Elizabeth McDaniel

Microbiology Ph.D. Student

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Education

University of Wisconsin – Madison *Aug. 2016-present*

Ph.D. student in the Microbiology Doctoral Training Program

- Laboratory of Dr. Katherine McMahon, Department of Bacteriology

University of Arkansas – Fayetteville *Aug. 2012-May 2016*

Bachelor of Science in Biology with Statistics Minor, Cum Laude Honors

- GPA: 3.71/4.0
- Honors Thesis: Natural Variation of the Ena1p Sodium Pump in *S. cerevisiae*

Research Experience

McMahon Lab – University of Wisconsin – Madison *Jan. 2017 - present*

Graduate research assistant in the laboratory of Dr. Katherine McMahon investigating bacterial communities in freshwater ecosystems and engineered wastewater systems. I use a combination of bioinformatics approaches and enrichment culture techniques to probe the diversity and population dynamics of environmentally significant microorganisms.

Lewis Lab – University of Arkansas – Fayetteville *Aug. 2013-Aug. 2016*

Undergraduate research assistant in the laboratory of Dr. Jeffrey Lewis studying the natural variation of stress defense mechanisms in the budding yeast *Saccharomyces cerevisiae.*

Broach Lab – Penn State Hershey College of Medicine *May-Aug. 2014*

Intern in the Summer Undergraduate Research Internship Program in the laboratory of Dr. James Broach studying the interactions and movements of chromosomes during quiescence in the budding yeast *S. cerevisiae*

Publications

1. McDaniel E.A., Stuecker T.N., Veluvolu M., Gasch A.P., Lewis J.A. **Independent Mechanisms for Acquired Salt Tolerance versus Growth Resumption Induced by Mild Ethanol Pretreatment in *Saccharomyces cerevisiae*.** mSphere. Nov 2018, 3 (6) e00574-18; **DOI:** 10.1128/mSphere.00574-18

Platform Talks

2. McDaniel, E.A. Stuecker, T.N., Elkon, I.M., Gasch, A.P., Lewis, J.A. Natural Variation in Yeast Uncovers Novel Regulation of the Ena1p Sodium Pump. Southeastern Regional Yeast Meeting. Tuscaloosa, AL. *March 2016.*

1. McDaniel, E.A. Stuecker, T.N., Elkon, I.M., Gasch, A.P., Lewis, J.A. Natural Variation in Yeast Uncovers Novel Regulation of the Ena1p Sodium Pump. Southeastern Regional Yeast Meeting. Little Rock, AR. *March 2015.*

Poster Presentations

10. McMahon Lab. Microbiomes of Freshwater Lakes and Engineered Wastewater Systems. Water@UW Syposium. Madison, WI. *Oct. 2018.* (Poster constructed and presented on behalf of McMahon Lab)

9. McDaniel, E.A. Peterson, B. Stevens, S.L.R., Krabbenhoft, D., McMahon, K.D. Expanded Phylogenetic and Metabolic Diversity of Microbial Mercury Methylation. Department of Bacteriology Raper Symposium. Madison, WI. *Sept. 2018.*

8. McDaniel, E.A. Peterson, B. Stevens, S.L.R., Krabbenhoft, D., McMahon, K.D. Comparative Genomics of Microbial Mercury Methylation. International Society of Microbial Ecology Meeting. Leipzig, Germany. *Aug. 2018.*

7. McDaniel, E.A. Moya, F. Camejo, P. He, S. McMahon, K.D. Long-Term Population Dynamics of '*Candidatus* Accumulibacter phosphatis' in Enhanced Biological Phosphorus Removal Sequencing-Batch Reactors. Population, Evolutionary, Quantitative Genetics Conference. Madison, WI. *May 2018.*

6. McDaniel, E.A. Peterson, B. Stevens, S.L.R., Krabbenhoft, D., McMahon, K.D. Comparative Genomics of Microbial Methylmercury Production. Madison Microbiome Meeting. Madison, WI. *April 2018.*

5. McDaniel, E.A. Peterson, B. Stevens, S.L.R., Krabbenhoft, D., McMahon, K.D. Comparative Genomics of Microbial Methylmercury Production. Joint Genome Institute User Meeting: Genomics of Energy and Environment. San Francisco, CA. *Mar. 2018*

4. McDaniel, E.A. Stuecker, T.N., Elkon, I.M., Gasch, A.P., Lewis, J.A. Natural Variation in Yeast Uncovers Novel Regulation of the Ena1p Sodium Pump. Arkansas IDeA Network of Biomedical Research Excellence Meeting. Fayetteville, AR. *Nov. 2015*

3. McDaniel, E.A. Stuecker, T.N., Elkon, I.M., Gasch, A.P., Lewis, J.A. Natural Variation in Yeast Uncovers Novel Regulation of the Ena1p Sodium Pump. 27th International Conference on Yeast Genetics and Molecular Biology. Levico, Terme, Trentino, Italy. *Sept. 2015*

2. McDaniel, E.A**.** Stuecker, T.N., Elkon, I.M., Gasch, A.P., Lewis, J.A. Natural Variation in Yeast Uncovers Novel Regulation of the Ena1p Sodium Pump. South Central Branch of the American Society for Microbiology Joint Meeting. Fayetteville, AR. *Sept. 2014*

1. McDaniel, E.A. Rutledge, M.T., Broach, J.R. Chromosome Interactions in Quiescent Yeast. Penn State Hershey Summer Undergraduate Research Internship Programs Symposium. Hershey, PA. *Aug. 2014.*

Honors and Awards

Microbiology Doctoral Training Program Travel Award - $1000 *May 2018*
Department of Bacteriology Travel Award - $1000 *May 2018*
Southeastern Regional Yeast Meeting Travel Award - $250 *Mar. 2016*
University of Arkansas Honors College Research Grant - $1200 *Jan. 2016*
University of Arkansas Honors College Travel Grant - $1200 *Aug. 2015*
Southeastern Regional Yeast Meeting Travel Award - $250 *Mar. 2015*
University of Arkansas Honors College Research Grant - $2500 *Jan. 2015*
University of Arkansas Academic Scholarship - $2500 *2014-2015*
ASM South Central Branch Meeting 2nd Place Poster Award *Sept. 2014*
University of Arkansas Academic Scholarship - $1000 *2013-2014*
University of Arkansas Symphony Orchestra Scholarship - $1000 *2012-2016*
University of Arkansas New Arkansan Non-Resident Tuition Award - $39,040

Teaching, Mentoring, and Service

Resolving Microbial Communities at Strain-Level Resolution Symposium
Teaching Assistant *Aug. 28th-31st 2018*

- Assisted at a workshop on metagenomic bioinformatics tools including assembly, binning, using the Anvi'o platform, and deconvoluting strains from metagenomic datasets. Held at the University of Exeter – Penryn campus in the United Kingdom.
- Presented a talk on "Integrating Anvi'o Tools into your Workflow: Insights from a Biological Nutrient Removal (BNR) System" and led an exercise on analytical struggles/and learning goals relative to computation in biology

Microbiology 304: Biology of Microorganisms Laboratory *Spring 2018*
Teaching Assistant

- Prepared lecture materials on the background, significance, and execution of experiments twice a week
- Assisted students with experiments and provided feedback on techniques, scientific analyses, and writing

McMahon Lab Mentoring *2017-present*
Graduate Student Mentor for REUs, Undergraduate Interns, and High School Students

- *Kaela Amundson:* Characterization and Enrichment of Microorganisms Capable of External Electron Transfer. *Fall 2017-Spring 2018.* Mentored Kaela through laboratory protocols, bioinformatics pipelines, graduate school applications, and a National Science Foundation Graduate Research Fellowship Application. *Currently: Pursuing a Ph.D. in Microbiology at Colorado State University*

- *Kali Denis:* Time-Series Analysis of Under-Ice Freshwater Bacterial Communities. *Spring 2018.* Mentored Kali through laboratory protocols, design and execution of an independent project, and preparation of a UW-Madison Sophomore Research Fellowship.
- *Matthew Wolff:* Investigation of Zebra Mussel eDNA in Lake Mendota Metagenomic Time-Series. *Spring 2018-current.* Mentored Matthew through bioinformatics pipelines, high-throughput computing, and graduate school applications.
- *EBPR Reactor Team:* In the Fall of 2018, I started overseeing the maintenance and routine sampling of our long-term enhanced biological phosphorus removal (EPBR) enrichment reactors, which involves the help of several undergraduate students. As of the Fall of 2018, I have mentored and worked with **3** undergraduate students and **1** high school student while maintaining these reactors.

Computational Biology, Ecology, and Evolution (ComBEE) Study Group
Co-Chair *Jan. 2017-present*
ComBEE is a peer-led group for computational biology researchers on the UW-Madison campus. We hold bi-weekly R and Python study group sessions and monthly meetings on current research topics in ecology and evolution.
- Organize peer-led discussion on the R and Python languages
- Facilitate monthly meetings in which a postdoc/faculty member gives a talk on their research.

ComBEE Git/Github Pages Workshop *Sept. 2017*
Workshop Leader
- Prepared novel materials and taught version control with Git and making a personal website using Github Pages/Jekyll
- Led a walkthrough tutorial to a group of 10 scientists on making a personal website using GithubPages

ComBEE Git/Github Pages Workshop *May. 2017*
Workshop Assistant
- Assisted during a workshop on the Anvi'o metagenomics analysis and visualization software with a focus on metagenomic binning and refinement
- Led an informal presentation and discussion on the theory of metagenomic binning

BIOL 2323: General Genetics *Spring 2015*
Drill Instructor
- Instructor and leader of biweekly review sessions for an undergraduate General Genetics course
- Prepared overview of lecture materials weekly and led exam study guide review sessions

University of Arkansas Office of Admissions *Aug. 2013-Dec. 2015*
Student Ambassador

- Volunteered 2 hours a week guiding tours of the University of Arkansas campus and housing options to prospective students

Professional Development

Microbial Genomics and Metagenomics Workshop, FISABIO *June 2017*
Anvi'o Workshop, University of Chicago *April 2017*
Data Carpentry Workshop, University of Wisconsin-Madison *Jan. 2017*

Technical and Laboratory Skills

Programming Python, R/RStudio, Bash, SQL, Git/Github/GH-pages, Markdown, High Throughput Computing (HT-Condor), Reproducible Research
Analytical Comparative Genomics/Metagenomics, Metagenomic Analysis and Binning, Amplicon Sequencing QC and Analysis, Genome Annotation and Assembly
Laboratory Molecular Cloning, DNA Extraction, qPCR, Primer Design, Flow Cytometry, Wastewater Reactor (Chemostat) Maintenance and Microbial Community Enrichment