KARA BOWEN DE LEÓN

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Department of Microbiology and Plant Biology
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EDUCATION

Post-Doctoral Fellowship Biochemistry	University of Missouri	2018
Ph.D. Microbiology	Montana State University	2013
B.S. Biology and Chemistry; Spanish minor	Northwest Nazarene University	2006

PROFESSIONAL APPOINTMENTS

Aug 2019-present **Assistant Professor** University of Oklahoma, Norman, OK
- Department of Microbiology and Plant Biology
- Environmental Microbiology, Molecular and Computational Biology

Jan-Aug 2019 **Research Scientist** University of Missouri; Columbia, MO

2013-2018 **Postdoctoral Research Fellow**
- Department of Biochemistry with Dr. Judy D. Wall as part of the Dept. of Energy Science Focus Area called ENIGMA
- Genetic drivers for key phenotypes of sulfate-reducing bacteria in the subsurface
- Prevalence of tandem duplications in prokaryotic genomes missed during assembly

2007-2013 **Graduate Research Assistant** Montana State University; Bozeman, MT
- Department of Microbiology, Center for Biofilm Engineering with Dr. Matthew W. Fields
- Thesis: Community analysis of groundwater and surrogate sediment samples during bioremediation of a chromium-contaminated site in Hanford, Washington

2006-2007 **Research Technician** Northwest Nazarene University; Nampa, ID
- Department of Biology with Dr. William Fyffe

2004-2006 **Research Assistant/Technician** Northwest Nazarene University; Nampa, ID
- Department of Chemistry with Dr. Jennifer Chase

PUBLICATIONS

Jeffries ER, Vogel JR, Miller C, **De León KB**, Stevenson BS, Kuhn KG. (2022). Real-time monitoring of the introduction and spread of SARS-CoV-2 Omicron variant in Oklahoma by wastewater surveillance through allele-specific RT-qPCR. (in review).

Jenneman GE and **De León KB**. (2022). Environmental stressors alter the susceptibility of microorganisms to biocides in upstream oil and gas systems. International Biodeterioration and Biodegradation Journal. *Int Biodeterior Biodegrad.* 169:105385.

De León KB. (2021). mSphere of Influence: surface sensing in biofilm formation. *mSphere*. 6(3):e00369-21.

Wall JD, Zane GM, Juba TR, Kuehl JV, Ray J, Chhabra SR, Trotter VV, Shatsky M, **De León KB**, Keller KL, Bender KS, Butland GP, Arkin AP, Deutschbauer AM. (2021). Deletion mutants, archived transposon library, and tagged protein constructs of the model sulfate-reducing bacterium *Desulfovibrio vulgaris* Hildenborough. *Microbiol Resour Announc*.10(11):e00072-21.

Zane GM, Wall JD, **De León KB**. (2020). Novel mode of molybdate inhibition of *Desulfovibrio vulgaris* Hildenborough. *Front Microbiol.* 11:610455.

Moon J-W, Paradis CJ, Joyner DC, von Netzer F, Majumder EL, Dixon ER, Podar M, Ge X, Walian PJ, Smith HJ, Wu X, Zane GM, Walker KF, Thorgersen MP, Poole II FL, Lui LM,

Adams BG, **De León KB**, Brewer SS, Williams DE, Lowe KA, Rodriguez, Jr. M, Mehlhorn TL, Pfiffner SM, Chakraborty R, Arkin AP, Wall JD, Fields MW, Adams MWW, Stahl DA, Elias DA, Hazen TC. (2020). Characterization of subsurface media from locations up- and down-gradient of a uranium-contaminated aquifer. *Chemosphere*. 255:126951.

Day LA, **De León KB**, Kempher ML, Zhou J, Wall JD. (2019). Complete genome sequence of *Desulfovibrio desulfuricans* IC1, a sulfonate-respiring anaerobe. *Microbiol Resour Announc*. 8:e00456-19.

Ge X, Vaccaro BJ, Thorgersen MP, Poole II FL, Majumder E.L. Zane GM, **De León KB**, Lancaster WA, Moon JW, Lowe KA, Paradis CJ, Joyner DC, von Netzer F, Stahl DA, Adams PD, Arkin AP, Wall JD, Hazen TC, Adams MWW. (2019). Iron- and aluminum-induced depletion of molybdenum in acidic environments impedes the nitrogen cycle. *Environ Microbiol*. 21(1):152-63.

Smith HJ, Zelaya AJ, **De León KB**, Chakraborty R, Elias DA, Hazen TC, Arkin AP, Cunningham AB, Fields MW. (2018). Impact of hydrologic boundaries on microbial planktonic and biofilm communities in shallow terrestrial subsurface environments. *FEMS Microbiol Ecol*. 94(12):fiy191. doi: 10.1093/femsec/fiy191.

De León KB, Zane GM, Trotter VV, Krantz GP, Arkin AP, Butland GP, Walian PJ, Fields MW, Wall JD. (2017). Unintended laboratory-driven evolution reveals genetic requirements for biofilm formation by *Desulfovibrio vulgaris* Hildenborough. *mBio*. 8(5)e01696-17.

Elnahas MO, **De León KB**, Amin MA, Hussein MMD, Ali AE, Wall JD. (2017). Complete genome sequencing of *Streptomyces sp*. MOE7 which produces an extracellular polysaccharide(s) with antioxidant and antitumor activities. *Genome Announc.* 5(22):e00442-17. (Invited summary of this article published in Atlas of Science April 2018)

De León KB, Utturkar SM, Camilleri LB, Elias DA, Arkin AP, Fields MW, Brown SD, Wall JD. (2015). Complete genome sequence of *Pelosinus fermentans* JBW45, a member of a remarkably competitive group of *Negativicutes* in the *Firmicutes* phylum. *Genome Announc.* 3(5):e01090-15.

De León KB, Gerlach R, Peyton BM, Fields MW. (2013). Archaeal and bacterial communities in alkaline hot springs in Heart Lake Geyser Basin, Yellowstone National Park. *Front Microbiol.* 4:330. doi: 10.3389/fmicb.2013.00330.

De León KB. (2013). Community analysis of groundwater and surrogate sediment samples during electron donor and electron acceptor injections into a chromium-contaminated site in Hanford, Washington, USA. Doctoral Dissertation. Montana State University.

Barnhart EP, **De León KB**, Ramsay BD, Cunningham AB, Fields MW. (2013). Investigation of coal-associated bacterial and archaeal populations from a diffusive microbial sampler (DMS). *Int J Coal Geol*. 115:64-70.

De León KB, Young ML, Camilleri LB, Brown SD, Skerker JM, Deutschbauer AM, Arkin AP, Fields MW. (2012). Draft genome sequence of *Pelosinus fermentans* JBW45, isolated during *in situ* stimulation for Cr(VI) reduction. *J Bacteriol*. 194(19):5456-5457.

De León KB, Ramsay BD, Fields MW. (2012). Quality-score refinement of SSU rRNA gene pyrosequencing differs across gene region for environmental samples. *Microbial Ecol.* 64:499-508.

Bowen KB, Reimers AP, Luman S, Kronz JD, Fyffe WE, Oxford JT. (2008). Immunohistochemical localization of collagen type XI alpha1 and alpha2 chains in human colon tissue. *J Histochem Cytochem* 56**:** 275-283.

Halsted KC, **Bowen KB**, Bond L, Luman SE, Jorcyk CL, Fyffe WE, Kronz JD, Oxford JT.(2008). Collagen alpha1(XI) in normal and malignant breast tissue. *Mod Pathol* 21**:** 1246-1254.

MANUSCRIPTS IN PREPARATION

Trotter VV, Shatsky M, Price MN, Juba TR, Zane GM, **De León KB**, Majumder EL, Gui Q, Ali R, Wetmore KM, Kuehl JV, Arkin AP, Wall JD, Deutschbauer AM, Chandonia J-M, Butland GP. Large-scale genetic characterization of a model sulfate-reducing bacterium. bioRxiv preprint 2021. https://doi.org/10.1101/2021.01.13.426591

Day LA, Wall JD, **De León KB**. Genetic basis for isethionate utilization by *Desulfovibrio vulgaris* Hildenborough.

Busi, SB, **De León KB**, Montonye DR, Wall JD, Amos-Landgraf J. *Desulfovibrio vulgaris* Hildenborough biofilm competency facilitates colonization in the gut and represses adenoma development in a rat model of colon cancer.

De León KB, Juba TR, Zane GM, Graham JE, Ning D, Trotter VV, Butland GP, Zhou J, Raman CS, Wall JD. Large tandem duplications are frequent in microbial genomes but go undetected in genome assemblies.

FUNDING

Funded

Oklahoma State Department of Health, Co-PI, 05/2022-04/2023 $1,638,000
Wastewater-Based Epidemiology to Monitor Infectious Pathogens in the State of Oklahoma

Presbyterian Health Foundation, Co-PI, 2022 $43,637
Using wastewater surveillance as a platform for monitoring outbreaks and clusters of foodborne diseases in Oklahoma

City of Oklahoma City, Co-PI, 01/2022-12/2022 $1,000,000
Surveillance of Pathogens in Sewage in Oklahoma City in 2022

University of Oklahoma Junior Faculty Fellowship, Kara De León (PI), 2020 $9,324
Title: High-throughput testing of genetic accessibility with fluorescence

ENIGMA Discovery Proposal, Judy Wall (PI) & Kara De León (Co-PI), 2017-2018 $111,000
Title: Microbial associations in groundwater
Independently designed and wrote proposal, but ENIGMA required PI to be faculty member

Mizzou Advantage, Judy Wall (PI) & Kara De León (Co-PI), 2015-2017 $149,954
Title: Genetic requirements for biofilm formation by *Desulfovibrio vulgaris* Hildenborough
Independently designed and wrote proposal, but U. Missouri required PI to be faculty member

Pending

National Science Foundation-EPSCoR, Senior Personnel, 2022-2026 (pending) $1,555,000
RII Track-2 FEC: Innovations in Wastewater-Based Epidemiology for Disconnected Sewage Systems

National Science Foundation-EPSCoR, Co-PI*, 2022-2026 (pending) $1,500,000

RII Track-2 FEC: MAP-CAP: Manufacturing Advanced bio-Polymers – Capturing Agri-wastes and consumer-derived Plastics (*lead PI at OU)

National Science Foundation, Senior Personnel, 2022 (pending) $745,571
Title: MRI: Acquisition of a Mass Spectrometry (MS)-Based System for Single Cell Metabolomics, Single Cell Proteomics, and MS Imaging

Not Funded

National Science Foundation, 2021 $19,977,817 (not funded)
Mid-scale RI-1 (M1:IP): An Integrated Infrastructure Research Platform for Closing the CO_2 Mass Balance: Complete Capture, Utilization, and Long-Term Geological Storage

Sun Grant, Oklahoma State Univ. and Univ. of Oklahoma, Co-PI, 2020 $342,230 (not funded)
Enhanced butanol production from syngas by *Clostridium carboxidivorans* and novel related strains

National Science Foundation, Co-PI, 2020 $1,600,001 (not funded)
Univ. of Arkansas for Medical Sciences and Univ. of Oklahoma.
RII Track-2 FEC: CARME: Center for the Arkansas River Microbial Ecology.

TEACHING EXPERIENCE

F2020, F2021	Water Microbiology Laboratory	Univ Oklahoma
F/S2020-2022	Investigations in Microbiology Graduate Course	Univ Oklahoma
S2020, 2021, 2022	Microbiology and Plant Biology Graduate Seminar	Univ Oklahoma
S2020, 2021, 2022	Microbiology Undergraduate Professional Development	Univ Oklahoma
S2016, S2018	Senior Seminar in Biochemistry Co-instructor	Univ Missouri
May 2013,2014,2015	Science and Our Food Supply Co-instructor	Boise State Univ
F2010, F2011	Microbes in the Environment Instructor	Montana State
F2009, S2010	Microbiology Laboratory Teaching Assistant	Montana State
F2003-S2006	JASON Project Program Coordinator	Northwest Nazarene Univ

GRADUATE/UNDERGRADUATE ADVISEES

- Madelynn Henderson. Microbiology undergraduate student. Univ. Oklahoma. 2022-present. Wastewater-based epidemiology for predicting pathogen outbreaks in Oklahoma.
- Anna Rockwood. Microbiology undergraduate student. Univ. Oklahoma. 2021-present. Wastewater-based epidemiology for predicting pathogen outbreaks in Oklahoma.
- Kaela Folks. Microbiology undergraduate student, transitioned to employee following graduation Spring 2022. Univ. Oklahoma. 2022-present. Wastewater-based epidemiology for predicting pathogen outbreaks in Oklahoma.
- Alexandra Davis. Microbiology undergraduate student, transitioned to employee following graduation Spring 2022. Univ. Oklahoma. 2022-present. Wastewater-based epidemiology for predicting pathogen outbreaks in Oklahoma.
- Leif Olson. Environmental Science PhD student. Univ. Oklahoma. 2022-present. Independent study: culturing, isolation, and genomics of sulfate-reducing bacteria
- Austin Fox. Microbiology Masters student. Univ. Oklahoma. 2021-present. Regulation of biofilm formation in *Desulfovibrio vulgaris* Hildenborough.
- Megan Perez. Microbiology undergraduate student. Univ. Oklahoma. 2021-present. Glycoside hydrolases in biofilm formation by *Desulfovibrio vulgaris* Hildenborough (1 oral presentation).
- Collin “Pete” Pickens. Microbiology PhD student. Univ. Oklahoma. 2019-present. Cell attachment and biofilm structure of *Desulfovibrio vulgaris* Hildenborough. (selected for Lawrence Berkeley National Lab SULI Internship Summer 2021)

- Alex Walls. Microbiology undergraduate student. Univ. Oklahoma. 2021-2022. Transport of sulfonates into *Desulfovibrio vulgaris* Hildenborough. (awarded $800 in OU undergraduate research funds, 1 oral presentation)
- Aayah Alnabhan. Microbiology undergraduate student. Univ. Oklahoma. 2021-2022. The role of a protease in biofilm formation. (1 poster presentation)
- Sebastian Echave-Sierra. Microbiology undergraduate student. Univ. Oklahoma. 2020-2022. *Desulfovibrio vulgaris* Hildenborough as an expression system. (1 poster presentation received award at ABRCMS, 1 oral presentation)
- Isam Madi. Microbiology student. Univ. Oklahoma. 2020-2022. Novel methods for high-throughput genetic accessibility testing.
- Susan Kerr. Microbiology undergraduate student. Univ. Oklahoma. 2019-2021. Biofilm formation in nonmotile mutants of *Desulfovibrio vulgaris* Hildenborough (1 oral presentation; honors thesis; awarded $997.87 in OU undergraduate research funds).
- Charlie Cervantes. Spanish undergraduate student. Univ. Oklahoma. 2020. Selecting mutants by fluorescent cell sorting.
- Leslie Day. Biochemistry undergraduate student. Univ. Missouri. 2014-2019. Spontaneous mutagenesis of *Desulfovibrio vulgaris* Hildenborough under nitrate stress and the mechanism of isethionate utilization in *Desulfovibrio* (1 seminar, 8 poster presentations, one publication and one manuscript in preparation; one poster received an honorable mention in a competition amongst all presenting post-doctorate, graduate, and undergraduates at Mizzou Life Sciences Week 2018).
- Catherine Gjerstad. Biomedical Engineering undergraduate student. Univ. Missouri. 2017-2019. The genetic requirements for uranium reduction in *Desulfovibrio* (3 poster presentations one of which was selected to be presented at Missouri Research Day at the Capital).
- Keith Steiger, Jr. Biochemistry undergraduate student. Univ. of Missouri. Jan. 2018-Aug. 2018. Identification and metabolic characterization of bacterial isolates from Oak Ridge Reservation groundwater (2 poster presentations) and sulfite transport in sulfate-reducers.
- Caroline Gjerstad. Biomedical Sciences undergraduate student. Univ. of Missouri. 2015-2016. Genetic requirements for biofilm formation in *Desulfovibrio vulgaris* Hildenborough. (3 poster presentations; one won first prize in undergraduate research at Mizzou Life Sciences Week; one was selected to be presented at Missouri Research Day at the Capital; selected for summer internship at Lawrence Berkeley National Lab).
- Sarah Henshaw. Biochemistry undergraduate student. Univ. of Missouri. 2013-2014. Using reactors to characterize biofilm formation in *Desulfovibrio vulgaris* Hildenborough.
- Anna Zelaya. Rotating molecular biosciences graduate student. Montana State Univ. 2011-2012. Analysis of sediment communities via 16S rRNA gene pyrosequencing.
- Mary Lynn Young. Biochemistry undergraduate student. Montana State Univ. 2009-2011. *Pelosinus* isolate metabolic characterization (resulted in publication).
- Philip Gardner. Cell Biology and Neuroscience undergraduate student. Montana State Univ. 2008-2010. H_2-producing enrichments and hot spring microbial diversity.

HONORS AND AWARDS

OU Vice President for Research & Partnerships Award for Excellence in Transdisciplinary Convergent Research	2022
University of Oklahoma Junior Faculty Fellowship	2020
Missouri Branch American Society for Microbiology Peggy Cotter Travel Award	2019
American Society for Microbiology Travel Award	2013,2017
Douglas D. Randall Young Scientists Travel Award	2016
W.G Characklis Outstanding Student Award	2013
Center for Biofilm Engineering Student Citizen Award	2012
INBRE Travel Award	2012
ISME Young Research Travel Grant Award	2010
NSF-IGERT Fellowship, Montana State University	2008-2013

Molecular Biosciences Program Fellowship, Montana State University	2007-2013
Magna Cum Laude, Northwest Nazarene University	2006
Award of Academic Excellence Biology/Chemistry, Northwest Nazarene University	2006
Dean's List, Northwest Nazarene University	2002-2006
Valedictorian, Skyview Highschool, Nampa, ID	2002

PROFESSIONAL SERVICE

- Review Editor of Microbiotechnology for Frontiers in Microbiology, Frontiers in Bioengineering and Biotechnology and Frontiers in Environmental Science. 2020-present
- Special Topics Editor for Frontiers in Microbiology - Computational Systems Microbial Biofilm/Material Interfaces: Understanding the Systems Biology at the Interface of Microbial Biofilms and Surface Substrates, 2021-present
- Ad Hoc Reviewer
  - ISME Journal, Environmental Microbiology, Microbial Ecology, BMC Research Notes, Annals of Microbiology, International Biodeterioration and Biodegradation Journal, Anaerobe, Science of the Total Environment
  - ASM Microbe 2022 – Applied and Environmental Microbiology Abstract Reviewer
- Grant Reviewer
  - National Science Foundation (panel 2021, panel 2022), Army Research Office (ad hoc), U. Missouri Research Board (ad hoc)
- Convener of In-Depth Symposium. American Society for Microbiology Microbe 2022. Inorganic Metabolism in Extreme Environments.
- Session Chair. International Biodeterioration and Biodegradation Symposium. September 6-9, 2021. Virtual.
- University Committees
  - School of Biosciences Consolidated Curriculum Committee. U Oklahoma. 2022-present.
  - Departmental Graduate Committee, U Oklahoma. 2019-present.
  - Faculty search committee, U Oklahoma. 2019/2020 and 2020/2021.
- Poster Judge
  - American Society for Microbiology Annual Biomedical Research Conference for Minority Students. Microbiology Section. Phoenix, AZ. November 2017.
  - Life Sciences Week. U. Missouri. April 2017.
- Interviews/News Articles
  - Confluence. 2014. Montana State College of Letters & Science Annual Magazine, pgs 3, 21. https://issuu.com/montanastateuniversity/docs/confluence_13
  - Montana State University News. May 2013. http://www.montana.edu/news/11941/msu-microbiologist-earns-doctorate-studying-microbes-of-yellowstone-and-hanford-wash

SELECT OUTREACH AND ENGAGEMENT

- Science Careers Skype Interview. University of Portland. Portland, OR. Interviewed by a college senior aspiring to be a research scientist. June 2020, again April 2021.
- Highschool Senior Project Interviews. Interviewed by students aspiring to be a research scientist. Skyview High School. Nampa, ID. November 2019. Independence High School. Independence, KS. December 2020.
- Microbiologist in the classroom. South Middle School. Nampa, ID. Taught classes about what it is like to have a career in microbiology; hands-on activities. Once yearly 2007-2017.
- Magic of Chemistry. University of Missouri. Columbia, MO. Lead hands-on chemistry experiments with Girls Scouts approx. ages 8-12. March, Nov. 2015. March, Nov. 2016.
- Project mentor for middle school science fair project. Chief Joseph Middle School, Bozeman, MT. January 2011, January-April 2012, January-March 2013.
- Microbiology instructor/guide in Yellowstone National Park for Chicago-based Project Exploration. July 2011.
- Science Olympiad mentor. Chief Joseph Middle School, Bozeman, MT. October-Nov. 2011.

- Thermal Biology Institute guide in Yellowstone National Park for Molecular Biosciences recruitment, March 2008, 2009, 2010, 2011.
- Microbiologist guide in Yellowstone National Park for the Masters in Science Education program, Montana State Univ. Summer 2009.
- JASON Project Program Coordinator. Create and lead hands-on science activities for 200+ 6-12th grades/yr to increase interest in science. Northwest Nazarene Univ. partnership with Idaho National Laboratories, Nampa, ID. 2003-2006 (also in Teaching Experience).

RELEVANT ADDITIONAL TRAINING

Research

Written >170 Python programs for genomic analysis, statistics, and data management
Proficient in Linux and R

Writing Workshop and continued writing group, Univ Oklahoma	Feb-Sept 2020
DOE KBase (https://kbase.us) Developer Training, LBNL, Berkeley, CA	January 2019
Machine Learning Workshop, LBNL, Berkeley, CA	April 2018
DOE KBase Users Workshop, Washington D.C.	March 2016
Facilis: Microbially-Driven Facilitation Systems in Environ Biotechnol, Milan, Italy	July 2014
Introduction to Linux and Tuxedo Suite Workshop, Univ of Missouri	June 2014
Roche 454 Junior Pyrosequencing Training	June 2012
OSHA HAZWOPER 20-hour training certificate and yearly renewal	2008-2012
Python Programming Language: NSF IGERT course in advanced methods	Spring 2010

Teaching and Mentorship

Online Lab Conundrum Online Workshop, OK State Regents for Higher Ed	May 2020
RESPOND: Partnering for Campus Mental Health workshop, Univ Missouri	March 2016
Participant in Teaching Renewal Week workshop, Univ Missouri	January 2016
Celebration of Teaching professional development, Univ Missouri	May 2014,2015,2016
Entering Mentoring course, Univ Missouri	Spring 2013
Intercultural Awareness course, Montana State Univ	Spring 2011
ILE Spanish Language School, San José, Costa Rica	Fall 2005

Guest Lectures

- MBIO 3001. Microbiology: Discipline & Degree. Microbial Biofilms. U. Oklahoma. Sept 2021.
- BIOCHM 4970. Senior Seminar in Biochemistry. NASA Twin Study. U. Missouri. Apr 2018.
- BIOCHM 4970. Senior Seminar in Biochemistry. Erythropoietin. U. Missouri. Feb 2018.
- BIOCHM/BIOSC 8060. Ethical Conduct of Research. Lab Relations. U. Missouri. Feb 2016.
- BIOCHM 2110. The Living World: Molecular Scale. Membranes and Transport. U. Missouri. Apr 2015.
- BIOCHM4270. Biochemistry. Biosynthesis of Nucleotides. U. Missouri. Sept 2014.
- BIOCHM4270. Biochemistry. Biosynthesis of Cholesterol. U. Missouri. Oct 2014.
- MB310. General Microbiology. Approx. 20% of lectures. Montana State Univ. Spring 2013

ORAL PRESENTATIONS

Genetic requirements for biofilm formation by the sulfate-reducing bacterium *Desulfovibrio vulgaris* Hildenborough. Dartmouth College. March 2022 (invited)

Genetic requirements for biofilm formation by the sulfate-reducing bacterium *Desulfovibrio vulgaris* Hildenborough. International Biodeterioration and Biodegradation Society meeting IBBS18. Virtual. September 2021.

Large tandem duplications are frequent in microbial genomes but go undetected in genome assemblies. American Society for Microbiology Microbe2019. San Francisco, CA. June 2019.

Tandem gene duplications are frequent in microbial genomes but go undetected in genome assemblies. University of Nebraska. Lincoln, NE. April 2019 (invited)

Genetic requirements for *Desulfovibrio vulgaris* Hildenborough biofilm formation. Joint Meeting of the Missouri and Missouri Valley Branches of the American Society for Microbiology. Omaha, NE. March 2019 (invited)

Genetic requirements for *Desulfovibrio vulgaris* Hildenborough biofilm formation in bioreactors and the rat colon. Montana State University. Bozeman, MT. March 2019 (invited)

Tandem gene duplications are frequent in microbial genomes but go undetected in genome assemblies. Lawrence Berkeley National Laboratory. Berkeley, CA. Sept. 2018. (invited)

Large tandem duplications are frequent in microbial genomes but go undetected in genome assemblies. American Society for Microbiology Microbe2018. Atlanta, GA. June 2018.

Large tandem duplications are frequent in microbial genomes but go undetected in genome assemblies. ENIGMA Monthly Science Seminar. Berkeley, CA. Presented remotely. June 2018.

Laboratory to field and back again: the sulfate-reducing bacteria story. DOE Genomic Sciences Program Annual Principal Investigator (PI) Meeting. Crystal City, VA. February 2017. (invited)

Relevance of sulfate-reducing bacteria at Oak Ridge. ENIGMA Science Advisory Committee Meeting. Berkeley, CA. October 2016.

A previously undetected duplication in the chromosome of *Desulfovibrio vulgaris* Hildenborough. ENIGMA Monthly Science Seminar. Berkeley, CA. Presented remotely. June 2016. Co-presented with Thomas R. Juba.

Single-base change by laboratory-driven evolution eliminates biofilm formation. DOE program manager site-visit at LBNL. Berkeley, CA. Presented remotely. December 2015.

Altered Biofilm Formation by Laboratory-Driven Evolution. DOE program manager site-visit at LBNL. Berkeley, CA. Presented remotely. December 2014.

Changes in Biofilm Formation Driven by Laboratory-Specific Culturing. ENIGMA Retreat, Berkeley, CA. August 2014.

Genetic Requirements for Biofilm Formation of *Desulfovibrio vulgaris* Hildenborough. Facilis Course. University of Milan. Milan, Italy. July 2014.

Archaeal and Bacterial Communities in Alkaline Hot Springs in Heart Lake Geyser Basin, Yellowstone National Park. Thermal Biology Institute Seminar. April 2013. (invited)

Planktonic and Biofilm Community Dynamics *in situ*. Montana Biofilms Meeting. Bozeman, MT. February 2013.

Microbial Population Dynamics in Groundwater and Surrogate Sediments during Biostimulation for Chromium Reduction. Montana State University Microbiology Seminar, Bozeman, MT. February 2012.

Elucidating Possible Relationships within Bacterial Community Dynamics and Abiotic Parameters. Biofilm Science and Technology Meeting, Bozeman, MT. July 2009.

POSTER PRESENTATIONS (off -campus; 13 others on-campus not listed)

Distinguishing the roles of two surface proteins in *Desulfovibrio vulgaris* Hildenborough biofilm formation. American Society for Microbiology Microbe2022. Presented by Collin "Pete" Pickens (graduate). Washington, DC. June 2022.

Gene expression and analysis of biofilm related proteins by the sulfate-reducing bacterium *Desulfovibrio vulgaris* Hildenborough. American Society for Microbiology Annual Biomedical Research Conference for Minority Students (ABRCMS). Presented by Sebastian Echave-Sierra (undergraduate). Virtual. November 2021. Won outstanding poster award.

Genetic requirements for biofilm formation by the sulfate-reducing bacterium *Desulfovibrio vulgaris* Hildenborough. ASM Microbe 2020. virtual meeting. July 2020.

Alternative, field-relevant electron acceptors for sulfate-reducing bacteria. ENIGMA Retreat, Berkeley, CA. August 2019.

Large tandem duplications are frequent in microbial genomes but go undetected in genome assemblies. American Society for Microbiology Microbe2019. San Francisco, CA. June 2019.

Large tandem duplications are frequent in microbial genomes but go undetected in genome assemblies. American Society for Microbiology Microbe2018. Atlanta, GA. June 2018.

Single nucleotide polymorphisms in a putative anion transporter cause nitrate resistance in *Desulfovibrio vulgaris* Hildenborough. American Society for Microbiology Microbe2017. New Orleans, LA. June 2017.

Sulfonate utilization by *Desulfovibrio vulgaris* Hildenborough. ENIGMA Science Advisory Committee Meeting. Berkeley, CA. October 2016.

Unintended laboratory-driven evolution eliminates biofilm formation in *Desulfovibrio vulgaris* Hildenborough. International Society for Microbial Ecology Meeting. Montreal, Quebec, Canada. August 2016.

Sulfonate utilization by *Desulfovibrio vulgaris* Hildenborough. ENIGMA Retreat, Berkeley, CA. August 2016.

Single-base change by laboratory-driven evolution eliminates biofilm formation in *Desulfovibrio vulgaris* Hildenborough. American Society for Microbiology Microbe2016. Boston, MA. June 2016.

Single-base change by laboratory-driven evolution eliminates biofilm formation in *Desulfovibrio vulgaris* Hildenborough. DOE Genomic Sciences Program Annual PI Meeting. Tysons Corner, VA. March 2016.

Altered biofilm formation in *Desulfovibrio vulgaris* Hildenborough by laboratory-driven evolution. ENIGMA Retreat, Berkeley, CA. August 2015.

Altered biofilm formation in *Desulfovibrio vulgaris* Hildenborough by laboratory-driven evolution. American Society for Microbiology General Meeting. New Orleans, LA. May 2015.

Altered biofilm formation in *Desulfovibrio vulgaris* Hildenborough by laboratory-driven evolution. DOE Genomic Sciences Program Annual PI Meeting. Tysons Corner, VA. February 2015.

Changes in biofilm formation driven by laboratory-specific culturing. ENIGMA Retreat, Berkeley, CA. August 2014.

Genetic requirements for biofilm formation of *Desulfovibrio vulgaris* Hildenborough. American Society for Microbiology General Meeting. Boston, MA. May 2014.

Injection of nitrate as a competing electron acceptor during stimulation for Cr(VI) reduction alters that microbial population in groundwater and surrogate sediments. ENIGMA Retreat, Berkeley, CA. August 2013.

Injection of nitrate as a competing electron acceptor during stimulation for Cr(VI) reduction alters that microbial population in groundwater and surrogate sediments. American Society for Microbiology General Meeting. Denver, CO. May 2013.

Microbial population dynamics in groundwater and surrogate sediments during HRC® biostimulation for Cr(VI)-Reduction. ISME-13 Meeting. Copenhagen, Denmark. Aug.2012.

Microbial community analysis of alkaline springs along a thermal gradient in Yellowstone National Park. Thermophiles Conference. Big Sky, MT. September 2011.

Quality-score refinement of SSU rRNA gene pyrosequencing differs across gene region for *in situ* samples. ENIGMA Retreat, Berkeley, CA. September 2011.

Microbial community dynamics from groundwater and surrogate sediments during HRC® biostimulation of Cr(VI)-reduction. ENIGMA Retreat. Berkeley, CA. September 2011.

Microbial community dynamics from groundwater and surrogate sediments during HRC® stimulation at a chromium contaminated field site. ISME-12 Meeting. Seattle, WA. Aug. 2010.

In silico analysis of a thermophilic, iron mat community: insights into community interactions and geochemical cycling. NSF-IGERT Project Meeting. Washington D.C. May 2010.

Bacterial community structure from alkaline springs along a thermal gradient in Yellowstone National Park. American Society for Microbiology General Meeting. Philadelphia, PA. May 2009.

Human alcohol dehydrogenase IV: ethanol's effects on the kinetics and control of retinol oxidation. Idaho Academy of Science. Nampa, ID. 2005.

Human alcohol dehydrogenase IV: ethanol's effects on the kinetics and control of retinol oxidation. M.J. Murdock Charitable Trust Conference. Portland, OR. 2004.

MEMBERSHIPS

American Society for Microbiology	2013-Present
American Society for Microbiology Missouri Valley Branch	2019-Present
American Association for the Advancement of Science	2020-Present

PROFESSIONAL REFERENCES

Judy D. Wall, Curator's Professor Emerita University of Missouri, (wallj@missouri.edu), Post-doctoral mentor

Matthew W. Fields, Professor, Director of the Center for Biofilm Engineering Montana State University (matthew.fields@montana.edu), PhD mentor