

ALICIA M PURCELL

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EDUCATION

- 2016 PhD student, Department of Biology (current)
Northern Arizona University, Flagstaff, Arizona
- 2014 M.S. Microbiology
University of Tennessee, Knoxville, Tennessee
- 2012 B.S. Biological Sciences
University of Tennessee, Knoxville, Tennessee

RESEARCH EXPERIENCE

- Aug 2016 – Present Graduate Researcher
Northern Arizona University
Department of Biology
Center for Ecosystem Science and Society
Advisor: Dr. Bruce Hungate
- Jan. 2015 – Aug. 2015 Field Research Assistant/Post-Masters Research Assistant
University of Tennessee, Knoxville, Tennessee
Department of Microbiology
Advisor: Dr. Jill Mikucki
Tasks: Plan, organize, and execute sample collection and experiments measuring microbial activity of samples collected from the grounding zone of the Whillans Ice Stream, West Antarctica; sample organization, inventory, and shipment; isolating microbes from sub-ice samples
- Jan. 2013 – Dec. 2014 Graduate Research Assistant
University of Tennessee, Knoxville, Tennessee
Department of Microbiology
Advisor: Dr. Jill Mikucki
Project: Diversity and function of sulfur cycling microorganisms in sediments from Subglacial Lake Whillans, West Antarctica as part of the WISSARD project
- May 2012 – Dec. 2012 Post-Baccalaureate Research Assistant
University of Tennessee, Knoxville, Tennessee
Department of Microbiology
Advisor: Dr. Jill Mikucki
Project: Optimization of techniques to visualize and quantify microorganisms in Antarctic sediments

Jan. 2011 - Undergraduate Researcher
May 2012 University of Tennessee, Knoxville, Tennessee
Department of Biochemistry, Cellular, and Molecular Biology
Advisor: Dr. Gladys Alexandre
Project: Genetic and phenotypic characterization of transposon mutants of
Azospirillum Brasilense on the basis of flocculation

RESEARCH INTERESTS

- Microbial ecology
- Influence of microbes on global biogeochemical cycling
- *In situ* growth and activity of soil microorganisms
- Biogeography of microorganisms

SKILLS

- Environmental sample collection
- Sterile technique, culturing, isolation, and preservation of microbes
- DNA extraction from environmental samples including low biomass sample preparations, clone library preparation
- Basic microbe physiological characterizations
- Quantitative PCR
- Epifluorescence microscope trained, Fluorescence *in situ* Hybridization (FISH), epifluorescence microscopy cell counting in sediment
- Microscopy method optimization
- Transmission and scanning electron microscope trained
- Radiation safety trained and experience using ¹⁴C, ³H, and ³⁵S to measure microbial metabolic activity
- Basic phylogenetic analysis (using BioEdit, MEGA)
- Microsoft office programs, R novice

TEACHING EXPERIENCE

Aug. 2016- Graduate Teaching Assistantship
Dec. 2016 Northern Arizona University
BIO305W instructor for one section
“Writing in Biology for Microbiology Students” – This is a junior level science writing course

Aug. 2014- Graduate Teaching Assistantship
Dec. 2014 University of Tennessee, Knoxville
General Biology 140 laboratory instructor for two sections
“Organization and Function of Cells” – This is a course for biology majoring undergraduates.

Jan. 2013 - Graduate Teaching Assistantship
Apr. 2013 General Biology 102 laboratory instructor for three sections
This is a course for general education course for non-biology majoring undergraduates.

Aug. 2013 - Graduate Teaching Assistantship
Dec. 2013 General Biology 101 laboratory instructor for three sections
This is a course for general education course for non-biology majoring undergraduates.

FIELDWORK EXPERIENCE

Dec. 2014- Antarctic Deep Field participant WISSARD team
Feb. 2015 WISSARD project (www.wissard.org) hot water drilling into the grounding zone of the Whillans Ice Stream, West Antarctica.

COMMUNITY OUTREACH EXPERIENCE

April 2015 Invited to present research results to a research seminar class for undergraduates at Lincoln Memorial University in Harrogate, TN. This was a model presentation for how to present data and a discussion with the class regarding what it is like to attend a scientific meeting.

May 2013 Assisted presentations with Dr. Mikucki at Gibbs Elementary School in Knoxville, TN as part of their Earth Science day. Presentation topic: extreme microorganisms with focus of polar environments. This was a one day event including 6 classrooms of third through fifth graders.

AWARDS

Oct. 2013 Impact Big Ideas Fundraiser
\$525 awarded to Alicia Purcell from a crowd sourcing initiative via the University of Tennessee Office of Alumni Affairs aiming to fund student projects and their next "Big Ideas".

PUBLICATIONS

Mikucki, J. A., P. A. Lee, J., D. Ghosh, **A. M. Purcell**, A. C. Mitchell, K. D. Mankoff, et al., and the WISSARD Science Team (2015). Subglacial Lake Whillans Biogeochemistry: A synthesis of current knowledge. *Philos. Trans. R. Soc. London, Soc. A.* 374(2059).

Bible, A., G. Kalsham, C. Green, P. Mishra, **A. Purcell**, A. Aksenova, G. Hurst, and G. Alexandre (2015). Specific changes during clumping and flocculation facilitate metabolic stress adaptation in *Azospirillum brasilense*. *Appl. Environ. Microbiol.* 81(24):8346-57.

Purcell, A. M., J. A. Mikucki, I. Alekhina, A.A. Achberger, C. Barbante, B.C. Christner, D. Ghosh, A.B. Michaud, A.C. Mitchell, J.C. Priscu, R. Scherer, M.L. Skidmore, T.J. Vick-Majors, and the WISSARD Science Team. (2014). Microbial sulfur transformations in sediments from Subglacial Lake Whillans. *Front. Microbiol.* 5:594. doi: 10.3389/fmicb.2014.00594

CONFERENCE ABSTRACTS AND PRESENTATIONS (presenting author in italics)

Purcell A. M., A. Achberger, B.C. Christner, A.B. Michaud, J. Mikucki, A. C. Mitchell, J. C. Priscu, M. L. Skidmore, T. Vick-Majors, and WISSARD Science Team. “The Biogeochemistry beneath the Whillans Ice Stream, West Antarctica: Evidence for a Chemoautotrophically Driven Ecosystem”. American Geophysical Union, Fall Meeting (Dec. 2015)

Mikucki, J. A., Lee, P., Ghosh, D., A. Purcell, et al. “Investigating the hydrological origins of Blood Falls – geomicrobiological insights into a briny subglacial Antarctic aquifer” American Geophysical Union, Fall Meeting [accepted] (Dec. 2015)

Mikucki, J.A., Tulaczyk, S., Esben, A., Dachwald, B., Lyons, W., Chua, M., and Purcell, A. “Geomicrobiology, Engineering and Geophysics: Enabling the exploration of the subglacial microbial community in Antarctica’s Blood Falls”. SICB Extremophile Symposium. Portland, OR [submitted] (Jan. 2016)

Purcell A., J. Mikucki, D. Ghosh, and the WISSARD Science Team. Microbial Sulfur and Carbon Cycling in Antarctic Sub-Ice Environments. Southeastern Geobiochemistry Symposium, (Mar. 2015); Atlanta, GA.

Skidmore, M.L., A.B. Michaud, A. Achberger, C. Barbante, B.C. Christner, J. Mikucki, A.C. Mitchell, J. C. Priscu, A. M. Purcell, W. van Gelder, T. Vick-Majors, and WISSARD Science Team. American Geophysical Union, Fall Meeting (Dec. 2014)

Mikucki, J., S. Tulaczyk, B. Dachwald, D. Gosh, A. Purcell, M. Chua, J. Priscu, R. Powell, A. Mitchell, R. Scherer, B. Christner, and the WISSARD Science Team. Antarctic Subglacial Exploration – highlights from recent investigations of Subglacial Lake Whillans and Blood Falls. Scientific Committee on Antarctic Research Open Science Conference (Aug. 2014)

Mikucki, J., D. Ghosh, A. Purcell, A. C. Mitchell, and the WISSARD Science Team. Evidence for Iron and Sulfur-driven Chemosynthesis below Antarctic Ice. Goldschmidt (June 2014)

Purcell A., D. Ghosh, A.C. Mitchell, A. Achberger, B.C. Christner, R. Scherer, J.C. Priscu, and J. Mikucki. Microorganisms in Sediments from an Antarctic Subglacial Lake Mediate S-cycling. Poster session, Southeastern Geobiochemistry Symposium, (Apr. 2014); Atlanta, GA.

Purcell, A., H.F. Castro, K. Prater, J. Biggerstaff and J. Mikucki, “Antarctic Subglacial Sediment Visualization Techniques and its application to the Whillans Ice Stream Subglacial Access Research Drilling (WISSARD) Project”. Poster session, KY-TN American Society for Microbiology Branch Meeting, (Oct. 2012); Maryville, TN.