan
2011 – Phi Kappa Phi Honor Society
2008 – 2012: University Honors, University of Michigan
2008 – William J. Branstrom Prize, for being in the top 5% of the freshman class, University of Michigan

PUBLICATIONS

8. Stark, B.*, G.E. Robinson[1], **C.L. Vernier[1].** 2026. Host genetic background and environment have different effects on the establishment and structure of the adult worker honey bee gut microbiome. *PLoS One* 21(1): e0340218. doi: 10.1371/journal.pone.0340218
[1]denotes equal contribution
*denotes undergraduate author

7. **Vernier, C.L.**, T.L.A. Nguyen*, T. Gernat, A. Cash Ahmed, Z. Chen, G.E. Robinson. 2024. Gut microbiota contribute to variation in honey bee foraging intensity. *ISME J*, 18(1):wrae030. doi: 10.1093/ismejo/wrae030.
*denotes undergraduate author

6. **Vernier, C.L.[1]**, N. Leitner[1], K.M. Zelle[1], M. Foltz*, S. Dutton*, X. Liang, S. Halloran, J.G. Millar & Y. Ben-Shahar. 2023. A pleiotropic chemoreceptor facilitates the production and perception of mating pheromones. *iScience,* 26:2. doi: 10.1016/j.isci.2022.105882.
Note: Issue cover story
[1]denotes equal contribution
*denotes undergraduate author

5. **Vernier, C.L.**, I.M. Chin*, B. Adu-Oppong, J.J. Krupp, J.D. Levine, G. Dantas & Y. Ben-Shahar. 2020. The gut microbiome defines social group membership in honey bee colonies. *Science Advances*, 6: eabd3431. doi: 10.1126/sciadv.abd3431.
*denotes undergraduate author

4. **Vernier, C.L.**, J.J. Krupp, K. Marcus*, A. Hefetz, J.D. Levine, & Y. Ben-Shahar. 2019. The cuticular hydrocarbon profiles of honey bee workers develop via a socially-modulated innate process. *eLife*, 8: e41855. doi: 10.7554/eLife.41855.
*denotes undergraduate author

3. McKinney, R.M.[1], **C.L. Vernier[1]** & Y. Ben-Shahar. 2015. The neural basis for insect pheromonal communication. *Current Opinion in Insect Science*, 12: 86 – 92. doi: 10.1016/j.cois.2015.09.010.
[1]denotes equal contribution

2. Tibbetts, E.A., T. Forrest, **C.L. Vernier**, J. Jinn & A. Madagame. 2015. Socially selected ornaments and fitness: Signals of fighting ability in paper wasps are positively associated with survival, reproductive success, and rank. *Evolution*, 69: 2917 – 2926. doi: 10.1111/evo.12793.

1. Tibbetts, E.A**.**, **C.L. Vernier** & J. Jinn. 2013. Juvenile hormone influences pre-contest assessment behaviour in *Polistes dominulus* paper wasps. *Animal Behaviour*, 85: 1177-1181. doi: 10.1016/j.anbehav.2013.03.003.

MEDIA COVERAGE FOR PUBLICATIONS

"When bugs swipe left" by Talia Ogliore, the SOURCE at Washington University in St. Louis. January 27, 2023. https://source.wustl.edu/2023/01/when-bugs-swipe-left/

"Social Insects and Gut Bacteria (Feat. Cassie Vernier)" Lil Dudes Insect Academy by Bradon Coy, Podcast, August 2022. https://podcasts.apple.com/my/podcast/75-social-insects-and-gut-bacteria-feat-cassie-vernier/id1456540913?i=1000577565746

"Beehives are held together by their mutual gut microbes" 60-second Science by Shahla Farzan, Scientific American, April 2021. https://www.scientificamerican.com/podcast/episode/beehives-are-held-together-by-their-mutual-gut-microbes/

"Honeybee Microbes Shape the Colony's Social Behavior" by Max Kozlov, The Scientist, January 2021. https://www.the-scientist.com/notebook/honeybee-microbes-shape-the-colonys-social-behavior-68236

"Honey bees recognize their sisters because their gut microbes make them small similar" by Scott McArt, Notes from the Lab, American Bee Journal, December 2020. https://americanbeejournal.com/4538-2/

"Gut feeling: New research reveals how honeybees identify outsiders" by Patchen Barrs, University of Toronto Mississauga News, October 26, 2020. https://www.utm.utoronto.ca/main-news/gut-feeling-new-research-reveals-how-honeybees-identify-outsiders

"How Can Bees Tell Friend From Foe?" All Things Considered, NPR News, October 15, 2020. https://www.npr.org/2020/10/15/924150231/how-can-bees-tell-friend-from-foe

"Science column: The secret life of bee bacteria" All in a Day with Alan Neal, CBC Radio One, October 15, 2020. https://www.cbc.ca/listen/live-radio/1-92-all-in-a-day/clip/15803362-science-column-the-secret-life-bee-bacteria

"Honey bee, it's me" by Talia Ogliore, the SOURCE at Washington University in St. Louis. October 14, 2020. https://source.wustl.edu/2020/10/honey-bee-its-me/

"Earning a bee's wings" by Talia Ogliore, the SOURCE at Washington University in St. Louis. February 20, 2019. https://source.wustl.edu/2019/02/earning-a-bees-wings/

PRESENTATIONS

Oral presentations

Vernier, C.L.. **Invited speaker.** "Gut microbes influence behavioral phenotypes in honey bees." University of Puerto Rico Biology Department Seminar, November 2023.

Vernier, C.L.. **Invited speaker.** "Gut microbes influence behaviors in the honey bee, *Apis mellifera.*" Wild Animal Microbiome Evolution, Virtual Symposium: Microbiome-Mediated Behaviour in Animals, March 2023.

Vernier, C.L., A. Cash-Ahmed, G.E. Robinson. **Invited speaker.** "Gut microbes influence foraging behaviors in the honey bee, *Apis mellifera*." International Union for the Study of Social Insects 2022, San Diego, California, July 2022.

Vernier, C.L."Gut microbes influence behaviors in the honey bee." **Invited speaker.** St. Louis Beekeepers, Isabees, St. Louis, MO, June 2022.

Vernier, C.L."Bees and their bugs." Bees and Beekeeping Short Course, University of Illinois, Urbana, IL, May 2022.

Vernier, C.L., A. Cash-Ahmed, G.E. Robinson "Microbiome changes are associated with behavioral maturation in the honey bee, *Apis mellifera*." Entomology 2021, Denver, CO, November 2021.

Vernier, C.L. "Gut microbes influence behavior in the honey bee." **Invited Speaker.** Genomics and Eco-evolution of Multi-Scale Symbioses (GEMS) Seminar, University of Illinois/Indiana University, October 2021.

Vernier, C.L. "Microbiome changes are associated with behavioral maturation in the honey bee, *Apis mellifera*." Biology and Genomics of Social Insects, Cold Spring Harbor, April 2021.

Vernier, C.L. "The gut microbiome is key to nestmate recognition in the honey bee." **Invited Speaker.** Central Association of Beekeepers, March 2021.

Vernier, C.L. "Mechanisms of nestmate recognition cue development in the honey bee." Biology Department Bioforum, Washington University in St. Louis, March 2019.

Vernier, C.L., J.J. Krupp, K. Marcus*, A. Hefetz, J.D. Levine, & Y. Ben-Shahar. "Colony-specific nestmate recognition cues mature via socially-regulated ontogenetic processes in the honey bee." **Invited Speaker.** St. Louis Ecology, Evolution and Conservation retreat, Maryville University, September 2018.
*denotes undergraduate author

Vernier, C.L., J.J. Krupp, K. Marcus*, A. Hefetz, J.D. Levine, & Y. Ben-Shahar. "Colony-specific nestmate recognition cues mature via socially-regulated ontogenetic processes in the honey bee." International Union for the Study of Social Insects 2018, Guaruja, Brazil, August 2018.
*denotes undergraduate author

Vernier, C.L., J.J. Krupp, K. Marcus*, A. Hefetz, J.D. Levine, & Y. Ben-Shahar. "Colony-specific nestmate recognition cues mature via socially-regulated ontogenetic processes in the honey bee." Biology and Genomics of Social Insects, Cold Spring Harbor, May 2018.
*denotes undergraduate author

Vernier, C.L. "Colony-specific nestmate recognition cues mature via socially-regulated ontogenetic processes in the honey bee." **Invited Speaker.** Biology Colloquium Series, Southern Illinois University Edwardsville, January 2018.

Vernier, C.L. & Y. Ben-Shahar. "Age dependent modulation of the cuticular hydrocarbon profile in the honey bee, *Apis mellifera*." International Union for the Study of Social Insects, North American Section Break Out Meeting, Orlando, Florida, September 2016.

Vernier, C.L. "Mechanisms of nestmate recognition in the honey bee, *Apis mellifera*." Ecology, Evolution and Population Biology Seminar, Washington University in St. Louis, April 2016.

Vernier, C.L. "The honey bee as a model for understanding the evolution of cooperative social groups." **Invited speaker.** St. Louis Beekeepers, Schlafly Bottleworks, St. Louis, MO, September 2014.

Poster presentations

Vernier, C.L., J.J. Krupp, K. Marcus*, J.D. Levine & Y. Ben-Shahar. The ontogeny of nestmate recognition cue development in the honey bee. International Union for the Study of Social Insects 2018, Guaruja, Brazil, August 2018.
*denotes undergraduate author

Vernier, C.L., J.J. Krupp, K. Marcus*, J.D. Levine & Y. Ben-Shahar. The ontogeny of nestmate recognition cue development in the honey bee. Saint Louis Ecology, Evolution and Conservation annual meeting, St. Louis University, St. Louis, MO, September 2017.
*denotes undergraduate author

Vernier, C.L. & Y. Ben-Shahar. Individual and colony level factors that influence nestmate recognition in the honey bee. Saint Louis Ecology, Evolution and Conservation annual meeting, St. Louis, MO, September 2015.

Vernier, C.L. & Y. Ben-Shahar. The deep roots of animal sociality: hints from Williams-Beuren Syndrome genes. Biology and genomics of social insects, Cold Spring Harbor, NY, May 2015.

Vernier, C.L. & Y. Ben-Shahar. The deep roots of animal sociality: hints from Williams-Beuren Syndrome genes. Evolution, Raleigh, NC, June 2014.

Vernier, C.L. The influence of ploidy and condition dependence on fluctuating asymmetry in a paper wasp *Polistes dominulus*. The Program in Biology Spring Fling, University of Michigan, Ann Arbor, MI, May 2012.

Vernier, C.L., A.S. Izzo & E.A. Tibbetts. Sexual Differences of Fluctuating Asymmetry in *Polistes dominulus*. Animal Behavior Society/International Ethological Conference meeting, Bloomington, IN, July 2011.

Vernier, C.L., A.S. Izzo & E.A. Tibbetts. Juvenile Hormone affects behavior in paper wasps. UROP poster session, University of Michigan, Ann Arbor, MI, April 2009.

NOTEWORTHY MENTEE PRESENTATIONS

*denotes undergraduate mentee

Valest, A.*, **C.L. Vernier**. Investigating the impact of gut microbiome on trophallaxis behavior in honey bees. University of Wisconsin – Stout Research Day. May 2025. Poster.

Stark, B.*, **C.L. Vernier,** G.E. Robinson. Determining the effects of host genetics and environment on gut microbiome composition in the honey bee. University of Illinois Undergraduate Research Symposium, Urbana, IL. April 2023. Poster.

Nguyen, T.L.A.*, **C.L. Vernier,** G.E. Robinson. Determining the causal link of honey bee gut microbial composition on behavioral maturation. University of Illinois Undergraduate Research Symposium, Urbana, IL. July 2021. Poster.

Chin, I.M.*, **C.L. Vernier** & Y. Ben-Shahar. Uncovering a conserved genetic basis for social behavior, from humans to flies. Entomological Society of America, St. Louis, MO, November 2019. Talk and poster.
[1]Awarded first place poster in Physiology, Biochemistry and Toxicology.

Chin, I.M.*, **C.L. Vernier** & Y. Ben-Shahar. Williams Syndrome-related genes influence *Drosophila* social behavior, suggesting a conserved genetic toolkit underlying animal sociality. NeuroNex Investigators Meeting, October 2019. Poster.

Chin, I.M.*, **C.L. Vernier** & Y. Ben-Shahar. Williams Syndrome Genes: Evidence for a conserved genetic toolkit underlying sociality. Gateway Drosophila Behavioral Neuroscience Conference, Rolla, MO, September 2019. Talk.

Chin, I.M.*, **C.L. Vernier** & Y. Ben-Shahar. Possible role for a eukaryotic translation initiation factor in behavioral plasticity and social behavior. Genetics Society of America 60th Annual Drosophila Research Conference, Dallas, TX, March 2019. Poster.

Marcus, K.*, **C.L. Vernier**, J.J. Krupp, A. Hefetz, J.D. Levine & Y. Ben-Shahar. The ontogeny of nestmate recognition cue development in the honey bee. Washington University in St. Louis Undergraduate Research Symposium, St. Louis, MO, October 2017. Poster.

COURSES TAUGHT

BIO-332 Genetics, **Course Instructor**. Fall 2025
BIO-136 College Molecular Cell Biology I, **Course Instructor.** Fall 2024, Spring 2025, Fall 2025
BIO-111 Science, the Environment and Sustainability, **Course Instructor.** Fall 2024, Spring 2025

OTHER TEACHING EXPERIENCE

2024: IB526 Special Topics in Entomology Graduate Seminar Course: Insect Microbiomes and Behavior, **Co-instructor**. University of Illinois, School of Integrative Biology. Course Instructors: Cassondra Vernier, Gene E. Robinson

2022, 2023: IB432 Genes and Behavior, **Guest Lecturer**. University of Illinois, School of Integrative Biology, Course Instructor: Adam Dolezal.

2021: IB504 Genomic Analysis of Insects, **Guest Lecturer.** University of Illinois, School of Integrative Biology, Course Instructor: Bernarda Calla.

2015, 2017, 2018: BIO 3422 Genes, Brains and Behavior, **Teaching Assistant.** Washington University in St. Louis, Department of Biology, Course instructor: Yehuda Ben-Shahar

2016 : BIO 3501 Evolution, **Teaching Assistant.** Washington University in St. Louis, Department of Biology**,** Course instructor: Ken Olsen

2014: BIO 472 Behavioral Ecology, **Teaching Assistant.** Washington University in St. Louis, Department of Biology, Course instructor: Joan Strassmann

OUTREACH AND SERVICE

2024-2026: IUSSI Elections Committee Member

2024: STEAM Day

2021-present: Rantoul Township High School Science Club Sponsor

Created this biweekly science club, which aims to increase interest in STEM by introducing diverse high school students to real scientists, scientific studies, and topics in STEM. For this club, I develop and teach diverse lessons and activities on topics in biology, as well as plan visits from University of Illinois researchers.
In association with this club, high school students are recruited to join the Carl R. Woese Institute for Genomic Biology as summer research interns.

2022: The International Microbiology Literacy Initiative

Wrote and contributed a Topic Framework entitled “The honey bee microbiome defines social grouping” for the Initiative Section 4 *Our animals* school curriculum.

2021-2022: IUSSI Diversity, Equity, Inclusion and Justice Committee Member

Worked with a collaborative group to address issues in DEIJ in the International Union for the Study of Social Insect North American Section.

Planned and assisted in DEIJ events for the International Union for the Study of Social Insects 2022 Congress meeting, including a silent auction fundraising event.

2022: Bees and Beekeeping Short Course, UIUC

Assisted with lessons on basic honey bee biology, and presented a lecture about honey bee gut microbes to local beekeepers/bee enthusiasts.

2021-2022: IUSSI 2022 Graduate Student and Postdoctoral Researcher Committee Member

Planned and assisted in graduate student and postdoc events for the International Union for the Study of Social Insects 2022 Congress meeting, including mixers and a grant writing workshop.

2021: Franklin Steam Academy ESL volunteer

Taught 8 English as a Second Language middle school students about honey bee biology and behavior.

2020-2021: Mahomet Science Club volunteer

Developed and taught a lesson on insect-pollinator interactions to middle school students.

2020 – 2021: STEAM TRAIN Mentor, Carl R. Woese Institute for Genomic Biology, UIUC

Mentor to 1 University High School student and 6 Franklin STEAM middle school students in scientific process and experimentation on projects tailored to individual middle school students' interests.

2019 – Genome Day, Carl R. Woese Institute for Genomic Biology, UIUC

Led hands-on activities to teach elementary and middle school students about DNA, genes, genomes and evolution.

2013 – 2019: The Young Scientist Program Volunteer, Washington University in St. Louis

Ecology and Evolution Teaching Team Leader (2015 – 2019)

Created, planned, and taught lessons on topics in ecology and evolutionary biology to K-12 students in St. Louis.

Coordinated volunteers and >40 events at over 10 schools in St. Louis.

Ecology and Evolution Teaching Team Volunteer (2013 – 2019)

Created, planned, and taught lessons on topics in ecology and evolutionary biology to K-12 students in St. Louis.

Summer Focus Research Mentor (Summer 2018)

Mentored a high school student in a summer research project focusing on microbial ecology in the honey bee.

2016 – 2019: The Show Me Costa Rica Project Volunteer, St. Louis Public Schools

Created and taught lessons on ecosystem functioning, entomology, tropical plant identification and adaptations, and nutrient cycling to prepare four cohorts of ~20 underrepresented students to travel to Costa Rica.

2014 – 2015: Ecology, Evolution and Population Biology weekly seminar Coordinator, Washington University in St. Louis

Coordinated seminars and hosted visiting scientists to present research to the EEPB program at Washington University in St. Louis.

2009 – 2013: Volunteer, DNR Frog and Toad Survey Volunteer, Oakland County Nature Center

Estimated frog and toad populations through identifying mating calls across various locations in Oakland County, Michigan.

2010 – 2012: Aquatic Entomological Survey Volunteer, Huron River Watershed Council

Performed aquatic insect collections in order to estimate population size and water quality across various streams and rivers in Ann Arbor, Michigan.

2008 – 2009: KGrams Volunteer, University of Michigan

Penpal and mentor to Detroit City elementary school students in order to foster interest in topics in STEM.

SCIENTIFIC CONFERENCES ATTENDED

International Union for the Study of Social Insects 2022, San Diego, California, July 2022.

Entomological Society of America Annual Meeting, Denver, CO, November 2021.

Biology and Genomics of Social Insects, Cold Spring Harbor, April 2021.

Microbiota and the Brain Retreat, online retreat, Neuroscience School of Advanced Studies, September 2020.

St. Louis Ecology, Evolution and Conservation retreat, Maryville University, September 2018.

International Union for the Study of Social Insects 2018, Guaruja, Brazil, August 2018.

Biology and Genomics of Social Insects, Cold Spring Harbor, May 2018.

Saint Louis Ecology, Evolution and Conservation annual meeting, St. Louis University, St. Louis, MO, September 2017.

International Union for the Study of Social Insects, North American Section Break Out Meeting, Orlando, Florida, September 2016.

Saint Louis Ecology, Evolution and Conservation annual meeting, St. Louis, MO, September 2015.

Biology and genomics of social insects, Cold Spring Harbor, NY, May 2015.

Evolution, Raleigh, NC, June 2014.

Animal Behavior Society/International Ethological Conference meeting, Bloomington, IN, July 2011.