Jed Eberly – Curriculum Vitae

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Education

2005 – 2010: Oregon State University Corvallis, OR, PhD, Biological & Ecological Engineering.

2000 – 2004: Montana State University-Billings, Billings MT, Bachelor of Science in Biology, Minor in Chemistry and Physics, Graduated May 2004 Magna Cum Laude

Research Experience

2017 – present: Assistant Professor, Montana State University, Central Ag Research Center, Moccasin, MT. Responsible for small grain variety trials and a soil microbiology program.
2011 - 2017: Research Microbiologist, US Army Corp of Engineering Environmental Research Lab-EP, Vicksburg, MS. Responsible for project management, coordinating with collaborators, and providing oversight for technicians. Research focus areas include assessing microbial community dynamics and structure in soil microcosms exposed to components of modern insensitive munitions and analysis of soil microbial communities across diverse soil taxonomies and correlating community profiles with soil taxonomic data.
2005 – 2010: Graduate student, dissertation: *Analysis of the thermophilic cyanobacterium Thermosynechococcus elongatus as a model organism for carbon sequestration, biofuel, and biomaterial production.*
2003 – 2004: Undergraduate research project: Effects of ultraviolet light on photosystem II in wheat plants.
2003: Summer internship with the Montana BRIN program. Isolation of S-layer proteins from hyperthermophilic archaea from Yellowstone National Park.

Research Grants and Awards

2016 US Army Basic Research Program, Environmental Quality Focus Area
"Epigenetic mechanisms underlying phenotypic plasticity induced by multiple abiotic stressors: harsh environment and insensitive munitions."
2016 ERDC Environmental Quality Focus Area, "Assessing the Environmental Impact of Synthetic Biology".
2016 ERDC Aquatic Plant Control Research Program, work unit title "Strategies for early detection of harmful algal blooms and predicting toxin release: Linking hyperspectral imaging to molecular techniques".
2016 US Army Basic Research Program, Environmental Quality Focus Area
"Leveraging nature's horizontal gene transfer (HGT) pathways to enhance *in situ* bioremediation potential."

2016 “Terrestrial Biogeochemical Processes in the Arctic/Subarctic.” Microbial Ecology Work Unit.
2015 ERDC Aquatic Plant Control Research Program, work unit title “Reducing eutrophication and the prevalence of harmful algal blooms”.
2014 US Army Basic Research Program, Environmental Quality Focus Area “Implications of signal timing and detection limits for routing efficacy of biological networks.”
2013 US Army Basic Research Program, Environmental Quality Focus Area “Engineered polyhydroxyalkanoate (PHA) materials: functionalized platforms for novel sensor development.”
2012 US Army Basic Research Program, Environmental Quality Focus Area “Riboswitch mediated signaling: a synthetic biology approach to developing microbial biosensors for detecting environmental contaminants.”
2011 US Army Basic Research Program, Environmental Quality Focus Area “A green synthesis route to explosives: recruitment of natural product biosynthetic pathways in bacteria.”
2010 US Army Basic Research Program, Environmental Quality Focus Area. “Whole cell biocatalyst-mediated alcoholysis for microdiesel synthesis using an engineered Actinomycete/consortium: next generation biodiesels?”
2008 Ron Miner Bioengineering Scholarship
2007 ASEE/DoD SMART Scholarship
2006 Dale E. Kirk Endowment in Bioengineering
2005 NSF IGERT Fellowship

Publications

Indest, K. J., Hancock, D. E., Crocker, F. C., **Jed O. Eberly, J. O.,** Jung, C. M., Blakeney, G. A., Brame, J., and Chappell, M. Biodegradation of insensitive munition formulations IMX101 and IMX104 in surface soils. *J Ind Microbiol Biotechnol* In Press.

Eberly, J. O., Indest, K. J., Hancock, D. E., Jung, C. M., Crocker, F. H. (2016) Metagenomic analysis of denitrifying wastewater enrichment cultures able to transform the explosive, 3-nitro-1,2,4-triazol-5-one (NTO). *J Ind Microbiol Biotechnol* 2016, 1–11.

Indest, K. J., **Eberly, J. O**., Hancock, D. E., Jung, C. M., Carr, M. R., Blakeney, G. A. (2016) *Rhodococcus jostii* RHA1 TadA-homolog deletion mutants accumulate less polyhydroxyalkanoates (PHAs) than the parental strain. J. Gen. Appl. Microbiol.

Indest, Karl, J., **Eberly, Jed O**., Hancock, Dawn E. (2015) Expression and Characterization of an N-oxygenase from Rhodococcus jostii RHAI. *Journal of General and Applied Microbiology*, Volume 61, 217-223

Indest, Karl J., **Eberly, Jed O**., Ringelberg, David B., & Hancock, Dawn E. (2014) The effects of putative lipase and wax ester synthase/acyl-CoA:diacylglycerol

acyltransferase gene knockouts on triacylglycerol accumulation in *Gordonia* sp. KTR9. *Journal of Industrial Microbiology & Biotechnology*, Volume 42, Issue 2, pp 219-227

Eberly, Jed. O., Ringelberg, David. B., & Indest, Karl. J. (2013) Physiological characterization of lipid accumulation and in vivo ester formation in Gordonia sp. KTR9. *Journal of Industrial Microbiology & Biotechnology*, Volume 40, Issue 2, pp 201-208.

Indest, Karl J., Hancock, Dawn E., Jung, Carina M., **Eberly**, **Jed O.,** Mohn, William W., Eltis, Lindsay D., and Crocker, Fiona H (2013) The role of nitrogen limitation in the transformation of hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX) by *Gordonia* sp. KTR9. *Applied and Environmental Microbiology* vol. 79 no. 5 1746-1750.

Eberly, Jed O. and Roger L. Ely. (2012) Photosynthetic accumulation of carbon storage compounds under CO_2 enrichment by the thermophilic cyanobacterium *Thermosynechococcus elongatus*. *J Ind Microbiol Biotechnol*. **39:** 843-850

Jung, Carina M., Crocker, Fiona H., **Eberly, Jed O**., and Indest, Karl J. (2011) Horizontal gene transfer (HGT) as a mechanism of disseminating RDX-degrading activity among Actinomycete bacteria. *J. Appl. Microbiol*. **110(6):** 1449-1459

Eberly, Jed O., 2010. Analysis of the thermophilic cyanobacterium Thermosynechococcus elongatus as a model organism for carbon sequestration, biofuel, and biomaterial production, 2010, *Dissertation*.

Eberly, Jed and Ely, Roger, (2008) Thermophilic Hydrogenases: Biological Diversity, Properties, and Biotechnological Applications. *Crit. Rev. Microbiol.* **34**: 1-14.

Caldwell, S. L., J. R. Laidler, E. A. Brewer, **J. O. Eberly**, S. C. Sandborgh, and F. S. Colwell. (2008) Anaerobic Oxidation of Methane: Mechanisms, Bioenergetics, and the Ecology of Associated Microorganisms. *Environ. Sci. Technol*. **42**:6791-6799.

Patents

2014: Patent application submitted. "RNA aptamer specifically binding to RDX and use thereof".

Presentations

Jed O. Eberly, Fiona Crocker, Matt Carr, and Michael Mayo. Characterization of a riboswitch for detection of hexahydro-1,3-5-trinitro-1,3,5-triazine (RDX). Society for Industrial Microbiology and Biotechnology 2016 Annual Meeting, July, 2016.

Jed O. Eberly Characterization of ester synthesis in *Gordonia* KTR9 for next generation biofuels, Presentation at Chico State University, Chemistry Summer Research Institute. Chico, CA. June, 2012.

Education and outreach activities

- Science fair judge at the Vicksburg District Science Fair, 2012-present.
- Science fair judge at the 2014 Mississippi Science and Engineering Region II Fair
- Mentor for a FIRST Lego League Robotics team.
- Judge for the FIRST Lego League Mississippi Championship

Professional Affiliations

- American Society for Microbiology

Journals Refereed

- International Biodeterioration & Biodegradation Journal
- Journal of Applied Phycology
- International Journal of Environmental Science and Technology

Technical Skills

- Hazardous Materials Technician and Emergency Response (HAZWOPER) certified
- Instruments experience: Agilent 1100 and 1200 HPLC's, Agilent 6890 GC and GC/MS, Dionex 3100 ICS-3000 Ion Chromatograph, ABI 3100 Genetic Analyzer, Illumina MiSeq Sequencer.
- Software: Microsoft Office, GraphPad Prism 6, Geneious, QIIME bioinformatics software, Mathematica.
- Experience with synthetic biology tools, Gibson Assembly, codon optimization