

# SARAH M. HIRD

## Curriculum Vitae

### Assistant Professor

University of Connecticut  
Department of Molecular and Cell Biology  
75 North Eagleville Road, U-3125  
Storrs, CT 06269 USA

OFFICE (860) 486.6299

EMAIL sarah.hird@uconn.edu

URL <https://www.hirdlab.com>

 @sarahmhirid

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

24. Grond K, Bell K, Demboski J, Santos M, Sullivan JM, **Hird SM**. No evidence for phyllosymbiosis in western chipmunk species. *FEMS Microbiology Ecology*; accepted.
23. Grond K, Guilani H, **Hird SM**. Spatial biogeography of the shorebird microbiome. *Royal Society Open Science*, accepted.
22. Grond KC, Perreau J, Loo W, Cavanaugh C, **Hird SM**. 2019. Longitudinal microbiome profiling reveals impermanence of probiotic bacteria in domestic pigeons. *PLOS One*, accepted (open access).
21. **Hird SM**. 2019. Perspective: Microbiomes, community ecology and the comparative method. *mSystems*, 4(3): e00112-19 (open access).
20. 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. 2019. Microbial community succession and nutrient cycling responses following perturbations of experimental saltwater aquaria. *mSphere*, 4:e00043-19. (open access)

19. **Hird SM**, Ganz HH, Eisen JA, Boyce WM. 2018. The cloacal microbiome of five wild duck species varies by species and influenza A infection status. *mSphere*, 3:e00382-18. (open access)
18. **Hird SM**. 2017. Evolutionary biology needs wild microbiomes. *Frontiers in Microbiology*, 8:725. (open access)
17. Ganz H, Firl A, Doroud L, **Hird SM**, Eisen J, Boyce W. 2017. Community-level differences in the microbiome of wild mallards associated with infection by influenza A viruses. *mSystems*. In press. (open access)
16. **Hird SM**, Sánchez C, Carstens BC, Brumfield RT. 2015. Comparative gut microbiota of 59 Neotropical bird species. *Frontiers in Microbiology*, 6: 1403. (open access)
15. 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. 2015. Evolution of the indoor biome. *Trends in Ecology and Evolution*, 30(4): 223-232.
14. **Hird SM**, Carstens BC, Cardiff SW, Dittmann DL, Brumfield RT. 2014. Sampling locality is more detectable than taxonomy or ecology in the brood-parasitic Brown-headed Cowbird (*Molothrus ater*). *PeerJ*, 2: e321. (open access)
13. Sullivan J, Demboski JR, Bell KC, **Hird SM**, Sarver B, Reid NM. 2014. Divergence-with-gene-flow within the recent chipmunk radiation (*Tamias*). *Heredity*, 113(3):185-194.
12. Reid NM, **Hird SM**, Brown JM, Pelletier TA, McVay JM, Satler JD, Carstens BC. 2013. Poor fit to the multispecies coalescent is widely detectable in empirical data. *Systematic Biology*, 63(3): 322-333.
11. **Hird SM**. 2012. lociNGS: a lightweight alternative for assessing suitability of next-generation loci for evolutionary analysis. *PLOS ONE* 7(10): e46847. (open access)
10. Zellmer AJ, Hanes MM, **Hird SM** and BC Carstens. 2012. Deep phylogeographic structure and environmental differentiation in the carnivorous plant *Sarracenia alata*. *Systematic Biology*, 61(5): 763-777.
9. McCormack JE, **Hird SM**, Zellmer AJ, Carstens BC and RT Brumfield. 2012. Applications of next-generation sequencing to phylogeography and phylogenetics. *Molecular Phylogenetics and Evolution*, 66: 526-538.
8. McCormack JE, Maley JM, **Hird SM**, Derryberry EP, Graves GR and RT Brumfield. 2011. Next-generation sequencing reveals phylogeographic structure and a species tree for recent bird divergences. *Molecular Phylogenetics and Evolution*, 62: 397-406.
7. **Hird SM**, Brumfield RT and BC Carstens. 2011. PRGmatic: an efficient pipeline for collating genome-enriched second generation sequencing data using a “provisional-reference genome”. *Molecular Ecology Resources*, 11(4):743-748.
6. **Hird S**, Kubatko L and B Carstens. 2010. Replicated subsampling enables accurate species tree estimation in empirical systems. *Molecular Phylogenetics and Evolution*, 57(2): 888-898.
5. **Hird S**, Reid N, Demboski J and J Sullivan. 2010. Introgression at differentially aged contact zones in red-tailed chipmunks (*Tamias ruficaudus*). *Genetica*, 138(8): 869-883.
4. Reid N, **Hird S**, Schulte-Hostedde A and J Sullivan. 2010. 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.
3. Koopman M, Fuselier D, **Hird S** and B Carstens. 2010. The carnivorous Pale Pitcher Plant harbors diverse, distinct and temporally dependent bacterial communities. *Applied and Environmental Microbiology*, 76: 1851-1860.
2. **Hird S** and J Sullivan. 2009. Assessing gene flow across a hybrid zone in red-tailed chipmunks (*Tamias ruficaudus*). *Molecular Ecology*, 18: 3097-3109.
1. Good J, **Hird S**, Reid N, Demboski J, Steppan S, Martin-Nims T and J Sullivan. 2008. Ancient Hybridization and Mitochondrial Capture between Two Distantly Related Species of Chipmunks (*Tamias*: Rodentia). *Molecular Ecology*, 17 (5): 1313-1327.

## Manuscripts Currently Under Review or in Revision

1. Capunitan D, Johnson O, Terrill RS, **Hird SM**. Evolutionary signal in the gut microbiomes of 74 bird species from Equatorial Guinea. *Molecular Ecology*, submitted 25 April 2019, resubmitted 28 November 2019.

## FUNDING AND FELLOWSHIPS

- 2019 University of Connecticut ISG Seed Grant (\$11,952)
- 2018 University of Connecticut Microbiome Research Seed Grant (\$50,000)
- 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

- 2017-9 *Sequence-based Microbial Community Analysis*. Graduate class. UConn.
- 2017-9 *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:** Dr. Kirsten Grond

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

**Current Undergraduate Students (UConn):** Nehal Navali, Inglis Tucker (SURF recipient)

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

**Previous Undergraduate Students (UConn):** Hannah Guilani (2018-2019), Francis Regala (2017-2018)

2014-6 Staff mentor with Guardian Scholar Program, UC Davis

2006 Laboratory training and supervision of undergraduate Tara Potter, UI.

## INVITED TALKS

- 2019 *Evolution of the microbiome as a trait of the host*. Deciphering the Microbiome. Alexandria, VA (NSF-sponsored workshop).
- 2019 *The avian microbiome: past, present, future*. Keynote: Pioneer Valley Microbiology Symposium. University of Massachusetts, Amherst.
- 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

- 2019 Capunitan DC, Johnson O, Terrill R, **Hird SM**. *Evolutionary signal in the gut microbiome of 73 species of bird from Equatorial Guinea*. Oral Presentation. Evolution 2019, Providence, RI, USA.
- 2019 Capunitan DC, Johnson O, Terrill R, **Hird SM**. *Evolutionary signal in the gut microbiome of 73 species of bird from Equatorial Guinea*. Poster presentation. Animal-Microbe Symbioses (Gordon Research Conference), West Dover, VT.
- 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*, *Bioinformatics*, *Biological Invasions*, *BMC Bioinformatics*, *Frontiers in Microbiology*, *Journal of Animal Ecology*, *Journal of Heredity*, *Microbial Ecology*, *Microbiome*, *Molecular Ecology* (A “Top Reviewer” in 2013 and 2014), *Molecular Ecology Resources*, *Molecular Phylogenetics and Evolution*, *PeerJ*, *PLOS ONE*, *Proceedings B*, *Science*, *Science Advances*, *Scientific Reports*, *Systematic Biology*

**Grant Reviewing:** National Science Centre in Poland (2019); NSF DEB SBS Panel (2018); Netherlands Organisation for Scientific Research (2018); NSF DEB SBS Preproposal Panel (2017, 2015); NSF Ad-hoc reviewer, IOS (2017), SBS (2016), AOE (2016); National Geographic Society (2017); Czech Science Foundation (2017)

**Graduate Committees (UConn):** Sarah Goldstein (MCB), Emily Green (MCB), Kathleen Kyle (MCB), Yutian Feng (MCB), Todd Testerman (MCB), Cora McGehee (PS), Lang Sun (AS), Emily Gagnon (MCB PSM 2019), Diler Haji (EEB 2019), Morgan Napier (EEB 2018)

- 2018- Founding faculty advisor for Ugo:MCB (Undergraduate Organization for Molecular and Cell Biology) - an undergraduate social club centered on the MCB classes and majors at UConn
- 2017- Founding faculty advisor for UConn WinS – a Women in Science club for graduate students and postdocs at UConn
- 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

- 2019 BAHfest participant at MIT, video available: [www.youtube.com/watch?v=6jGDPH5h\\_Mg](http://www.youtube.com/watch?v=6jGDPH5h_Mg)
- 2018 Story Collider story teller – “true, personal stories about science”. Hartford, CT; appearance on Story Collider podcast, available: [www.storycollider.org/stories/2019/3/27/peace-stories-about-searching-for-solace](http://www.storycollider.org/stories/2019/3/27/peace-stories-about-searching-for-solace)
- 2017-8 Skype-A-Scientist Participant
- 2017 Panelist for "Feminism and Academia", in honor of International Women's Day, invited by the GEU-UAW9560's Women's Committee, UConn
- 2017 Panelist, "Family Matters: Navigating the Job Market with Partners and Children"; UConn Graduate School and Career Center
- 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), available: [www.sciencefriday.com/segments/festival-of-fake-hypotheses-generates-real-laughs/](http://www.sciencefriday.com/segments/festival-of-fake-hypotheses-generates-real-laughs/)
- 2014 BAHfest participant at Bay Area Science Festival, video available: [www.youtube.com/watch?v=MUw3s4evhTE](http://www.youtube.com/watch?v=MUw3s4evhTE)
- 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](mailto:jaeisen@ucdavis.edu)

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

Louisiana State University  
Museum of Natural Science  
119 Foster Hall  
Baton Rouge, LA 70803  
Phone: 225.578.3081  
Email: [robb@lsu.edu](mailto:robb@lsu.edu)

**Bryan Carstens**, Ph.D. (Doctoral Co-Advisor)

Ohio State University  
Evolution, Ecology and Organismal Biology  
300 Aronoff Laboratory  
318 W. 12<sup>th</sup> Avenue  
Columbus, OH 43210  
Phone: 614.292.6587  
Email: [carstens.12@osu.edu](mailto:carstens.12@osu.edu)

**Jack Sullivan**, Ph.D. (Master's Advisor)

University of Idaho  
Department of Biological Sciences  
Room 274, Life Sciences South  
Box 443051  
Moscow, ID 83844  
Phone: 208.885.9049  
Email: [jacks@uidaho.edu](mailto:jacks@uidaho.edu)