

Alice B. Dennis

Evolutionary Biology & Systematic Zoology
Institute for Biochemistry & Biology
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EDUCATION

PhD Biology, Louisiana State University. May 2010.

Advisor: Dr. Michael E. Hellberg. Dissertation title: *The Evolution of Freeze Tolerance in a Historically Tropical Snail* (*Melampus bidentatus*).

BS Biology, Emphasis in Ecology & Evolution, University of California, Davis. June 2003.

PROFESSIONAL EXPERIENCE

October 2016 – *present*

Wissenschaftliche Assistentin (approx. non tenure track assistant professor), Evolutionary Biology & Systematic Zoology, Institute for Biochemistry & Biology, University of Potsdam, with Prof. Dr. Ralph Tiedemann.

October 2013 – September 2016

Postdoctoral Researcher, ETH Zürich and EAWAG with Prof. Dr. Christoph Vorburger, *The genetics of host-parasite interactions*.

June 2010 – July 2013

Postdoctoral Researcher, Systematics, Landcare Research with Dr. Thomas R. Buckley, *The evolution of freeze tolerance in alpine stick insects*.

January – August 2008

Research Assistant, Department of Biology, Louisiana State University with Dr. Michael E. Hellberg, *Gamete recognition proteins in Tegula*.

December 2003 – August 2004

Research Assistant, Department of Marine Sciences, University of North Carolina Chapel Hill with Dr. Peter B. Marko, *Phylogeography of Pacific Lingcod*.

June – December 2003

Post Graduate Researcher, University of California, Davis and University of North Carolina Chapel Hill, Dr. J. J. Stachowicz. *Chemical ecology of Atlantic Hydroids*.

August 2002 – June 2003

Undergraduate Research Assistant, College of Biological Sciences, University of California, Davis with Dr. Rick Grosberg and Dr. Alex C. C. Wilson. *Molecular systematics of hermit-crab dwelling Hydractinia in the Atlantic Ocean*.

PUBLICATIONS

In review and revision

Paul, Sarah C., Pragya Singh, **Alice B. Dennis**, and Caroline Mueller. Intergenerational effects of early life starvation on life-history, consumption, and transcriptomes of a holometabolous insect.

<https://doi.org/10.1101/2021.03.11.434967>

Paul, Sarah C., **Alice B. Dennis**, Lisa Johanna Tewes, Jeanne Friedrichs, and Caroline Mueller.

Consequences of pharmacophagous uptake from plants and conspecifics in a sawfly elucidated using chemical and molecular techniques. <https://doi.org/10.1101/2021.02.09.430406>

Käch, Heidi, **Alice B. Dennis**, and Christoph Vorburger. Triple RNA-Seq characterizes aphid gene expression in response to infection with unequally virulent strains of the endosymbiont *Hamiltonella defensa*.

Dennis, Alice B., Heidi Käch, and Christoph Vorburger. Dual RNA-seq in an aphid parasitoid reveals plastic and evolved adaptation to symbiont-conferred resistance.

<https://doi.org/10.1101/2019.12.13.875104>

Peer reviewed publications [OA] marks Open Access publications

21. Paraskevopoulou Sofia, **Alice B. Dennis**, Guntram Weithoff, and Ralph Tiedemann. (2020) Temperature-dependent life history and transcriptomic responses in heat-tolerant versus heat-sensitive *Brachionus rotifers*. *Scientific Reports*, 10: 13281. [OA]

20. **Dennis, Alice B.**, Gabriel I. Ballesteros, *et al.* (2020) Functional insights from the GC-poor genomes of two aphid parasitoids, *Aphidius ervi* and *Lysiphlebus fabarum*. *BMC Genomics* 21, 376 [OA]

19. Lüthi, Martina N., Christoph Vorburger, and **Alice B. Dennis** (2020) A novel RNA virus in the parasitoid wasp *Lysiphlebus fabarum*: genomic structure, prevalence and transmission. *Viruses*. 12(1): 59 [OA]

18. Obbard, Darren J., Mang Shi, Katherine E. Roberts, Ben E. Longdon, and **Alice B. Dennis** (2020) A new lineage of segmented RNA viruses infecting animals. *Virus evolution*. 6(1): vez061. [OA]

17. Matthey-Doret, Cyril, Casper van der Kooi, Daniel Lee Jeffries, Jens Bast, **Alice B. Dennis**, Christoph Vorburger, and Tanja Schwander (2019) Identification of complementary sex determination loci in a parasitoid wasp. *Genome Biology & Evolution*, evz219. [OA]

16. Paraskevopoulou, Sofia, **Alice B. Dennis**, Guntram Weithoff, Stefanie Hartmann, and Ralph Tiedemann (2019) Within species expressed genetic variability and gene expression response to different temperatures in the rotifer *Brachionus calyciflorus sensu stricto*. *PLOS ONE*, 14(9): e0223134. [OA]

15. Autenrieth, Marijke, Stefanie Hartmann, Ljerka Lah, Anna Roos, **Alice B. Dennis**, Ralph Tiedemann (2018) High quality whole genome sequence of an abundant Holarctic odontocete, the harbour porpoise (*Phocoena phocoena*). *Molecular Ecology Resources*. 18: 1469-1481.

14. Käch, Heidi, Hugo Mathé-Hubert, **Alice B. Dennis**, and Christoph Vorburger (2018) Rapid evolution of symbiont-mediated resistance compromises biological control of aphids by parasitoids *Evolutionary Applications*. 11(2): 220-230 [OA]

PUBLICATIONS, continued

13. Twort, Victoria, **Alice B. Dennis**, Duckchul Park, Kathryn F. Lomas, Richard D. Newcomb, and Thomas R. Buckley (2017) Positive selection and comparative molecular evolution of reproductive proteins from New Zealand tree weta (Orthoptera, Hemideina). *PLOS ONE* 12(11): e0188147. [OA]
12. **Dennis, Alice B.**, Vilas Patel, Kerry M. Oliver, and Christoph Vorburger (2017) Parasitoid gene expression changes after adaptation to symbiont-protected hosts. *Evolution*. 71(11): 2599-2617
11. MacMillan, Heath A., Jose M. Knee, **Alice B. Dennis**, Hiroko Udaka, Katie E. Marshall, Thomas J. S. Merritt, and Brent J. Sinclair (2016) Cold acclimation wholly reorganizes the *Drosophila melanogaster* transcriptome and metabolome. *Scientific Reports*, 6: 28999 [OA]
10. Wu, Chen, Ross Crowhurst, Victoria Twort, **Alice B. Dennis**, Shanlin Liu, Richard Newcomb, Howard Ross, and Thomas Buckley (2016) De novo transcriptome analysis of the common New Zealand stick insect *Clitarchus hookeri* (Phasmatodea) reveals genes involved in olfactory reception, digestion and sexual reproduction. *PLOS ONE*, 11(6): e0157783 [OA]
9. **Dennis, Alice B.**, Luke T. Dunning, Brent J. Sinclair, and Thomas R. Buckley (2015) Parallel molecular routes to cold adaptation in eight genera of New Zealand stick insects. *Scientific Reports*, 5: 13965, doi:10.1038/srep13965 [OA]
8. Dunning, Luke T., **Alice B. Dennis**, Brent J. Sinclair, Richard D. Newcomb, and Thomas R. Buckley (2014) Divergent transcriptional responses to low temperature among populations of alpine and lowland species of New Zealand stick insects (*Micrarchus*). *Molecular Ecology*. 23(11): 2712-2726
7. **Dennis, Alice B.**, Stephen H. Loomis and Michael E. Hellberg (2014) Latitudinal variation in freeze tolerance in an intertidal marine snail (*Melampus*). *Physiological & Biochemical Zoology*. 87(4): 517-526
6. **Dennis, Alice B.**, Luke T. Dunning, Christopher J. Dennis, Brent J. Sinclair and Thomas R. Buckley (2014) Overwintering in New Zealand stick insects. *New Zealand Entomologist* 37(1): 35-44
5. Dunning, Luke T., **Alice B. Dennis**, Geoffrey Thomson, Brent J. Sinclair, Richard D. Newcomb, Thomas R. Buckley (2013) Positive Selection in a Core Energy Conversion Pathway among Australasian Stick Insects. *BMC Evolutionary Biology* 13: 215 [OA]
4. Dunning, Luke T., **Alice B. Dennis**, Duckchul Park, Brent J. Sinclair, Richard D. Newcomb, and Thomas R. Buckley (2013) Identification of cold-responsive genes in a New Zealand alpine stick insect using RNA-Seq. *Comparative Biochemistry and Physiology, D* 8(1): 24–31.
3. Hellberg, Michael E., **Alice B. Dennis**, Patricia Arbour-Reily, Jan E. Aagaard, and Willie J. Swanson (2012) The *Tegula* Tango: a coevolutionary dance of interacting, positively selected sperm and egg proteins. *Evolution* 66(6): 1681-1694. [OA]
2. **Dennis, Alice B.** and Michael E. Hellberg (2010) Ecological partitioning among parapatric cryptic species. *Molecular Ecology* 19: 3206-3225.
1. Marko, Peter B., Laura Rogers-Bennett and **Alice B. Dennis** (2006) MtDNA population structure and gene flow in lingcod (*Ophiodon elongatus*): limited connectivity despite long-lived pelagic larvae. *Marine Biology* 150: 1301-1311.

RESEARCH GRANTS & AWARDS

- Deutsche Forschungsgemeinschaft (DFG) **Individual grant**, *The role of physiological variation in delimiting geographical ranges of parapatric cryptic species* (2019) 228,800€
- **Young Investigator Award**, Society for Molecular Biology & Evolution (2019).
- **DAAD** Kongressreisen, ESEB (2017) 1,020 €
- Eidgenössische Anstalt für Wasserversorgung, Abwasserreinigung und Gewässerschutz (EAWAG) **Academic Transition Grant** (2016) *The evolution of ice nucleating proteins in Melampus*, 24,000chf
- National Science Foundation- USA (**NSF**), **Doctoral Dissertation Improvement Grant** (2008) *The evolution of freeze tolerance in a historically tropical snail*, # DEB-0808381. \$12,000
- American Women in Science **Predocctoral Award** (2000) \$1,000
- BIOGRADS **Travel Awards** (annually 2005-2009) \$300 each
- LSU Graduate School **Travel Award** (2005, 2008, 2009) \$600 each
- Western Society of Malacologists **Student Grant** (2006) \$800
- Society of Wetland Scientists- **Student Grants** (2006) \$1,000
- Conchologists of America- **Grants to Malacology** (2006) \$1,500
- Sigma Xi **Grants-In-Aid of Research** (2006) \$700

COLLABORATIVE RESEARCH VISITS

2018. University of Münster, Münster, Germany
Host: Jürgen Gadau, Institute for Evolution and Biodiversity
- 2006 and 2017. Connecticut College, New London, CT. USA.
Host: Dr. Stephen Loomis, Department of Biology.
2012. University of Western Ontario, London, Canada.
Host: Dr. Brent Sinclair, Department of Biology.
2012. University of Otago, Dunedin, New Zealand.
Host: Dr. David Wharton, Department of Zoology.
2011. British Antarctic Survey, Cambridge, England.
Host: Dr. Melody Clark.

INVITED TALKS

- 2018:** Lund University, Department of Biology, Lund, Sweden
- 2017:** Martin Luther University, Department of Zoology, Halle-Wittenberg, Germany
- 2015:** INRIA, Rennes, France *and* ETH Zürich, Institute of Integrative Biology, Switzerland
- 2013:** Louisiana State University, Department of Biology, Baton Rouge, LA, USA
- 2012:** University of Western Ontario, Department of Biology, London, Canada

CONFERENCE PRESENTATIONS

Alice B. Dennis. 2020. *Arthropod Genomics Symposium*. Virtual symposium.

Alice B. Dennis. 2019. *DZG annual meeting*, Jena, Germany

DZG Fachgruppe Keynote in Evolutionsbiologie: Evolution of infectivity in parasitoid wasps

Alice B. Dennis, Kerry Oliver, and Christoph Vorburger. 2016. *BeGenDiv Symposium*, Berlin, Germany

Alice B. Dennis, Kerry Oliver, and Christoph Vorburger. 2015. *Popgroup49*, Edinburgh, Scotland

Alice Dennis and Christoph Vorburger. 2015. *European Society for Evolutionary Biology*, Lausanne, Switzerland

Alice Dennis and Christoph Vorburger. 2015. *Popgroup48*, Sheffield, England

Alice Dennis and Christoph Vorburger. 2014. *Evolution*, Raleigh, NC, USA

Alice Dennis, Luke Dunning, Richard Newcomb, Brent Sinclair and Thomas Buckley. 2012. *Australian and NZ Society for Comparative Physiology and Biochemistry*, Auckland, NZ

Alice Dennis, Luke Dunning, Richard Newcomb, Brent Sinclair and Thomas Buckley. 2012. *Evolution*, Ottawa, Canada

Alice B. Dennis, Luke T. Dunning, Shelley S. Myers and Thomas R. Buckley. 2011. *Evolution*, Norman, Oklahoma, USA

Invited symposium speaker: “Promises and Pitfalls of Incorporating Next-Generation Sequencing Data in Phylogeography”: Stick insects in the cold: comparing RNASeq and physiology across genera

Alice B. Dennis and Michael E. Hellberg. 2009. *Evolution*. Moscow, ID, USA

Alice B. Dennis, Stephen H. Loomis and Michael E. Hellberg. 2008. *Benthic Ecology Meeting*, Providence, RI, USA

Alice B. Dennis and Michael E. Hellberg. 2008. *Evolution*, Minneapolis, MN, USA

AFFILIATIONS

European Reference Genome Atlas- member and on Annotation Committee since 2021

Society for Integrative & Comparative Biology (SICB) since 2020

Society for Molecular Biology & Evolution since 2019

European Society for Evolutionary Biology since 2011

Sigma Xi since 2006

Society of the Study of Evolution since 2006

TEACHING EXPERIENCE

University of Potsdam (UP):

Instructor: Zoologische Bestimmungsübungen (BSc) since 2016
Instructor: How much conservation is needed for evolution? (MSc) since 2017
Instructor: The integrate function of evolutionary biology (MSc) since 2019
Instructor: Molecular Population Genetics & Conservation Genetics (MSc) since 2018
Occasional Lecturer: State-of-the-art-evolution (MSc), Spezielle Zoologie, & Evolutionsbiologie, since 2016

ETH Zürich (ETH):

Tutor, Seminar für Bachelorstudierende: Umweltbiologie. 2014.

University of Auckland (UoA):

Practical instruction of BSc theses

Louisiana State University (LSU):

Teaching Assistant, Invertebrate Zoology (2004-2005, 2007-2009)
Teaching Assistant, Intro Biology Lab for Majors II (2005)
Teaching Assistant, Genetics (2007)
Teaching Assistant, Genetics of the Evolutionary Process (2009).
Occasional Lecturer, Invertebrate Zoology, Intro Biology for majors II, Evolution, Genetics of the Evolutionary Process.

Science Outreach Assistant, Louisiana State University. HHMI Scope-On-A-Rope project, 2005, 2006, and 2010. www.lsu.edu/science/soar

Graduate Mentor, Louisiana State University. Biology Intensive Orientation for Students, Summer 2005 – 2009. Publication from this program: Wischusen and Wischusen, 2007, *CBE Life Science Education* 6(2): 172-178.

MENTORING & STUDENT SUPERVISION (*Co-supervisor)

	University	Degree supervised	Year
Thomas Inäbnit	U Potsdam	PhD	2019- present
Feng Cheng*	U Potsdam	PhD	2019- present
Anton Stamm	U Potsdam	BSc	2020- 2021
Tobias Lendroth	U Potsdam	BSc	2019
Paul Tannenberg	U Potsdam	BSc	2019- 2021
Dr. S. Paraskevopoulou*	U Potsdam	PhD	2017- 2020
Dr. M. Autenrieth*	U Potsdam	PhD	2016- 2020
M. Lüthi	ETH Zürich	MSc	2016- 2020
Dr. H. Käch*	ETH Zürich	PhD	2015- present
A. Marty	ETH Zürich	BSc	2015- 2016
Dr. C. Wu*	UoA	PhD	2013- 2016
Dr. V. Twort*	UoA	PhD	2011- 2016
Dr. L. Dunning*	UoA	PhD	2010- 2013
Dr. S. Myers*	UoA	PhD	2010- 2014
R. Cheah	UoA	BSc	2010- 2011
Dr. M. Habetz	LSU	BSc	2008
S. Todd	LSU	BSc	2006 – 2007
P. Ojiaku	LSU	BSc	2006- 2007

RELEVANT TRAINING

Bioinformatics of long read sequencing, Swiss Institute of Bioinformatics, 2016

Bioinformatics for Adaptation Genomics, ETH Zürich Winter School 2016

Bodega Applied Phylogenetics workshop, UC Davis, 2007

4WD certified 2011

Certified Scientific Diver since 2003

Languages: **English** (native), **Spanish** (approx. A2), **German** (in progress, approx. B1)

BIOINFORMATICS & COMPUTING SKILLS

- R: including use for statistics, bioinformatics (e.g. Bioconductor), and graphics
- Linux and high performance computing, bash scripting, some Perl programming
- Genome guided and *de novo* transcriptome assembly: e.g. Trinity, Mira, SOAP-trans
- Whole genome assembly & annotation: e.g. Allpaths, SOAP, MAKER, Canu
- Phylogeny reconstruction: e.g. MrBayes, Paup, Garli, Beast
- Population genetics & Phylogeography: e.g. Arlequin, MIGRATE, IMA, STRUCTURE

MOLECULAR BIOLOGY SKILLS

- DNA & RNA handling, especially with difficult invertebrate samples
- Experience working in wildlife forensic molecular lab
- cDNA preparation & sequencing
- Illumina & 454 library preparation
- qPCR & PCR, Sanger Sequencing
- Molecular cloning & primer design

FIELD EXPEDITIONS

New Zealand Stick Insect Collection:

- South Island lowland and mountain field trips. Collections and microhabitat assessment:
 - o Summer 2012, Winter 2011, Spring 2011, Summer 2011
- Field surveys and caging experiment: April & August 2012
- Central North Island. Collections and microhabitat assessment
 - o April 2012, January 2012

Coastal Eastern USA, dissertation collections:

- Winter 2017, Connecticut
- Winter 2007 & 2008: Louisiana, Virginia and Connecticut
- Summer 2008: Florida to North Carolina
- Summer 2007: North Carolina to Rhode Island
- Summer 2006: Maine to Massachusetts, South Texas, Louisiana
- Summer 2005. Massachusetts to South Carolina, Louisiana, and Florida

Panama & Pacific Coast Islands September 2006. Field collection of intertidal *Melampus* and subtidal Corbulid bivalves.

Florida Keys September 2003, three week field expedition. Dive-based survey and field collection. Surface support for a 7-day underwater mission in *Aquarius*: aquarius.fiu.edu

SERVICE

Recommender (approx. Associate Editor): Peer Community In Genomics.
<https://genomics.peercommunityin.org/>

Reviewer for: The American Naturalist, Archives of Virology, BMC Evolutionary Biology, Biological Journal of the Linnean Society, Comparative Biochemistry & Physiology-D, Current Research in Insect Science, Genes, Heredity, Insect Biochemistry & Physiology, Evolution, Functional Ecology, Journal of Evolutionary Biology, Journal of Experimental Marine Biology and Ecology, Journal of Thermal Biology, Marine Ecology Progress Series, Molecular Ecology, Molecular Ecology Resources, Royal Society Open Science, Scientific Reports

Examination Board, University of Potsdam Master of Science program “Biochemistry and Molecular Biology, *member* 2019-present.

Conference organization, Biology15. Annual joint meeting of the Swiss Zoological, Botanical, and Systematics societies. Dübendorf, Switzerland. *Review committee and organizer*.

Community Outreach:

Radio New Zealand “Our changing world” featured my stick insect work in 2012.
Available to listen at www.radionz.co.nz/audio/remote-player?id=2515556

LENScience Meet-A-Scientist Participant at the Liggins Institute, University of Auckland, secondary students (10-13 years old).

K-12 education and teacher training at Louisiana State University. Science education to > 300 K-12 students in classrooms and summer camps. Teacher training to > 200 Louisiana K-12 teachers. I also annually coordinated presentations at Louisiana Sea Grant’s “Ocean Commotion” (2004-2010), attended by approximately 2,000 students each year.

College outreach education. Between 2007-2010, I designed and coordinated an outreach program in which Invertebrate Biology students (3rd and 4th year university students) taught lessons in local 4th grade classrooms (8 years old). This program remains a part of the course curriculum.

REFERENCES

Thomas R. Buckley

Research Group Leader, Landcare Research
Associate Professor, University of Auckland
Private Bag 92170, Auckland 1072, New Zealand
Phone: +64 (09) 574 4116
Email: buckleyt@landcareresearch.co.nz
Relationship: Former postdoctoral supervisor

Michael E. Hellberg

Associate Professor
Associate Chair of Graduate Studies
Dept. of Biological Sciences, Louisiana State University
202 Life Science Building, LSU, Baton Rouge, LA 70808, USA
Phone: +1 (225)578-1757
Email: mhellbe@lsu.edu
Relationship: PhD supervisor

Ralph Tiedemann

Professor, University of Potsdam
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14476 Potsdam, Germany
Phone: +49 (331) 977 5249
Email: tiedeman@uni-potsdam.de
Relationship: Current supervisor

Christoph Vorburger

Head of Department, Aquatic Ecology, EAWAG
Adjunct Professor for Evolutionary Ecology, Institute of Integrative Biology, ETH Zürich
BU G13, Überlandstrasse 133
8600 Dübendorf, Switzerland
Phone: +41 (058) 765 5196
Email: christoph.vorburger@eawag.ch
Relationship: Former postdoctoral supervisor