Curriculum Vitae

JULIEN F. AYROLES

Assistant Professor of Evolutionary Biology and Genomics
Princeton University

Contact Information

150 Icahn Laboratories
Lewis-Sigler Institute
Princeton, NJ 08544

Phone: (609) 258-8422
Fax: (609) 258-7070
jayroles@princeton.edu

POSITIONS AND EMPLOYMENT

Assistant Professor, Princeton University, Princeton, NJ…… . 2015-present
Department of Ecology and Evolutionary Biology and Lewis-Sigler Institute for Integrative Genomics

Harvard Junior Fellow, Cambridge, MA…….. 2011-2015
Harvard Society of Fellows, Harvard University

Graduate Student, Raleigh, NC (Under Drs. Trudy Mackay and Eric Stone)…….2005-2011
North Carolina State University, Department of Genetics

Research and Field Assistant, Champaign, IL (Under Dr. Ken Paige)…….2005-2011
University of Illinois, Department of Zoology

EDUCATION

Ph.D. in Genetics…….. 2011
North Carolina State University, Raleigh, Department of Genetics
Title: A Systems Genetics Approach to the Dissection of Complex Traits in Drosophila melanogaster.

Master of Sciences in Natural Recourses and Environmental Sciences……..….. 2005
University of Illinois, Urbana-Champaign, Department of Animal Behavior
Title: Functional genomic survey of inbreeding depression in Drosophila melanogaster.

Maîtrise (equivalent B.S.) in Organismal and Population Biology with honors……..….. 2002
Paul Sabatier Université, Toulouse, France Exchange program TASSEP

General degree in Biological Sciences (DEUG) with honors……..…… 2001
Paul Sabatier Université, Toulouse, France

PUBLICATIONS

26- **Ayroles, JF** and Clark AG. (2016). The misguided search for the missing heritability of complex traits. Nature Review Genetics (invited review).

25- Dumitrascu, B., Darnell, G., **Ayroles, JF.** and Engelhardt, B.E., 2015. A Bayesian test to identify variance effects. arXiv preprint arXiv:1512.01616. (under review)

24 - Zwarts L, Broeck LV, Cappuyns E, **Ayroles JF**, Magwire MM, Vulsteke V, Clements J, Mackay TF, Callaerts P. (2015) The genetic basis of natural variation in mushroom body size in Drosophila melanogaster. Nature communications.11:6.

23 - **Ayroles JF**, Buchanan SM, O'Leary C, Skutt-Kakaria K, Grenier JK, Clark AG, Hartl DL, de Bivort BL. (2015). Behavioral idiosyncrasy reveals genetic control of phenotypic variability. Proceedings of the National Academy of Sciences 112(21):6706-11.

21 - Matute DR*, **Ayroles JF***. (2014) Hybridization occurs between Drosophila simulans and D. sechellia in the Seychelles archipelago. Journal of evolutionary biology. 27(6):1057-68.

20- Corbett-Detig RB, Zhou J, Clark AG, Hartl DL, **Ayroles JF .** (2013). Genetic Incompatibilities Within Species are Widespread. Nature, 504, 135–137.

19- Huang W, Richards S, Carbone MA, Zhu D, Anholt RRH, **Ayroles JF**, et al. (2012) Epistasis Dominates The Genetic Architecture Of Drosophila Quantitative Traits. PNAS, 109:15553-15559.

18- Massouras A, Waszak SM, Albarca M, Hens K, Holcombe K, **Ayroles JF**, Dermitzakis ET, Eric A Stone EA, Jensen J D, Mackay T.F.C, Deplancke B. (2012) Genomic Variation And Its Impact On Gene Expression In Drosophila Melanogaster. Plos Genetics. 8 (11): e1003055.

17- Mackay TFC*, Richards S*, Barbadilla A *, Stone EA*, **Ayroles JF***, Zhu D, Sònia Casillas. et. al. (2012) The Drosophila Genetics Reference Panel:A Community Resource for Analysis of Population Genomics and Quantitative Traits. Nature, 482(7384):173-8. Faculty of 1000, Biology

16 - Ober U, **Ayroles JF**, Stone EA, Richards S, Zhu D,Gibbs RA, Stricker C, Gianola D, Schlather M, Mackay TFC, Simianer H. (2011) Using Whole Genome Sequence Data to Predict Quantitative Trait Phenotypes in Drosophila melanogaster. PLoS Genetics, 8(5): e1002685. Faculty of 1000, Biology

15 - Rowe K, Singhal S, MacManes M, **Ayroles JF**, Morelli TL, Rubidge E, Bi K, Moritz C (2012). Museum Genomics: Low Cost And High Accuracy Genetic Data From Historical Specimens. Molecular Ecology Ressources, 11(6): 1082–1092.

14 - **Ayroles JF,** Laflamme B , Wolfner MA, Mackay TFC. (2011) Sifting Through The Data: Identifying Top Candidates For Novelseminal Protein Genes From Drosophila Whole Genome Expression Data. Genetics Research, 93(6): 387-395.

13 - Jumbo-Lucioni P*, **Ayroles JF***, Chambers MM, Jordan KW, Leips J, Mackay TF, De Luca M. (2010) Systems Genetics Analysis Of Body Weight And Energy Metabolism Traits In Drosophila Melanogaster. BMC Genomics, 11(11): 297. **(* Contributed equally)**

12 - Edwards, A, **Ayroles JF**, Stone EA, Mackay TFC. (2009) A Transcriptional Network Associated With Natural Variation In Drosophila Aggressive Behavior. Genome Biology, 10(7): R76.

11 - Mackay TFC, Stone EA, Ayroles JF. (2009) Quantitative Genetics: Prospects And Challenges. Nature Review Genetics, 10(8): 565-577.

10 - Morozova TV*, **Ayroles JF*,** Jordan KW, Duncan LH, Carbone MA, Lyman RF, Stone EA, Govindaraju DR, Ellison RC, Mackay TF, Anholt RR. (2009) Alcohol Sensitivity In Drosophila: Translational Potential Of Systems Genetics. Genetics, 183(2): 733-745 **(* Contributed equally)**

9 - Harbison ST, Carbone MA, **Ayroles JF**, Stone EA, Lyman RF, Mackay TFC (2009) Co-Regulated Transcriptional Networks Contribute to Natural Genetic Variation in Drosophila Sleep. Nature Genetics, 41(3): 371-375.

8 - **Ayroles JF**, Carbone MA, Stone EA, Jordan KW, Lyman RF, Magwire MM, Rollman SM, Duncan LH, Lawrence F, Anholt RH, Mackay TFC. (2009) Systems genetics of complex taits in Drosophila melanogaster. Nature Genetics, 41(3): 299-307. Faculty of 1000, Biology

7 - Kocher SD, **Ayroles JF**, Stone EA, Grozinger CM. (2009) Genomics Of Pheromone Response: Cooperation And Conflict In Honey Bees. Plos ONE, 5(2): e9116.

6 - Stone EA, **Ayroles JF**. (2009) Modulated Modularity Clustering As An Exploratory Tool For Functional Genomic Inference. PLoS Genetics, 5(5): e1000479.

5 - **Ayroles JF**, Hughes KA, Reedy MM, Rodriguez-Zas SL, Drnevich JM, Rowe KC, Cáceres CE, Paige KN. (2009) Genome-Wide Assessment Of Inbreeding Depression In Drosophila Melanogaster. Conservation Biology, 23(4): 920-930.

4 - Carbone MA, **Ayroles JF**, Yamamoto A, Morozova TV, West SA, Magwire MM, Mackay TF, Anholt RR. (2009) Overexpression Of Myocilin In The Drosophila Eye Activates The Unfolded Protein Response: Implications For Glaucoma. PLoS ONE, 4(1): e4216.

3 - **Ayroles JF**, Gibson G. (2006) Analysis Of Variance Of Microarray Data. Methods Enzymol, 411: -33.

2 - Hughes KA, **Ayroles JF**, Reedy MM, Drnevich JM, Rowe KC, Ruedi EA, Cáceres CE, Paige KN. (2006) Segregating Variation In The Transcriptome: Cis Regulation And Additivity Of Effects. Genetics 173(3): 1347-1355.

1 - Dejean A, Solano PJ, **Ayroles JF**, Corbara B, Orivel J. (2005) Insect Behaviour: Arboreal Ants Build Traps to Capture Prey. Nature, (434):973.

HONORS, GRANTS AND AWARDS

2015 Banff International Research Station (Grant)
2015 Foundation les Treilles (Grant)
2014 3CPG (grant)
2014 Kavli Fellow, National Academy of Science
2014 Broad Institute SPARC (grant -in collaboration with Norbert Perrimon)
2013 Faculty of the 1000 (Genomics & Genetics, Evolutionary/Comparative Genetics)
2012 Milton Research Award (grant)
2011 Junior Fellowship, Harvard Society of Fellows, Harvard University
2011 Kenneth R. Keller Award for Excellence in Doctoral Dissertation Research
2008 Graduate Student Genetics Association Award
2005 Recognized as an outstanding teaching assistance by students
2004 Recognized as an excellent Teaching assistance by students
2002 Graduate College Master's Thesis Project (grant)
2003 Environmental Council Support (grant)
2002 Special Undergrad Research on the Environment (SURE) program (grant)

TEACHING AND MENTORING EXPERIENCE

2007 GN411: "Principles of Genetics". Under Dr. Ted Emigh. Discussion section for undergraduates. North Carolina State University

2005 IB456: "The evolution of adaptive systems". Under Dr. Thomas Frazetta. Discussion section for graduate and undergraduates. University of Illinois

2002 – 2004 MCB150: "The Molecular and Cellular Basis of Life". School of Molecular and Cellular Biology Undergraduate class. (4 semesters) University of Illinois

2001 BIO121: "Ecology and Organismic Biology". Discussion and lab sections for undergraduates. University of Illinois

MEMBERSHIP IN PROFESSIONAL SOCIETIES

American Society for Human Genetics (ASHG)
American Genetics Association (AGA)
Genetic Society of America (GSA)
Society for the Study of Evolution (SSE)
W.M. Keck Center for Behavioral Biology at North Carolina State University

INVITED TALKS AND LECTURES

2015 Gordon Conference, Molecular Mechanism in Evolution
2015 Kavli Frontier, National Academy of Science
2015 Banff International Research Station
2015 American Society for Human Genetics
2014 Broad Institute: Behavioral individuality reveals genetic control of phenotypic variability
2014 Cornell University: A curious case of niche theft in the islands
2014 Biology of Genomes: "From Individual Variation to Genetic Control of Variability"
2013 Cornell University: "Understanding the genetic basis of variability".
2013 EEFG Gordon conference: "Genomic approaches to detect epistasis".
2013 SMEB: "Genomic incompatibilities within species are widespread".
2013 Drosophila meeting: "From missing genotypes to Epistasis".
2013 Cold Spring Harbor, Biology of Genomes meeting: "Genomic incompatibilities within species"
2012 Harvard University, System Biology Seminar: "The complex genetics of complex Traits"
2012 Cornell University, Summer seminar series: "From linkage disequilibrium to Epistasis"
2011 Cold Spring Harbor, Biology of Genomes meeting: "Genotype to phenotype mapping"
2011 Harvard University, Museum of natural history: "Genotype to phenotype mapping"
2011 Penn State University, Biology department: "From system genetics to Biology"
2009 SSE - Evolution meeting: "A system genetics approach to genetic dissection of complex trait: Example of competitive fitness"
2009 W.M. Keck Center annual symposium: "From functional genomic to genome annotation"
2008 Cornell University, MCB department. "A systems approach to genetic dissection of complex traits"
2008 Duke University, Pop Bio Seminar: "A systems approach to genetic dissection of complex traits"
2007 Indiana University, Annual Animal Behavior Conference: "Functional genomics of speciation in Drosophila yakuba and Drosophila santomea"
2006 University of North Carolina. "Functional genomics of speciation in Drosophila yakuba and Drosophila santomea, lessons from hybrid mis-regulation"
2004 International conference of Zoology: "Genome-wide assessment of inbreeding depression in Drosophila melanogaster"

SERVICE AND OUTREACH

2005 – 2011 Frequent contributor the newsletter "The Signal" published by the Keck Center for Behavioral Biology at NCSU
2008 – 2010 Genetics department graduate curriculum revision committee
2008 – 2009 Treasurer for the Genetics Graduate Student Association
2006 – 2008 President for the Genetics Graduate Student Association
2005 Organized reading group based on the coalescent.
2002 Served on the Environmental Horizon UIUC
2000 – 2002 Veracruz organization for outreach in K-12 education