

# Adam James Orr

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## Education

Arizona State University, Tempe AZ 85281

Graduate Student, Molecular and Cellular Biology Ph.D. Program, August 2015 – Present.

Bachelor of Science, Molecular Biosciences and Biotechnology, May 2015

Bachelor of Science, Mathematics, May 2015

- Minor, Biochemistry
- Summa Cum Laude
- Undergraduate Thesis: Gene Families in Cancer: Using phylogenetic data to examine an atavistic model of cancer

## Research Experience

Research Assistant, Cartwright Lab, August 2014-Present

Center for Evolutionary Medicine and Informatics, Biodesign Institute, Arizona State University  
*Somatic Mutation in Eucalyptus* – Development of a method for detecting somatic mutants in *Eucalyptus meliodora* and matching the mutations to the topology of the tree.

*SISRS* – SNP Identification from Short Read Sequences. Software that rapidly identifies phylogenetically informative sites from next-gen whole-genome sequencing data.

Research Assistant, Davies Lab, August 2014-May 2015

Department of Physics, Arizona State University

*Atavistic Model of Cancer* – Developing and testing a model of cancer development. Focuses on the similarities of cancer cells with evolutionarily ancient organisms.

Research Associate, March 2014-January 2015

SIO2 Nanotech, LLC. Scottsdale, AZ

IP transfer from Herbots Lab, product development, and preparation for FDA approval

*AVNE* – A process to permanently prevent fogging on flat glass surfaces

Research Assistant, Herbots Lab, December 2012-August 2014

Department of Physics, Arizona State University

*VitreOx* – A semi-permanent medical device for preventing fogging on endoscope lenses.

*HemoClear* – A medical device for preventing blood occlusion on lenses

Research Assistant, Kumar Lab, April 2012-August 2014

Center for Evolutionary Medicine and Informatics, Biodesign Institute, Arizona State University,

*Fly Express* – Annotation and analysis of gene expression in *Drosophila melanogaster*

*MyFX* – Bug testing

*MEGA* – Bug testing

### Computing Experience

Intimate knowledge of Unix, Python, and Perl

Intermediate knowledge of C++, Java, Matlab, and Android

Functional knowledge of MySQL

### Teaching Experience

Teaching Assistant. BIO340 General Genetics (Fall 2015, Fall 2016, Fall 2017)

Instructor – Software Carpentry Workshop. <http://www.adamjorr.com/2016-05-23-BiodesignASU/> (May 23-24 2016)

Helper. Analyzing Next Gen Sequencing Data (ANGUS) workshop with Professor C. Titus Brown. Davis, CA. (June 26 – July 8 2017)

### Publications

- Cisneros L, Bussey KJ, Orr AJ, Miočević M, Lineweaver CH, et al. (2017) Ancient genes establish stress-induced mutation as a hallmark of cancer. *PLOS ONE* 12(4): e0176258. <https://doi.org/10.1371/journal.pone.0176258>

### Posters and Presentations

(\* = presented by A.J. Orr)

- \*Patterns of mutation match physical branching topology in *Eucalyptus*. June 27, 2017. *Evolution*. Portland, OR.
- \*Patterns of somatic mutation correspond to physical topology in *Eucalyptus*. April 7, 2017. *Biodesign Fusion Science Retreat*. Poster. Carefree, AZ.
- \*Detection of Somatic Mutations in *Eucalyptus melliodora*. April 8, 2016. *Molecular and Cellular Biology Colloquium*. Oral presentation. Tempe, AZ.
- \*Phylogenies derived from somatic mutation agree with physical topologies in *Eucalyptus*. July 3-7 2016. Poster. Gold Coast, Australia.
- \*Adam Orr. “Detecting somatic mutations in *Eucalyptus melliodora*.” March 4 2016. *Graduate Brownbag Seminar Series*. Oral presentation. Tempe, AZ.
- A.J. Orr, C.F. Watson, N. Herbots, E.J. Culbertson, A.J. Acharya, S.D. Whaley, M. Matiski, R.B. Bennett-Kennett, A.M. Murphy. “VitreOx™: A Super-hydrophilic Thin Fluid Film Device (TFFD™) Medical Accessory to Eliminate Fogging on Surgical Lenses” June 16-18 2014. *TechConnect World Conference and Expo*. Oral Presentation. National Harbor, MD.
- \*A.J. Orr, E. R. Morgan, A. J. Acharya, B. W. Hughes, A. S. Benitez, T. T. Kutz, D. A. Sell, R. B. Bennett-Kennett, A. M. Murphy, N. Herbots, C.F. Watson. “Controlling Condensation on Lens Surfaces with A Biologically Compatible Polymeric Mesh” April 4 2014. *Eleventh Annual Physics Undergraduate Research Symposium*. Oral Presentation. Tempe, AZ.
- \*A.J. Orr. “Gene Families in Cancer: Using phylogenetic data to examine an atavistic model of cancer” February 27 2014. *PS-OC Think Tank*. Oral Presentation. Tempe, AZ
- \*R.B. Bennett-Kennett, A.M. Murphy, A.J. Acharya, B.W. Hughes, E.R. Morgan, A.J. Orr, A.S. Benitez, T.T. Kutz, D.A. Sell, N.Herbots, C.F. Watson. “Effects of Blood Proteins on Condensation on Surgical Lenses” April 11 2013. *Celebrating Honors Symposium of Research and Creative Projects*. Poster. Tempe, AZ
- Sudhir Kumar, Ivan Montiel, Qian Sun, MichaelMcCutchan, Bremen Braun, Adam Orr, Stuart Newfeld, Jieping Ye. “myFX: Turn-key software for laboratory desktops that analyzes

spatial patterns of gene expression in *Drosophila* embryos.” April 3-7 2013. *54<sup>th</sup> Annual Drosophila Research Conference*. Poster. Washington, DC

- N. Herbots, A. M. Murphy, A. Acharya, R. B. Bennett-Kennett, B. W. Hughes, E.R Morgan, A.J. Orr, C. F. Watson, R.J. Culbertson E.J. Culbertson. “Modeling Condensation, Hydro- and Pepto-affinity of Surfaces in Medical Implant Devices and Surgical Lenses: Effect of Blood Proteins”. April 1-5 2013. *2013 Materials Research Society Spring Meeting & Exhibit*. Presentation by N. Herbots. San Francisco, CA
- R. B. Bennett-Kennett, A. M. Murphy, D. A. Sell, B. W. Hughes, A. A. Acharya, T. T. Kutz, A. J. Orr, E. R. Morgan. “Modeling the Effect of Blood Proteins on Condensation and the Hydro- and Pepto-affinity of Surfaces: Medical Implant Devices and Surgical Lenses” Feb 15-16 2013. *Annual meeting of the AAAS*. Presentation by R.B. Bennett-Kennett. Boston, MA

### **Academic and Extracurricular Honors**

- Graduated Summa Cum Laude (May 2015)
- Graduate of Barrett, the Honor’s College at Arizona State University (May 2015)
- Joyce M. Foster Larson Scholarship (August 2014)
- Dean’s List (Fall 2011, Spring & Fall 2012, Spring & Fall 2013, Spring & Fall 2014)
- Arizona Board of Regent’s High Honors Tuition Waiver (2011-2015)
- National Merit Commended Student (2011)
- Advanced Placement National Scholar (2011)
- Distinguished Delegation of Collegiate National Model United Nations (March 2011)

### **Service**

Associate Editor at ASU’s *The Triple Helix*, November 2013-August 2014

Volunteer at Arizona State University’s Night of the Open Door, 3/2013, 3/2015, 2/2016, 2/2017

Contributor to ASU’s Ask a Biologist program

Open Source Contributor at [www.github.com](http://www.github.com)

Software Carpentry Certified Instructor