

CHRISTOPHER S. WILLETT

Research Assistant Professor
Department of Biology
CB#3280 Coker Hall
University of North Carolina, Chapel Hill
Chapel Hill, NC, 27599-3280

Tel: 919-843-6290
Fax: 919-962-1625
Email: willett4@email.unc.edu

A. VITAE

EDUCATION

Cornell University Ph.D. Genetics and Development, August 1999
Michigan State University B.S. in Zoology, May 1993

PROFESSIONAL EXPERIENCE

Research Assistant Professor, Department of Biology, University of North Carolina,
Chapel Hill, July 2002-present.
Postgraduate Researcher, Marine Biology Research Division, Scripps Institution of
Oceanography, Sept. 1999-June 2002. (advisor Dr. Ronald S. Burton)
Teaching Assistant, Genetics (Dr. Micheal Goldberg) fall 1994
Teaching Assistant, Genetics (Dr. Ross MacIntyre) spring 1995

FELLOWSHIPS AND AWARDS

National Institute of Health genetics training grant, 1998-99
National Science Foundation predoctoral fellowship, 1995-98
Sage fellowship, Cornell University, 1993-94
Top student in Zoology at Michigan State University, 1993
Honor's College at Michigan State University, 1993
Phi Beta Kappa, 1993

B. GRANTS

Willett, C. S., 2008-2011. Genetic pathways involved in hybrid breakdown in *Tigriopus californicus*. NSF population and evolutionary processes program, DEB-0821003 (\$410 000)

Willett, C. S., 2005-2009. Genomic coadaptation, extrinsic interactions, and reproductive isolation in *T. californicus*. NSF population and evolutionary processes program, DEB-0516139. (\$377 243)

Willett, C. S., and R. G. Harrison, 1997-9. The evolution of pheromone binding proteins: Evidence for directional selection? NSF doctoral dissertation improvement grant. (\$10 000)

C. PUBLICATIONS AND CONTRIBUTED PAPERS

Willett, C. S., 2010. The nature of interactions that contribute to postzygotic reproductive isolation in hybrid copepods. *Genetica*. DOI 10.1007/s10709-010-9525-1.

Willett, C. S. 2010. Potential fitness tradeoffs for thermal tolerance in the intertidal copepod *Tigriopus californicus*. *Evolution* **64**: 2521-2534.

Willett, C. S. and J. T. Ladner. 2009. Investigations of fine-scale phylogeography in *Tigriopus californicus* reveal historical patterns of population divergence. *BMC Evolution*. **9**:139.

Willett, C. S. 2008. No evidence for faster male hybrid sterility in population crosses of an intertidal copepod (*Tigriopus californicus*). *Genetica* **133**:129-136.

Willett, C. S. 2008. Significant variation for fitness impacts of ETS loci in hybrids between populations of *Tigriopus californicus*. *Journal of Heredity* **99**:56-65.

Willett, C. S. and J. N. Berkowitz*, 2007. Viability effects and not meiotic drive cause dramatic departures from Mendelian inheritance for malic enzyme in hybrids of *Tigriopus californicus* populations. *Journal of Evolutionary Biology* **20**:1196-1205.

*Work part of honor's thesis for UNC undergraduate

Willett, C. S. 2006. Deleterious epistatic interactions between electron transport system protein-coding loci in the copepod *Tigriopus californicus*. *Genetics* **173**:1465-1477.
Paper recommended by Faculty of 1000

Burton, R. S., E. C. Metz, J. M. Flowers, and C. S. Willett. 2005. Unusual structure of ribosomal DNA in the copepod *Tigriopus californicus*: Intergenic spacer sequences lack internal sub-repeats. *Gene* **344**:105-113.

Willett, C. S., and R. S. Burton, 2004. Evolution of interacting proteins in the mitochondrial electron transport system in a marine copepod. *Molecular Biology and Evolution*. **21**:443-453.

Willett, C. S., and R. S. Burton, 2003. Environmental influences on epistatic interactions: viabilities of cytochrome c genotypes in interpopulation crosses. *Evolution* **57**:2286-2292.

Paper recommended by Faculty of 1000

Willett, C. S., and R. S. Burton, 2003. Characterization of the glutamate dehydrogenase gene and its regulation in a euryhaline copepod. *Comp. Biochem. Physiol. B* **135**: 639-646.

Willett, C. S. and R. S. Burton, 2002. Proline biosynthesis genes and their regulation under salinity stress in the euryhaline copepod *Tigriopus californicus*. *Comp. Biochem. Physiol. B* **132**:739-750.

Willett, C. S., and R. S. Burton, 2001. Viability of cytochrome c depends on cytoplasmic background in *Tigriopus californicus*. *Evolution* **55**:1592-1599.

Willett, C. S., 2000. Evidence for directional selection acting on pheromone-binding proteins in the genus *Choristoneura*. *Molecular Biology and Evolution* **17**:553-562.

Willett, C. S., 2000. Do pheromone binding proteins converge in amino acid sequence when pheromones converge? *Journal of Molecular Evolution* **50**:175-183.

Willett, C. S. and R. G. Harrison, 1999. Insights into genome differentiation: Pheromone binding protein variation and population history in the European corn borer (*Ostrinia nubilalis*). *Genetics* **153**:1743-1751.

Willett, C. S. and R. G. Harrison, 1999. Pheromone binding proteins in the European and Asian corn borers: No protein change associated with pheromone differences. *Insect Biochemistry and Molecular Biology*, **29**:277-284.

Willett, C. S., M. J. Ford, and R. G. Harrison, 1997. Inferences about the origin of a field cricket hybrid zone from a mitochondrial DNA phylogeny. *Heredity* **79**:484-494.

Selected Contributed Papers:

The nature of interactions that contribute to post-zygotic reproductive isolation in hybrid copepods. Invited talk. Genetics and the Origin of Species: The Continuing Synthesis. Cornell University, Ithaca, NY July 22-23, 2010.

Potential fitness tradeoffs for thermal tolerance in the intertidal copepod *Tigriopus californicus*. Contributed talk. Evolution 2010: The Society of Systematic Biologists, the Society for the Study of Evolution, and American Society of Naturalists, Joint Annual Meeting. Portland, OR, June 25-29, 2010.

Fitness trade-offs for thermal tolerance in the dispersal-limited copepod *Tigriopus californicus*. Contributed poster. The genetics and genomics of climate change. American Genetic Association Annual Symposium. Brown University, Providence, RI. June 8-11, 2009.

Identifying gene interactions contributing to hybrid breakdown in the intertidal copepod *Tigriopus californicus*. Contributed talk. Evolution 2008: The Society of Systematic Biologists, the Society for the Study of Evolution, and American Society of Naturalists, Joint Annual Meeting, Minneapolis, MN. June 20-24, 2008.

The interplay between selection and population structure for mitochondrial DNA variation. Contributed poster. Annual meeting of the Society for Molecular Biology and Evolution. Halifax, NS. June 24-28, 2007.

Genic Incompatibilities, Hybrid Breakdown, and ETS Proteins in Hybrid Copepods. Contributed poster. Genetics of Speciation meeting, hosted by the American Genetics Association, Vancouver, BC. July 21-24, 2006.

Genic incompatibilities, hybrid breakdown, and ETS proteins in hybrid copepods. Contributed talk. The Society of Systematic Biologists, the Society for the Study of Evolution, and American Society of Naturalists, Joint Annual Meeting, Stony Brook, NY, June 23-27, 2006.

The evolution of hybrid sterility: Haldane's rule and hybrid incompatibilities in copepods. Contributed talk. South Eastern Population Ecology and Genetics Group Meeting. Swannanoa, NC, September 10-12, 2004.

The evolution of hybrid sterility: Haldane's rule and hybrid incompatibilities in copepods. Contributed talk. The Society of Systematic Biologists, the Society for the Study of Evolution, and American Society of Naturalists, Joint Annual Meeting, Ft. Collins, CO, June 26-20, 2004.

Hybrid breakdown in population crosses: environmental influences on incompatibilities. Contributed talk. The Society of Systematic Biologists, the Society for the Study of Evolution, and Numerical Taxonomy Group Joint Annual Meeting, Chico CA, June 21-24, 2003.

Molecular genetics of osmoregulation: Regulation of free amino acid accumulation in copepods under hyperosmotic stress. Contributed talk. Society for Integrative and Comparative Biology Annual Meeting. Toronto, Canada, January 4-8, 2003.

Sequences of mtDNA and nuclear genes: Coadaptation between proteins encoded by different genomes. Contributed talk. South Eastern Population Ecology and Genetics Group Meeting, Beaufort, NC, September 20-22, 2002.

Selection upon nuclear markers varies across environments in laboratory populations of an intertidal copepod. Poster presentation. The Society of Systematic Biologists, the Society for the Study of Evolution, and Numerical Taxonomy Group Joint Annual Meeting, Knoxville TN, June 26-30, 2001.

Intergenomic coadaptation and hybrid breakdown in population crosses. Contributed paper. California population and evolutionary and genetics group. Santa Cruz, CA. December 8-10. 2000.

Intergenomic coadaptation and hybrid breakdown in population crosses. Contributed paper. The Society of Systematic Biologists, the Society for the Study of Evolution, and

Numerical Taxonomy Group Joint Annual Meeting, Indiana University, Bloomington, IN. June 23-27, 2000.

Evolution of pheromone binding proteins in moths. Contributed paper. The Society of Systematic Biologists, the Society for the Study of Evolution, and Numerical Taxonomy Group Joint Annual Meeting, Vancouver B.C., Canada. June 20-24, 1998.

Pheromone binding protein genes of corn borers: No evidence for divergence associated with pheromone differences. Poster presentation. 2nd international symposium on insect pheromones, WICC-International Agricultural Centre, Wageningen, The Netherlands. March 30-April 3, 1998

Molecular evolution in pheromone systems in moths: Pheromone binding proteins of the European corn borer (*Ostrinia nubilalis*). Contributed paper. The Society of Systematic Biologists, the Society for the Study of Evolution, and Numerical Taxonomy Group Joint Annual Meeting, University of Colorado, Boulder, Colorado. June 14-18, 1997.

Inferences about the origin of a field cricket hybrid zone from a mtDNA phylogeny. Poster presentation. The Society of Systematic Biologists, the Society for the Study of Evolution, and Numerical Taxonomy Group Joint Annual Meeting, McGill University, Montreal, Quebec. July 8-12, 1995.

D. PROFESSIONAL ACTIVITIES

INVITED PRESENTATIONS

Department of Biology, East Carolina University, invited speaker, November 2009.
10th International Conference on Copepoda, Pattaya, Thailand, invited symposium speaker, July 2008

Department of Biological Sciences, Florida State University, invited speaker, February 2008.

Department of Integrative Biology, University of Guelph, invited speaker, April 2005.
Department of Biology, University of Miami, invited speaker, February 2005.

Department of Biology, Population Biology seminar, University of Virginia, February 2003.

Department of Biology, PopBio seminar, Duke University, January 2003

Department of Biology, University of North Carolina at Chapel Hill, March 2001

Biology Department, College of William and Mary, March 2001 (recruitment seminar)

Biology Department, American University, February 2001 (recruitment seminar)

Marine Biology Seminar, Scripps Institution of Oceanography, May 2000.

Center for Population Biology, University of California, Davis, February 2000.

Biology Department, Ecology and Evolutionary Biology Seminar, University of Rochester, February 1999.

W. M. Keck Center for Behavioral Biology, North Carolina State University, February 1999.

Department of Ecology and Evolutionary Biology, University of Chicago, November 1998.

PROFESSIONAL ACTIVITIES

Participant International Workshop on Copepod Genomics, Pattaya Thailand, July 2008; set up wiki page for editing papers resulting from discussions in meeting and contributed to writing of a white paper discussing the development of genomic tools in copepods.

Reviewer for *Evolution*, *Science*, *Molecular Biology and Evolution*, *PLoS Biology*, *Genetics*, *Heredity*, *Trends in Genetics*, *Insect Biochemistry and Molecular Biology*, *Insect Molecular Biology*, *Journal of Experimental Marine Biology and Ecology*, *Genetica*, *Invertebrate Biology*, *Molecular Ecology*, *Marine Biology*, *Current Zoology*, *Proceedings of the Royal Society Series B*.

Proposal reviews, NSF Biocomplexity in the Environment: Genome-Enabled Environmental Sciences and Engineering; NSF sensory biology; NSF-Population and Evolutionary Processes; NSF-International Polar Year, Environmental Genomics; NSF-Biological Oceanography; Israel Science Foundation; Royal Society of New Zealand, Marsden Fund; National Geographic Society; Netherlands Organization for Scientific Research (NWO), Innovational Research Incentives Scheme.

Panelist, NSF evolutionary genetics advisory panel, NSF DDIG population and evolutionary processes advisory panel.

Participant, 1995 Workshop on Molecular Evolution, MBL, Woods Hole, Massachusetts

PROFESSIONAL SOCIETES

American Association for the Advancement of Science
The Society for the Study of Evolution
Society for Molecular Biology and Evolution

E. GRADUATE COMMITTEE

Advisor: Richard G. Harrison
Members: Charles F. Aquadro
Wendell L. Roelofs