

Jessica Purcell, Ph.D.
Assistant Professor
Department of Entomology
University of California, Riverside
Riverside, CA 92521
1-951-827-7258
jessica.purcell@ucr.edu
jpurcell.webs.com

Academic Background

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| 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; <i>cum laude</i> , with honors in Biology. |

Positions

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| 7/15 - present | 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. |

Awards and Fellowships

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| 2015 | UC Riverside Collaborative Seed Grant (with Erin Wilson Rankin)
'Understanding the genetic basis of novel social phenotypes in damaging invasive wasps' US \$10,000 |
| 2013 | University of Lausanne Fondation du 450e Anniversaire
'The genetic basis of sociality in spiders' CHF 12,000 |
| 2011 | Fondation Herbette, Funding to initiate genotyping-by-sequencing project, collaborator on application of PI Michel Chapuisat. CHF 25,000 |
| 2008 | American Society of Naturalists Travel Award, Evolution Meeting. US \$500 |
| 2005-2008 | U.S. National Science Foundation Graduate Research Fellow. US \$90,000 |
| 2004-2008 | UBC Graduate Tuition Award. CAD 30,000 |
| 2004-2005 | UBC Graduate Entrance Scholarship. CAD 5000 |
| 2005 | U.S. National Science Foundation Student Travel Grant. US \$ 1500 |
| 2002-2003 | U.S. Fulbright Fellow in Bolivia. US \$12,500 |

Publications

† Denotes student author who I supervised or co-supervised

Articles published in refereed journals

- 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. (* authors contributed equally)
- 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. (* authors contributed equally)
- 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. *Journal of 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, Los Angeles 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**, Brüttsch 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. The social system and primary sex ratio of the recently-described social spider *Anelosimus oritoyacu*. *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**, Brelford A. 2004. Reassessing the causes of decline of *Polylepis*, a tropical subalpine forest. *Ecotropica* 10: 155-158.

Articles in review in refereed journals

- Avril A[†], **Purcell J**, Chapuisat M. In revision. Ant workers exhibit personality and memory during raft formation. *The Science of Nature*.
- Ingle S, Pruitt J, Scharf I, **Purcell J**. Submitted. Group composition, not individual personality, drives ecological selection against immigrants. *American Naturalist*.

Non-refereed contributions

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

Teaching Experience

Course instruction

- 2016 Instructor, U. California Riverside (UCR): Evidence for Evolution (non-majors course).
2009 Instructor, U. of British Columbia (UBC): Skills and Concepts for Advanced Ecology.

Supervision

* denotes students who are co-authors on published or submitted articles.

- 2016 Mentor for Junxia Zhang, Postdoctoral Scholar (UCR)
“Tracing the evolutionary history of a supergene underlying social organization”
UCR, Microbiology PhD Program
- 2016 Mentor for Amanda Hale, 10 week lab rotation, UCR Microbiology PhD program
“Pathogen-based biocontrol mechanisms in the fire ant *Solenopsis invicta*”
UCR, Research for Undergraduates
- 2015- 2016 Mentor for Daniel Pierce
“Social organization and population genetics of *Formica francoeuri*”
- 2016 Mentor for Fabian Vazquez
“Integrating supergenes and phenotypes associated with social polymorphisms”
University of Lausanne, Behavior, Evolution and Conservation Master Program
- 2014 Mentor for Anouk Athanasiades and Rebecca Türler (first step)
“Character displacement of ant communication system in a hybrid zone?”
- 2014 Co-mentor for Sacha Zahnd (master), with Alan Brelsford (postdoc, U. Lausanne)
“Gene flow and selection in an ant hybrid zone”
Co-mentor for Oriol Cases Solanes (master), with Amaury Avril (PhD student, U. Lausanne)
“Genetics of social behavior: egg discrimination by ant workers”
- 2013 Mentor for Dorin Pirogan* (master)
“Local adaptation to different altitudinal conditions in an ant”
Co-mentor for Marion Podolak, with Sarah Kocher (postdoc, Harvard U.)
“Variation in social systems across ecological gradients in sweat bees”
- 2012 Mentor for Farid Bouyarden* “Adaptation to altitude in an ant”
Co-mentor for Jessica Joachim* and Aline Buri*, with Sergio Rasmann (PI, U. Lausanne) and Loïc Pellissier (PhD student, U. Lausanne):
“Evolution of mutualism with ants in *Vicia sepium* along an elevation gradient”
- 2010 Mentor for Sarah Bates* “Rafting and response to floods in ants”
University of Lausanne, Summer Undergraduate Research Program
- 2011 Mentor for Johanne Boulat “Ecology of a social polymorphism in an ant”
University of Lausanne, Research Internships for Undergraduate Students
- 2013 Mentor for Myriam Dridi
- 2013 Mentor for Aurélie Laurent
- 2011 Mentor for Amaury Avril*
- 2010 Mentor for Alain Reymond*

Teaching assistantships

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

Other teaching experience

- 2006 Volunteer, UBC Let's Talk Science Outreach Program.
2001-2002 Science Outreach Program instructor (weekly 4th grade science class).
2000-2002 Peer tutor, Department of Biology, Williams College.

Professional Talks and Posters

“Genetics and ecology of a social polymorphism”

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

“How arthropod societies cooperate”

- 2015 **Invited talk:** Department of Art, Cal State, Long Beach, CA, USA.

“Genetic and ecological underpinnings of social organization in ants”

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

“Causes and consequences of a social polymorphism.”

- 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.

“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.

“The 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.

“Ecological aspects of spider sociality.”

- 2009 Departmental seminar, University of British Columbia, Vancouver, BC, Canada.
2009 Departmental seminar, University of Lausanne, Lausanne, Switzerland.

“Dispersal and the cost of sociality.”

- 2009 UBC/SFU/UVic Ecology and Evolutionary Biology Retreat, Squamish, BC, Canada.

“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.
“Five sympatric *Anelosimus* spider species partition their niche along spatial and temporal axes.”
2008 UBC Grad Student Symposium, Vancouver, BC, Canada.
2008 Pacific Ecology and Evolution Conference, Bamfield, BC, Canada.
“A transplant of social spiders across an altitudinal gradient: effects of precipitation and predation.”
2007 European Society for Evolutionary Biology, Uppsala, Sweden.
“Smaller colonies and more solitary living mark higher elevation populations of a social spider.”
2007 Canadian Society for Ecology and Evolution, Toronto, Ontario, Canada.
2006 Latin American Animal Behavior Society, Xalapa, Mexico.
2006 UBC/SFU/UVic Ecology & Evolutionary Biology Retreat, Squamish, BC, Canada.
“Distribución espacial de arañas sociales y subsociales: Causas y consecuencias.”
2005 Congreso Latinoamericano de Aracnología, Minas, Uruguay.
“Dispersal behavior: Natural selection at the individual level versus population dynamics.”
2005 World Evolution Summit, Galapagos, Ecuador. (Poster)

Manuscripts Reviewed

American Naturalist; Animal Behaviour; Annals of the Entomological Society of America; Axios Review; Behaviour; Behavioral Ecology; Behavioral Ecology and Sociobiology; Biological Invasions; Biological Journal of the Linnean Society; Biology Letters; BMC Ecology; Evolution; Genetics and Molecular Biology; International Journal of Tropical Biology; Journal of Animal Ecology; Journal of Evolutionary Biology; Journal of Field Ornithology; Naturwissenschaften, Oecologia, Proceedings of the Royal Society B.

Research Proposals Reviewed

US National Science Foundation, UC Mexus Program Dissertation Improvement Grant Panelist

Service

- 2016 UC Riverside PhD student committees (one Entomology, one Botany)
2015-2016 UC Riverside Student Curriculum and Admissions Committee Member
2015-2016 UC Riverside 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), Bamfield, B.C.
2004-2008 Zoology representative to graduate student society (GSS), UBC
2007-2008 Grad student representative, University Sustainability Advisory Committee, UBC
2006-2008 Graduate student representative, GSS sustainability committee, UBC
2006 Organizer for Evolution Lecture, Dept. of Zoology, UBC

Personal

Citizenship: United States

Languages: English (native), Spanish (fluent), French (basic)

Computer Programming Experience: C++, Matlab, R, Unix