Daniel Roush

PhD Student - Geomicrobiology

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Roushomics

Education

2013–Current **Doctorate in Microbiology, *In Progress***
Arizona State University, Tempe, Arizona
Garcia-Pichel Lab

2011–2013 **Masters of Science in Applied and Environmental Biology**
Missouri University of Science and Technology, Rolla, Missouri
Mormile Lab

2007–2011 **Bachelor's of Science in Biology**
Missouri University of Science and Technology, Rolla, Missouri

Research

PhD Research **Microbial Ecology of Intertidal Carbonate Endolithic Ecosystems**

Committee **Ferran Garcia-Pichel (Chair)**, A. Anbar, H. Cadillo-Quiroz, J. Farmer, R. Krajmalnik-Brown

Description In the Garcia-Pichel lab my work focuses on examining the microbial ecology of endolithic ecosystems, with a focus on relationships between community composition and substrate geochemistry. The role of euendolithic cyanobacteria on endolithic ecological succession is also examined.

Master's Thesis **Production of 1,3-propanediol from glycerol under haloalkaline conditions**

Advisors **Melanie Mormile**, D. Westenberg, O. Sitton, D. Elias

Description The focus of this project was to examine the produciton of 1,3-propanediol from glycerol and crude glycerol feedstocks by the haloalkalilphilic organism, *Haloanaerobium hydrogeniformens*. Biohydrogen production from glycerol was also examined, along with the tolerance of the organism to crude glycerol and various other compounds.

Undergrad **Engineering sensing strains for the detection of Novel Quorum Sensing Homoserinelactones**

Advisor **Dave Westenberg**

Description A novel homoserinelactone quoroum sensing system was examined in *Bradyrhizobium japonicum*. The goal was to identify novel compounds used for cell-cell communication through engineered detection strains.

Undergrad **Expression of *Geobacter sulfurreducens* cytochromes in *Escherichia coli***

Advisors **Dave Westenberg**, K. Shannon

Description Outer-membrane cytochromes from *Geobacter sulfurreducens* were cloned into *Escherichia coli* to better understand external electron transfer in aerobic environments.

Honors and Awards

2013-2014 Science Foundation Arizona Graduate Research Fellow

2013 ASU SoLS Doctoral Recruitment Award

May 2013 ASM Young Investigator Invited Talk

May 2013 ASM Travel Grant

2011-2012 TWA Environmental Science Scholarship

Teaching Experience

Fall 2014 Advanced Bacteriology Lab

Spring 2012 - Spring 2013 General Microbiology Lab

Fall 2011 Molecular Genetics Lab

Professional Affiliations

American Society of Microbiology

American Geophysical Union

American Association for the Advancement of Science

Outreach

2013-2015 Ask a Biologist Contributor

2014 SciFilms Science Advisor

2013-2014 Science Advisor for Steam Machines K-12 Outreach

2011-2013 Science Olympiad Regional Event Coordinator

Presentations

Roush, D., O. Sitton, D. Elias, and M. Mormile, *Production of 1,3-Propanediol from Glycerol Under Haloalkaline Conditions.* Presentation at American Society for Microbiology 113th General Meeting 2013. May 19th 2013. Denver, Colorado.

Patents and Publications

Roush, Daniel W., Dwayne A. Elias, and Melanie R. Mormile. *Metabolic Capabilities of the Members of the Order Halanaerobiales and Their Potential Biotechnological Applications.* Current Biotechnology. 3.1 (2014): Print.

Roush, Daniel W. *Production of 1,3-propanediol from Glycerol Under Haloalkaline Conditions by Halanaerobium Hydrogeniformans.* Thesis. Missouri University of Science and Technology, 2013. N.p.: UMI, 2013. Print.

Mormile, M., D. Roush, D. Elias, and O. Sitton. August 2012. *Conversion of Glycerol to 1,3-Propanediol Under Haloalkaline Conditions.* The Curators of the University of Missouri, assignee. Patent 61/683,568. Patent pending.