

Aaron Z. Welch, Ph.D.

Contact Information

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Achievements

- Conceived and developed a genetics-based method to increase the selenium accumulation capacity of yeast which has led to the first ever patent filing in the department
- Wrote a research proposal for a novel method of degrading a toxin found in wine and was awarded a grant of \$250,000.
- Generated several mutants capable of producing low levels of ethanol during fermentation to fulfill a need in the wine industry
- Conducted a survey in which several wines were identified as containing Ochratoxin-A, a common toxin with potentially serious side effects, manuscript in preparation
- Identified SNPs present in a yeast mutant strain using next generation sequencing and bioinformatics tools
- Led a group of three students in various biology projects
- Collaborated with professors at FIU in projects requiring the use of Inductively Coupled Plasmon Resonance Mass Spectrometry, and High-Performance Liquid Chromatography to quantify various small molecules.

Education

PhD Cellular and Molecular Biology

The Johns Hopkins University, Baltimore, MD, September 2007- September 2012

- Dissertation: TOR and Ras pathways regulate desiccation tolerance in *Saccharomyces cerevisiae*

B.S. Biochemistry

University of Kansas, Lawrence, KS, August, 2003-August, 2006

Research Experience

Florida International University

Assistant Professor, Jan, 2013-Present

- Conceived and executed a project aimed at genetically selecting for a strain of wine yeast that can degrade Ochratoxin-A.
- Surveyed over 80 wines for the presence of Ochratoxin-A, resulting in a publication that described the widespread presence of this toxin
- Directed development of a strain of wine yeast that produces the biofuel 2,3-butanediol.
- Identified a novel method of selection for phenylalanine auxotrophy.
- Currently developing a strain of wine yeast that produces high levels of the commercially valuable aroma 2-phenylethanol.
- Conceived and developed a genetics-based method to increase the selenium accumulation capacity of yeast.
- Currently identifying strains of yeast that accumulate higher levels of the natural nutrient folate.
- Designed and is working on a project aimed at investigating metabolic aging of yeast.

University of California, Berkeley

Graduate Student, June, 2010 –September 2012

Students Mentored

Stephanie How, Post-Baccalaureate, 9/1/13- Present
Sally Gorenstein, Undergraduate, 7/1/15-Present
Saad Massud, High School Student, 9/1/15-Present
Noe Ley, High School Student, 1/15/16- Present
Justin Vooray, Undergraduate, 7/1/15-9/1/15
Damien Blanco, Post-Baccalaureate, 9/1/13-7/15/15
Castro Bonny, Undergraduate, 9/1/13-6/1/14
Semithe Cheveleon, Undergraduate, 4/1/13-7/1/13

Presentations

- A Dry Talk: Desiccation Tolerance in *Saccharomyces cerevisiae*, HWCOC Distinguished Series Seminar, 2013
- Selection for Strains of *Saccharomyces cerevisiae* with enhanced Ochratoxin-A degradation capabilities, Yeast Genetics Meeting, 2013
- Seleno-Yeast, Rosen Lab Research Group 2014
- Selection for Strains of *Saccharomyces cerevisiae* with enhanced Ochratoxin-A degradation capabilities, USDA-AFRI-NIFA Project Directors Meeting, 2015
- Selection for Strains of *Saccharomyces cerevisiae* with enhanced Ochratoxin-A degradation capabilities, Yeast Research Group, University of Miami, 2015
- Investigation of p-fluorophenylpyruvate-resistant mutants, Yeast Research Group, University of Miami, 2015

Classes Taught

Research and Statistical Methods	Fall 2014- Summer 2016
Developmental Biology Laboratory	Fall 2009, Spring 2010
Components of Wine for Beverage Management	Summer 2013 - Fall 2014

Media Appearances

- "Florida college looking for way to make wine healthier" Local 6 News. WKMG, Miami, Florida. April 17, 2014. Television.
- "Wine Worry" 7 News. WSVN, Miami, Florida. Feb 24, 2014. Television.

Volunteering

- Activity day at Miami Bridge Youth and Family Services, January, 2016
- "Yeast and Science" talk, FIU STEM EXPO, September, 2015
- Co-Chair Graduate Social Club, University of California, Berkeley, September, 2010- September, 2011

Other Skills

- Proficient in Spanish speaking, reading, writing
- Can code using Perl, C++