

TIMOTHY S. MAGNUSON

Professor of Microbiology
Department of Biological Sciences
Idaho State University
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RESEARCH AND TEACHING INTERESTS

- Microbial Biochemistry, Physiology, and Ecology
- Biotechnology and Bioenergy
- Astrobiology and Exobiology
- Discovery-based Learning and Teaching

EDUCATION**University of Minnesota**

Minneapolis, Minnesota
Bachelor of Science in Biochemistry, July 1987.

University of Idaho

Moscow, Idaho
Master of Science in Bacteriology, June 1991.
Thesis Title: Role and occurrence of extracellular peroxidases from *Streptomyces* sp.

Doctor of Philosophy in Bacteriology, May 1996.

Dissertation Title: Biochemical and genetic studies on the lignocellulose degradation system of *Streptomyces viridosporus* T7A

PROFESSIONAL EXPERIENCE

Professor (Tenured). Department of Biological Sciences, Idaho State University, Pocatello, ID 2013-Present.

Visiting Scientist, Utah State University, Logan UT (Sabbatical Leave Spring 2017).

Visiting Scientist. T3S Technologies, Salt Lake City UT (Sabbatical Leave Fall 2016).

Associate Professor (Tenured). Department of Biological Sciences, Idaho State University, Pocatello, ID 2006-2013.

Affiliate Faculty. Center for Advanced Energy Studies, Idaho Falls, ID, 2010-Present.

Adjunct Associate Professor. Department of Microbiology, Molecular Biology, and Biochemistry, University of Idaho, Moscow, ID 2008-2011.

Assistant Professor. Department of Biological Sciences, Idaho State University, Pocatello, ID 2001-2006.

Assistant Research Professor. Department of Microbiology and Center for Biofilm Engineering, Montana State University, Bozeman, MT 2000-2001.

Postdoctoral Research Associate (G.G. Geesey, Advisor). Department of Microbiology and Center for Biofilm Engineering, Montana State University, Bozeman, MT 1999-2000.

Postdoctoral Research Associate (D.R. Lovley, Advisor). Department of Microbiology, University of Massachusetts, Amherst, MA 1996-1999.

Graduate Assistant. Department of Microbiology, Molecular Biology, and Biochemistry, University of Idaho, Moscow, ID 1988-1996.

Junior Scientist. Department of Plant Pathology, University of Minnesota, St. Paul, MN 1987-1988.

Research Assistant and Research Associate. INCSTAR Corporation, Stillwater, MN 1986-1987.

HONORS AND AWARDS

Sabbatical Leave, Idaho State University, 2016-2017.

Center for Advanced Energy Studies Faculty Affiliate, 2010-2018.

Outstanding Researcher, Idaho State University, 2013.

Sigma Xi, The Scientific Research Society, 2011-2014.

Sabbatical Leave, Idaho State University, 2007-2008.

CURRENT PROJECTS AND COLLABORATIONS

Ecophysiology of Nitrogen Fixation and Electron Bifurcation (2017-Present). This is an ongoing collaboration with the laboratory of Dr. Rhesa Ledbetter, Idaho State University. A major work has been published (*Biochemistry* 2018), and we are currently preparing grant submissions for NSF (Chemistry of Life Processes, .

Origins of Microbial Iron Respiration. NASA Exobiology (2014-2018). This project focuses on the biochemistry and genomics of iron respiration in extremophiles. (w/ J.C. Rask, NASA Ames Research Center). ISU Undergraduates (7) and Graduate students (2) were or are involved. All undergraduates are co-authors on conference presentations and manuscripts in preparation.

Magcrobe LLC. This is a small business venture focused on contract research to enable new biopharmaceutical and biotechnology discoveries in diverse microbial habitats. Development is in collaboration with ISU Office of Research, and will seek funding from NSF-SBIR.

Novel Antimicrobials from Thermophilic Microbial Systems. Funding to be Determined. (w/Srinath Pashikanti, Dept. of BPSCI, Idaho State University). Discovery and characterization of small molecule antimicrobials and growth factors.

Reynolds Creek Critical Zone Observatory. NSF 2014-2018. This project examines climate-induced changes in a SE Idaho creek drainage, using microbiological and metagenomic tools to assess nitrogen fixation activity as a function of environmental variables and anthropogenic impacts (w/ K.A. Lohse, K. Aho, Idaho State University). Three publications are either in revision or being prepared for submission. An ISU Graduate student was involved.

Proteomics of Extracellular Electron Transport in Selected Metal-reducing Bacteria. (w/ R. White and J. Cort, Pacific Northwest National Laboratory). DoE 2015-2018. This is a continuing collaboration that focuses on the proteomics, biochemistry, and physiology of microbial electron transport to soluble and solid-phase metals such as iron and uranium. Two publications are being planned.

Metagenomics of Radioactive Thermal Systems. (w/Eric Boyd, Dan Coleman, Montana State University). I visited MSU in October 2017 and discussed some collaborative opportunities. Boyd and Coleman have agreed to help in obtaining and dissecting metagenome sequence data from microbial communities in radioactive, thermal systems in Idaho.

PUBLICATIONS

In Preparation, Submitted, or In Revision

Magnuson, T.S., J.C. Rask, K.C. Bywaters, M.W. Swenson. 2018. Geomicrobiology of a Radioactive Thermal System in Idaho, USA. FEMS Microbiol. Ecol. (Invited Paper for Conference Proceedings). In Preparation.

Swenson, M.W., R. White III, J.W. Cort, and T.S. Magnuson. 2018. Proteomic analysis of biofilm-associated extracellular electron transport in an extremophile, *Acidiphilium cryptum*. Journal of Bacteriology. In Preparation.

Published

Ray, A.E., S.A. Connon, A.L. Neal, Y. Fujita, D.E. Cummings, J. C. Ingram, and T.S. Magnuson. 2018. Metal Transformation by a novel *Pelosinus* Isolate from a Subsurface Environment. Frontiers Microbiol. 17 August 2018 | <https://doi.org/10.3389/fmicb.2018.01689>.

Ledbetter, R.N., A.M. Garcia Costas, C.E. Lubner, D.W. Mulder, M. Tokmina-Lukaszewska, J.H. Artz, A. Patterson, T.S. Magnuson, Z.J. Jay, H.D. Duan, J. Miller, M.H. Plunkett, J.P. Hoben, B.M. Barney, R.P. Carlson, A.F. Miller, B. Bothner, P.W. King, J.W. Peters, and L.C. Seefeldt. 2017. The Electron Bifurcating FixABCX Protein Complex from *Azotobacter vinelandii*: Generation of Low-Potential Reducing Equivalents for Nitrogenase Catalysis. Biochemistry 56(32):4177-4190. doi: 10.1021/acs.biochem.7b00389.

Schwabedissen, S. G., K. A. Lohse, S. C. Reed, , K. A. Aho, and T. S. Magnuson. 2017. Limits of Nitrogen Fixation by Biological Soil Crusts in a Cold Desert Sagebrush Steppe. Biogeochemistry 134: 57-76.

Blay, E.S., S. G. Schwabedissen, T. S. Magnuson, K.A. Aho, P.P. Sheridan, and K.A. Lohse 2017. Variation in Biological Soil Crust Bacterial Abundance and Diversity as a Function of Climate in Cold Steppe Ecosystems in the Intermountain West, USA. Microb. Ecol. 74: 691-700.

Magnuson, T.S., and R.N. Ledbetter. 2016. Experimental Geomicrobiology: From Field to Laboratory. In Manual of Environmental Microbiology, 4rd Edition. American Society for Microbiology Press. (Invited Book Chapter).

Brown, S.D., S.M. Utturkar, T.S. Magnuson, A.E. Ray, F.L. Poole, W.A. Lancaster, M.P. Thorgersen, M.W. Adams, D.A. Elias. Complete Genome Sequence of *Pelosinus* sp. Strain UFO1 Assembled Using Single-Molecule Real-Time DNA Sequencing Technology. Genome Announc. 2014 Sep 4;2(5).

- Reardon, C.L., T.S. Magnuson, E. S. Boyd, W.D. Leavitt, D.W. Reed, and G.G Geesey. 2014. Hydrogenase Activity of Mineral-Associated and Suspended Populations of *Desulfovibrio desulfuricans* Essex 6. *Microb. Ecol.* 67(2): 318-326
- Coats, E., E. Searcy, K. Feris, D. Shrestha, A. McDonald, A. Briones, T.S. Magnuson, and M. Prior. 2013. Application of an Integrated 2-Stage Anaerobic Digestion and Biofuels Production Process to Reduce Life Cycle GHG Emissions from US Dairies. *Biofuels Bioproducts Biorefining* 7: 459-473.
- Ellis, J.T., and T.S. Magnuson. 2012. Thermostable and alkalistable xylanases produced by the thermophilic bacterium *Anoxybacillus flavithermus* TWXYL3. *ISRN Microbiology Article ID 517524*.
- Hall, C.L., N.K. Wadsworth, D.R. Howard, E.M. Jennings, L.D. Farrell, T.S. Magnuson, and R.J. Smith. 2011. Inhibition of Microorganisms on a Carrion Breeding Resource: The Antimicrobial Peptide Activity of Burying Beetle (Coleoptera: Silphidae) Oral and Anal Secretions. *Environ. Entomol.* 40(3): 669-678.
- Ray, A. E., J. R. Bargar, V. Sivaswamy, A. C. Dohnalkova, Y. Fujita, B. M. Peyton, and T. S. Magnuson. 2011. Evidence for multiple modes of uranium immobilization by an anaerobic bacterium. *Geochimica Cosmochimica Acta.* 75 (10): 2684-2695.
- Magnuson, T.S. 2011. Commentary: How the xap locus put electrical 'zap' in *Geobacter sulfurreducens* biofilms. *J. Bacteriol.* 193(5): 1021-2.
- Cort, J.R., M.W. Swenson, and T.S. Magnuson. 2011. ¹H, ¹³C, and ¹⁵N backbone, side-chain, and heme chemical shift assignments for oxidized and reduced forms of the monoheme c-type cytochrome ApcA isolated from the acidophilic metal-reducing bacterium *Acidiphilium cryptum*. *Biomol. NMR Assign.* 5(1):89-92.
- Magnuson, T.S., M.W. Swenson, L.A. Deobald, A.J. Paszczynski, and D.E. Cummings. 2010. Physiology and proteogenomics of Cr(VI) reduction in *Acidiphilium cryptum* JF-5. *Biometals* 23: 1129-38.
- Magnuson, T.S., and R.N. Ledbetter. 2010. The geomicrobiology of arsenic. In Barton, L., M. Mandl, and A. Loy (Eds). *Geomicrobiology: Molecular and Environmental Perspective*. Springer Publishing, New York.
- Ray, A.E., S.A. Connon, P.P. Sheridan, J. Gilbreath, M.S. Shields, D.T. Newby, Y. Fujita, and T.S. Magnuson. 2010. Intragenomic heterogeneity of the 16S rRNA gene in strain UFO1 caused by a 100 bp insertion in helix 6. *FEMS Microbiol. Ecol.* 72: 343-353.
- B.R. Briggs, T. Mitton, R. Smith, T.S. Magnuson. 2009. Teaching cellular respiration & alternate energy sources with a laboratory exercise developed by a scientist-teacher partnership. *Amer. Biology Teacher* 71(3): 164-167.
- Connon, S.A., A.L. Neal, A. Koski, S.A. Wood, and T.S. Magnuson. 2008. Ecophysiology and geochemistry of microbial arsenic oxidation within a high arsenic, circumneutral hot spring system of the Alvord Desert. *FEMS Microbiol. Ecol.* 64: 117-128.
- Cummings, D.E., and T.S. Magnuson. 2007. Microbial Fe(III) reduction: ecological and physiological considerations. *In Manual of Environmental Microbiology*, 3rd Edition. American Society for Microbiology Press. Ch. 101.

- Ledbetter, R.N., S.A. Connon, A.L. Neal, A. Dohnalkova, and T.S. Magnuson. 2007. Biogenic mineral production by a novel arsenic-metabolizing thermophilic organism from the Alvord Basin, OR. *Appl. Environ. Microbiol.* 73: 5928-36.
- Lee, M.H., J.L. Keams, D.W. Helzer, O.P. Leiser, M.A. Ochoa, S.A. Connon, T.S. Magnuson, and M.E. Watwood. 2007. Characterization of Viral and Prokaryotic Communities in Alvord Desert Hot Springs, Oregon. *Aqua. Microb. Ecol.* 48: 19-26.
- Cummings, D. E., S. Fendorf, N. Singh, R. K. Sani, B. M. Peyton, and T. S. Magnuson. 2007. Reduction of Cr(VI) under acidic conditions by the facultative Fe(III)-reducing bacterium *Acidiphilium cryptum*. *Env. Sci. Technol.* 41:146-152.
- Kahre, N., D.M. Lovelace, C.M. Eggleston, M.W. Swenson, and T.S. Magnuson. 2006. Redox-linked conformation change and electron transfer between monoheme c-type cytochromes and oxides. *Geochim. Cosmochim. Acta* 70: 4332-4342.
- Magnuson, T.S., A.L. Neal, and G.G. Geesey. 2004. Combining *in situ* reverse transcriptase polymerase chain reaction, optical microscopy, and X-ray photoelectron spectroscopy to investigate mineral surface-associated microbial activities. *Microb. Ecol.* 48: 578-588.
- A. L. Neal, L. K. Clough, T. D. Perkins, B.J. Little, and T. S. Magnuson. 2004. Characterization of surface-associated growth, mineral transformation, and gene expression by *Geobacter pelophilus* grown on solid-phase mineral surfaces. *FEMS Microbiol. Ecol.* 49: 163-169.
- Ferris, M. J., T. S. Magnuson, J. A. Fagg, R. Thar, M. Köhl, K. B. Sheehan, and J. M. Henson. 2003. Microbially mediated sulphide production in a thermal, acidic algal mat community in Yellowstone National Park. *Environ. Microbiol.* 5: 954-960.
- Magnuson, T.S., N. Isoyama, A. L. Hodges-Myerson, G. Davidson, M. J. Maroney, G. G. Geesey, and D. R. Lovley. 2001. Isolation, characterization, and gene sequence analysis of a membrane associated 89 kDa Fe(III) reducing cytochrome c from *Geobacter sulfurreducens*. *Biochem. J.* 359: 147-152.
- Magnuson, T. S., A. L. Hodges-Myerson, and D. R. Lovley. 2000. Characterization of a membrane-bound NADH-dependent Fe³⁺ reductase from the dissimilatory Fe³⁺-reducing bacterium *Geobacter sulfurreducens*. *FEMS Microbiol. Lett.* 185: 205-211.
- Ramachandran, S., T. S. Magnuson, and D. L. Crawford. 2000. Isolation and Analysis of three peroxide sensor regulatory gene homologs *ahpC*, *ahpX* and *oxyR* in *Streptomyces viridosporus* T7A - A lignocellulose degrading actinomycete. *DNA Sequence.* 11: 51-60.
- Kanhiyur, D. N., T. S. Magnuson, and D. L. Crawford. 2000. Cloning, sequencing, and characterization of the xylanase-encoding gene, *svxA*, from *Streptomyces viridosporus* T7A and its expression in *Escherichia coli*. *Actinomycetologica* 14: 6-10.
- Ramachandran, S., T. S. Magnuson, and D. L. Crawford. 2000. Cloning, sequencing, and characterization of two clustered cellulase-encoding genes, *celS1* and *celS2* from *Streptomyces viridosporus* T7A and their expression in *Escherichia coli*. *Actinomycetologica.* 14: 11-16.

- Magnuson, T. S., A. L. Hodges, and D. R. Lovley. 1998. Characterization of a membrane-bound NADH-dependent Fe(III) reductase from *Geobacter sulfurreducens*. *Protein Science* 7 (Suppl.): 141.
- Magnuson, T. S., and D. L. Crawford. 1997. Purification and characterization of an alkaline xylanase from *Streptomyces viridosporus* T7A. *Enzyme Microb. Technol.* 21: 161-164.
- Magnuson, T. S. and D. L. Crawford. 1992. Comparison of extracellular peroxidase- and esterase-deficient mutants of *Streptomyces viridosporus* T7A. *Appl. Environ. Microbiol.* 58: 1070-1072.
- Magnuson, T. S., M. A. Roberts, D. L. Crawford, and G. Hertel. 1991. Immunologic relatedness of extracellular ligninases from the lignin-solubilizing actinomycetes *Streptomyces viridosporus* T7A and *Streptomyces badius* 252. *Appl. Biochem. Biotechnol.* 28/29: 433-443.
- Wang, Z., D. L. Crawford, T. S. Magnuson, B. H. Bleakley, and G. Hertel. 1991. Characterization of bacterial lignin peroxidase effects on the rate of organic carbon mineralization in soil using recombinant *Streptomyces* strains. *Can. J. Microbiol.* 37: 287-294.
- Lovrien, R. L., M. A. Ferrey, T. S. Magnuson, and R. A. Blanchette. 1989. Microbial calorimetric analysis: Lignin related compounds in micromolar concentrations. In: N. G. Lewis and N. G. Paice (eds.), *Plant Cell Wall Polymers: Biosynthesis and Biodegradation*. American Chemical Society Symposia, Vol. 399. American Chemical Society, Washington D.C.
- Gleason, F. K., D. E. Case, K. D. Sipprell, and T. S. Magnuson. 1986. Effect of the natural algicide, cyanobacterin, on a herbicide-resistant mutant of *Anacystis nidulans* R2. *Plant Science* 46: 5-10.

COLLABORATORS (LAST 5 YEARS)

<u>Person</u>	<u>Institution</u>	<u>Expertise</u>
Dr. Ken Aho	Idaho State University	Biostatistics
Dr. Roslyn Brown	Pacific NW National Laboratory	Proteomics
Dr. Stephanie Connon	CalTech	Molecular Phylogeny
Dr. John Cort	Pacific NW National Laboratory	Protein Spectroscopy
Dr. Dave Cummings	Point Loma Nazarene University	Microbial Ecology
Dr. Lee Deobald	University of Idaho	Proteomics
Dr. Gill Geesey	Montana State University	Microscopy, Geomicrobiology
Dr. Amin Mirkouei	University of Idaho-CAES	Biological Engineering
Dr. Andy Neal	Rothamstead Research UK	Microscopy, Mineralogy
Dr. Srinath Pashikanti	Idaho State University	Organic Chemistry
Dr. Andrzej Paszczynski	University of Idaho	Biochemistry, Proteomics
Mr. Jon Rask	NASA-Ames	Geochemistry
Dr. Allie Ray	Center for Advanced Energy Studies	Biochemical Engineering
Dr. Katie Reardon	USDA, Portland OR	Microbiology
Dr. Peter Sheridan	Idaho State University	Bioinformatics
Dr. Rosemary Smith	Idaho State University	Insect Ecology
Dr. Richard White III	Pacific NW National Laboratory	Proteomics

RESESRCH GRANTS SUBMITTED (2017-2018)

Magnuson, T.S., L.A. Deobald, K.C. Bywaters, J.C. Rask. 2018. Geomicrobiomes of Primitive Extreme Environments: Shared Survival Strategies at Molecular and Geochemical Levels. NASA ROSES 2019. Amount: \$450,000. Period: 2018-2021. Grant submitted May 2018. In Review.

Magnuson, T.S., L.A. Deobald, K.C. Bywaters, J.C. Rask. 2018. Geomicrobiomes of Primitive Extreme Environments: Shared Survival Strategies at Molecular and Geochemical Levels. NASA Idaho EPSCoR Preapplication 2019. Amount: \$720,000. Period: 2018-2021. Grant submitted May 2018. Not Selected for Development.

Magnuson, T.S., S. Kobs-Nawotniak, and D. DelParte. 2018. Microbial Habitability of Mars-like Environments. Idaho Space Grant Research Initiation Grants. Amount: \$45,000. Period: 2018-2019. Not Funded.

Magnuson, T.S., L.A. Deobald, K.C. Bywaters, J.C. Rask. 2017. Multi-omics of multi-extreme microbial systems. NASA ROSES 2018. Amount: \$600,000, Period: 2018-2021. Grant submitted October 2017. Not Funded.

Mirkouei, A., and T.S. Magnuson. 2018. Commercializing Pyrolysis-char Production through Advanced Conversion Process and Data-Influenced Decision Making: "CREATIVES" Platform. Idaho Global Entrepreneurial Mission. Amount: \$ 200,000. Period: 2018-2019. Grant submitted January 2018. Not Funded.

RESEARCH GRANTS AWARDED (2000-2017)

Magnuson, T.S., M. Thomas, L. Yang. 2014. Origins of Microbial Iron Respiration. National Aeronautics and Space Administration. Amount: \$430,000. Period: 2014-2017. No-Cost extension requested for 2017-2018.

Magnuson, T.S. 2014. Microbial Technetium and Iodine Transformation. Pacific Northwest National Laboratory. Amount: \$50,000. Period: 2013-2015.

Magnuson, T.S., and E. Burr. 2013. Microbial analysis of dairy waste treatment strategies. BECO Dairy Management. Amount: \$3724. Period: 2013.

Thomas, M. et al. 2011 (T.S. Magnuson, Senior Personnel). MRI: Acquisition of an Ion Torrent PGM Sequencer for Research and Education. National Science Foundation. Amount: \$194,365. Period: 2011-2014.

Magnuson, T.S., and L.C. DeVeaux. 2011. Microbial Mn acquisition in extremis. National Aeronautics and Space Administration-Idaho EPSCoR. Collaboration Grant. Amount: \$4000. Period: 2011-2012.

Magnuson, T.S., J.R. Cort, M.W. Swenson. 2010. Exploring Microbe-Microbe and Microbe-Environment Interactions in *Acidiphilium cryptum* and *Acidithiobacillus ferrooxidans*: A Model Contaminant Metal Redox Cycling System. Pacific Northwest National Laboratory-Environmental Molecular Science Laboratory User Agreement. Amount: Instrument Time for Proteomics, NMR Spectroscopy, Electron Microscopy. Period: 2010-2012.

Magnuson, T.S. 2010. Conversion of Agricultural Wastes to Biofuels. VerdureTech, Inc. Amount: \$12,800. Period: 2010-2011.

- Searcy, E., A. Briones, E. Coats, K. Feris, D. Keiser, T. Magnuson, A. McDonald, D. Shrestha. 2010. Design and Operational Improvements, and LCA in Anaerobic Digestion of Fermented Dairy Manure Using a 2-Stage process. Center for Advanced Energy Studies-Idaho National Laboratory. Amount: \$20,000. Period: 2010-2012.
- Bala, G., K. Feris, J. VanGerpen, and T.S. Magnuson. Bioethanol production potential in Idaho. Center for Advanced Energy Studies-Idaho National Laboratory. Amount : \$81,000. Period: 2008-2011.
- Magnuson, T.S. (Principal Investigator-ISU), C.M. Eggleston, and P.J.S. Colberg. Collaborative Research: Redox metalloproteins and conformational gating in electron transfer to ferric minerals. National Science Foundation-Research in Biogeosciences. Amount: \$85,328. Period: 2004-2008 (No-cost extension to 2009).
- Magnuson, T.S. (Principal Investigator, ISU), P.J.S. Colberg, and C.M. Eggleston. Redox interactions of cytochromes and bacteria with oxide surfaces: Probing redox-linked conformational change. Department of Energy-Basic Energy Sciences. Amount: \$271,468. Period: 2006-2009 (No-cost extension to 2010).
- Liang, L, J. Ankner, B. Gu, T.S. Magnuson, D. Myles, and W. Hamilton. Probing molecular interaction between microbial-cell protein and mineral surfaces with neutrons. Oak Ridge National Laboratory-University of Tennessee-Battelle. Amount: \$15,000. Period: 2006-2008.
- Magnuson, T.S. (Principle Investigator), and A. Ponce (Collaborator-NASA Jet Propulsion Laboratory). *In situ* detection and characterization of microbial enzymes from microbial mats and complex communities. National Aeronautics and Space Administration-Idaho Space Grant Consortium. Amount: \$15,000. Period: 2005-2007.
- Magnuson, T.S. (Principle Investigator), and A. Ponce (Collaborator-NASA Jet Propulsion Laboratory). Directed proteomics of microbial enzymes purified from complex communities. National Aeronautics and Space Administration-EPSCoR. Amount: \$10,917. Period: 2006-2007.
- Magnuson, T.S. (Principal Investigator), and D.E. Cummings. Comparative biochemistry and physiology of iron-respiring bacteria from acidic and neutral pH environments. Department of Energy-Natural and Accelerated Bioremediation Research Program (NABIR). Amount: \$542,793. Period: 2004-2007.
- Magnuson, T.S., D.E. Cummings, and K. Kusel. Sequencing the *Acidiphilium cryptum* JF-5 Genome. U.S. Department of Energy-Joint Genome Institute. Amount: No monetary award, Data only. Period: 2005-2006.
- Magnuson, T. S. (Principal Investigator), and D. E. Cummings. Selective attachment of dissimilatory metal-reducing bacteria to metal oxide substrata. Inland Northwest Research Alliance. Amount: \$180,000; Period: 2002-2005.
- Watwood, M. E., and T. S. Magnuson (Co-Principal Researchers, Idaho State University; P.I.: J. Shreeve, University of Idaho). Life at Interfaces and the Biocomplexity of Extreme Environments. National Science Foundation-Experimental Program to Stimulate Competitive Research. Amount (to TSM and MEW): \$420,000; Period: 2002-2005.

Magnuson, T. S. (Principal Investigator). 2000. Characterization of mineralogical and molecular genetic events associated with colonization of mineral surfaces by *Geobacter* spp. U. S. Department of Energy-Natural and Accelerated Bioremediation Research Program. Grant Awarded June 2000. Amount: \$75,000; Duration: 1 year.

INVITED SEMINARS

2017. What can radioactive hot springs tell us about life on other planets. Thermal Biology Institute Seminar Series, Montana State University, Bozeman, MT.

2017. Hot and Hotter: A radioactive hot spring system in Idaho. Department of Pharmaceutical Sciences, Idaho State University, Pocatello ID.

2015. Manure Biochemistry and Microbiology. WIDE Dairy Industry Workshop, Boise ID.

2014. Geomicrobiology Research at Idaho State. 1st Workshop on Mining, Metals, Microbes, and Minnesota. Minneapolis MN March 5, 2014.

2013. The hunt for better biocatalysts: Discovery of bioenergy-producing microbes from a variety of habitats. Intermountain Branch American Society for Microbiology Meeting, Pocatello ID April 2013.

2013. Multi-extreme environments of Idaho and Oregon. Montana State University, Thermal Biology Institute Seminar Series, Bozeman MT April 6, 2013.

2012. NASA-supported collaboration and outreach at Idaho State University. NASA/NSF-EPSCoR Annual Meeting, Boise, ID.

2011. Microbial Bioenergy: From electrons to complex carbon. University of Minnesota Biotechnology Institute Seminar Series, Minneapolis, MN.

2011. The search for biocatalysts: From pure culture to complex ecosystems. Idaho National Laboratory Seminar Series, Idaho Falls, ID.

2010. Animal waste conversion research at Idaho State University. Center for Advanced Energy Studies Bioenergy Summit, Idaho Falls ID.

2010. Collaborative Research Between ISU and the PNNL. Pacific Northwest National Laboratory, Richland WA.

2008. Microbial mineral transformation: A preponderance of possible permutations. Department of Geosciences, Oregon State University, Corvallis OR.

2008. Discovering the power of microbes for remediation and energy. Department of Microbiology, Molecular Biology, and Biochemistry, University of Idaho, Moscow ID.

2007. Harnessing mineral-transforming microbes for remediation and energy. Department of Zoology and Physiology, University of Wyoming, Laramie WY.

2007. Directed proteomics. INRA Environmental Sensing Symposium, Boise, ID.

2007. Redox and solution behavior of c-type cytochromes from mineral-respiring bacteria. 17th Goldschmidt Conference, Cologne, Germany.
2007. Purification of redox active biomolecules from pure cultures and complex samples. Inland Northwest Research Alliance Environmental and Subsurface Science Symposium, Logan, UT.
2006. Acidophiles and Metals: Implications for Bioremediation. American Chemical Society, San Francisco CA.
2006. Biochemical and genomic inquiries into the metal-reducing acidophile *Acidiphilium cryptum* JF-5. INRA Environmental Biofilms Symposium, Bozeman MT.
2006. Ecological Biochemistry: The need for new methods to assess microbial activity in complex communities. Lawrence Livermore National Laboratory, Microbial Systems Division, Livermore, CA.
2006. A Renaissance in Microbial Biology. NSF-IGERT Seminar Series, Oregon State University, Corvallis, OR.
2005. Comparative biochemistry of cytochromes c from acidophilic and neutrophilic iron-reducing bacteria. 15th Annual Goldschmidt Conference, Moscow, ID.
2005. Comparative biochemistry and physiology of iron-respiring bacteria from acidic and neutral pH environments. Department of Energy-NABIR Investigators Meeting, Warrenton, VA.
2005. Metal transforming microbes: The tiniest electrical engineers on earth. Department of Biological Sciences Seminar Series, University of Colorado-Denver, Denver, CO.
2005. Metal transforming microbes: The tiniest electrical engineers on earth. Department of Geosciences, University of Wyoming, Laramie, WY.
2004. Are all iron-reducing bacteria created equal? Comparative physiology of neutrophilic and extremophilic iron-reducing microorganisms. Soil Science Society of America Meeting, Seattle WA.
2003. Adventures in Geomicrobiology: A young investigators story. Lawrence Livermore National Laboratory BBRP Seminar, LLNL, Livermore, CA.
2003. Adventures in Geomicrobiology: A young investigators story. Savannah River Ecological Laboratory Seminar Series, SREL, Aiken GA.
2003. Life at the Interface-Revealing the hidden world of bugs on rocks. Sandia National Laboratory (CA) Seminar Series. Sandia National Laboratory, Livermore, CA.
2002. Shedding new light on the lives of dissimilatory metal reducing bacteria. Department of Microbiology, Molecular Biology, and Biochemistry Seminar Series, University of Idaho, Moscow, ID.
2001. Biochemical and Molecular Analysis of Metal Reduction in *Geobacter sulfurreducens*: Findings and Applications. Idaho National Engineering and Environmental Laboratory Seminar Series, Idaho Falls, ID.

2001. Integration of molecular and surface analytical techniques for the study of dissimilatory metal-reducing bacteria. Inland Northwest Research Alliance Meeting, Idaho Falls, ID.
2001. New news from the world of metals and microbes. Center for Biofilm Engineering Seminar Series, Montana State University, Bozeman, MT.
2001. How do bacteria 'breathe' metals? Department of Biological Sciences Seminar Series, Idaho State University, Pocatello, ID.
2001. Use of RT-PCR and In situ RT-PCR techniques to detect functional gene expression in dissimilatory metal and sulfate reducing bacteria. Technical Associates Meeting, Center for Biofilm Engineering, Montana State University, Bozeman, MT.
2000. Biochemistry and Molecular Genetics of Dissimilatory Metal Reduction in *Geobacter* : Current Knowledge and Future Issues. DOE-NABIR Metals and Microbes Workshop, Washington, DC.
2000. Iron reduction in *Geobacter* spp.: Will the real iron reductase step forward? Departmental Seminar Series, Department of Microbiology, Montana State University, Bozeman, MT.
1997. Partial purification and preliminary characterization of Fe(III) reductase from *Geobacter sulfurreducens*. Departmental Seminar Series, Department of Microbiology, University of Massachusetts, Amherst, MA
1996. Biochemistry of the lignocellulose degradation system of *Streptomyces viridosporus* T7A. Biology Seminar Series, Protein Engineering Group, Oak Ridge National Laboratory, Oak Ridge, TN.
1995. Purification of an alkaline xylanase from *Streptomyces viridosporus* T7A. Graduate Seminar Series, Department of Microbiology, Molecular Biology, and Biochemistry, University of Idaho, Moscow, ID.

MEETING AND CONFERENCE PRESENTATIONS

- Magnuson, T.S., M. W. Swenson, and L.A. Deobald. 2018. Unique Physiologic Adaptations of Iron Reducing Extremophiles. American Society for Microbiology, Atlanta GA.
- Swenson, M.W., T.S. Magnuson, R. Brown, and R.A. White III. 2018. Outer Membrane Vesicles from *Acidiphilium cryptum* JF-5 As Nutrient Sequestration Organelles. American Society for Microbiology, Atlanta GA.
- Magnuson, T.S., J.C. Rask, K.C. Bywaters, M.W. Swenson. 2017. Geomicrobiology of a Radioactive Thermal System in Idaho, USA. International Symposium on Subsurface Microbiology, Rotorua NZ.
- Magnuson, T.S., J. C. Rask, K. F. Bywaters, K. A. Counsell, J. A. Wilson, C. Puschak, M. W. Swenson, and D. Viall. 2017. Radioactive hot springs as a model geomicrobiological system for exobiology studies. NASA Astrobiology Science Conference, Mesa AZ.
- Magnuson, T.S., J. C. Rask, K. F. Bywaters, K. A. Counsell, J. A. Wilson, C. Puschak. 2017. Geomicrobiology of a Radioactive Thermal Complex in Idaho. American Society for Microbiology General Meeting, New Orleans LA.

Johnson, A., C. Puschak, J.A. Wilson, and T.S. Magnuson. 2015. Extracellular electron transport in *Thermus*. 115th General Meeting, American Society for Microbiology, New Orleans, LA.

Blay E.S., S.G. Schwabedissen, S.C Reed, P.P. Sheridan, T.S. Magnuson, and K.A. Lohse, 2015. Variation in Biological Soil Crust Bacterial Diversity with a Changing Climate. Idaho Conference on Undergraduate Research 2015. Boise, Idaho. July 29-30. [Poster].

Schwabedissen, S.G., S.C., Reed, T.S., Magnuson, K.A. Lohse, 2014. Biological Soil Crust Nitrogen Fixation in Semi-arid Ecosystems: Climatic and Grazing Controls. All Hands Critical Zone Observatory Network. Fish Camp, CA. September 21-24. [Poster].

Schwabedissen, S.G., S.C. Reed, , P.P.Sheridan, , T.S. Magnuson, ,and K.A. Lohse, 2014. Climatic and grazing controls on biological soil crust nitrogen fixation in semi-arid ecosystems. American Geophysical Union Fall Meeting 2014. San Francisco, CA. December 14-19. [Poster].

Magnuson, T.S., A. Johnson, A. Gordon, K. Counsell. 2014. International Symposium on Subsurface Microbiology, October 2014, Pacific Grove, CA.

Lee, M.H., and T.S. Magnuson. 2013. Evaluation of Prokaryotes and Community Dynamics in Alvord Desert Hot Springs. Goldschmidt Conference on Geochemistry, Florence, Italy July 2013.

Magnuson, T.S., M.W. Swenson, R. Brown, T. Salazar. 2010. Proteomics of extracellular electron transport structures in an acidophilic bacterium. International Society for Microbial Ecology, Seattle, WA.

Sycheva, L.V., C.M. Eggleston, P.J.S. Colberg, T.S. Magnuson, and L. Shi. 2010. Redox-linked conformation change observed for adsorbed metal-reducing bacterial cytochromes. Goldschmidt 2010, Knoxville, TN.

T. S. Magnuson, M. Swenson, R. Brown, T. Salazar, B. Shakya. 2010. Biochemistry and proteomics of biofilm redox proteins in an acidophilic iron-respiring bacterium. 110th General Meeting, American Society for Microbiology, San Diego CA.

Thorne, J., and T.S. Magnuson. 2009. Synthesis of a knockout gene fragment for *ApcA* of *Acidiphilium cryptum*. 109th General Meeting, American Society for Microbiology, Philadelphia PA.

Swenson, M.W., and T.S. Magnuson. 2009. Identification of Excreted and Surface Associated Proteins in *Acidiphilium cryptum* JF-5. 109th General Meeting, American Society for Microbiology, Philadelphia PA.

Pharis, J., R.N. Ledbetter, M.J. Meehan, and T.S. Magnuson. 2009. Selenium Transforming Bacteria from River Sediments and Thermal Areas. 109th General Meeting, American Society for Microbiology, Philadelphia PA.

Ellis, J., D. McGuire, M.W. Swenson, and T.S. Magnuson. 2009. Xylanases from thermophilic and mesophilic bacteria. 109th General Meeting, American Society for Microbiology, Philadelphia PA.

Cummings, D.E., D. Kerk, D. Sims, P. Richardson, B. Briggs, M. Swenson, and T.S. Magnuson. 2008. The *Acidiphilium cryptum* genome reveals capacities for metal transformation and mineral colonization. UCLA-Lake Arrowhead Conference on Microbial Genomics, Lake Arrowhead, CA.

M.W. Swenson, T.S. Magnuson, P.J.S. Colberg, and C.M. Eggleston. 2008. Functional Characterization of c-type Cytochromes from Iron-Respiring Bacteria. 18th V.M. Goldschmidt Conference, Vancouver, BC.

Swenson, M.W., P.J.S. Colberg, C.M. Eggleston, and T.S. Magnuson. 2008. Purification and Functional Characterization of Two Periplasmic C-Type Cytochromes from *Acidiphilium cryptum*. American Society for Microbiology General Meeting, Boston, MA.

Ledbetter, R.N., L.A. Deobald, A.P. Paszczyński, and T.S. Magnuson. 2007 Directed proteomics applied to the detection and characterization of arsenic-transforming enzymes from complex communities in the Alvord Basin hydrothermal system. 17th V.M. Goldschmidt Conference, Cologne, Germany.

Ray, A.E., P.P. Sheridan, M.S. Shields, J. Gilbreath, S.A. Connon, D.T. Newby, Y. Fujita, and T.S. Magnuson. 2007. 16S rRNA pseudogene detection in an environmental isolate, Strain UFO1-a Cautionary Tale. American Society for Microbiology General Meeting, Toronto, Canada.

Gresham, T.G., B. Briggs, M. Swenson, M. Day, L. Yang, M. A. Thomas, P. P. Sheridan, D. Sims, P. Richardson, D. Kerk, D. E. Cummings, and T. S. Magnuson. 2007. Genome Sequencing and Annotation of the Acidophilic Metal-reducing Bacterium *Acidiphilium cryptum* JF-5. Department of Energy-Joint Genome Institute Users Meeting, Walnut Creek, CA.

Ray, A.E., S.A. Connon, D.T. Newby, P.P. Sheridan, and T.S. Magnuson. 2006. Multiple 16S rRNA genes in an environmental isolate: A cautionary tale. INRA Subsurface Science Symposium 2006, Moscow ID.

Ledbetter, R.N., M. James, A.L. Neal, and T.S. Magnuson. 2006. Microbial "Life Signatures": Novel biogenic mineral production and enzyme detection in microorganisms. 16th V.M. Goldschmidt Conference, Melbourne, Australia.

Tyler, T.L., D.E. Cummings, and T.S. Magnuson. 2006. Chemiluminescence-based detection of a novel chromate reductase on polyacrylamide gels. 106th General Meeting, American Society for Microbiology, Orlando, FL.

Ledbetter, R.N., S.A. Connon, A. Ponce, and T.S. Magnuson. 2006. Ecological Biochemistry: Detection and characterization of arsenic transforming enzymes from complex microbial communities. 106th General Meeting, American Society for Microbiology, Orlando, FL.

Magnuson, T.S., D.E. Cummings, T.L. Tyler, M.E. Swenson. 2005. Emerging mechanisms of electron transport in iron reducing bacteria. INRA Environmental and Subsurface Science Symposium, Big Sky, MT.

Tyler, T.L., M.W. Swenson, D.E. Cummings, and T.S. Magnuson. 2005. Chromate reduction by the acidophilic metal-reducing bacterium *Acidiphilium cryptum* JF-5. The Joint International Symposia for Subsurface Microbiology (ISSM 2005) and Environmental Biogeochemistry (ISEB XVII), Jackson, WY.

Swenson, M.W., D.E. Cummings, and T.S. Magnuson. 2005. Purification and biochemical characterization of four c-type cytochromes from the Fe(III)-respiring bacterium *Acidiphilium cryptum*. The Joint International Symposia for Subsurface Microbiology (ISSM 2005) and Environmental Biogeochemistry (ISEB XVII), Jackson, WY.

Ray, A.E., S.A. Connon, A.L. Neal, V. Sivaswamy, B.M. Peyton, D.E. Cummings, Y. Fujita, T.S. Magnuson. 2005. Characterization of a novel metal-reducing Clostridiales, Strain UFO1. The Joint International Symposia for Subsurface Microbiology (ISSM 2005) and Environmental Biogeochemistry (ISEB XVII), Jackson, WY.

Ledbetter R.N., S.A. Connon, A.L. Neal, T.S. Magnuson. 2005. Isolation of a novel arsenic-metabolizing organism from the Alvord Basin hydrothermal system. The Joint International Symposia for Subsurface Microbiology (ISSM 2005) and Environmental Biogeochemistry (ISEB XVII), Jackson, WY.

Connon, S.A., and T. S. Magnuson. 2005. *In situ* detection and purification of mineral transforming microbial enzyme activities. The Joint International Symposia for Subsurface Microbiology (ISSM 2005) and Environmental Biogeochemistry (ISEB XVII), Jackson, WY.

Cummings, D.E., S. Fendorf, R.K. Sani, B.M. Peyton, and T.S. Magnuson. 2005. Reduction of Cr(VI) under acidic conditions by the facultatively Fe(III)-reducing bacterium *Acidiphilium cryptum*. The Joint International Symposia for Subsurface Microbiology (ISSM 2005) and Environmental Biogeochemistry (ISEB XVII), Jackson, WY.

Reardon, C.L., T.S. Magnuson, and G.G. Geesey. 2005. Expression of [NiFe] Hydrogenase in *Desulfovibrio desulfuricans* Essex 6 under various growth conditions. 105th General Meeting, American Society for Microbiology, Atlanta, GA.

A.L. Neal, R.N. Ledbetter, S.A. Connon, and T.S. Magnuson. 2005. Biosynthesis of novel arsenic-sulfide minerals by an arsenic-reducing bacterium. 15th Annual Goldschmidt Conference, Moscow, ID.

Cummings, D.E., M.E. Swenson, T.L. Tyler, and T.S. Magnuson. 2004. Comparative physiology and the discovery of 'metal reductase' proteins in an acidophilic metal-reducing bacterium. West Coast Bacterial Physiologists Annual Meeting, Pacific Grove, CA.

Connon, S.A., A.L. Neal, S.A. Wood, and T.S. Magnuson. 2004. Microbial diversity of biofilms along geochemical gradients within arsenic-laden hot springs in the Alvord Desert Basin in Southeastern Oregon, USA. 10th International Symposium on Microbial Ecology, Cancun, Mexico.

Lee, J., S.A. Connon, T.S. Magnuson, and M.E. Watwood. 2004. Variance in microbial diversity of a hot springs group within the Alvord Basin as influenced by temperature and phase association of organisms. 104th General Meeting, American Society for Microbiology, New Orleans, LA.

Ray, A.E., S.A. Connon, T.S. Magnuson, and D.E. Cummings. 2004. FRC-A1: A novel genus of Fe(III)-reducing bacteria. 104th General Meeting, American Society for Microbiology, New Orleans, LA.

Connon, S.A., R.N. Ledbetter, A.L. Neal, S.A. Wood, and T.S. Magnuson. 2004. Geomicrobiological explorations of the Alvord Basin hydrothermal system. 104th General Meeting, American Society for Microbiology, New Orleans, LA.

Magnuson, T.S., A. Rasmussen, R.K. Sani, B.E. Peyton, C.R. Breckenridge, and D.E. Cummings. 2004. Acidophilic iron-reducing bacteria: shared traits and unique characteristics as compared with their neutrophilic counterparts. 104th General Meeting, American Society for Microbiology, New Orleans, LA.

- Howard, M. H., S. A. Connon, M. E. Watwood, and T. S. Magnuson. 2004. Viral and bacterial dynamics in thermal hot springs, Alvord Desert, Oregon. American Society of Limnology and Oceanography, Savannah, GA.
- Magnuson, T.S., S.A. Connon, L. Clough, J. Blew, and M.E. Watwood. 2003. Community and functional analysis of microbial populations in an alkaline hydrothermal area in Oregon. 103rd General Meeting, American Society for Microbiology, Washington, DC.
- Neal, A L., J. Henson, and T. S. Magnuson. 2002. Visualizing functional gene expression and geochemical transformation in complex systems. ASA-CSSA-SSSA Annual Meetings Indianapolis, IN
- Neal, A. L., L. K. Clough, T.D. Perkins, and T. S. Magnuson. 2002. Integrated biochemical, molecular, and chemical studies on the Fe(III)-reducing bacterium *Geobacter pelophilus*. 5th International Symposium on Subsurface Microbiology, Copenhagen, Denmark.
- Neal, A. L., L. K. Wells, and T. S. Magnuson. 2002. Integrated biochemical, molecular, and surface-analysis techniques applied to the study of *Geobacter pelophilus*, a dissimilatory Fe(III)-reducing bacterium. 102nd General Meeting, American Society for Microbiology, Salt Lake City, UT.
- Magnuson, T. S., A.L. Neal, Y.A. Gorby, and G.G. Geesey. 2001. Use of RT-PCR and In situ RT-PCR techniques to detect functional gene expression in dissimilatory metal and sulfate reducing bacteria. 101st General Meeting, American Society for Microbiology, Orlando, FL.
- Magnuson, T. S., A. L. Hodges-Myerson, and D. R. Lovley. 1999. Purification and properties of the membrane-bound Fe(III) reductase from the dissimilatory Fe(III) reducing bacterium *Geobacter sulfurreducens*. 99th General Meeting, American Society for Microbiology, Chicago, IL.
- Magnuson, T. S., A. L. Hodges, and D. R. Lovley. 1998. Characterization of the NADH-dependent membrane-bound Fe(III) reductase from the dissimilatory Fe(III) reducing organism *Geobacter sulfurreducens*. 12th Annual Symposium, the Protein Society, San Diego, CA.
- Magnuson, T. S., and D. R. Lovley. 1997. Distribution and properties of membrane bound hydrogenase and Fe(III) reductase from *Geobacter sulfurreducens*. 97th General Meeting, American Society for Microbiology, Miami, FL.
- Magnuson, T. S. 1996. Purification and characterization of an alkaline xylanase from *Streptomyces viridosporus* T7A. 96th General Meeting, American Society for Microbiology, New Orleans, LA.
- Magnuson, T. S. and D. L. Crawford. 1995. Azo dye affinity chromatography of extracellular enzymes of *Streptomyces viridosporus* T7A: Purification of a xylanase and lignin peroxidase. Northwest Branch Meeting, American Society for Microbiology, Missoula, MT.
- Magnuson, T. S. and D. L. Crawford. 1992. Biochemical characterization of an extracellular peroxidase from *Streptomyces viridosporus* T7A. 92nd General Meeting, American Society for Microbiology, New Orleans, LA.
- Magnuson, T. S. and D. L. Crawford. 1991. Comparison of extracellular peroxidase- and esterase-deficient mutants of *Streptomyces viridosporus* T7A. 91st General Meeting, American Society for Microbiology, Dallas, TX.

PROFESSIONAL SOCIETY MEMBERSHIPS

American Society for Microbiology, 1989-Present
The Planetary Society, 2018-Present.

PROFESSIONAL SOCIETY SERVICE

Chapter Advisor, ISU Microbiology Club Student Chapter, American Society for Microbiology, 2017-Present.
President, Sigma Xi, Idaho State University Chapter, 2013-2014.
President, Intermountain Chapter of the American Society for Microbiology, 2012-2013.
Session Chair, Goldschmidt 2007 Geochemistry Symposium, Cologne, Germany.
Session Chair, Inland Northwest Research Alliance Environmental and Subsurface Science Symposium 2007, Logan, UT.
Treasurer, American Society for Microbiology Intermountain Branch, 2006-2007.
Session Chair, Inland Northwest Research Alliance Environmental and Subsurface Science Symposium 2005, Big Sky, MT.

PROFESSIONAL EDITORIAL SERVICE**Editorial Boards**

Frontiers in Microbiology (Extremophiles, Ecotoxicology and Bioremediation), Review Editor

Journal Review

Journal of Bacteriology
FEMS Microbiology Ecology
Biotechnology Progress
Geochimica et Cosmochimica Acta
Biodegradation
Molecular Microbiology
BMC Microbiology
Geobiology
Journal of Environmental Radioactivity
PLoS
Biotechnology and Bioengineering
Environmental Science and Technology

Proposal Review

Review Panelist, National Aeronautics and Space Administration
Exobiology and Evolutionary Biology
Review Panelist, Department of Energy
Genomes to Life
Basic Energy Sciences
Review Panelist, National Science Foundation
Environmental Genomics
Energy for Sustainability
Organism-Environment Interactions
Reviewer, National Science Foundation
Research in Biogeosciences
Microbial Observatories and Microbial Interactions and Processes
Geobiology and Low-Temperature Geochemistry
Molecular and Cellular Biology
CAREER
Dimensions of Biodiversity

PRESS ARTICLES AND INTERVIEWS

Universities seek power from manure: Researchers explore ways to create high-energy fuel from farm waste. Capital Press Agriculture News, October 2011.

Turning potato skins into ethanol. KIDK News, February 2009.
<http://www.kidk.com/news/39398377.html>.

Energy Well-spent. Idaho State Journal, February 2009.

Wirehaired Bacteria. Discover magazine (Online), July 2006.
<http://discovermagazine.com/2006/jul/nanowiredbacteria/>.

ISU researchers explore cool uses for heat-loving bacteria: Bugs that live in geothermal areas could help clean up contamination. Idaho State Journal, November 2005.
<http://www.journalnet.com/articles/2005/11/01/news/local/news03.txt>.

Rust-Breathing Bacteria: Miracle Microbes? National Geographic News (Online). April 2004.
http://news.nationalgeographic.com/news/2004/04/0412_040412_pulsegeobacter.html.
Geobiologists: As Diverse as the Bugs They Study. Science, May 2002.

TEACHING AND SCIENCE OUTREACH

TEACHING EXPERIENCE*Formal Courses*

Biological Imaging Lecture and Laboratory, 2018-Present.
 Mycology, 2018-Present.
 Field and Laboratory Mycology, 2017.
 Microbial Physiology Lecture and Laboratory, 2001-Present.
 Advanced Microbial Physiology, 2005-Present.
 Industrial Microbiology Lecture and Laboratory, 2005-2008.
 Applied and Environmental Microbiology, 2009-Present.
 Special Topics in Microbiology (Yellosstone National Park), 2001-2016.
 Introductory Microbiology Lecture, 2001-2005.
 Biology Senior Seminar, 2009-Present.
 Independent Problems, 2001-Present.
 General Microbiology, 2015.

POSTDOCTORAL, GRADUATE, AND UNDERGRADUATE TRAINEES

<u>Name</u>	<u>Degree, Institution</u>	<u>Period</u>	<u>Current Position/Location</u>
<i>Postdoctoral Research Associates</i>			
Dr. Stephanie Connon	Ph.D., Oregon St. U.	2002-2005	Scientist, CalTech
Dr. Tina Gresham	Ph.D., Idaho State U.	2004-2006	Scientist, USDA, Idaho Falls ID
<i>Graduate Students</i>			
Anders Johnson	M.S. Biology	2013-2017	Technician, Pocatello ID
Rajendra Shrestha	M.S. Env. Science	2014-2017	Staff Scientist, Orem UT
Mike Haldorson	M.S. Microbiology	2014-2016	Boise ID
Stacy Schwabedissen	M.S. Microbiology	2014-2016	Scientist, USDA, Twin Falls ID
Mike Swenson	Ph.D. Microbiology	2009-2013	Technician, Idaho State University
Pritee Pradhan	M.S. Env. Science	2009-2011	Scientist, Salt Lake City, UT
Josh Ellis	M.S. Microbiology	2008-2010	Consultant, Richland WA
Judy Lee	M.S. Env. Science	2004-2009	Research Assoc., N. Arizona U.
John Thorne	M.S. Microbiology	2008-2009	Agribusiness, Portland OR
Allison Ray	Ph.D. Biology	2002-2007	Res. Scientist, Idaho National Lab.
Brandon Briggs	M.S. Microbiology	2005-2007	Asst. Professor, Univ. Alaska
<i>Undergraduate Students</i>			
Shawna Hennings	B.S. Microbiology	2018	M.S. Biology, Utah State University
Cody Bohm	B.S. Microbiology	2018	Idaho State Univ.
James Wilson	B.S. Microbiology	2014-2016	Grad Asst., Univ. Alaska
Cody Benjamin	B.S. Microbiology	2013-2015	Biotech., Texas
Derek Viall	B.S. Biology	2013-2016	Undergraduate Researcher
Charles Puschak	B.S. Microbiology	2013-2016	Boise ID
Kristen Counsell	B.S. Microbiology	2013-2015	M.S. Program, Mississippi State Univ.
Hunter Lewis	B.S. in Biochemistry	2011	
Anders Johnson	B.S. in Biology	2010-2013	Analytical Chem, Blackfoot ID
Tamara Salazar	B.S. in Microbiology	2008-2010	Ph.D., Psychology, Idaho St. Univ.
Binita Shakya	B.S. in Microbiology	2008-2010	Biotech., Salt Lake City UT
Julienne Pharis	B.S. in Biology	2006-2009	Melaluca, Idaho Falls, ID
Sean Clark	B.S. in Microbiology	2006-2008	Biotech. Company, Texas

Andrew Fielding	B.S. in Biochemistry	2007	Faculty, Seattle Univesity
Don McGuire	B.S. in Microbiology	2007	Graduate Assistant, U. of Alabama
Michelle James	B.S. in Microbiology	2006-2007	Idaho Falls, ID
Rhesa Ledbetter	B.S. in Microbiology	2003-2005	Visiting Asst. Prof., Idaho State U.
Janine Hutchinson	B.S. in Microbiology	2003-2004	Graduate Assistant, Oregon State U.
Deepika KC	B.S. in Microbiology	2003	Clinical Lab Scientist
Sandhya Tulachan	B.S. in Microbiology	2003-2004	Pharmacy, Idaho State U.
Jacob Clawson	B.S. in Microbiology	2004	Medical Doctor, Washington DC
Deepa Joshi	B.S. in Microbiology	2003-2004	Biotechnology Company, UT
Cameron Clark	B.S. in Microbiology	2002-2003	Physician's Assistant, Pocatello ID
Lani Clough	B.S. in Microbiology	2001-2003	Scientist, U. of Utah
Todd Perkins	B.S. in Microbiology	2001-2003	Biotechnology Company, WA

TEACHING OUTREACH ACTIVITIES

Bengal STEM Day, ISU, 2018.

ISU Majors and Minors Fair, ISU, 2017, 2018.

NASA Spaceward Bound Idaho Expedition, 2011, 2012, 2013

Idaho Science and Engineering Festival, 2012.

Guest Lecturer (Biology), Mohave Community College, Bullhead City, AZ, 2011.

Idaho Science and Engineering Festival, 2010.

Guest Lecturer (English as a Second Language), Jiaxing University, Jiaxing, China, 2010.

ARTISTIC ENDEAVORS IN SCIENCE EDUCATION

Podcast The Musicality of Electrons. Creators: Rhesa Ledbetter, Tim Magnuson, Mike Swenson, John Pteres, Lance Seefeldt, and Kerry Bringhurst. Host: DoE Office of Science. June 2017.

<https://www.energyfrontier.us/content/musicality-electrons>

Artistic Works



Warhol Bacilli. Acrylic on Canvas. 2013.



Helices. Color Pencil on Paper. 2017.

SERVICE TO ACADEME

UNIVERSITY AND COMMUNITY SERVICE*University*

- University Grievance Panel (Chair), 2018-2021.
- University Research Council, 2011-2012. Chair
- Faculty Senator, 2006-2009.
- University Research Committee, 2008-2009.
- Biosafety Committee, 2001-2009.
- Library Committee, 2004-2006.
- Graduate Faculty Representative (Average 2 defenses per year 2002-2017).

Department of Biological Sciences

- Strategic Planning Committee, 2018-2019.
- Cell Biologist Search Committee, 2017-2018.
- Tenure and Promotion Committee (S. Bearden, 2013).
- Department Research Advisory Committee, 2012-2014.
- Department Chair Search Committee, 2011-2012.
- Microbiology Faculty Search Committee, 2011-2012.
- Graduate Program Committee 2002-2010.
- Microbiology Graduate Program Committee, 2010-Present.
- Tenure and Promotion Committee (S. Kelchner, 2008).
- Tenure and Promotion Committee (M. Shields), 2006.
- Tenure and Promotion Committee (D. Delehanty), 2004.
- Biochemistry Faculty Search Committee, 2006.
- Cell Biology Faculty Search Committee, 2005.

Community

- Bengal STEM Day, February 2018
- ISU Majors and Minors Fair, October 2017.
- Idaho Science and Engineering Festival, April 2012.
- Celebrate ISU, April 2011.
- Idaho Science and Engineering Festival, October 2010.
- Portneuf River Clean Up, October 2009.