# J.J. EMERSON

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## EDUCATION/ACADEMIC POSITIONS

| | |
|---|---|
| Current | Assistant Professor, Dept. Ecology & Evolutionary Biology, Center for Complex Biological Systems, University of California Irvine |
| 2010-2013 | Postdoctoral Fellow, Integrative Biology, University fo California Berkeley (Advisor: Doris Bachtrog) |
| 2006-2010 | Postdoctoral Fellow, Genomics Research Center, Academia Sinica, Taipei, Taiwan (Advisor: Wen-Hsiung Li) |
| 2000-2006 | PhD Ecology & Evolution, University of Chicago (Advisor: Manyuan Long) |
| 1996-2000 | BA Biochemistry/Ecology & Evolution, Rice University |

## PUBLICATIONS (REVERSE CHRONOLOGICAL ORDER, * INDICATES EQUAL CONTRIBUTION, † INDICATES CORRESPONDING AUTHOR)

22. Solares E.A.*, Chakraborty M.*, Miller D.E., Kalsow S., Hall K.E., Perera A.G., **Emerson, J.J.**†, Hawley R.S.† Rapid low-cost assembly of the *Drosophila melanogaster* reference genome using low-coverage, long-read sequencing. **G3: Genes, Genomes, Genetics** 2018 *8* 3143-3154.
21. Chakraborty M.†, VanKuren N.W. Zhao R., Zhang X., Kalsow S., and **Emerson J.J.**†, Hidden genetic variation shapes the structure of functional elements in *Drosophila*. **Nature Genetics** 2018; 50, 20-25.
20. **Emerson J.J.**†, Evolution: A Paradigm Shift in Snake Sex Chromosome Genetics. **Current Biology** 2017; *27*, R800–R803.
19. Long M. *†, **Emerson J.J.***†, Meiotic Sex Chromosome Inactivation: Compensation by Gene Traffic. **Current Biology** 2017; *27*, R659–R661.
18. Chakraborty M., Baldwin-Brown J.G., Long A.D., **Emerson J.J.†**, Contiguous and accurate *de novo* assembly of metazoan genomes with modest long read coverage. **Nucleic Acids Research** 2016, *44*, e147–e147.
17. Viçoso B.*, **Emerson J.J.***, 2 others, Doris Bachtrog. Comparative Sex Chromosome Genomics in Snakes: Differentiation, Evolutionary Strata, and Lack of Global Dosage Compensation. **PLoS Biology** 2013; 11:e1001643.
16. Schaefke B.*, **Emerson J.J.***, 3 others, Li WH. Inheritance of gene expression level and selective constraints on trans-and cis-regulatory changes in yeast. **Mol. Biol. Evol.** 2013 30(9):2121-33.
15. Pool J.E., Corbett-Detig R.B., Sugino R.P., Stevens K.A., Cardeno C.M., Crepeau M.W., Duchen P., **Emerson J.J.**, Saelao P., Begun D.J., Langley C.H. Population Genomics of sub-saharan *Drosophila melanogaster*: African diversity and non- African admixture. **PLoS Genet**. 2012; 8(12):e1003080.
14. Cardoso-Moreira M., **Emerson J.J.**, *et al*. *Drosophila* duplication hotspots are associated with late-replicating regions of the genome. **PLoS Genet**. 2011; 7(11): e1002340.
13. Nikaido M., Sasaki T., **Emerson J.J.**, 6 others, Li W.-H., Okada N. Genetically distinct coelacanth population off the northern Tanzanian coast. **Proc. Natl. Acad. Sci. U.S.A.** 2011;108(44): 18009- 13.
12. **Emerson J.J.***, Hsieh L.- C.*, Sung H.- M.*, Wang T.- Y.*, 4 others, Li W.- H. Natural selection on cis and trans regulation in yeasts. **Genome Research** 2010; 20(6): 826- 36.

11. **Emerson J.J.**, Li W.- H. The genetic basis of evolutionary change in gene expression levels. **Phil. Trans. R. Soc. B**. 2010; 365(1552): 2581- 90.
10. **Emerson J.J.***†**,** Cardoso- Moreira M.*†, Borevitz J.O., Long M. Natural selection shapes genome- wide patterns of copy- number polymorphism in *Drosophila melanogaster*. **Science**. 2008; 320(5883): 1629- 31.
9. Fan Chuanzhu, **Emerson J.J.,** Manyuan Long, M. The origin of new genes. **Evolutionary Genomics and Proteomics**, Mark Pagel & Andrew Pomiankowski (eds.). 2007. Sinauer Associates, Inc., Sunderland, Massachusetts, USA. pp27- 44.
8. Chen Y.*†, **Emerson J.J.***†**,** Martin T.M.*† Codon volatility does not detect selection. **Nature**. 2005; 433:E6- 7.
7. Cowan A.T., Bowman G.R., Edwards K.F., **Emerson J.J.**, Turkewitz A.P. Genetics, genomic, and functional analysis of the granule lattice proteins in *Tetrahymena* secertory granules. **Mol. Biol. Cell**. 2005; 17(9): 4046- 60.
6. International Chicken Genome Sequencing Consortium. Sequence and comparative analysis of the chicken genome provide unique perspectives on vertebrate evolution. **Nature**. 2004; 432:695-716.
5. **Emerson J.J.*,** Kaessmann H.*, Betrán E., Long M. Extensive gene traffic on the mammalian X chromosome. **Science**. 2004; 303(5657): 537- 40.
4. Betrán E., **Emerson J.J.,** Kaessmann H., Long M. Sex Chromosomes and Male Functions: Where Do New Genes Go? **Cell Cycle**. 2004; 3(7):873-5.
3. Wang W., Thornton K., **Emerson J.J.,** Long M. Nucleotide variation and recombination along the fourth chromosome in Drosophila simulans. **Genetics**. 2004; 166(4): 1783- 94.
2. Strassmann J.E., Queller D.C., Emerson J.J., Stagi M., Cervo R., Turillazzi S. Comparing the costs and benefits of grouping with non- relatives in the social amoeba *Dictyostelium discoideum* (Amoebazoa) and the social wasp *Polistes dominulus* (Hymenoptera vespidae). **Redia**, LXXXVII, 2004: 145- 148.
1. Bergelson J., Dwyer G., **Emerson J.J.** Models and data on plant- enemy coevolution. **Annu. Rev. Genet**. 2001;35:469-99.

## CURRENT FUNDING

PI: NIH: Structural variation, population size, and the evolution of genome complexity (NIH), 2017-2022.

Co-PI: NSF: Mechanisms of color vision: Genomics, physiology and behavior (PI: Adriana Briscoe), 2017-2021.

## RESEARCH APPOINTMENTS & AWARDS

1. Academia Sinica Distinguished Postdoctoral Researcher Fellowship (2007-2008)
2. National Science Foundation Doctoral Dissertation Improvement Grant (2001-2005)
3. GAANN training grant appointment (Evolutionary Genomics), U. Chicago Dept. Ecology and Evolution (200-2003).
4. National Science Foundation Graduate Research Fellowship Award (2001)
5. Huxley Award for Excellence, Dept. of Ecology & Evolution, Rice U.
6. National Science Foundation Graduate Research Fellowship Honorable Mention (2000)
7. Magna Cum Laude, Rice University (2000)
8. National Science Foundation REU Fellow (Biological Sciences), Rice U. Dept. Ecology and Evolution (1999-2000)
9. Keck Center for Computational and Structural Biology Undergraduate Research Trainee (1998)

## INVITED TALKS

1. 6/29/2018, Graduate University for Advanced Studies (Hayama, Kanagawa, Japan): The evolution of genome structure in *Drosophila*.
2. 4/25/2018, Loma Linda University: The evolution of genome structure in *Drosophila*.
3. 3/19/2018, Arizona State University: The Evolution of Genome Structure in *Drosophila*
4. 1/23/2018, University of Nebraska, Lincoln: The Evolution of Genome Structure in *Drosophila*
5. 9/13/2016, Cornell University: Beneath the tip of the iceberg: using high quality genomes to uncover the evolutionary consequences of hidden genetic variation in *Drosophila*
6. 9/12/2016, University of Rochester: Beneath the tip of the iceberg: using high quality genomes to uncover the evolutionary consequences of hidden genetic variation in *Drosophila*
7. 3/19/2015, Michigan State University: Evolution and novelty: exploring adaptation from the perspectives of experimental evolution and population genomics
8. 6/19/2013, Pomona College (Claremont Colleges) HHMI Summer Colloquium: Unraveling sex chromosome differentiation in snakes using high throughput sequencing
9. 12/6/2010, Univ. of California Davis: Population genomics of two model systems: variation in cis & trans regulation in yeasts and sexual antagonism in *Drosophila*
10. 4/9/2009, Univ. of California Irvine: Population Genomics in Model Systems
11. 4/1/2009, Rice University: Population Genomics in Model Systems
12. 2/17/2009, The Graduate University for Advanced Studies, Kanagawa, Japan: Evolution of Genomic Novelties
13. 8/20/2008, National Chung Cheng University, Chiayi, Taiwan: Integrating Computer Science, Biology and Statistics (An example from genome evolution)
14. 6/12/2008, University of Bergen, Norway: Natural selection shapes genome wide patterns of copy number polymorphism in *Drosophila melanogaster*
15. 6/10/2008, University of Oslo, Norway: Natural selection shapes genome wide patterns of copy number polymorphism in *Drosophila melanogaster*
16. 9/13/2006, University of Texas at Arlington: Copy number variation in *Drosophila* sister species.
17. 7/17/2005, National Institutes of Health: Gene Traffic in Eukaryotic Sex Chromosome Evolution.
18. 2/25/2005, Am Chem Soc of Chicago: Gene Traffic in Vertebrate Genomes: Examples from Chicken and Mammals
19. 11/29/2004, Rice University: Gene Traffic in Sex Chromosomes

## SOCIETY TALKS

1. 7/2013, Society for Molecular Biology and Evolution: Using Experimental Evolution Data to Improve Models of Phenotypic Adaptation.
2. 6/2007, Society for Molecular Biology and Evolution: Natural selection shapes genome-wide levels and patterns of copy number polymorphism in *Drosophila melanogaster*.
3. 5/25/2006, Society for Molecular Biology and Evolution: A genome-wide survey of copy number polymorphism in *D. melanogaster* and *D. simulans*.
4. 6/19/2004, Society for Molecular Biology and Evolution: Extensive gene traffic on the mammalian X chromosome.

## POSTERS

1. 3/30/2011, *Drosophila* research conference: Natural variation and sexual antagonism in *Drosophila* species.
2. 7/6/2010, Society for Molecular Biology and Evolution: Natural selection on *cis* and *trans* regulation in yeasts
3. 3/30/2006, 47th Annual Drosophila Research Conference, Houston, TX. A genome-wide survey of copy number polymorphism in *D. melanogaster* and *D. simulans*.
4. 1/26/2004, IGERT Evolutionary Genomics meeting, University of Arizona. Extensive gene traffic on the mammalian X chromosome.
5. 6/2001, Society for the Study of Evolution. Grouping between related and unrelated individuals in the primitively eusocial wasp, *Polistes dominulus*.