

SARAH M. HIRD

Curriculum Vitae

Assistant Professor

Department of Molecular and Cell Biology
University of Connecticut
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Host-associated microbiomes, phylogeography, bioinformatics, ornithology, evolution, increasing diversity in STEM

EDUCATION

- 2013 **PhD** in Biological Sciences
Louisiana State University (LSU), Baton Rouge, LA, USA.
DISSERTATION: Novel computational tools and utilization of gut microbiota for phylogeographic inference
ADVISORS: Dr. Robb Brumfield, Dr. Bryan Carstens
- 2008 **MSc** in Biology
University of Idaho (UI), Moscow, ID, USA.
THESIS: Analysis of nuclear markers in red-tailed chipmunk (*Tamias ruficaudus*) hybrid zones
ADVISOR: Dr. Jack Sullivan
- 2005 **BSc** in Biology
University of Idaho (UI), Moscow, ID, USA.

RESEARCH AND ACADEMIC APPOINTMENTS

- 2016 – present **Assistant Professor**, Department of Molecular and Cell Biology, University of Connecticut
- 2014 – 2016 **UC Davis Chancellor's Postdoctoral Fellow**, Genome Center, University of California, Davis
MENTOR: Dr. Jonathan Eisen
- 2013 – 2014 **Postdoctoral Researcher**, Genome Center, University of California, Davis
MENTOR: Dr. Jonathan Eisen

PEER-REVIEWED PUBLICATIONS

- 2018 **Hird SM**, Ganz HH, Eisen JA, Boyce WM. The cloacal microbiome of five wild duck species varies by species and influenza A infection status. *mSphere*, 3:e00382-18. (open access)
- 2017 **Hird SM**. Evolutionary biology needs wild microbiomes. *Frontiers in Microbiology*, 8:725. (open access)
Ganz H, Firl A, Doroud L, **Hird SM**, Eisen J, Boyce W. Community-level differences in the microbiome of wild mallards associated with infection by influenza A viruses. *mSystems*. In press. (open access)
- 2015 **Hird SM**, Sánchez C, Carstens BC, Brumfield RT. Comparative gut microbiota of 59 Neotropical bird species. *Frontiers in Microbiology*, 6: 1403. (open access)
- NESCent Working Group on the Evolutionary Biology of the Built Environment, Martin LJ, Adams RI, Bateman A, Bik HM, Hawks J, **Hird SM**, Hughes D, Kembel SW, Kinney K, Kolokotronis S, Levy G, McClain C, Meadow JF, Medina RF, Mhuireach G, Moreau CS, Munshi-South J, Nichols LM, Palmer C, Popova L, Schal C, Taubel M, Trautwein M, Ugalde JA, Dunn RR. Evolution of the indoor biome. *Trends in Ecology and Evolution*, 30(4): 223-232.

- 2014 **Hird SM**, Carstens BC, Cardiff SW, Dittmann DL, Brumfield RT. Sampling locality is more detectable than taxonomy or ecology in the brood-parasitic Brown-headed Cowbird (*Molothrus ater*). *PeerJ*, 2: e321. (open access)
- Sullivan J, Demboski JR, Bell KC, **Hird SM**, Sarver B, Reid NM. Divergence-with-gene-flow within the recent chipmunk radiation (*Tamias*). *Heredity*, 113(3):185-194.
- 2013 Reid NM, **Hird SM**, Brown JM, Pelletier TA, McVay JM, Satler JD, Carstens BC. Poor fit to the multispecies coalescent is widely detectable in empirical data. *Systematic Biology*, 63(3): 322-333.
- 2012 **Hird SM**. lociNGS: a lightweight alternative for assessing suitability of next-generation loci for evolutionary analysis. *PLOS ONE* 7(10): e46847. (open access)
- Zellmer AJ, Hanes MM, **Hird SM** and BC Carstens. Deep phylogeographic structure and environmental differentiation in the carnivorous plant *Sarracenia alata*. *Systematic Biology*, 61(5): 763-777.
- McCormack JE, **Hird SM**, Zellmer AJ, Carstens BC and RT Brumfield. Applications of next-generation sequencing to phylogeography and phylogenetics. *Molecular Phylogenetics and Evolution*, 66: 526-538.
- 2011 McCormack JE, Maley JM, **Hird SM**, Derryberry EP, Graves GR and RT Brumfield. Next-generation sequencing reveals phylogeographic structure and a species tree for recent bird divergences. *Molecular Phylogenetics and Evolution*, 62: 397-406.
- Hird SM**, Brumfield RT and BC Carstens. PRGmatic: an efficient pipeline for collating genome-enriched second generation sequencing data using a “provisional-reference genome”. *Molecular Ecology Resources*, 11(4):743-748.
- 2010 **Hird S**, Kubatko L and B Carstens. Replicated subsampling enables accurate species tree estimation in empirical systems. *Molecular Phylogenetics and Evolution*, 57(2): 888-898.
- Hird S**, Reid N, Demboski J and J Sullivan. Introgression at differentially aged contact zones in red-tailed chipmunks (*Tamias ruficaudus*). *Genetica*, 138(8): 869-883.
- Reid N, **Hird S**, Schulte-Hostedde A and J Sullivan. Examination of nuclear markers at a zone of mitochondrial introgression in two chipmunk species (*Tamias amoenus* and *Tamias ruficaudus*). *Journal of Mammalogy*, 91(6): 1389-1400.
- Koopman M, Fuselier D, **Hird S** and B Carstens. The carnivorous Pale Pitcher Plant harbors diverse, distinct and temporally dependent bacterial communities. *Applied and Environmental Microbiology*, 76: 1851-1860.
- 2009 **Hird S** and J Sullivan. Assessing gene flow across a hybrid zone in red-tailed chipmunks (*Tamias ruficaudus*). *Molecular Ecology*, 18: 3097-3109.
- 2008 Good J, **Hird S**, Reid N, Demboski J, Stepan S, Martin-Nims T and J Sullivan. Ancient Hybridization and Mitochondrial Capture between Two Distantly Related Species of Chipmunks (*Tamias*: Rodentia). *Molecular Ecology*, 17 (5): 1313-1327.

Manuscripts Currently In Review

- Bik HM, Alexiev A, Aulakh SK, Bharadwaj L, Flanagan L, Haggerty JM, **Hird SM**, Jospin G, Lang JM, Sauder LA, Neufeld JD, Shaver A, Sethi A, Eisen JA, Coil DA. 2018. Microbial community succession and nutrient cycling responses following perturbations of experimental saltwater aquaria. *FEMS Microbiology Ecology*.

FUNDING AND FELLOWSHIPS

- 2017 University of Connecticut Research Excellence Program (\$25,000)
- 2014 UC Davis Chancellor’s Postdoctoral Fellowship
- 2013 LSU BioGrads Travel Award
- 2011 Society for the Study of Evolution Rosemary Grant Award
Society of Systematic Biologists Graduate Student Research Award
Sigma Xi Grants-In-Aid of Research

- LSU BioGrads Travel Award
2010 LSU BioGrads Research Award
2009 LSU Graduate Student Enhancement

TEACHING

Instructor

- 2017-8 *Sequence-based Microbial Community Analysis*. Graduate class. UConn.
2017-8 *Host-Associated Microbiomes*, co-taught with Dr. Nichole Broderick. Graduate and undergraduate class. UConn.
2018 *Seminar in Microbiology*. Graduate seminar. UConn.

Teaching Assistant

- 2012 *Principles of Genetics*, recitation instructor. LSU
2005-7 *Plant and Animal Structure and Function*, laboratory instructor. UI.
2005-6 *Mammalogy*, laboratory instructor. UI.
2005 *Biology and Society*, laboratory instructor. UI.

Professional Instructor

- 2008-9 *ACT Test Preparation*. Educational Testing Consultants, Inc. Baton Rouge, LA.
2009 *GRE Test Preparation*. Educational Testing Consultants, Inc. Baton Rouge, LA.

MENTORING

Current Postdoctoral Researchers: Kirsten Grond

Current Graduate Students (UConn): Joshua Gil (PhD), Elizabeth Herder (PhD)

Current Undergraduate Students (UConn): Nehal Navali, Hannah Guilani, Inglis Tucker

Graduated Graduate Students (UConn): Darien Capunitan (M.S., 2018)

Previous Undergraduate Students (UConn): Francis Regala

- 2014-6 Staff mentor with Guardian Scholar Program, UC Davis
2006 Laboratory training and supervision of undergraduate Tara Potter, UI.

INVITED TALKS

- 2018 *The avian microbiome: past, present, future*. University of Maine's School of Biology and Ecology Department Seminar. Orono, ME.
2018 *Evolutionary signal in the avian microbiome*. Stanford University Microbiome Symposium. Palo Alto, CA.
2018 *Big data and bird microbiomes*. University of Connecticut Computational Biology Core Open House. Storrs, CT.
2018 *The avian microbiome: past, present, future*. University of California Berkeley Integrative Biology Department Seminar Series. Berkeley, CA.
2018 *Evolution and the Microbiome*. Eighth Annual Workshop on Genomics. Český Krumlov, Czech Republic.
2017 *The avian microbiome: past, present, future*. The American Museum of Natural History Ruth Gilder Graduate School Comparative Biology Seminar Series. New York City, NY.
2017 *Avian influenza virus and the cloacal microbiome of wild avian hosts*. University of Connecticut, Department of Pathobiology and Veterinary Sciences Comparative Pathology Seminar Series. Storrs, CT.
2017 *Avian influenza virus and the cloacal microbiome of wild avian hosts*. Connecticut College, Life Sciences Seminar Series. New London, CT.
2015 *Metagenomics, phylogeography and the evolution of host-associated microbiota*. University of Connecticut, Department of Molecular and Cell Biology. Storrs, CT.
2015 *Phylogeography, bioinformatics and host-associated microbiota*. California State University Monterey Bay, Biology Department. Monterey Bay, CA.
2015 *Metagenomics, phylogeography and the evolution of host-associated microbiota*. UC Davis, Center for Population Biology. Davis, CA.
2009 *Nuclear markers at red-tailed chipmunk hybrid zones*. LSU, Museum of Natural Science. Baton Rouge, LA.

CONTRIBUTED TALKS AND POSTERS

- 2017 **Hird SM**, W Boyce. *Avian influenza virus and the cloacal microbiome of wild avian hosts*. Oral presentation. American Ornithological Society Meeting, East Lansing, MI.
- 2017 **Hird SM**, W Boyce. *Avian influenza virus and the cloacal microbiome of wild avian hosts*. Oral presentation. Evolution 2017, Portland, OR, USA.
- 2017 **Hird SM**, W Boyce. *No consistent changes in the cloacal microbiome of 5 wild duck species based on Influenza A virus (IAV) infection*. Poster presentation. Animal-Microbe Symbioses (Gordon Research Conference), West Dover, VT.
- 2013 **Hird SM**, Dittmann DL, Cardiff SC, Carstens BC and RT Brumfield. Oral presentation. *Nature vs. Nurture in the gut microbiota of brown-headed cowbirds*; Evolution 2013, Snowbird, UT, USA.
- 2012 **Hird SM**, Carstens BC and RT Brumfield. Oral presentation. *Using gut microbiota to explore ecology and evolution in Neotropical birds*; Evolution 2012, Ottawa, Ontario, Canada.
- 2012 **Hird SM**, Carstens BC and RT Brumfield. Poster. *Gut microbiota of an avian brood parasite (Molothrus ater) and nine potential host species*; Ecology and Evolution of Host-associated Microbiota Workshop, Basel, Switzerland.
- 2011 **Hird SM**, Brumfield RT and BC Carstens. Oral presentation. *Creating and using a provisional-reference genome from anonymous next-gen fragments using PRGMATIC*; Evolution 2011, Norman, OK, USA.
- 2010 **Hird SM**, Koopman MM, Ence DD, Brumfield RT and BC Carstens. Poster. *An Efficient Pipeline for the Preparation of Phylogeographic Data Collected Via Next-Generation Sequencing*; Evolution 2010, Portland, OR.
- 2006 **Hird S** and J Sullivan. Poster. *Preliminary Microsatellite Analysis of a Chipmunk Hybrid Zone*; Evolution 2006, Stony Brook, NY.

ACADEMIC SERVICE

Manuscript Reviewing: *Auk*, *Biological Invasions*, *BMC Bioinformatics*, *Frontiers in Microbiology*, *Journal of Animal Ecology*, *Journal of Heredity*, *Microbial Ecology*, *Molecular Ecology* (A “Top Reviewer” in 2013 and 2014), *Molecular Ecology Resources*, *Molecular Phylogenetics and Evolution*, *PeerJ*, *PLOS ONE*, *Science Advances*, *Scientific Reports*, *Systematic Biology*

Grant Reviewing: NSF DEB SBS Panel (2018); NSF DEB SBS Preproposal Panel (2017, 2015); NSF Ad-hoc reviewer, SBS (2016), AOE (2016), IOS (2017); National Geographic Society (2017); Czech Science Foundation (2017)

Graduate Committees (UConn): Sarah Goldstein (MCB), Emily Green (MCB), Kathleen Kyle (MCB), Yutian Feng (MCB), Lang Sun (AS), Diler Haji (EEB), Morgan Napier (EEB)

- 2014-6 Organizing committee, Women in Science (WiSci) group, UC Davis
- 2012-3 LSU Biological Sciences Diversity Committee, graduate student representative.
- 2012 LSU Computational Biology Faculty Search, graduate student representative.

OUTREACH

- 2018 Story Collider story teller – “true, personal stories about science”. Hartford, CT.
- 2018 Founding faculty advisor for UConn WinS – a Women in Science club for graduate students and postdocs at UConn
- 2017-8 Skype-A-Scientist Participant
- 2016-8 Advisory board and judge for The Science Ambassador Scholarship (with Cards Against Humanity)
- 2017 BAHfest judge at MIT
- 2015 BAHfest judge at Bay Area Science Festival
- 2015 Science Friday guest (discussing BAHfest)
- 2014 BAHfest participant at Bay Area Science Festival
- 2014-5 Outreach coordinator for BOSC (Bioinformatics Open Source Conference)
- 2011-6 Co-founder and contributor to popular and academic sciences blog *Nothing in Biology Makes Sense!*

REFERENCES

Jonathan Eisen, Ph.D. (Post-Doctoral Advisor)

University of California, Davis
UC Davis Genome Center
451 East Health Sciences Drive
Davis, CA 95616
Phone: 530.752.3498
Email: jaeisen@ucdavis.edu

Robb Brumfield, Ph.D. (Doctoral Co-Advisor)

Louisiana State University
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119 Foster Hall
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Bryan Carstens, Ph.D. (Doctoral Co-Advisor)

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Evolution, Ecology and Organismal Biology
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Jack Sullivan, Ph.D. (Master's Advisor)

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