

# JANNA L FIERST

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Department of Biological Sciences  
The University of Alabama  
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## EDUCATION

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2010	<b>The Florida State University</b> <i>PhD, Biological Science, Section for Ecology and Evolution</i> Dissertation: <i>Genetic Interactions in Evolutionary Processes</i> Advisors: David Houle and Thomas F. Hansen	<b>Tallahassee, FL</b>
2004	<b>California State University, Northridge</b> <i>MS, Biology</i> Thesis: <i>Ecological Factors Separating Life Histories in the Red Alga, Mastocarpus papillatus</i> Advisor: Steven R. Dudgeon	<b>Los Angeles, CA</b>
1998	<b>Pomona College</b> <i>BA, Biology</i>	<b>Los Angeles, CA</b>

## PROFESSIONAL POSITIONS

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2015-Present	<b>The University of Alabama</b> <i>Assistant Professor</i> Department of Biological Sciences	<b>Tuscaloosa, AL</b>
2012-2014	<b>The University of Oregon</b> <i>Postdoctoral Researcher, Institute for Ecology and Evolution</i> Computational genomics of <i>Caenorhabditis remanei</i> Sponsor : Patrick C. Phillips	<b>Eugene, OR</b>
2010-2012	<b>The University of Oregon</b> <i>NSF Postdoctoral Fellow in Biological Informatics</i> Evolution of the <i>Saccharomyces cerevisiae</i> genetic interaction network Sponsor: Patrick C. Phillips	<b>Eugene, OR</b>
2008-2009	<b>The University of Oslo</b> <i>Leiv Eiriksson Mobility Fellow</i> Evolution of genetic regulatory networks Sponsor: Thomas F. Hansen	<b>Oslo, Norway</b>

## PUBLICATIONS

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2018*	Akob, D.M., J.M. Sutton, <b>J.L. Fierst</b> , K.B. Haase, and R.S. Oremland. Acetylenotrophy: Something old or something new? <i>In press</i> ; invited FEMS Microbial Ecology review
2017	<b>Fierst, J.L.</b> , and D.A. Murdock. Decontaminating eukaryotic genome assemblies with machine learning. <i>BMC Bioinformatics</i> 18(1): 533.
2017*	Akob, D.M., S.M. Baesman, J.M. Sutton, <b>J.L. Fierst</b> , A.C. Mumford, Y.

- Shrestha, A.T. Poret-Peterson, S. Bennett, D.S. Dunlap, K.B. Haase, and R.S. Oremland. Detection of diazotrophy in the acetylene-fermenting anaerobe, *Pelobacter* strain SFB93. *Applied and Environmental Microbiology*. 83: e01198 - 17.
- 2017 **Fierst, J.L.**, D.A. Murdock, C. Thanthiriwatte, J.H. Willis, and P.C. Phillips. Metagenome-assembled draft genome sequence of a novel microbial *Stenotrophomonas maltophilia* strain isolated from *Caenorhabditis remanei* tissue. *Genome Announcements* 5(7): e01646-16.
- 2017\* Sutton, J.M., S.M. Baesman, **J.L. Fierst**, A.T. Poret-Peterson, R.S. Oremland, D.S. Dunlap, D.M. Akob. Complete genome sequences of two acetylene-fermenting *Pelobacter acetylenicus* strains. *Genome Announcements* 5(6): e01572-16.
- 2017\* Sutton, J.M., S.M. Baesman, **J.L. Fierst**, A.T. Poret-Peterson, R.S. Oremland, D.S. Dunlap, and D.M. Akob. Complete genome sequence of the acetylene-fermenting *Pelobacter* strain SFB93." *Genome Announcements* 5(6): e01573-16.
- 2016\* Ma, C., J. Ou, N. Xu, **J.L. Fierst**, S-T Yang and X. Liu. Rebalancing redox to improve biobutanol production by *Clostridium tyrobutyricum*. *Bioengineering* 3(1): 2.
- 2015 **Fierst, J.L.**, J.H. Willis, C.G. Thomas, W. Wang, R.M. Reynolds, T.E. Ahearne, A.D. Cutter, and P.C. Phillips. Reproductive mode and the evolution of genome size and structure in *Caenorhabditis* nematodes. *PLoS Genetics* 11(6): e1005323.
- 2015 **Fierst, J.L.** Using linkage maps to correct and scaffold *de novo* genome assemblies: methods, challenges and computational tools. *Frontiers in Genetics* 6: 220.
- 2015 **Fierst, J.L.** and P.C. Phillips. Modeling the evolution of genetic systems: the gene network family tree. *Journal of Experimental Zoology (Molecular and Developmental Evolution)* 324B: 1-12.
- 2013 **Fierst, J.L.** Female mating preferences determine system-level evolution in a gene network model. *Genetica* 141: 157-170.
- 2013 Houle, D. and **J.L. Fierst**. Properties of spontaneous mutational variance and covariance for wing size and shape in *Drosophila melanogaster*. *Evolution* 67: 1116-1130.
- 2012 **Fierst, J.L.** and P.C. Phillips. Variance in epistasis links gene regulation and evolutionary rate in the yeast genetic interaction network. *Genome Biology and Evolution* 4: 1080-1087.
- 2011 **Fierst, J.L.** A history of phenotypic plasticity accelerates evolution to a new environment. *Journal of Evolutionary Biology* 24: 1992-2001.
- 2011 **Fierst, J.L.** Sexual dimorphism increases evolvability in a genetic regulatory network. *Evolutionary Biology* 38: 52-67.
- 2010 **Fierst, J.L.**, and T.F. Hansen. Genetic architecture and post-zygotic reproductive isolation: Bateson-Dobzhansky-Muller incompatibilities in a polygenic model. *Evolution* 64: 675-693.
- 2010 **Fierst, J.L.**, J.E. Kubler and S.R. Dudgeon. Spatial distribution and reproductive phenology of sexual and asexual *Mastocarpus papillatus*

- (Rhodophyta). *Phycologia* 49: 274-282.
- 2009 Hollis, B., **J.L. Fierst**, and D. Houle. Sexual selection accelerates the elimination of a deleterious mutant in *Drosophila melanogaster*. *Evolution* 63: 324-333.
- 2005 **Fierst, J.**, C. Terhorst, J.E. Kubler and S.R. Dudgeon. Fertilization success can drive patterns of phases dominance in complex life histories. *Journal of Phycology* 41: 238-249.

\* Student-authored publication

### ***Manuscripts in Preparation and Review***

- \* Baesman, S.M., J.M. Sutton, **J.L. Fierst**, D.M. Akob, and R.S. Oremland. *Pelobacter acetylenovorans*, strain SFB93, sp. nov., a diazotrophic, acetylene-fermenting anaerobe isolated from San Francisco Bay intertidal sediments. *In review*.
- Willis, J.H., R. Jovelin, **J.L. Fierst**, C.M. Small, A.D. Cutter and P.C. Phillips. Expression variance in syntenic, inter-genic clusters predominates microRNA diversity between *Caenorhabditis* sister species. *In preparation*.

### **GRANTS AND AWARDS**

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- |      |   |   |
|------|---|---|
| 2015 | System genetics of natural variation in stress response pathways<br>NIH NIGMS, sub-contract       | \$115,366                                 |
| 2015 | Genome-scale model guided metabolic engineering of <i>C. tyrobutyricum</i><br>UAlabama RGC, co-PI | \$86,453                                  |
| 2010 | Biological Informatics Postdoctoral Fellowship<br>US National Science Foundation, PI              | 2 years salary and research support       |
| 2008 | Leiv Eiriksson Mobility Fellowship<br>Norwegian Research Council                                  | 1 year salary and research support        |
| 2003 | Grant in Aid of Research<br>PADI Project Aware  | \$5,000 research support                  |
| 2002 | Grant in Aid of Research<br>Sigma Xi  | \$2,500 research support (received twice) |
| 2002 | Grant in Aid of Research<br>Phycological Society of America                                       | \$2,500 research support                  |

### **TEACHING AND MENTORING**

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#### *Teaching*

- 2015-present **The University of Alabama** **Tuscaloosa, AL**  
*Instructor*  
Developed and taught new Introduction to Bioinformatics (taught in the Fall semester, annually) and Computational Biology (taught in the Spring semester, annually) courses. Both courses are cross-listed with enrollment open to upper division undergraduate students and graduate students.
- 2003-2010 **The Florida State University** **Tallahassee, FL**  
*Graduate Teaching Assistant*  
Study sections, lectures and lab sessions for Introductory Biology, Animal

- 2000-2004 **Diversity and Evolution**  
**California State University, Northridge** **Los Angeles, CA**  
*Graduate Teaching Assistant*  
Lectures and lab sessions for Introductory Biology, Anatomy and Physiology,  
Marine Ecology and Biometry
- 1998-2000 **Immaculate Heart High School** **Los Angeles, CA**  
*Science Teacher*  
9<sup>th</sup> grade Introductory Science and 10<sup>th</sup> grade Biology and Honors Biology

### *Mentoring*

2015-present **The University of Alabama**

#### Current

*Dissertation chair:* Paula Adams, John Sutton, Joshua Millwood

*Dissertation committee:* Jennifer Fortunato, Jason Jackson

*Thesis chair:* Louis Bubrig

*Thesis committee:* Ryan Lavoie

*Biological Sciences undergraduate researchers:* Ashlynn Anderson

*Computer Science undergraduate researchers:* Houston Wingo

#### Past

*Dissertation committee:* Andrei Bombin, Younji Kim, Chao Ma, Vishal Oza

*Thesis committee:* Grace Scarsella

*Biological Sciences undergraduate researchers:* Louis Bubrig, Kaylee Covan,  
Danielle Kem, Obie Moultrie, Mackenzie Valentin

*Computer Science undergraduate researchers:* Alan Hincey

2012-2013 **The University of Oregon**

#### **Computer and Information Sciences research projects**

*Undergraduate students:* Zeyu Feng, Katerina Ko, Jiazhang Liu, Erick Rogers,  
Alexandra Weston and Ran Zhang

*Graduate students:* Azad Abbasi, Dan Everson, Mahshid Yar Mohammadi,  
Yunfeng Zhang

#### **The Institute of Ecology and Evolution graduate student rotation projects**

Christine O'Connor, Andrew Nishida, Allison Fuiten

### **SPECIAL PROGRAMS**

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- 2011 **Pacific-American Studies Institute** **Valparaiso, Chile**  
*Scientific Computing: The Challenge of Massive Parallelism in the Americas*
- 2006 **Santa Fe Institute** **Beijing, China**  
*Complex Systems Summer School*
- 1997 **Semester Abroad in Zimbabwe** **Harare, Zimbabwe**  
*Pitzer International Programs*

### **SERVICE**

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- 2017-present College of Arts & Sciences High Performance Computing Advisory  
Committee, the University of Alabama

Janna L Fierst

2016-present	W.D. Hamilton Award Committee, Society for the Study of Evolution
2015-present	Alabama's Lectures on Life's Evolution (ALLELE) Organizing Committee, the University of Alabama
2015	Plant Systematics Faculty Search Committee, the University of Alabama
2014-present	Technology Research Advisory Committee, the University of Alabama
2013	Organizing Committee, University of Oregon Postdoctoral Association
2012-2013	Constitution and Bylaws Committee, University of Oregon Faculty Union
2006-2008	Graduate representative, Integrating Genotype and Phenotype faculty search committee, Florida State University
2004-2005	President, Ecology and Evolution Discussion Group, Florida State Univ.
2002-2003	President, Biology Graduate Student Association, CSU Northridge

Articles reviewed for: *Bioinformatics*, *BMC Bioinformatics*, *Ecology*, *Evolution*, *Genetics*, *J. of Evolutionary Biology*, *PLoS Genetics*, *Proceedings of the Royal Society, Series B*

### INVITED PRESENTATIONS

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2018	Genome evolution across worms and microbes. The University of West Alabama, Livingston, AL.
2017	Genome evolution in <i>Caenorhabditis</i> nematode worms. Emory University, Atlanta, GA.
2016	Chemical & Biological Engineering Departmental Seminar, The University of Alabama
2016	NSF Research Experiences for Undergraduates "Fluid Mechanics with Analysis Using Computations and Experiments" Guest speaker, The University of Alabama
2016	Department of Mathematics, Applied Math Seminar, The University of Alabama
2016	Decontaminating <i>de novo</i> genome assemblies. University of California, Santa Barbara, CA.
2015	NSF Research Experiences for Undergraduates "Fluid Mechanics with Analysis Using Computations and Experiments" Guest speaker, The University of Alabama
2014	Computational approaches to genetic evolution. The Florida State University, Tallahassee, FL.
2014	Sex and recombination in genomic evolution. San Francisco State University, San Francisco, CA.
2014	The influence of sex on genetic and genomic evolution. The University of Alabama, Tuscaloosa, AL.
2012	Evolutionary systems biology. The University of Colorado at Denver.
2011	Nucleosome occupancy mediates transcription, gene expression, and epistatic fitness effects. Workshop on Systems Biology, Luebeck, Germany.
2010	Studying evolutionary processes with models of gene regulatory networks. University of Pretoria, Pretoria, South Africa.
2010	Sexual selection determines robustness and evolvability in a computational model of a genetic regulatory network. Gothenburg University, Gothenburg, Sweden.

## SELECTED CONFERENCE PRESENTATIONS

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- 2016 Decontaminating genome assemblies with machine learning. Society for the study of Evolution Annual Meeting, Austin, Texas.
- 2014 The influence of mating system on genome evolution in *Caenorhabditis*. EVO-WIBO, Port Townsend, WA.
- 2012 Evolution of genome structure in *Caenorhabditis remanei*. Cold Spring Harbor Laboratory, Evolution of Caenorhabditid worms and their relatives, New York.
- 2011 A history of phenotypic plasticity accelerates adaptation. Western Society of Naturalists, Vancouver, WA.
- 2010 Sexual dimorphism increases both robustness and evolvability. Society for Integrative and Comparative Biology, Seattle, USA.
- 2009 Genetic architecture in reproductive isolation: Evolution of Bateson-Dobzhansky-Muller incompatibilities in a polygenic model. Society for the Study of Evolution Annual Meeting, Moscow, USA.
- 2008 Genetic architecture in reproductive isolation. Society for Molecular Biology and Evolution Annual Meeting, Barcelona, Spain.
- 2006 Good genes and sexual conflict. Society for the Study of Evolution Annual Meeting, Stonybrook, NY.
- 2004 Multilinear epistatic interactions in the Bateson-Dobzhansky-Muller model. Society for the Study of Evolution Annual Meeting, Fort Collins, CO.

## MEMBERSHIPS

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Society for the Study of Evolution, Society for Integrated and Applied Mathematics, Society for Integrative and Comparative Biology