

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, R, 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, Fall 2018)
 Lead Instructor. Analyzing Next Gen Sequencing Data (ANGUS) workshop. Davis, CA. (July 2 - 14, 2018)
 Instructor - Data Carpentry Workshop. <https://code.nimahejazi.org/2018-05-03-LBNL/> (May 3-4, 2018)
 Helper. ANGUS workshop. Davis, CA. (June 26 – July 8 2017)
 Instructor – Software Carpentry Workshop. <http://www.adamjorr.com/2016-05-23-BiodesignASU/> (May 23-24 2016)

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)

- Calculating a non-model *Eucalyptus* Individual's Somatic Mutation Rate. September 25, 2018. *Evolutionary Biology Graduate Student Symposium*. Oral presentation. Tempe, AZ.
- Calculating a non-model *Eucalyptus* Individual's Somatic Mutation Rate. September 18, 2018. *Molecular and Cellular Biology Colloquium*. Oral presentation. Tempe, AZ.
- Calculating a non-model *Eucalyptus* Individual's Somatic Mutation Rate. Feb 18, 2018. *Molecular and Cellular Biology Colloquium*. Oral presentation. Tempe, AZ.
- *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. *Society for Molecular Biology and Evolution*. 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, Michael McCutchan, 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. *54th 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

Software Carpentry Certified Instructor