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Academic Background

8/04 - 4/09	**Ph.D.** Dept. of Zoology, University of British Columbia; Supervisor: Leticia Avilés
9/98 - 6/02	**B.A.** Biology and History, Williams College; *cum laude*, honors in Biology.

Positions

7/21 - present	**Associate Professor** Dept. of Entomology, University of California, Riverside.
7/15 - 6/21	**Assistant Professor** Dept. of Entomology, University of California, Riverside.
1/10 - 5/15	**Postdoc** Dept. of Ecology & Evolution, U. of Lausanne; Supervisor: Michel Chapuisat.
6/09 - 12/09	**Lecturer and Postdoc** Dept. of Zoology, University of British Columbia.
1/05 - 6/09	**Teaching Assistant** Dept. of Zoology, University of British Columbia.
9/03 - 7/04	**Research Intern** Theoretical Ecology Dept., Lund University; Supervisor: Anders Brodin.

Publications

† Denotes student author, ‡ Denotes postdoc author, * Denotes equal contribution

Summary: 52 peer reviewed articles (49 empirical, 3 review or perspective), of which I am first or senior author on 37. Students I mentored are co-authors on 28 articles.

Zarate D‡, Canova A†, Wilson Rankin EE, Loope K, **Purcell J**. Comparative linkage mapping to investigate synteny and recombination in social Vespidae. In press, *Annals of the Entomological Society of America.*

Scarparo G‡, West M‡, Brelsford A*, **Purcell J*.** Broad host use and frequent polyandry in the facultative dulotic species Formica aserva (Hymenoptera: Formicidae). In press, *Annals of the Entomological Society of America.*

Scarparo G‡, Palanchon M†, Brelsford A, **Purcell J.** 2023. Social antagonism facilitates supergene expansion. *Current Biology* 33: 5085-5095. https://doi.org/10.1016/j.cub.2023.10.049

Moysi M, Ogolowa B, Nikiforou C, Dretakis M, **Purcell J**, Brelsford A, Kirschel A. 2023. Genomic data reveal contrasting patterns of divergence among island and mainland birds of the Eastern Mediterranean. *Ibis* **165**: 829-843. https://doi.org/10.1111/ibi.13178

Sankovitz M †, Loope KJ, Wilson Rankin EE, **Purcell J**. 2023. Unequal reproduction early in a social transition: insights from invasive wasps. *American Naturalist* **201**: 241-255. https://doi.org/10.1086/722514

Blacher P *, Zahnd S † *, **Purcell J**, Avril A, Oliveira Honorato T, Bailat-Rosset G, Staedler D, Brelsford A, Chapuisat M. 2022. Species recognition limits mating between hybridizing ant species. *Evolution* **76**: 2105-2115. **https://doi.org/10.1111/evo.14566**

Sankovitz M †, **Purcell J**. 2022. Ant nests differentially affect soil chemistry across elevational gradients. *Insectes Sociaux* **69**: 293-298. https://doi.org/10.1007/s00040-022-00869-1

Pierce D †, Sun P ‡, **Purcell J***, Brelsford A*. 2022. A socially polymorphic *Formica* ant species exhibits a novel distribution of social supergene genotypes. *J. Evolutionary Biology* 35: 1031-1044. https://doi.org/10.1111/jeb.14038, * co-senior authors.

McGuire D †, Sankovitz M †, **Purcell J.** 2022. A novel distribution of supergene genotypes is present in the socially polymorphic ant *Formica neoclara*. *BMC Ecology and Evolution* **22**: 47. https://doi.org/10.1186/s12862-022-02001-0

Fontcuberta A †, Kapun M, Tran Van P, **Purcell J***, Chapuisat M*. 2022. Effects of social organisation and elevation on spatial genetic structure in a montane ant. *Ecology and Evolution* **12**: e8813. **https://doi.org/10.1002/ece3.8813**, * co-senior authors.

Sankovitz M †, **Purcell J**. 2021. Ant nest architecture is shaped by local adaptation and plastic response to temperature. *Scientific Reports* **11**: 23053. https://doi.org/10.1038/s41598-021-02491-w

Scarparo G ‡, Sankovitz M †, Loope KJ, Wilson Rankin EE, **Purcell J**. 2021. Early queen joining and long-term queen associations in polygyne colonies of an invasive wasp revealed by longitudinal genetic analysis. *Evolutionary Applications* **14**: 2901-2914. https://doi.org/10.1111/eva.13324

Purcell J, Lagunas-Robles G †, Rabeling C, Borowiec M, Brelsford A. 2021. The maintenance of polymorphism in an ancient social supergene. *Molecular Ecology* **30**: 6246-6258. **https://doi.org/10.1111/mec.16196**

Lagunas-Robles G †, **Purcell J**, Brelsford A. 2021. Linked supergenes underlie social organization and split sex ratio in an ant. *Proceedings of the National Academy of Sciences of the USA* **118**: e2101427118. https://doi.org/10.1073/pnas.2101427118

Torres-Martínez L, Porter, S, Wendlandt C †, **Purcell J**, Ortiz-Barbosa, GS, Rothschild J, Lampe M, Farsamin W, Le T, Weisberg AJ, Chang JH, Sachs JL. 2021. Evolution of specialization in a plant-microbial mutualism is explained by the oscillation theory of speciation. *Evolution* **75:** 1070-1086. https://doi.org/10.1111/evo.14222

Phan PT * †, Wilson Rankin EE *, **Purcell J**. 2020 *Formica francoeuri* responds to pheromones and defensive chemical cues of social bees. *Insectes Sociaux* 67: 547-556. https://doi.org/10.1007/s00040-020-00788-z

Scarparo G †, Rugman-Jones P, Gebiola M, Di Giulio A, **Purcell J**. 2020. Social parasite distancing: RADseq reveals high levels of inbreeding in the social parasite *Microdon myrmicae* but low philopatry for host ant nest. *Ecological Entomology* 46: 89-99. **https://doi.org/10.1111/een.12944**

Tawdros S †, West M †, **Purcell J**. 2020 Scaling relationships in *Formica* ants with continuous worker size variation. *Insectes Sociaux* 67: 463-472. https://doi.org/10.1007/s00040-020-00779-0

Featured by the editor: https://link.springer.com/article/10.1007/s00040-020-00794-1

Avril A †, **Purcell J**, Béniguel S †, Chapuisat M. 2020. Maternal effect killing by a supergene controlling ant social organization. *Proceedings of the National Academy of Sciences of the USA* 117: 17130-17134.

Media coverage: Featured in Nature Reviews Genetics, https://rdcu.be/b6i25

Harrop TWR, Guhlin J, McLaughin GM, Permina E, Stockwell P, Gilligan J, Le Lec MF, Gruber MAM, Quinn O, Graham B, Knapp R, Van Eeckhoven J, Lovegrove M, Duncan EJ, Remnant EJ, Wilson Rankin EE, **Purcell J,** Lester PJ, Dearden PK. 2020. High-quality assemblies for three invasive social wasps from the *Vespula* genus. *Genes|Genomes|Genetics* 10: 3479-3488.

West M †, **Purcell J.** 2020. Size-based task partitioning in ants lacking discrete morphological worker subcastes. *Behavioral Ecology and Sociobiology* 74: 66.

de la Mora A*‡, Sankovitz M *†, **Purcell J**. 2020. Ants (Hymenoptera: Formicidae) as host and intruder: recent advances and future directions in the study of exploitative strategies. *Myrmecological News* 30: 53-71.

Brelsford A*, **Purcell J***, Avril A †, Tran Van P, Zhang J ‡, Brütsch T †, Sundström L, Helanterä H, Chapuisat M. 2020. An ancient and eroded social supergene is widespread across *Formica* ants. *Current Biology* 30: 304-311.

Purcell J, Pruitt J. 2019. Are personalities genetically determined? Inferences from subsocial spiders. *BMC Genomics* 20:867.

Fisher K †*, West M †*, Lomeli A †, Woodard SH, **Purcell J.** 2019. Are societies resilient? Challenges faced by social insects in a changing world. *Insectes Sociaux* 66: 5-13.

Avril A †, **Purcell J**, Brelsford A, Chapuisat M. 2019. Asymmetric mate choice between social forms contributes to the maintenance of a supergene controlling ant social organization. *Molecular Ecology* 28: 1428-1438.

Hale A †, Bougie T †, Henderson E †, Sankovitz M †, West M †, **Purcell J.** 2018. Notes on hunting behavior of the spider *Euryopis californica*, a novel predator of *Veromessor pergandei* harvester ants. *Pan-Pacific Entomologist* 94: 141-146.

Purcell J, Zahnd S †, Athanasiades A †, Türler R †, Chapuisat M, Brelsford A. 2016. Ants exhibit asymmetric hybridization in a mosaic hybrid zone. *Molecular Ecology* 25: 4866-4874.

Ingley S, Pruitt J, Scharf I, **Purcell J**. 2016. Social context, but not individual personality, alters immigrant viability in a spider with mixed social structure. *Animal Behaviour* 120: 153-161.

Avril A †, **Purcell J**, Chapuisat M. 2016. Ant workers exhibit specialization and memory during raft formation. *The Science of Nature* 103: 36.

Media coverage: Featured on NPR weekend edition and Discover magazine

Purcell J *, Pirogan D * †, Avril A †, Bouyarden F †, Chapuisat M. 2016. Environmental influence on the phenotype of ant workers revealed by common garden experiment. *Behavioral Ecology and Sociobiology* 70: 357-367.

Media coverage: Featured on the Springer Animal Sciences blog (https://www.facebook.com/Springer-Animal-Sciences-1450678515186976/)

Purcell J, Pellissier L, Chapuisat M. 2015. Social structure varies with elevation in an alpine ant**.** *Molecular Ecology* 24: 498-507.

Purcell J*, Brelsford A*, Wurm Y, Perrin N, Chapuisat M. 2014. Convergent genetic architecture underlies social organization in ants. *Current Biology* 24: 2728-2732.

Purcell J, Chapuisat M. 2014. Foster carers influence brood pathogen resistance in ants. *Proceedings of the Royal Society B* 281: 20141338.

- Recommended by Faculty of 1000.
Media coverage: 24 heures Lausanne

Kocher SD, Pellissier L, Veller C, **Purcell J**, Nowak MA, Chapuisat M, Pierce NE. 2014. Transitions in social complexity along altitudinal gradients reveal a dual impact of climate on social evolution. *Proceedings of the Royal Society B* 281: 20140627.

Rasmann S, Buri A †, Gallot-Lavallée M, Joaquim J †, **Purcell J**, Pellissier L. 2014. Differential allocation and deployment of direct and indirect defences of *Vicia sepium* along elevation gradients. *J. Ecology* 102: 930-938.

Purcell J, Avril A †, Jaffuel G †, Bates S †, Chapuisat M. 2014. Ant brood function as life preservers during floods. *PLOS ONE* 9: e89211.

Media coverage: partial list: Science Now, National Geographic, LA Times, NY Times

Purcell J, Chapuisat M. 2013. Bidirectional shifts in colony queen number in a socially polymorphic ant population. *Evolution* 67: 1169-1180.

Reymond A †, **Purcell J**, Cherix D, Guisan A, Pellissier L. 2013. Strategies in ant communities shift in response to colder conditions. *Ecological Entomology* 38: 364-373.

Purcell J, Chapuisat M. 2012. The influence of social structure on brood survival and development in a socially polymorphic ant: Insights from a cross-fostering experiment. *J. Evolutionary Biology* 25: 2288-2297.

Purcell J, Brelsford A, Avilés L. 2012. Co-evolution between sociality and dispersal: the role of synergistic cooperative benefits. *J. Theoretical Biology* 312: 44-54.

Avilés L, **Purcell J**. 2012. The evolution of inbred social systems in spiders and other organisms: From short-term gains to long-term evolutionary dead-ends? *Advances in the Study of Behavior* 44: 99-133.

Purcell J, Vasconcellos-Neto J, Gonzaga MO, Fletcher JA, Avilés L. 2012. Spatio-temporal differentiation and sociality in spiders. *PLOS ONE* 7: e34592.

Purcell J, Brütsch T, Chapuisat M. 2012. Effects of the social environment on the survival and fungal resistance of ant brood. *Behavioral Ecology and Sociobiology* 66: 467-474.

Purcell J. 2011. Geographic patterns in the distribution of social systems in terrestrial

arthropods. *Biological Reviews* 86: 475-491.

Reber A, **Purcell J,** Buechel SD, Buri P, Chapuisat M. 2011. The expression and impact of anti-fungal grooming in ants. *J. Evolutionary Biology* 24: 954-964.

Avilés L, **Purcell J.** 2011. *Anelosimus oritoyacu*, a cloud forest social spider with only slightly female-biased primary sex ratios. *J. Arachnology* 39: 178-182.

Purcell J, Avilés L. 2008. Gradients of precipitation and ant abundance may contribute to the altitudinal range limit of subsocial spiders: Insights from a transplant experiment. *Proceedings of the Royal Society B* 275: 2617-2625.

Purcell J, Brodin A. 2007. Factors influencing route choice by avian migrants: A dynamic programming model of Pacific brant migration. *J. Theoretical Biology* 249: 804-816.

Avilés L, Agnarsson I, Salazar P, **Purcell J**, Iturralde G, Yip E, Powers KS, Bukowski T. 2007. Altitudinal patterns of spider sociality and the biology of a new mid-elevation social *Anelosimus* species in Ecuador. *American Naturalist* 170: 783-792.

Purcell J, Avilés L. 2007. Smaller colonies and more solitary living mark higher elevation populations of a social spider. *J. Animal Ecology* 76: 590-597.

Purcell J, Brelsford A. 2004. Reassessing the causes of decline of *Polylepis*, a tropical subalpine forest. *Ecotropica* 10: 155-158.

Non-refereed contributions

Purcell J. 2023. How population genetics uncovers the secret lives of ants, and why it matters. *Myrmecological News Blog, invited contribution.*

Sankovitz M, **Purcell J.** 2019. Scientific serendipity at Granite Mountain leads to description of novel ant hunting behaviors of spiders. *Mojave National Preserve Science Newsletter* 15-16.

Purcell J. 2018. Ant research in the genomic era: advances and prospects. *Myrmecological News Blog, invited contribution.*

Purcell J. 2009. Ecological influences and the biogeographic distribution of sociality in *Anelosimus* spiders. University of British Columbia Doctoral Thesis.

Purcell J, Brelsford A, Kessler M. 2004. The world's highest forest: Properties of Andean woodlands and implications for conservation. *American Scientist* 92: 454-461.

Purcell J. 2002. Dispersal behavior: natural selection at the individual level versus population dynamics. Williams College Undergraduate Thesis.

Selected Awards, Grants, and Fellowships

Summary: Since arriving at UCR, collaborators and I have secured funding from a variety of competitive sources totaling more than USD $2.4M. My students and postdocs have additionally secured more than $500K in fellowship and grant funding. Since receiving tenure, I have received two awards, in mentorship and teaching, from the Pacific Branch of the Entomological

Society of America.

2023	Distinguished Achievement in Teaching Award, Pacific Branch ESA	
2022	Outstanding Mentorship Award, Pacific Branch, Entomol Soc of America	
2020	NSF CAREER award	**US $761,763**
	"Integrating genetic and ecological drivers of a social phenotype: dynamics of a social polymorphism and supergene"	
2020	CA Conservation Genomics Proj (co-PI, with PI J. Sachs).	**US $53,155**
2019	USDA NIFA HSI Training grant (PI, with 8 co-PIs)	**US $1,000,000**
	"Six legs, endless possibilities: Training the next generation of agricultural scientists"	
2019	George Brown Award (best submission 2019, UC Mexus)	**US $2500**
2019	UC Mexus/CONACYT grant (PI, with F. Varela)	**US $22,518**
	" On genes, behaviors, and exploitation: exploring the causes and consequences of alternative social strategies along latitudinal gradients"	
2018	Binational Science Foundation Grant (with A. Brelsford, E. Privman)	
	" Genome structure and social evolution: linking genome evolution with phenotypic transitions"	**US $270,000**
2018	NSF-DEB Small Grant (co-PI with PI A. Brelsford)	**US $199,690**
	"SG: Evolutionary history and contemporary function of alternative supergene haplotypes"	
2018	Outstanding faculty member award, UCR Entomology Grad Student Association	
2017	NSF-DEB Small Grant (PI, co-PI: E. Wilson Rankin)	**US $149,929**
	"SG: Understanding the genetic and behavioral basis of novel social phenotypes in damaging invasive wasps"	
2016	UC Riverside (UCR) Regents' Faculty Fellowship	**US $5000**
2015	UCR Collaborative Seed Grant (co-PI: E. Wilson Rankin)	**US $10,000**
2013	University of Lausanne Fondation du 450e Anniversaire	**CHF 12,000**
2011	Fondation Herbette, Funding to initiate RADseq project, collaborator on application of PI Michel Chapuisat.	**CHF 25,000**
2005-2008	US NSF Graduate Research Fellow	**US $90,000**
2002-2003	U.S. Fulbright Fellow in Bolivia.	**US $12,500**

Teaching and Mentorship

Course instruction

Teaching expectation: 1.5-2 courses/year; I meet or exceed the expectation each year
Recent teaching evaluations are included at the end of the CV.

2018	ENTM 127 and 190: "Bugging Out in the Alps" study abroad (8 credits, 50%, 10 students)
2018	NASC 093: "Freshman Advising Seminar" (2 credits, 100%, 20 students)
2017-2023	ENTM 203: "Core Areas of Entomology" (5 credits, ~60%, 5-15 grad students).
2017, 2020, 2022	ENTM 249: "Topics in Social Insects" (2 credits, 50 % in 2017, 100% in 2020-2022, 3-12 grad students).

2016-2023 BPSC/ENTM 50: "Evidence for Evolution" (4 credits, 50% in 2016, 100% since 2017, 60 non-major students).
2009 ZOOL 502: "Advanced Ecology", *University of British Columbia* (4 credits, 100%, 12 grad students).

Supervision

*** denotes mentees who are co-authors on published articles.**

UCR, Postdocs and Graduate Students Mentored

2022-2024 Daniela Zarate *, Chancellor's Postdoctoral Fellow (UCR)
"Gene expression in a social supergene"
2020-2024 Giulia Scarparo *, Postdoctoral Scholar (UCR)
"Genetics of novel social traits in insect societies"
2020-present Marie Palanchon *, UCR EEOB PhD Program (former Fulbright fellow)
"The evolution and maintenance of 4-haplotype supergene systems"
2019-2021 Darin McGuire *, UCR Entomology BS + MS program
"Distribution of a social supergene across the range of *Formica neoclara".*
2017-2019 Aldo de la Mora * (UC Mexus Postdoc 2018-2019)
“Biogeographic patterns in the distribution of social parasites”
2017-2022 Madison Sankovitz *, UCR Entomology PhD Program (USDA fellow)
“Ants as soil engineers: biogeographic patterns and experimental tests”
2016-2022 Mari West *, UCR Entomology PhD Program
“Division of labor in ants lacking morphological castes”
2015-2016 Junxia Zhang *, Postdoctoral Scholar (UCR)
“The evolutionary history of a supergene underlying social organization”
2016-2018 Amanda Hale *, UCR Microbiology Graduate Program
“Ant microbiomes: contributions to range size and invasion potential”

UCR, Undergraduate Students Mentored

2023-present Azariah Lopez, Eli Muro
"Transmission distortion in a 4-haplotype supergene system"
2022-present Abigail Pellitteri
"Ant learning transfer to naive nestmates"
2022 Rian Arcelao
"Associative learning with a negative stimulus"
2021-2023 Alan Wu, Carolina Gonzalez
"Associations between ant morphology and genotype in a 4-haplotype supergene system"
2021-2022 Min Chang, Angela Soliman
"Interactions between colony size and nest building behavior in ants"
2020-2023 Rameen Shahzad-Ghajar *(Now a MSc student at Cal Poly!)*
"Characterizing the social supergene in the alpine ant *Formica neorufibarbis"*
2020-2022 Jorge Piche Perez
"Investigating the geographic distribution of social parasites in *Formica* ants"
2020-2022 Erin Beck *(now a PhD student at Arizona State!)*
"Native ants exhibit associative learning in the field"

2020-2021	Zaara Said, Shukerrah Palmer, Stephanie Loyola "Plasticity and local adaptation in ant nest architecture"
2019-2020	Guadalupe Gonzalez "Do Argentine ant nests facilitate entomopathogenic nematode locomotion?"
2019-2020	Ka Wu "Investigating synteny in ant genomes through comparative linkage mapping"
2018-2019	Jeneane Hamideh “Associative learning in ants depends upon head size”
2017-2019	Kiera Donoghue “Constructing a linkage map of the social wasp *Dolichovespula maculata*”
2017-2019	Shirley Tawdros * “Allometric scaling in ants with continuous worker size variation.”
2017-2019	Alyssa Canova * *(Now a PhD student at Texas A&M!)* “High-density genetic linkage map for the wasp *Vespula consobrina*”
2017-2018	Garrett Keating “Reproductive partitioning by nestmate queens in yellowjacket wasps”
2016-2018	Joel Castelan “Do ant/soil interactions benefit plant growth?”
2017	Taha Farooqi “Assessing cooperative food burying strategies in a desert ant”
2015-2017	Daniel Pierce * *(Now a PhD student in the UCR EEOB program!)* “Social organization and population genetics of *Formica francoeuri*”
2016	Fabian Vazquez “Integrating supergenes and phenotypes associated with sociality”

U. of Lausanne, Behavior, Evolution and Conservation Master Program Students Mentored

2014	Anouk Athanasiades* and Rebecca Türler* (first step) “Character displacement of ant communication system in a hybrid zone?”
2014	Sacha Zahnd* (master), co-mentor with A. Brelsford (U. Lausanne) “Gene flow and selection in an ant hybrid zone” Oriol Cases Solanes (master), co-mentor with A. Avril (U. Lausanne) “Genetics of social behavior: egg discrimination by ant workers”
2013	Dorin Pirogan* (master) “Local adaptation to different altitudinal conditions in an ant” Marion Podolak (master), co-mentor with S. Kocher (Harvard U.) “Variation in social systems across ecological gradients in sweat bees”
2012	Farid Bouyarden* (first step) “Adaptation to altitude in an ant” Jessica Joachim* and Aline Buri* (first step), co-mentor with S. Rasmann (U. Lausanne) and L. Pellissier (U. Lausanne) “Evolution of mutualism with ants in *Vicia sepium*”
2010	Sarah Bates* (first step) “Rafting and response to floods in ants”

University of Lausanne, Research Internships for Undergraduate Students Mentored

2013	Myriam Dridi, Aurélie Laurent
2011	Amaury Avril*, Johanne Boulat
2010	Alain Reymond*

Teaching assistantships

2008-2009	UBC: Lab coordinator for Biometrics.
2008	UBC: Lab coordinator for Animal Behaviour.
2007	UBC: Designed laboratory, homework assignments for Animal Behaviour.
2007	UBC: Biometrics.
2005	UBC: Darwinian Medicine.
2000	Williams College: Ecology.
2000	Williams College: The Organism.

Pedagogical Training

2017	HHMI Mobile Summer Institute Participant
2016	Course Redesign Workshop, led by Purdue IMPACT Program
2015	New Faculty Teaching Excellence Seminar, led by UCR Academy of Distinguished Teachers

Funding to Purcell lab mentees (when required, I was PI on the grant)

2022-2024	UCR Chancellors Postdoctoral Fellowship to D. Zarate	**US $150,000**
2020	Fulbright fellowship to M. Palanchon, PhD student	**US $30,000**
2020	USDA NIFA AFRI fellowship to M. Sankovitz	**US $70,344**
2019	Boulder County Open Space grant to M. Sankovitz	**US $4518**
2018-2019	UC Mexus/CONACYT fellowship to A. de la Mora	**US $64,398**
2018-2020	NSF Research Traineeship for Integrated Computational Entomology, 3-year fellowship to M. Sankovitz	**US $102,000**
2018	Harry Shorey Award to M. West	**US $3500**
2017-2019	NSF Research Traineeship for Integrated Computational Entomology, 3-year fellowship to M. West	**US $102,000**
2017-2018	Alberta Conservation Association grant to M. West	**CA $15,010**
2017-2018	Mildred Mathias grad student research grant to A. Hale	**US $1250**
2017	Mayhew grad research award to A. Hale	**US $1399**
2016-2018	Robert Lee grad student research grant to A. Hale	**US $3952**
2016-2018	Shipley Skinner Riverside Co. Endowment grant to A. Hale	**US $22,834**

Additional Mentorship

- Student committees (beyond my own students). I've served on 35 UCR student committees for 18 students across 4 programs), plus 2 PhD student committees for students from New Zealand and Switzerland, respectively.
- Graduate student peer mentorship program faculty advisor (2017-2023)
- Queens of STEAM (student-founded and run outreach program) faculty advisor (2020)

Selected Professional Talks and Posters, Conference Organization

Conference and symposium organization

2023 Co-organizer, with G. Scarparo and D. Zarate (both UCR), "Emerging Research Questions in Social Insect Genomics"; Symposium at Pacific Branch of the Entomological Society of America (ESA), Seattle, WA, USA; sponsored by Annals of the ESA. **Special collection by Annals of the ESA underway.**

2022 Co-organizer, with C. Clark (UCR EEOB), Southern California Animal Behavior Conference, April, Riverside, CA, USA

2018 Co-organizer, with C. Rabeling (Arizona State) and A. Brelsford (UCR EEOB): Speciation in social insects; Symposium at IUSSI conference in Guaruja, Brazil

Presentations delivered by Purcell

"Turnover in the function and mode of action in a conserved social supergene"

2024 **Invited talk:** University of Denver, Denver, CO

2023 Evolution 2023, Albuqueque, NM

2023 Pacific Branch of the Entomological Society of America, Seattle, WE

2022 **Invited talk:** International Union for the Study of Social Insects, San Diego, CA

2022 **Invited talk:** University of Haifa, Israel

"Selfishness, sociality, and sex ratio: Understanding genetic links between complex traits"

2023 **Invited talk:** Biology Department, Universität Konstanz

2022 **Invited talk:** EBE Department, UC San Diego

“Exploring the evolutionary history of an ancient supergene in *Formica* ants”

2020 **Invited talk:** Entomological Society of America Conference, Virtual

“Variation in social strategies along environmental gradients”

2019 **Invited talk:** Entomological Society of America Conference, St. Louis, MO, USA

“Insights from invasive species: Identifying the genetic basis of a recently evolved social phenotype.”

2019 Pacific Branch Meeting, Entomological Society of America, San Diego, CA, USA

“Why don't transitions in queen number lead to speciation?”

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

“Selfish gene, social outcome: Exploring the genetic basis of a complex social trait”

2019 **Student Invited Talk**: Biology Department, Cal State Fullerton, USA

2018 **Invited talk:** Biology Department, University of California Los Angeles, USA.

2018 **Invited (plenary) talk:** Cold Spring Harbor Labs, Biology and Genomics of Social Insects

“Integrating genetic and ecological underpinnings of social organization in *Formica* ants”

2017 **Invited talk:** Entomological Society of America Conference, Denver, CO, USA

“Causes and consequences of a social polymorphism.”

2017 **Plenary talk:** European Meeting of PhD Students in Evolutionary Biology, Krakow, Poland

2016 **Invited talk:** Biology Department, University of California San Diego, USA.

2016 **Invited talk:** Biology Department, University of California Riverside, USA.

2013 **Invited talk:** Pierce lab group, Harvard University, Cambridge, MA, USA.

2013 **Invited talk:** Laboratoire d'Ecologie Alpine, Université Joseph Fourier, Grenoble, France.

2012 **Invited talk:** Institute of Evolutionary Biology & Environmental Studies, University of Zürich, Switzerland.

2012 **Invited talk:** Behavioural Ecology Group, University of Bern, Switzerland.

"How arthropod societies cooperate"

2016 **Invited talk:** Department of Biology, Moreno Valley College, CA, USA.
2015 **Invited talk:** Department of Art, Cal State, Long Beach, CA, USA.

"Genetics and ecology of a social polymorphism"

2015 **Invited talk:** Entomological Society of America, Minneapolis, MN, USA.

"Genetic and ecological underpinnings of social organization in ants"

2014 **Invited talk:** Entomology Department, University of California Riverside, USA.
2014 **Invited talk:** Institute of Biology, University of Neuchâtel, Switzerland.

"Foster caregivers influence brood pathogen resistance in ants."

2014 Biology 14, Geneva, Switzerland.
2013 European Society for Evolutionary Biology, Lisbon, Portugal. (Poster)

"Geographic patterns in the distribution of social systems in terrestrial arthropods."

2012 **Invited talk:** Department of Organismal Biology, Queen Mary, University of London, UK.
2011 **Invited talk:** Institute of Biogeography, University of Basel, Switzerland.
2011 Workshop: Adaptation to Climate from a Spatial Perspective, Lammi, Finland. (Poster)
2009 **Invited talk:** Entomological Society of America, Indianapolis, IN, USA.
2008 International Society for Behavioral Ecology, Ithaca, NY, USA.

"Influence of social structure on brood survival and development in a socially polymorphic ant."

2012 International Society for Behavioral Ecology, Lund, Sweden.

"Temporal shifts in queen number in a socially polymorphic ant population."

2011 European Society for Evolutionary Biology, Tübingen, Germany.
2010 International Union for the Study of Social Insects, Copenhagen, Denmark.

"Gradients of precipitation and ant abundance may contribute to the altitudinal range limit of subsocial spiders: insights from a transplant experiment."

2009 Evolution Meeting, Minneapolis, MN, USA.
2008 Canadian Society for Ecology and Evolution, Vancouver, BC, Canada.

"Distribución espacial de arañas sociales y subsociales: Causas y consequencias."

2005 Congreso Latinoamericano de Aracnología, Minas, Uruguay.

Selected co-authored presentations (since 2015)

2023 Evolution 2023 Conference, Albuquerque, NM, USA
"A social supergene expanded to include miniaturizing alleles in ants", talk by G. Scarparo
"Supergene evolution in the ant subfamily Formicinae", talk by D. Zarate
"The evolution of a miniaturizing supergene: insights from multiple Formica ant species", talk by Z. Alam
"Evolutionary history of a sex ratio supergene across six Formica ant species", poster by G. Lagunas-Robles
"Evidence for associative learning in Formica ant workers?", poster by A. Pellitteri
2023 Southern California Evolutionary Genetics and Genomics Meeting, Irvine, CA
"Supergene-associated polygyny in ants: do small queens cheat?", talk by M. Palanchon
"The evolution of a miniaturizing supergene: insights from multiple Formica ant species",

poster by Z. Alam
"Evolutionary history of a sex ratio supergene across six Formica ant species", poster by G. Lagunas-Robles

2023 Pacific Branch Meeting of the Entomological Society of America, Seattle, WA
"Supergene evolution in the ant subfamily Formicinae", talk by D. Zarate
"More than social organization: When supergenes underlie multiple complex phenotypes in ant societies", talk by G. Scarparo

2022 Southern California Conference for Undergraduate Research, Malibu, CA, USA
"Harvester ant workers vary in their investment in subterranean tasks", poster by A. Soliman

2022 Evolution 2022 Conference, Cleveland, OH, USA
"Evolutionary history of a sex ratio supergene in *Formica* ants", talk by G. Lagunas-Robles

2022 Southern California Animal Behavior Conference, Riverside, CA, USA
" More than social organization: a miniaturizing supergene controls complex phenotypes in *Formica cinerea* (Hymenoptera; Formicidae)", talk by G. Scarparo
" Linked supergenes underlie split sex ratio and social organization in an ant", talk by G. Lagunas-Robles

2020 The Molecular Basis and Evolution of Sexual Dimorphism Symposium, Virtual
"A W-like supergene haplotype is associated with offspring sex ratio in a socially polymorphic ant", poster by G. Lagunas-Robles

2020 Southern California Animal Behavior Conference, San Diego, CA, USA
“Nest architecture response to temperature in *Formica* ants”, presented by M. Sankovitz
“Task performance in ants lacking distinct morphological castes”, presented by M. West
“Argentine ant nests as facilitators of nematode locomotion”, poster by G. Gonzalez

2019 Entomological Society of America, St. Louis, MO, USA
“Altitudinal patterns of *Formica* ant nest soil properties in California mountains”, presented by M. Sankovitz, winner of best student talk in her section.

2019 Evolution 2019 Conference, Providence, RI, USA
“A genetic contribution to split sex ratios in the ants *Formica glacialis* and *F. podzolica*”, poster by PhD student in collaborating lab, G. Lagunas-Robles

2019 Pacific Branch Meeting of the Entomological Society of America, San Diego, CA
“High density linkage map of *Vespula consobrina* wasps”, poster by A. Canova
“Do the long-term tasks of *Formica francoeuri* workers influence mandibular attrition?”, poster by K. Donoghue
“Investigating the genetic basis of split sex ratio in *Formica podzolica*”, poster by G. Lagunas-Robles
“Associative learning ability in ants is associated with head size”, poster by J. Hamideh

2018 International Union for the Study of Social Insects (IUSSI), Guaruja, Brazil
“What's size got to do with it? Investigating associations between size and worker task”, presented by M. West
“Reproductive partitioning in polygynous, perennial *Vespula pensylvanica* colonies”, presented by M. Sankovitz
“The role of gut microbiome plasticity in a species range”, presented by A. Hale

2016 IUSSI European Branch, Helsinki, Finland
“Assortative mating limits gene flow between socially polymorphic ant species”, presented by

S. Zahnd
"Fine-scale population genomics and sex-biased dispersal in *F. selysi*", presented by A. Avril

Selected Manuscripts Reviewed

I have reviewed approximately 85 articles since 2015 for the following journals.

American Naturalist; Animal Behaviour; Annals of the Entomological Society of America; Behaviour; Behavioral Ecology; Behavioral Ecology and Sociobiology; Biological Invasions; Biological Journal of the Linnean Society; Biology Letters; BMC Ecology; Current Biology; Ecological Entomology; Evolution; Functional Ecology; Genetics and Molecular Biology; Heredity; Insectes Sociaux, Journal of Animal Ecology; Journal of Arachnology; Journal of Evolutionary Biology; Journal of Insect Behavior; Journal of Thermal Biology; Nature; Nature Communications; Nature Ecology and Evolution; Naturwissenschaften; Molecular Biology and Evolution; Molecular Ecology; Molecular Ecology Resources; Oecologia; PLOS ONE; Proceedings of the Royal Society B, Proceedings of the National Academy of Science of the USA.

Research Proposals Reviewed

US National Science Foundation Ad hoc reviewer and DEB Panelist, UC Mexus Program Dissertation Improvement Grant Panelist, Shipley Skinner Riverside County Endowment, UCR Undergraduate Minigrant Review Panelist, Austrian Science Fund Ad hoc reviewer, French National Research Agency Ad hoc reviewer, Israel Science Foundation Ad hoc reviewer, UK Natural Environment Research Council Ad hoc reviewer, Czech National Science Foundation Ad hoc reviewer, US Army Corps of Engineers Ad hoc reviewer

Selected University and Community Service

2022	External Expert for PhD Dissertation, University of Otago, New Zealand
2022-present	Dissertation Committee Member, University of Lausanne, Switzerland
2022-2023, 2024-	Faculty advisor for Entomology PhD program (co-advisor)
2020-2023	Faculty advisor for Entomology BS+MS program (co-advisor in '21-'22)
2020-2023	UCR EEOB Graduate admissions committee
2019-2020	UCR EEOB Evolutionary Genomics faculty search committee
2019-present	Editorial Board Member, Neotropical Biodiversity
2019, 2022	Public outreach lecture: Riverside Recreational Trails
2017-2023	Speaker and panelist, AAUW STEM day for middle school girls
2017-present	Editorial Board Member, Biology Letters (~10 articles per year)
2017-2023	Faculty advisor for UCR Graduate Student Peer Mentorship program
2017-2023	UCR Entomology Teaching Evaluation Committee Member
2017	Public outreach lectures at Hi-Desert Museum, Idyllwild Nature Center
2017	UCR Search Committee Member, Urban Entomology Endowed Chair
2016-2017	UCR Entomology Museum Committee Member
2017-2019	Organized and staffed outreach booth on ants at Riverside Insect Fair
2016-present	UCR PhD student qualifying exam committees (Entomology, Microbiology, EEOB graduate programs)
2015-2019, 2020-2023	UCR Entomology Student Curriculum and Admissions Committee Member
2015-2017, 2022-2023	UCR Entomology Seminar Committee Member

2012-2015	UNIL Master in Behavior, Evolution and Conservation Program, Expert Panel Member
2010-2014	Organizer for weekly Internal Seminar, Dept. of Ecology and Evolution, UNIL
2008-2009	Co-organizer, Pacific Ecology and Evolution Conference (PEEC)
2004-2008	Zoology representative on the graduate student council