

Christopher S. Willett

Curriculum Vitae

Updated October 2021

A. PERSONAL

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

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B. EDUCATION

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

C. PROFESSIONAL EXPERIENCE

Research Associate Professor, Department of Biology, University of North Carolina,
Chapel Hill, July 2014-present

Research Assistant Professor, Department of Biology, University of North Carolina,
Chapel Hill, July 2002-2014.

Sabbatical leave at the Evolutionary Biology Centre (EBC) in the Department of
Evolutionary Biology, Uppsala University, Sweden, group headed by Niclas
Backström. March 2018-June 2018.

Sabbatical leave at Institut für Populationsgenetik, Vetmeduni, Vienna, Austria, group
headed by Christian Schlötterer. January 2012-August 2012.

Postgraduate Researcher, Marine Biology Research Division, Scripps Institution of
Oceanography, Sept. 1999-June 2002. (advisor Dr. Ronald S. Burton)

D. HONORS 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

E. GRANTS

Willett, C. S. (co-PI), and J. G. Kingsolver. 2020-2024. Heat stress and host-parasitoid-
endosymbiont interactions: Developmental timing and physiological mechanisms of

thermal mismatch, NSF Integrative Ecological Physiology Program, IOS-2029156 (\$810,727)

Willett, C. S. (co-PI), and J. G. Kingsolver. 2016-2021. Understanding Growth and Developmental Responses of Ectotherms to Fluctuating Environments: Beyond Performance Curves, NSF Integrative Ecological Physiology Program, IOS-1555959 (\$680 857)

Willett, C. S., S. Edmands, and R. S. Burton co-PIs. 2012-2017. Collaborative Research: Ecological genomics of stress response in an intertidal copepod, NSF Integrative Ecological Physiology Program and Biological Oceanography Programs, IOS-1155325 (\$422 513; CSW portion of grant)

Willett, C. S., 2008-2012. 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)

F. PUBLICATIONS

Refereed Articles

Lee, J-Y., M. C. Phillips, M. Lobo*, and C. S. Willett. 2021. Tolerance patterns and transcriptomic response to a fluctuation in salinity and to extreme salinities across populations of the intertidal copepod *Tigriopus californicus*. **94**:50–69 *Physiological and Biochemical Zoology*. <https://doi.org/10.1086/712031>

*UNC undergraduate

Alston, M. A., J. Lee, M. E. Moore, J. G. Kingsolver, and C. S. Willett. 2020. The Ghost of Temperature Past: Interaction of Previous and Current Thermal Conditions on Gene Expression in *Manduca sexta*. *Journal of Experimental Zoology*. 223, jeb213975. <https://doi.org/10.1242/jeb.213975>

Lima, T. G., R. S. Burton, and C. S. Willett. 2019. The importance of nuclear-nuclear versus mito-nuclear incompatibilities in population crosses of the copepod *Tigriopus californicus*. *Evolution* **73**:609-620. <https://doi.org/10.1111/evo.13690>

Barreto, F. S., E. T. Watson, T. G. Lima, C. S. Willett, S. Edmands, W. Li, and R. S. Burton, 2018. Mitonuclear interactions leave a footprint of accelerated molecular evolution across the nuclear genome of the copepod *Tigriopus californicus*. *Nature Ecology and Evolution* **2**, 1250–1257. <https://doi.org/10.1038/s41559-018-0588-1>

Work highlighted News and Views by J. Hui in same issue

Lima, T. G., and C. S. Willett, 2018. Using pool-seq to search for genomic regions affected by hybrid inviability in the copepod *T. californicus*. *Journal of Heredity*. **109**(4):469-476

<https://doi.org/10.1093/jhered/esx115>

Willett, C. S., and E. Wilson, 2018. Evolution of Melanoma antigen-A11 (MAGEA11) during Primate Phylogeny. *Journal of Molecular Evolution*. **86**:240–253.

<https://doi.org/10.1007/s00239-018-9838-8>

Willett, C. S., and C. Son*, 2018. The evolution of the thermal niche across locally adapted populations of the copepod *Tigriopus californicus*. *Bulletin of the S. CA Acad. Sci (13th ICOC conference proceedings)*. **117**(2):150-156. <https://doi.org/10.3160/3712.1>

**UNC undergraduate*

Lima, T. G., and C. S. Willett, 2017. Locally adapted populations of a copepod species exhibit starkly different gene expression responses to different thermal environments.

Ecology and Evolution **12**:4312-4325. <https://doi.org/10.1002/ece3.3016>

Sinclair, B. J., K. E. Marshall, M. A. Sewell, D. L. Levesque, C. S. Willett, S. Slotsbo, Y. Dong, C. D.G. Harley, D. J. Marshall, B. S. Helmuth, and R. B. Huey. 2016. Can we predict ectotherm responses to climate change using thermal performance curves and body temperatures? *Ecology Letters*. **19**:1372-1385. <https://doi.org/10.1111/ele.12686>

Willett, C. S., T. G. Lima, I. Kovaleva*, L. Hatfield*. 2016. Chromosome-wide impacts on the expression of incompatibilities in hybrids of *Tigriopus californicus*. *G3 | Genes | Genomes | Genetics* **6**:1739-1749. <https://doi.org/10.1534/g3.116.028050>

**UNC undergraduates*

Willett, C. S. 2013. Gene conversion yields novel gene combinations in paralogs of GOT1 in the copepod *Tigriopus californicus*. *BMC Evolutionary Biology* **13**:148.

Willett, C. S. 2012. Quantifying the elevation of mitochondrial DNA evolutionary substitution rates over nuclear rates in the intertidal copepod *Tigriopus californicus*. *Journal of Molecular Evolution* **74**:310-318.

Willett, C. S. 2012. Hybrid breakdown weakens under thermal stress in population crosses of the copepod *Tigriopus californicus*. *Journal of Heredity* **103**:103-114.

- Willett, C. S. 2011. Complex deleterious interactions associated with malic enzyme may contribute to reproductive isolation in the copepod *Tigriopus californicus*. *PLoS ONE* **6**:e21177.
- Willett, C. S. 2011. The nature of interactions that contribute to postzygotic reproductive isolation in hybrid copepods. *Genetica* **139**: 575-588.
- 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 Evolutionary Biology*. **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.

Submitted, preprint, or in-prep papers

Deconinck, A., and C. S. Willett. Latitudinal cline in hypoxia tolerance does not result in correlated acid tolerance in *Tigriopus californicus*.
bioRxiv 2021.04.10.439290; doi: <https://doi.org/10.1101/2021.04.10.439290>

Lee, J-Y, C. S. Willett. Widespread paternal leakage and rapid shifts in paternal haplotype frequencies in marine copepod hybrids (*Tigriopus californicus*).
bioRxiv 2021.05.10.443310; doi: <https://doi.org/10.1101/2021.05.10.443310>

Papers authored by students in my research group under my supervision

Lima, T. G. 2014. Higher levels of sex chromosome heteromorphism are associated with markedly stronger reproductive isolation. *Nature Communications* **5**:4743.

Other publications

Howard, D. J., R. K. Grosberg, M. A. F. Noor, B. B. Normark, D. M. Rand, K. L. Shaw, and C. S. Willett. 2016. In memoriam: Richard G. Harrison – his life and legacy. *Molecular Ecology* **25**:2333-2336.

Dissertations

Lee, J. Y. 2021 Unexpected paternal mitochondrial inheritance in inter-population hybrids, and salinity tolerance in genetically divergent populations of the marine copepod *Tigriopus californicus*. PhD thesis, University of North Carolina, Chapel Hill, NC.

Lima, T. G. 2015. Local adaptation and reproductive isolation in the copepod *Tigriopus californicus*. PhD thesis, University of North Carolina, Chapel Hill, NC.

Willett, C. S. 1999. The evolution of pheromone binding proteins in moths: Insights into protein evolution and population history. PhD thesis, Cornell University, Ithaca, NY.

G. TEACHING AND MENTORING

Teaching Experience

Awards and fellowships

UNC Quality Enhancement Plan (QEP) award for development of Course-Based Undergraduate Research (CURE) course and attending faculty learning community group to help in development (Fall 2019 and spring 2020)

American Association of Universities (AAU) apprentice for undergraduate STEM initiative. Fall 2016. This fellowship allowed me to transform my large ecology/evolution course into a more structured/higher student engagement course.

UNC courses taught

Biol 201/54: Ecology and Evolution. Taught fall 2005-2018; spring 2021 (13 semesters). Class enrollment has gone from 137 undergraduates to 225 undergraduates per semester. Starting in 2021 teaching two concurrent sections.

Biol 255H: Evolution of Extraordinary Adaptations. Course-based undergraduate research course (CURE); spring 2020 (20 students)

Biol 891: Graduate Seminar in Biology (9 semesters). Focuses on developing effective seminar presentations about their research. Taught spring 2009, 2010 (18 students), 2011 (25 students); fall 2012 (14 students), 2013 (15 students), 2014 (15 students), 2015 (13 students); spring 2016 (14 students), fall 2016 (15 students), fall 2017 (16 students), fall 2018 (14 students), spring 2018 (15 students) fall 2019 (16 students), fall 2020 (9 students).

Biol 659: Seminar in Evolutionary Biology (2 semesters). Fall 2011 topic was speciation (6 registered students), Spring 2004 topic was techniques in molecular evolution (7 registered students).

Biol 669: Seminar in Ecology (1 semester). Spring 2014 topic was next generation sequencing approaches in ecology and evolution.

Cornell University courses assisted

Teaching Assistant, Genetics (Dr. Micheal Goldberg) fall 1994
 Teaching Assistant, Genetics (Dr. Ross MacIntyre) spring 1995

Graduate Student Trainees

Thiago Lima	Graduated Fall, 2015 with PhD from EEOB, UNC; Senior Scientist at Digital Proteomics, La Jolla, CA
Jeeyun Lee	Graduated Spring, 2021 with PhD in EEOB, UNC
Meggan Alston	6 th year student in EEOB, UNC
Aimee Deconinck	5 th year student in EEOB, UNC
Katherine Malinski	4 th year student in EEOB, UNC (joint with Joel Kingsolver)
Lorrie He	1 st year student in EEOB, UNC (joint with Joel Kingsolver)
Stephanie Peak	1 st year student in EEOB, UNC (joint with Karl Castillo)

Graduate Committees (excluding students in my lab)

Catherine Chen	current EEOB student, UNC
Joseph McGirr	PhD. EEOB 2020, UNC
Audrey Kelly	PhD. EEOB 2020, UNC
Kate Augustine	PhD. EEOB 2018, UNC
Amanda Whitlock	PhD. GMB 2016, UNC
Justin Yeh	switched off committee, EEOB PhD. 2018, UNC
Lisa Bono	PhD. EEOB 2014, UNC
Jessica Higgins	PhD. EEOB 2014, UNC
Eric Early	PhD. MCDB 2013, UNC
Josie Reinhardt	PhD. MCDB 2012, UNC
Gregory Ragland	PhD. EEOB 2007, UNC

Undergraduates Supervised

Biol 395/98 Undergraduate Research Advisor

Maryann Bowyer	Spring 2019 (volunteer with Jeeyun Lee in Fall 2019)
Sarah Slay	Spring 2019 (volunteer with Jeeyun Lee in Fall 2019)
Alejandra Samano	Fall 2018-Spring 2019 (mentored by Meggan Alston)
Anna Pearson	Spring 2018 (Joel Kingsolver officially supervised due to my leave and time in Sweden at Uppsala); worked in lab Fall 2018 to present.
Austin Cotton	Fall 2017 (worked in lab from spring 2017)
Christian Proserpi	Fall 2016-spring 2017 (work study in lab from Fall 2105)
Sean Rankin	Spring-summer 2015
Judith Mendez Segovia	Fall 2013-Spring 2014 (HHMI FSC participant in lab summer 2013)
Monica Lobo	Fall 2013-Spring 2014 (Dental school, Stoney Brook, NY)
Hemanth Kunduru	Spring 2010 (D.M.D Tufts, Dentist Dallas, TX)

Austin Craven	Spring 2008 (in lab until spring 2009); (M.S. UNC Greensboro; Lecturer UNC Greensboro)
Nathaniel Gindele	Spring 2007 (in lab from summer 2006); (Ph.D philosophy Duke, web developer, Denver, CO)
Heather Leisy	Fall 2004, spring 2005, honor's thesis spring 2006 (in lab from fall 2003); (med. school USC, population health physician, Darlington SC)
Joshua Berkowitz	Spring, fall 2004, honor's thesis spring 2005 (in lab from spring 2003); (med. school UNC; Orthopaedic Surgeon Chapel Hill, NC)

Biol 295 Undergraduate Research Advisor

Nedria Thomas (Walker)	Spring 2016 (work study in lab Fall 2015); (research assistant U. of Iowa)
Inna Kovaleva	Spring 2015 (work study in lab from 2011 through 2014)

Biol 395/98 Undergraduate Research Sponsor

Morgan Landis	Spring and Fall 2016
Kyle McKnight	Spring 2016
Ashley Han	Spring and Fall 2016
Luke Current	Spring and fall 2014
Mary Lewis	Spring, fall 2011
Andrew Hyde	Fall 2011
Kevin Adams	Fall 2011
Daniel Williamson	Spring 2011
Nicholas Zerona	Spring 2009
Sarah Underwood	Spring 2009
Tobin Mangel	Fall 2007
Neil Kumar	Fall 2006
Fatima Bangura	Spring, fall 2006

Undergraduate researchers in lab (from UNC)

Sarayu Kudaravalli	Fall 2021-present (volunteer with Aimee Deconinck)
Max Buglisi	Fall 2021-present (work study)
Melanie Tojong	Fall 2018-spring 2021 (work study)
Jacklyn Rojas	Spring 2018-fall 2020 (volunteer with Aimee Deconinck/work study)
Olivia Madalone	Fall 2017-present (work study; postbac)
Alicia Ozhakanat	Spring 2019 (volunteer with Aimee Deconinck)
Sophia Abedi	Spring 2019 (volunteer with Aimee Deconinck)
Carson Hash	Fall 2018-Spring 2019 (volunteer with Katherine Malinski)
Chloe Lindberg	Fall 2018-Spring 2019 (volunteer with Katherine Malinski)

Ruby Richardson	Fall 2018 Spring 2019 (volunteer with Jeeyun Lee)
Brenda Sanchez	Fall 2018 Spring 2019 (volunteer with Jeeyun Lee)
Yoonho Sung	Fall 2018 Spring 2019 (volunteer with Jeeyun Lee)
Loren Weidenhammer	Fall 2018 Spring 2019 (volunteer with Jeeyun Lee)
London Scotto	Fall 2018- Spring 2019 (volunteer with Aimee Deconinck/work study)
Ryland Pursley	Fall 2018- Spring 2019 (volunteer with Aimee Deconinck)
Rachel Rice	Spring 2018 (volunteer with Aimee Deconinck)
Hannah Rendulich	Spring 2018 (volunteer with Aimee Deconinck)
Hannah John	Fall 2016-spring 2019 (work study)
Liana Kostak	Fall 2016-Spring 2018 (work study)
Sarah Monroe	Fall 2017 (paid research, joint with Joel Kingsolver)
Allison Hedvall	Fall 2015-spring 2017 (work study)
Stephanie Hopkins-Spencer	Summer 2014-Summer 2016 (faculty mentor for McNair Scholars program, HHMI FSC, work study)
Christine Son	Fall 2013-Spring 2015 (work study)
Devon Allen	Fall 2013-Spring 2017 (work study)
Lydia Hatfield	Summer 2011-Spring 2015 (SMART program, paid researcher)
Joshua Horwitz	Spring 2013-Fall 2013
Nandan Thakkar	Summer 2013
Brandon Scott Gilreath	Fall 2012 (work study)
Hong Lee	Fall 2011-summer 2012
Angela Aboagye-Kumi	Summer 2009-spring 2012 (SMART program summer 2009)
Dominique Dormeville	Spring 2011-fall 2011 (PharmD, USC, pharmacist Charlotte NC).
Catherine Safrit	Spring 2011-fall 2011
Josh Hirt	Spring 2009-spring 2011 (research analyst at Duke)
Brooke Teffera	Summer 2011 (DEBS scholar)
Kathleen Hannan	Spring 2010-spring 2011
Gabriella Brown	Summer 2010 (SMART program)
Bobby Bayne	Spring 2010-fall 2010
Austin Cannon	Spring 2009-fall 2009 (med. School UNC, Surgery resident, U. of Utah)
John Weeks	Summer 2009 (DEBS scholar)
Stefanie Martina	Fall 2008-Spring 2010 (work study); (research associate, Pensacola FL, human performance in extreme environ.)
Melissa Shatzer	Fall 2008
Jennifer Yanik	Fall 2006-summer 2008 (UNC nursing school, later med school ECU)
Ashley Hammond	Summer 2008 (SMART program)
Sarah Underwood	Fall 2007-summer 2008 (now clinical lab scientist at NIH)
Abbas Rattani	Summer 2007 (filmmaker, Mipsterz, Med. Student Loyola, IL)
John Michalak	Fall 2006-spring 2007

Chintan Desai	Spring 2007-Fall 2008 (work study)
Ivy Todd	Fall 2005-summer 2006 (now PA at Wake Western Med.)
Micheal Smith	Summer 2005-spring 2006 (now English teacher São Paulo, Brazil)
Erin Washburn	Fall 2003-fall 2005 (M.D. Dartmouth, maternal fetal medicine UCSF)
Maurice Alexander	Summer 2005 (SMART program) (Doctor of Pharm. UNC, Clinical Pharmacy, UNC Health Care)
Whitney McGee	Summer 2005 (Ph.D in Behavioral Neuroscience OHSU, now Vet. School at Col. St.)
Mariam Qureshi	Fall 2004-spring 2005
Swapanilkumar Patel	Fall 2004-summer 2005 (now Podiatrist in Jacksonville, FL)
Qian Qin	Spring-fall 2003 (Assist. Prof. Chemistry/Biochem. Loyola University, New Orleans, LA)
Elizabeth Hoddeson	Spring 2003 (now Otolaryngologist in Athens, GA)

Post-baccalaureate and outside UNC

Jorge Santana	Summer 2017 (undergraduate from University of Puerto Rico; Summer Undergraduate Research Experience (SURE) program funded by NSF); SMART program summer 2019; Fall 2018- fall 2020 (work study-transferred to UNC).
Marshall Phillips	Summer-fall 2014 (former UNC undergraduate, volunteer intern); (Graduate Student NCSU)

H. PROFESSIONAL SERVICE (to discipline)

Invited Presentations

- Biology Department Seminar, Case Western Reserve, invited speaker, March 2021.
- Evolutionary Biology Program, WMS seminar (Wednesday morning seminar), Uppsala University, Uppsala, Sweden, May 2018.
- 13th International Conference on Copepoda, Los Angeles, CA, invited symposium speaker (Response of copepods to climate change-Patterns and Mechanisms); title Using the intertidal copepod *Tigriopus californicus* as a model for studying the evolution of stress tolerance, July 2017.
- iCUBE Scientific meeting, Institute for Biodiversity and Environmental Research, Universiti Brunei Darussalam, Brunei, invited speaker, December 2014.
- Vienna graduate school of population genetics, Populations Genetics Seminar, Vetmeduni, Vienna, Austria, February 2012.
- Department of Biology, University of Southern California, Marine and Environmental Biology seminar series, invited speaker, October 2011.
- Biology 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.

Presentations at Scientific Meetings

Talk given by Aimee Deconinck; The odd un-couple: Hypoxia tolerance uncorrelated with acid tolerance in populations of *Tigriopus californicus*. Contributed talk. Society for Integrative and Comparative Biology Annual Meeting. February 2021.

Talk given by Meggan Alston; Testing for trans-generational effects of high temperature exposure in *Manduca sexta*. Contributed talk. Joel Kingsolver co-authored. Society for Integrative and Comparative Biology Annual Meeting. February 2021.

Talk given by Katherine Malinski; Thermal mismatch in an insect host-parasitoid-endosymbiont system: causes and consequences. Contributed talk. Joel Kingsolver co-authored. Society for Integrative and Comparative Biology Annual Meeting. February 2021.

Talk given by Meggan Alston; The ghost of temperature past: interaction of previous and current thermal conditions on gene expression in *Manduca sexta*. Contributed talk. Jeeyun Lee, M. Elizabeth Moore, Joel Kingsolver co-authored. Evolution 2019: The Society of Systematic Biologists, the Society for the Study of Evolution, and American Society of Naturalists, Joint Annual Meeting. Providence RI, June 21-25.

Talk given by Thiago Lima; Mito-nuclear incompatibilities contribute to hybrid inviability in early stages of divergence. R. S. Burton additional coauthor. Evolution 2017: The Society of Systematic Biologists, the Society for the Study of Evolution, and American Society of Naturalists, Joint Annual Meeting. Portland OR, June 23rd-27th.

Salinity tolerance and adaptation in two populations of *Tigriopus californicus*. Poster presentation by Jeeyun Lee, Marshall Phillips coauthored. Evolution 2016: The Society of Systematic Biologists, the Society for the Study of Evolution, and American Society of Naturalists, Joint Annual Meeting. Austin, TX, June 17-21st.

Local adaptation to fluctuating and extreme temperatures and gene regulation in the copepod *Tigriopus californicus*, Thiago Lima coauthored. Evolution 2016: The Society of Systematic Biologists, the Society for the Study of Evolution, and American Society of Naturalists, Joint Annual Meeting. Austin, TX, June 17-21st.

Genes involved in local adaptation and acclimation for thermal tolerance in *Tigriopus californicus*. Thiago Lima coauthored. Contributed poster. SMBE 2015: Annual meeting of the Society of Molecular Biology and Evolution. Vienna, Austria, July 12th to July 16th.

Genome-wide analysis of hybrid incompatibilities using an allele-frequency method in *Tigriopus californicus*, Thiago Lima coauthored. Evolution 2014: The Society of Systematic Biologists, the Society for the Study of Evolution, and American Society of Naturalists, Joint Annual Meeting. Raleigh, NC, June 20-24th 2014.

Chromosome-wide impacts of hybrid breakdown in population crosses of the copepod *Tigriopus californicus*. Evolution 2013: The Society of Systematic Biologists, the Society for the Study of Evolution, and American Society of Naturalists, Joint Annual Meeting. Snowbird, Utah, June 21-25th 2013.

Gene conversion yields novel gene combinations and reveals potential selection in paralogs of GOT1 in the copepod *Tigriopus californicus*. Contributed poster. SMBE 2012: Annual meeting of the Society of Molecular Biology and Evolution. Dublin, Ireland, June 23-26th 2012.

Fast mtDNA evolution-even faster in the copepod *Tigriopus californicus*. Contributed talk. Evolution 2011: The Society of Systematic Biologists, the Society for the Study of Evolution, and American Society of Naturalists, Joint Annual Meeting. Norman OK, June 17-21, 2011.

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.

Professional Activities

Completed UNC's Office for Graduate Educations faculty mentoring workshop. April and May 2017.

Participant in workshop on Gastropod Thermal Biology and Climate Change in the Tropics, and 3rd iCUBE scientific meeting, Universiti Brunei Darussalam, Brunei, December 2014.

Meeting organization committee for the Evolution Meetings held in Raleigh in the summer of 2014.

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*, *Journal of Evolution*, *Science*, *Molecular Biology and Evolution*, *PLoS Biology*, *PLoS One*, *Genetics*, *Molecular Ecology*, *Heredity*, *Trends in Genetics*, *Insect Biochemistry and Molecular Biology*, *Conservation Genetics*, *Insect Molecular Biology*, *Evolutionary Applications*, *Journal of Experimental Marine Biology and Ecology*, *Genetica*, *Invertebrate Biology*, *Marine Biology*, *Current Zoology*, *Proceedings of the Royal Society Series B*, *BMC Evolutionary Biology*, *BMC Genetics*, *BMC Molecular Biology*, *Comp. Biochem. Physiol. A*, *Comp. Biochem. Physiol. B*, *Comp. Biochem. Physiol. D*, *Environmental Evidence*, *Hydrobiologia*, *Chinese Journal of Oceanography and Limnology*, *Comparative Biochemistry and Physiology*, *Functional Ecology*, *Polar Biology*, *Estuaries and Coasts*, *Biology Letters*, *Limnology and Oceanography*, *J. Plankton Biology*, *Freshwater Biology*.

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, Icelandic Research Fund. Human Frontiers in Science Program (France), Austrian Academy of Sciences (DOC doctoral fellowship).

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 Societies

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

Outreach Activities

Host lab for Summer Undergraduate Research Experience (SURE) program participant, funded by NSF, summer 2017. The student in our lab (Jorge Santana) was an undergraduate from the University of Puerto Rico.

NC Science Festival, Chapel Hill NC, April 2012-2019. My lab hosted an interactive booth at this outdoor science festival showcasing copepods and explaining their importance to ecosystems and potential use in evolutionary studies.

Faculty mentor for Ronald E. McNair scholar in summer of 2016. This program seeks to prepare underrepresented minorities for the application process for graduate programs and to lay the groundwork to help them succeed in these programs.

Host lab for HHMI-FSC program student summer 2013 and 2014. This program from the Howard Hughes Medical Institute seeks to give promising students from all walks of life a significant exposure to scientific research to help them to become future scientists and clinicians.

Bugfest at NC Museum of Natural Sciences Raleigh, NC, September 17th 2011. I hosted a hands-on informational booth on copepod ecology and evolution. The event draws close to 35,000 people per year.

Host lab for SMART and DEBS scholars for UNC summers of 2005, 2008, 2009, 2010, and 2011. These programs are designed to expose individuals from under-represented groups to research in a laboratory setting for one or two months in the summer to interest them in careers in research after obtaining their undergraduate degree.

In the fall of 2006 our lab participated in a Science Spectrum Symposium for talented high school science students from high schools from around the state of North Carolina (~350 participated). The focus of the symposium was the science of evolution and we prepared a poster/demonstration table concerning our research where we interacted with the students about our research as an example of current research being done in evolutionary biology.

Helped Birch Aquarium in La Jolla, CA with their educational exhibit on seahorses, fall 2001. In particular, I used molecular techniques to confirm the species identity of seahorse species on display there (and being reared for other public aquariums to lessen collections from natural populations). In addition I helped design the portion of the exhibit that focuses on a hands-on exhibit where the participant learns how DNA can be used in addition to morphology to identify species.

I. PROFESSIONAL SERVICE (within UNC)

University-Wide Service

Faculty Council Representative—Elected as a representative on Faculty Council for UNC with a term running from fall 2014 to spring 2017. Re-elected to second term running from 2017-2020.

Departmental Committees

Director of Graduate Studies and Admissions Fall 2018-present

Associate Director of Graduate Admissions	2015-2018
EEOB Graduate Studies and Admissions	2012-present
Seminar Committee	2002-present
Biology Curriculum Working Group	spring 2018
Graduate Studies (EEOB)	2002-2012