

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.

RESEARCH EXPERIENCE

October 2016 – *present*.

Research Scientist/ Postdoctoral Researcher, 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 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:

Dennis, Alice B., Vilas Patel, Kerry M. Oliver, and Christoph Vorburger. Parasitoid gene expression changes after adaptation to symbiont-protected hosts.

Victoria G. Twort, **Alice B. Dennis**, Duckchul Park, Kathryn F. Lomas, Richard D. Newcomb, Thomas R. Buckley. Positive selection and comparative molecular evolution of reproductive proteins from New Zealand tree weta (Orthoptera, Hemideina)

In press:

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, DOI: 10.1038/srep28999

10. Wu, Chen, Ross Crowhurst, Victoria Twort, **Alice 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

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

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.**, S. H. Loomis and M. 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

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.

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.

PRESENTATIONS (*invited)

Alice B. Dennis, Kerry Oliver, and Christoph Vorburger. The transcriptomic basis of infectivity in a parasitoid wasp. November 2016, BeGenDiv Symposium 2016, Berlin, Germany

Alice B. Dennis, Kerry Oliver, and Christoph Vorburger. Experimental evolution in a parasitoid wasp: virulence through venom and the role of viruses. Dec 2015, Popgroup49, Edinburgh, Scotland

***Alice B. Dennis**, Jens Bast, Zoé Dumas, Tanja Schwander, and Christoph Vorburger. Whole genome assembly of the parasitoid wasp *Lysiphlebus fabarum*, Nov 2015, INRIA, Rennes, France.

***Alice Dennis**, Kerry Oliver and Christoph Vorburger. The transcriptomic basis of parasitoid attack. GDC Symposium, ETH Zürich, Sept 2015, Zürich, Switzerland

Alice Dennis and Christoph Vorburger. Parasitoid adaptation to hosts with symbiont conferred resistance. European Society for Evolutionary Biology, Aug 2015, Lausanne, Switzerland

Alice Dennis and Christoph Vorburger. An evolutionary arms race: parasitoid counter-adaptation to symbiont-conferred resistance in aphids. Jan 2015, Popgroup48, Sheffield, England

Alice Dennis and Christoph Vorburger. Rapid parasitoid adaptation to symbiont-conferred resistance. Evolution, June 2014, Raleigh, NC, USA

***Alice Dennis**, Luke Dunning, Richard Newcomb, Brent Sinclair and Thomas Buckley. Divergent transcriptomics and physiology in New Zealand walking sticks. Eco Seminar Series, EAWAG, Oct 2013, Zürich, Switzerland

***Alice Dennis**, Luke Dunning, Richard Newcomb, Brent Sinclair and Thomas Buckley. Divergent transcriptomics and physiology in New Zealand walking sticks. LSU Museum of Natural Science, Aug 2013, Baton Rouge, LA, USA

Alice Dennis, Luke Dunning, Richard Newcomb, Brent Sinclair and Thomas Buckley. Comparing cold tolerance and transcriptional response among NZ stick insects. Australian and NZ Society for Comparative Physiology and Biochemistry, Dec 2012, Auckland, NZ

***Alice Dennis**, Luke Dunning, Richard Newcomb, Brent Sinclair and Thomas Buckley. Stick insects in the cold: comparing RNASeq and physiology across genera. July 2012, University of Western Ontario, London, Canada

Alice Dennis, Luke Dunning, Richard Newcomb, Brent Sinclair and Thomas Buckley. Stick insects in the cold: comparing RNASeq and physiology across genera. July 2012, Evolution, Ottawa, Canada

***Alice B. Dennis**, Luke T. Dunning, Shelley S. Myers and Thomas R. Buckley. Cold tolerance in New Zealand alpine stick insects: transcriptome variation within and among species. In the “Promises and Pitfalls of Incorporating Next-Generation Sequencing Data in Phylogeography” symposium, June 2011, Evolution, Norman, Oklahoma, USA

Alice B. Dennis and Michael E. Hellberg. Using ecological niche modeling and physiology to explain cryptic species' ranges. June 2009, Evolution. Moscow, ID, USA

Alice B. Dennis, Stephen H. Loomis and Michael E. Hellberg. Do cryptic snail species differ in freeze tolerance? April 2008, Benthic Ecology Meeting, Providence, RI, USA

Alice B. Dennis and Michael E. Hellberg. The evolution of freeze tolerance in a historically tropical genus (*Melampus*). June 2008, Evolution, Minneapolis, MN, USA

Alice B. Dennis
CURRICULUM VITAE

RESEARCH GRANTS & AWARDS

- EAWAG Academic Transition Grant. Title: The evolution of ice nucleating proteins in *Melampus*, September 2016, **CHF 24,000**
- National Science Foundation, Doctoral Dissertation Improvement Grant. Title: The evolution of freeze tolerance in a historically tropical snail, June 2008, # DEB-0808381. **\$12,000**
- American Women in Science Predoctoral Award, June 2008, **\$1,000**
- BIOGRADS Travel Awards, annually 2005-2009, **\$300 each**
- LSU Graduate School Travel Award, June 2005, April 2008, and June 2009 **\$600 each**
- Western Society of Malacologists Student Grant, August 2006, **\$800**
- Society of Wetland Scientists- Student Grants, June 2006, **\$1,000**
- Conchologists of America- Grants to Malacology, May 2006, **\$1,500**
- Sigma Xi Grants-In-Aid of Research, March 2006, **\$700**

COLLABORATIVE RESEARCH VISITS

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.

2006. Connecticut College, New London, CT. USA.

Host: Dr. Stephen Loomis, Department of Biology.

RELEVANT TRAINING

Bioinformatics for Adaptation Genomics, ETH Zürich Winter School 2016

Bodega Applied Phylogenetics workshop, UC Davis, 2007

4WD certified 2011

Certified Scientific Diver 2003

Languages: **English** (native), **Spanish** (proficient), **French** (beginner), **German** (in progress)

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

TEACHING EXPERIENCE

Tutor, ETH Zürich. Seminar für Bachelorstudierende: Umweltbiologie. 2014.

Teaching Assistant, Louisiana State University:

Invertebrate Zoology (2004-2005, 2007-2009)

Intro Biology Lab for Majors II (2005)

Genetics (2007)

Genetics of the Evolutionary Process (2009).

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

Graduate Mentor, Louisiana State University. Biology Intensive Orientation for Students, Summer 2005 – 2009. <http://www.ncbi.nlm.nih.gov/pubmed/17548879>

Guest Lecturer, Louisiana State University. Invertebrate Zoology, Intro Biology for majors II, Evolution, Genetics of the Evolutionary Process.

MENTORING & STUDENT SUPERVISION

Marijke Autenrieth, Uni Potsdam PhD student, 2016- present

Heidi Käch, ETH PhD student, 2015 - present

Martina Lüthi, ETH MSc Student, 2016- 2017

Anja Marty, ETH Bachelorarbeit, 2015- 2016

Chen Wu, UOA PhD Student, 2013 - 2016

Victoria Twort, UOA PhD Student, 2011 - 2016

Luke Dunning, UOA PhD student, 2010 - 2013

Shelley Myers, UOA PhD student, 2010 - 2014

Geoffrey Thompson, UOA Summer student 2011 - 2012

Ruby Cheah, UOA Summer student Nov 2010 - 2011

Morgan Habetz, LSU, Undergraduate researcher 2008

Princess Ojiaku, LSU, Undergraduate researcher, 2006 - 2007

AFFILIATIONS

European Society for Evolutionary Biology member since 2011

Sigma Xi member since 2006

Society of the Study of Evolution member since 2006

FIELD EXPEDITIONS

- New Zealand, Stick Insect Collection:
 - Summer South Island field trips, 2011 & 2012.
 - Field surveys and caging experiment: April & August 2012.
 - January & April 2012, Paengaroa Scenic Reserve, North Island.
- Coastal Eastern USA, dissertation collections:
 - 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

Conference organization, Biology15: Review committee and organizer: biology15.eawag.ch

Reviewer for: BMC Evolutionary Biology, Biological Journal of the Linnean Society, Heredity, Evolution, Functional Ecology, Journal of Evolutionary Biology, Journal of Experimental Marine Biology and Ecology, Marine Ecology Progress Series, Molecular Ecology, Molecular Ecology Resources

Community Outreach:

Work experience host at Landcare Research in 2012 (year 12 student)

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. Visited > 300 K-12 students through classroom visits and summer camps, conducting lessons in science and technology. I led separate teacher training sessions that were attended by more than 200 Louisiana K-12 teacher. 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

Brent J. Sinclair

Professor
Department of Biology Biological & Geological Sciences, University of Western Ontario
Room 2078, Western University, 1151 Richmond St N, London, Ontario, Canada, N6A 5B7
Phone: +1 (519) 661 2111 ext 83138
Email: bsincla7@uwo.ca

Relationship: Collaborator

Christoph Vorburger

Group Leader, 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: Current postdoctoral supervisor