Roland Hatzenpichler, PhD

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My research focuses on microbial ecophysiology, the study of the physiology of microorganisms within their native habitat. I am interested in how the activity of this "uncultured majority" of microbes impacts humans and the environment on a micron to global scale. I currently focus on the biology of sediment-dwelling uncultured archaea and bacteria that live at the intersection of the oxic and anoxic world in geothermal, deep-sea, and coastal sediments, as well as the activity of the human gut microbiome. I am convinced that only by gaining an understanding of microbes directly in their native habitat scientists will be able to elucidate the mechanisms of microbial interactions with the biotic and abiotic world. To accomplish these goals, my lab applies an integrative approach that bridges the extremes of the microbial scale bar: the individual cell and the whole community. The research questions my lab addresses are: (1) who is doing what (linking cell identity and *in situ* function), (2) what are the abiotic and biotic factors controlling microbial activity, (3) how does this activity affect the environment and ultimately humans, (4) what are the limits to metabolism in terms of energy, space, and time, and (5) how can we discover novel structures and functions of uncultured cells?

Appointments

- **2023 - present, Associate Professor, Department of Chemistry and Biochemistry. Montana State University (MSU), Bozeman**
- 2016 - 2023, Assistant Professor, Department of Chemistry and Biochemistry. Montana State University (MSU), Bozeman
- 2021 - present, Affiliated faculty, Department of Microbiology and Cell Biology, MSU
- 2020 - present, Affiliated faculty, Montana Nanotechnology Facility, MSU
- 2017 - present, Affiliated faculty, Thermal Biology Institute, MSU
- 2016 - present, Affiliated faculty, Center for Biofilm Engineering, MSU
- 2016, Assistant Research Professor, Department of Microbiology and Immunology, MSU

Professional Preparation

- 2011-2016, Postdoctoral Scholar, California Institute of Technology, Geological and Planetary Sciences, Pasadena, CA
- 2011, Doctor of Natural Sciences (PhD), Microbial Ecology, University of Vienna, Austria
- 2006, Master of Natural Sciences, Molecular Microbiology and Genetics, University of Vienna, Austria

Awards and honors

- 2021, Most Impactful Science Poster Award, DOE Joint Genome Institute, Genomics of Energy and Environment Meeting
- **2017, NASA Early Career Fellowship**
- 2014, NSF Center for Dark Energy Biosphere Investigations Postdoctoral Scholarship
- 2011, O.K. Earl Postdoctoral Scholarship in Geobiology, California Institute of Technology
- 2011, Erwin Schrödinger Postdoctoral Scholarship, Austrian Science Fund
- 2011, Award for outstanding PhD thesis by the City of Vienna and the University of Vienna
- 2007, Pre-doctoral Fellowship by the Austrian Academy of Sciences

Total publications: 39 **>4,300 citations, h-index 20, i10 index 24**

Hatzenpichler corresponding Hatzenpichler lab member #equal contribution

30. #Frates E, #Spietz RL, Silverstein M, Girguis P, **Hatzenpichler R**, Marlow JJ. *Natural and anthropogenic carbon input affect microbial activity in salt marsh sediment*. Front Microbiol, 14:1235906 (2023) PDF

29. #Murali R, #Metcalfe KS, Yu H, Speth D, Wu F, Crémière A, Laso-Pèrez R, Malmstrom RM, Goudeau D, Woyke T, **Hatzenpichler R**, Chadwick GL, Orphan VJ. *Physiological potential and evolutionary trajectories of syntrophic sulfate-reducing bacterial partners of anaerobic methanotrophic archaea*. PLoS Biology, accepted (2023) PDF

28. #Lynes MM, #Krukenberg V, Jay ZJ, Kohtz AJ, Gobrogge C, Spietz RL, **Hatzenpichler R**. *Diversity and function of Methyl-coenzyme M reductase-encoding archaea in Yellowstone hot springs revealed by metagenomics and mesocosm experiments*. ISME Comm, 3:22 (2023) PDF

27. Wiegand T, Wilkinson R, Santiago-Frangos A, Lynes M, **Hatzenpichler R**, Wiedenheft B. *Functional and phylogenetic diversity of Cas10 proteins*. The CRISPR J. DOI:10.1089/crispr.2022.0085 (2023) PDF

26. Kohtz AJ, Jay ZJ, Lynes MM, Krukenberg V, **Hatzenpichler R**. *Culexarchaeia, a novel archaeal class of anaerobic generalists inhabiting geothermal environments.* ISME Comm, 2: 86 (2022) PDF

25. Schaible GA, Kohtz AJ, Cliff J, **Hatzenpichler R**. *Correlative SIP-FISH-SEM-Raman-NanoSIMS links identity, morphology, biochemistry, and physiology of environmental microbes*. ISME Comm, 2:52 (2022) PDF

24. Reichart NJ, Bowers RM, Woyke T, **Hatzenpichler R**. *Metagenomes and metagenome-assembled genomes from substrate-amended hot spring sediment incubations.* Microbiology Resource Announcements, doi.org/10.1128/mra.01065-21 (2022) PDF

23. #Chadwick GL, #Skennerton CT, Laso-Perez R, Leu AO, Speth DR, Yu H, Morgan-Lang C, **Hatzenpichler R,** Goudeau D, Malmstrom RR, Brazelton WJ, Woyke T, Hallam S, Tyson GW, Wegener G, Boetius A, Orphan VJ. *Unique metabolic systems differentiate syntrophic methanotrophic archaea from methanogens*. PLoS Biology 20: e3001508 (2022) PDF

22. Krukenberg V, Reichart N, Spietz RL, **Hatzenpichler R**. *Microbial community response to polysaccharide amendment in anoxic hydrothermal sediments of the Guaymas Basin.* Front Microbiol, 12: 763971 (2021) PDF

21. Marlow JJ, Spietz RL, Kim K, Ellisman M, Girguis P, **Hatzenpichler R**. *Spatially resolved correlative microscopy and microbial identification reveal dynamic depth- and mineral-dependent anabolic activity in salt marsh sediment*. Environ Microbiol, 23(8), 4756-4777 (2021) PDF

20. Wang Q, Alowaifeer A, Kerner P, Balasubramanian N, Patterson A, Christian W, Tarver A, Dore JE, **Hatzenpichler R**, Bothner BB, McDermott TR. *Aerobic bacterial methane synthesis*. Proc Natl Acad Sci USA, 118 (27) e2019229118 (2021) PDF

19. Reichart NJ, Bowers RM, Woyke T, **Hatzenpichler R**. *High potential for biomass-degrading enzymes revealed by hot spring metagenomics*. Front Microbiol, 12: 668238 (2021) PDF

18. Reichart NJ, Jay ZJ, Krukenberg V, Parker AE, Spietz RL, **Hatzenpichler R**. *Activity-based cell sorting reveals responses of uncultured archaea and bacteria to substrate amendment.* The ISME J, 14: 2851–2861 (2020) PDF

17. Murray AE, Freudenstein J, Gribaldo S, **Hatzenpichler R**, Hedlund BP, Hugenholtz P, et al. *Roadmap for naming uncultivated archaea and bacteria.* Nat Microbiol, 5: 987–994 (2020) PDF

16. Steward KF, Eilers B, Trippett B, Fuchs A, Dorle M, Rawle R, Soriano B, Balasubramanian N, Copié V, Bothner B*, **Hatzenpichler R.** *Metabolic Implications of Using BioOrthogonal Non-Canonical Amino Acid Tagging (BONCAT) for Tracking Protein Synthesis*. Front Microbiol, 11:197 (2020) PDF

15. **Hatzenpichler R**, Krukenberg V, Spietz RL, Jay ZJ. *Next-generation physiology approaches to study microbiome function at the single cell level*. Nat Rev Microbiol, 18: 241-256 (2020) PDF

► Cover article ► Review article ►Faculty1000 recommended

14. Lawson CE, Harcombe WR, **Hatzenpichler R,** Lindemann SR, Löffler F, O'Malley MA, García-Martin H, Pfleger BF, Raskin L, Venturelli OS, Weissbrodt DG, Noguera DR, McMahon KD. *Common principles and best practices for engineering microbiomes*. Nat Rev Microbiol, 17: 725–741 (2019) PDF ► **Perspective article**

13. McKay LJ, **Hatzenpichler R**, Inskeep WP, Fields MW. *Occurrence and expression of novel methyl-coenzyme M reductase gene (mcrA) variants in hot spring sediments*. Sci Rep 7: 7252 (2017) PDF

12. Miranda PJ, McLain NK, **Hatzenpichler R**, Orphan VJ, and Dillon J. *Characterization of chemosynthetic microbial mats associated with intertidal hydrothermal sulfur vents in White Point, San Pedro, CA, USA*. Front Microbiol, 7:1163 (2016) PDF

Prior to faculty position

11. **Hatzenpichler R**, Connon SA, Goudeau D, Malmstrom R, Woyke T, Orphan VJ*. *Visualizing in situ translational activity for identifying and sorting slow-growing archaeal-bacterial consortia.* Proc Natl Acad Sci USA, 113: E4069-E4078 (2016) PDF
► **Highlighted by Nat Microbiol "News & Views"**

10. Tavormina PL, **Hatzenpichler R**, McGlynn S, Chadwick G, Dawson K, Connon S, Orphan VJ. *Methyloprofundus sedimenti gen. nov., sp. nov., an obligate methanotroph from ocean sediment belonging to the Deep Sea 1 clade of marine methanotrophs*. Int J Syst Evo Microbiol, 65: 251–259 (2015) PDF

9. **Hatzenpichler R**, Scheller S, Tavormina PL, Babin B, Tirrell D, Orphan VJ*. *In situ visualization of newly synthesized proteins in environmental microbes using amino acid tagging and click chemistry*. Environ Microbiol, 16: 2568-2590 (2014) PDF
► **Cover article** ► **Highlighted by Environ Microbiol "Research Highlight"**

8. Ma L, Kim J, **Hatzenpichler R**, Karymov MA, Hubert N, Hanan IM, Chang EB, Ismagilov RF. *Gene-targeted microfluidic cultivation validated by isolation of a gut bacterium listed in Human Microbiome Project's Most Wanted taxa*. Proc Natl Acad Sci USA, 111: 9768–9773 (2014) PDF

7. #Lebedeva EV, #**Hatzenpichler R**, Pelletier E, Schuster N, Hauzmayer S, Bulaev A, Grigorjeva NV, Galushko A, Schmid M, Palatinsky M, Le Paslier D, Daims H, Wagner M. *Enrichment and genome sequence of the group I.1a ammonia-oxidizing archaeon "Ca. Nitrosotenuis uzonensis" representing a clade globally distributed in thermal habitats*. PLoS One, 8: e80835 (2013) PDF

6. Spang A, Poehlein A, Offre P, Zumbrägel S, Haider S, Rychlik N, Nowka B, Schmeisser C, Lebedeva E, Rattei T, Böhm C, Schmid M, Galushko A, **Hatzenpichler R**, Weinmaier T, Daniel R, Schleper C, Spieck E, Streit W, Wagner M. *The genome of the ammonia-oxidizing Candidatus Nitrososphaera gargensis: Insights into metabolic versatility and environmental adaptations*. Environ Microbiol, 14: 3122-3145 (2012) PDF

5. **Hatzenpichler R**. *Diversity, physiology, and niche differentiation of ammonia-oxidizing archaea*. Appl Environ Microbiol, 78: 7501-7510 (2012) PDF
► **Review article**

4. Mußmann M, Brito I, Pitcher A, Damsté JS, **Hatzenpichler R**, Richter A, Nielsen JL, Nielsen P H, Müller A, Daims H, Wagner M, Head IM. *Thaumarchaeotes abundant in refinery nitrifying sludges express amoA but are not obligate autotrophic ammonia oxidizers*. Proc Natl Acad Sci USA, 108: 16771-16776 (2011) PDF

3. #Shapiro OH, #**Hatzenpichler R***, Buckley DH, Zinder SH, Orphan VJ. *Multicellular photo-magnetotactic bacteria*. Environ Microbiol Rep, 3: 233-238 (2011) PDF
► **Chief Editor's Choice Article 2011**

2. Spang A, **Hatzenpichler R**, Brochier-Armanet C, Rattei T, Tischler P, Spieck E, Streit W, Stahl DA, Wagner M, Schleper C. *Distinct gene set in two different lineages of ammonia-oxidizing archaea supports the phylum Thaumarchaeota*. Trends Microbiol 18:331-40 (2010) PDF
► **Cover article**

1. **Hatzenpichler R**, Lebedeva EV, Spieck E, Stoecker K, Richter A, Daims H, Wagner M. *A moderately thermophilic ammonia-oxidizing crenarchaeote from a hot spring*. Proc Natl Acad Sci USA, 105: 2134-2139 (2008) PDF

Book chapters

4. Hu D, Cui Y, Markillie LM, Chrisler WB, Wang Q, **Hatzenpichler R**, Orr G. *Counting mRNA copies in intact bacterial cells by fluctuation localization imaging-based fluorescence in situ hybridization (fliFISH)*. Book chapter for *Fluorescence In Situ Hybridization (FISH) for Microbial Cells: Methods and Concepts, Methods in Molecular Biology*, Azevedo N.F and Almeida C (eds.), Vol. 2246, 237-247, Springer Nature (2021) PDF

3. Marlow JJ, **Hatzenpichler R**. *Assessing metabolic activity at methane seeps: a testing ground for slow-growing environmental systems*. Book chapter in Life at Vents and Seeps. 223-259 (2017) PDF

Prior to faculty position

2. Tavormina PL, **Hatzenpicher R**, McGlynn SE, Chadwick G, Dawson K, Connon S, Orphan VJ. Methyloprofundus. Bergey's Manual of Systematics of Archaea and Bacteria. John Wiley & Sons, Inc. doi: 10.1002/9781118960608.gbm01414 (2016) PDF

1. **Hatzenpichler R***, Orphan VJ. *Detection of protein-synthesizing microorganisms in the environment via bioorthogonal non-canonical amino acid tagging (BONCAT)*. Book chapter for *Hydrocarbon and Lipid Microbiology Protocols, Vol. 7: Single-cell and single-molecule methods*. Springer Protocols Handbooks, doi: 10.1007/8623_2015_61 (2015) PDF

White papers

2. Meadows V, Graham H, and **workshop participants**. *Community Report from the Biosignatures Standards of Evidence Workshop*. arXiv:2210.14293 (2022). PDF

1. Schmidt B, Johnson SS, Hoehler T, Graham H, Bowman J, Som S, Barge L, Cabrol N, Pavlov A, Pontefract A, Stockton A, Orcutt B, Nunn B, Foreman C, Stillman D, Shock E, Kenig F, Love G, Bergmann K, Sobron P, Mathies R, **Hatzenpichler R**, Yu S, Swingley W, Jones D, Lawrence J, Bryson F, Spiers E, Chivers C, Plattner T, Mullen A, Hanna A, Buffo J. *Enabling Progress Towards Life Detection on NASA Missions*. Planetary Science and Astrobiology Decadal Survey 2023-2032 white paper e-id. 260; Bulletin of the American Astronomical Society, 53 (4), e-id 260 (2021) PDF

Data consortium papers. Lab members are listed as "consortium authors"; our lab contributed DNA sequencing data, typically via JGI projects, but were not involved in analyses

3. Pavlopoulos GA, Baltoumas FA, Liu S, Selvitopi O, Nayfach S, Azad A, Call L, Camargo AP, Ivanova NN, Chen IM, Paez-Espino D, Karatzas E, **Novel Metagenome Protein Families Consortium**, Iliopoulos I, Konstantinidis K, Tiedje JM, Baker D, Ouzounis CA, Ovchinnikov S, Buluç A, Kyrpides NC. *Discovery, diversity and distribution of functional dark matter through global metagenomics.* Nature, 662: 594-602 (2023)

2. Fremin BJ, **Global Phage Small Open Reading Frame (GP-SmORF) Consortium**, Bhatt AS, Kyrpides NC. *Thousands of small, novel genes predicted in global phage genomes*. Cell Reports, 39:12: 110984 (2022) PDF

1. Nayfach S, Roux S, Seshadri R, Udwary D, Varghese N, Schulz F, Wu D, Paez-Espino D, Chen IM, Huntemann M, Palaniappan K, Ladau J, Mukherjee S, Reddy TBK, Nielsen T, Kirton E, Faria JP, Edirisinghe JN, Henry CS, Jungbluth SP, Chivian D, Dehal P, Wood-Charlson EM, Arkin AP, Tringe SG, Visel A, **IMG/M Data Consortium**, Woyke T, Mouncey NJ, Ivanova NN, Kyrpides NC, Eloe-Fadrosh EA. *A genomic catalog of Earth's microbiomes*. Nat Biotech, DOI:10.1038/s41587-020-0718-6 (2020) PDF

5 manuscripts in review or revision

Hatzenpichler corresponding Hatzenpichler lab member #equal contribution

- #Krukenberg V, #Kohtz AJ, Jay ZJ, **Hatzenpichler R**. Methyl-reducing methanogenesis by a thermophilic culture of Korarchaeia. In revision
- Kohtz AJ, #Krukenberg V, #Petrosian N, #Jay ZJ, Pilhofer M, **Hatzenpichler R**. Cultivation and visualization of a methanogen of the phylum Thermoproteota. In revision PDF preprint

- Lynes MM, Jay ZJ, Kohtz AJ, **Hatzenpichler R**. *Methylotrophic methanogenesis in the Archaeoglobi: Cultivation of Ca. Methanoglobus hypatiae from a Yellowstone hot spring*. In revision PDF preprint
- Schaible GA, Jay JJ, Cliff J, Schulz F, Gauvin C, Goudeau D, Ruff E, Malmstrom RR, Edgcomb V, **Hatzenpichler R**. *Multicellular magnetotactic bacterial consortia are metabolically differentiated and not clonal*. In review PDF preprint
- Murali R, Pace LA, Sanford RA, Ward LM, Lynes M, **Hatzenpichler R**, Lingappa UF, Fischer WW, Gennis RB, Hemp J. *Diversity and evolution of nitric oxide reduction.* In review PDF preprint

Invited departmental seminars (•, 19) and invited conference talks (◊, 20)

2023

- Jan 31, Department of Microbiology, North Dakota State University, Fargo, ND. *Taming the first methanogens from outside the Euryarchaeota*
- Feb 9, Synthetic Biology Young Speaker Series. Washington University in St. Louis, MO. *Next Generation Physiology reveal microbial life at (close to) in situ conditions*
- Mar 21, Cumming Foundation Mountain West Microbiome meeting, Snowbird, UT. *Next generation physiology approaches to advance human microbiome research*
- May 2, German Research Center for Geosciences GFZ, Potsdam, Germany. *The first methanogens outside the Euryarchaeota*

◊ Jun 10, Xcelerate Meeting, Metrodora Foundation, Salt Lake City, UT. *Accelerating discovery by bridging scientific fields*

◊ Jul 16-21, Chair of session *Probing microbial phenotypes in situ* at Gordon Research Conference Applied and Environmental Microbiology. South Hadley, MA

◊ Aug 24-25, Co-organizer and invited speaker at From New Lineages of Life To New Functions symposium. DOE Joint Genome Institute, Berkeley, CA. Talk given by graduate student Anthony Kohtz due to emergency. *Not your grandma's methanogens: First-time cultivation of methanogens of the phylum Thermoproteota*

◊ Oct 11, Archaea Power Hour (virtual). *Taming the first methanogens from outside the Euryarchaeota*. Recording available at https://youtu.be/3MgdtaqVcrw?si=0ayHRylNHIMjrRLF&t=100

◊ Oct 26, FASI discovery meeting, The Broad Institute, Harvard-MIT, MA. *Next generation physiology approaches to advance human microbiome research*

2022 (presentations until April 2022 held online because of Corona pandemic)

- Mar 17, Leibniz Institute DSMZ - German Collection of Microorganisms and Cell Cultures, Braunschweig, Germany. *Methanogenic archaea and methane-synthesizing bacteria in diverse habitats of Yellowstone National Park*
- Mar 29, Faculty of Chemistry, Biofilm Centre, University of Duisburg-Essen, Germany. *Correlative microscopy links identity, activity, chemistry, and morphology of uncultured cells*
- Apr 21, San Francisco State University, San Francisco, CA. *Novel extremophilic archaea from Yellowstone hot springs and new methods to study their physiology*

◊ Jun 2, Penn State Microbiome Symposium, Penn State Microbiome Center, State College, PA, USA. *Next Generation Physiology approaches for studying microbial in situ phenotypes*

◊ Jul 12, Montana Biofilm Meeting, Bozeman, MT. *Correlative SIP-FISH-Raman-SEM-NanoSIMS links identity, morphology, biochemistry, and physiology of environmental microbes*

◊ Aug 30, DOE Joint Genome Institute (JGI)'s 25th Anniversary Genomics of Energy & Environment meeting. *Next Generation Physiology approaches to study microbial in situ phenotypes*

◊ Oct 24, Department of Chemistry and Biochemistry, Montana State University, Bozeman, MT. *New Archaea in Old Habitats: Exploring Archaeal Diversity in Geothermal Ecosystems Using Culture-dependent and Culture-independent Approaches*

◊ Nov 9, University of Texas at San Antonio. *New Archaea in Old Habitats: Exploring Archaeal Diversity in Geothermal Ecosystems Using Culture-dependent and Culture-independent Approaches*

◊ Nov 17, Microbial Sciences Initiative, Harvard University, Cambridge, MA. *The first methanogens outside the Euryarchaeota*

◊ Dec 15, American Geophysical Union Fall meeting. *Diversity, function, and cultivation of the first methanogens outside the Euryarchaeota*

2021 (all presentations held online because of Corona pandemic)

◊ May 7, Center for Dark Energy Biosphere Investigations Virtual Meeting. *Next-generation physiology: Why and how to measure microbial phenotypes under (close to) in situ conditions.*

◊ Aug 4, Symbiosis Model Systems Virtual Gathering, Gordon and Betty Moore Foundation. *Correlative microscopy approaches link identity, activity, chemistry, and morphology of uncultured cells*

◊ Aug 23, Joint Academic Microbiology Seminars. Singapore. *Diversity, ecophysiology, activity of uncultured and newly cultured archaea in Yellowstone hot springs*

◊ Oct 27, University of Innsbruck, Austria. *Methanogenic archaea and methane-synthesizing bacteria in diverse habits of Yellowstone National Park*

◊ Nov 29, Helmholtz Centre for Ocean Research Kiel, Germany. *Activity of uncultured microbes in geothermal marine and terrestrial environments*

2020 (all presentations held online because of Corona pandemic)

- Mar 27, *MicroSeminar* sponsored by the International Society for Microbial Ecology. Online live-streamed seminar that was then made available on Youtube. 122 live attendants; ~1,350 views since then. *Ecophysiology of uncultured sediment-dwelling microbes revealed by substrate analog probing*. https://www.youtube.com/watch?v=eNUn-1uCkQw

◊ Jun 11, Workshop on Next-generation physiology approaches in microbial ecology for graduate students and postdocs. Annual meeting of NSF EPSCOR BuG ReMeDEE. *Using next-generation physiology approaches to characterize novel methanotrophs*. University of Oklahoma, Norman, OK

◊ Sep 4, Joint International Symposium on Microbial and Biomolecular Interactions, Friedrich Schiller University Jena. *Next-generation physiology: bridging the gap at the single cell level*

- Oct 5, Dep. of Land Resources and Environmental Sciences, Montana State University, Bozeman, MT. *Functional activity of microbes revealed through substrate analog probing and stable isotope probing*

◊ Nov 18, Archaea Cafe, Medical University of Graz, Austria. *New microbes in old habitats: diversity and activity of archaea in Yellowstone hot springs*

2019

- Mar 19, John Lawrence Seminar, Environmental Genomics and Systems Biology Division, Lawrence Berkeley National Laboratory, Berkeley, CA. *Next Generation Physiology: determining in situ metabolisms of uncultured microbes at single cell resolution and high through-put*

◊ Jul 9, Workshop on next-generation sequencing technologies for graduate students and postdocs, Annual meeting of NSF EPSCOR BuG ReMeDEE. *Next generation and 3rd generation sequencing methods*. South Dakota School of Mines, Rapid City, SD

◊ Jul 14-18, Chair of session *Insights into microbial species interaction* at Gordon Research Conference Applied and Environmental Microbiology. South Hadley, MA

2018

- Apr 5, Chemical Biology Initiative, Biotechnology Institute, University of Minnesota. St. Paul, MN. *Ecophysiology and in situ activity of uncultured thermophiles at single cell resolution*

◊ Apr 15-18, NSF-HHMI conference on New Opportunities to Study Origins of the Eukaryotic Cell. Howard Hughes Medical Institute, Janelia Research Campus. Ashburn, VA. *Multicellular magnetotactic bacteria: a window into the early evolution of advanced life*

◊ Apr 27, *Engineering the Microbiome* workshop, University of Wisconsin. Madison, WI. *Studying microbiome function by bioorthogonal labeling and isotope probing*

- Aug 21, Department of Microbiology, University of Hamburg, Hamburg, Germany. *Determining growth substrates of uncultured thermophiles in situ and at single cell resolution*

2017

- Jun 22, Department of Geoscience, University of Calgary. Calgary, Canada. *Bioorthogonal labeling reveals physiology and in situ activity of uncultured microbes on single cell level*

◊ Jul 24, Gordon Research Conference *Archaea: Ecology, Metabolism, and Molecular Biology*. Waterville, NH. *Metabolic potential and in situ activity of thermophilic uncultured archaea at single cell resolution*

◊ Nov 14, NSF *Center for Dark Energy Biosphere Investigations Annual Meeting*. Marina, CA. *Metabolic potential and in situ activity of thermophilic uncultured archaea at single cell resolution*

- Dec 1, The University of Texas at Austin, Marine Science Institute. Austin, TX. *Metabolic potential and in situ activity of uncultured thermophiles at single cell resolution*

Prior to faculty position

- 23 invited seminars and 5 invited conference talks prior to starting tenure track faculty position

Contributed presentations by members of the Hatzenpichler lab (● talks, n=16; ◊ posters, n=33). Only the presenter's name is given; *et al.* is implied. Presentations co-authored but not given by members of the Hatzenpichler lab are not listed

2023

- Aug 25, Kohtz A, Graduate student, Symposium on New Lineages of Life, Joint Genome Institute, Berkeley. CA. *Not your grandma's methanogens: First-time cultivation of methanogens of the phylum Thermoproteota* (invited talk to Roland Hatzenpichler; given by Anthony Kohtz)

◊ Aug 8, Gray C, Undergraduate student, INBRE Summer Poster Session, Bozeman, MT. *Developing and validating a FISH probe for the genus Methanobrevibacter, an archaeon inhabiting the human gut*

◊ Jul 26, Kohtz A, Graduate student, GRC Archaea, Mt. Snow, VT. *Cultivation and visualization of a methyl-reducing methanogen of the phylum Thermoproteota*

◊ Jul 24, Jay Z, Staff scientist, GRC Archaea, Mt. Snow, VT. *Methyl-reducing methanogenesis by a thermophilic culture of Korarchaeia*

◊ Jul 16, Schaible G, Graduate student, Gordon Research Conference Applied and Environmental Microbiology, South Hadley, MA. *Multicellular magnetotactic bacteria are metabolically differentiated and not clonal*

◊ May 22, Schaible G, Graduate student, Astrobiology Graduate Conference, LA Jolla, CA. *Cellular differentiation within obligate multicellular bacteria*

- Jan 30, 2023, Schlegel P, Undergraduate student and TBI Fellow, Thermal Biology Institute Seminar, Montana State University, Bozeman, MT. *Isolation and metabolism of Pyrosphaera yellowstonii, a representative of a new genus of thermophilic archaea from Yellowstone hot springs*

2022

◊ Nov 11, 2022, Giner M, REU student, Annual Biomedical Research Conference for Minoritized Scientists, Anaheim, CA. *Attempts to culture thermophilic archaea and bacteria from Yellowstone National Park hot springs*

- Sep 10 2022, Jay Z, staff scientist, Extremophiles 2022, Loutraki, Greece. *Geochemical forcing causes extensive functional diversity in an abundant (hyper)thermophilic archaeon in Yellowstone National Park*

◊ Aug 16 2022, Schaible G, graduate student, International Symposium on Microbial Ecology, Lausanne, Switzerland. *Diversity, morphology, physiology, and division of labor of obligate multicellular bacteria*

◊ Aug 15 2022, Kohtz A, graduate student, International Symposium on Microbial Ecology, Lausanne, Switzerland. *Cultivation of thermophilic Verstraetearchaeota (Methanomethylicia) under methanogenic conditions* **GRC Poster Award**

◊ Aug 10 2022, Lynes M, graduate student, Gordon Research Conference C1 Metabolism, Southbridge, MA. *Phylogenetic and functional diversity of mcrA-encoding archaea in Yellowstone hot springs revealed by metagenomics and mesocosm experiments*

◊ Aug 9 2022, Kohtz A, graduate student, Gordon Research Conference C1 Metabolism, Southbridge, MA. *Cultivation of thermophilic Verstraetearchaeota (Methanomethylicia) under methanogenic conditions*

- Aug 7 2022, Kohtz A, graduate student, Gordon Research Seminar C1 Metabolism, Southbridge, MA. *Cultivation of thermophilic Verstraetearchaeota (Methanomethylicia) under methanogenic conditions*

◊ Jul 12 2022, Lynes M, graduate student, Montana Biofilm Science and Technology Meeting. *Wide phylogenetic and functional diversity of mcrA-encoding archaea in Yellowstone hot springs revealed by metagenomics and mesocosm experiments*

◊ Jun 10 2022, Lynes M, graduate student, ASM Microbe, Washington, DC. *Wide phylogenetic and functional diversity of mcrA-encoding archaea in Yellowstone hot springs revealed by metagenomics and mesocosm experiments*

- Apr 19 2022, Lynes M, graduate student, Archaea Power Hour, Online. *Phylogenetic and functional diversity of mcrA-encoding archaea in Yellowstone hot springs*

2021 (all virtual because of Covid-19 pandemic)

◊ Oct 28 2021, Schaible G, graduate student, Montana Nanotechnology Facility user meeting, Bozeman, MT. *Correlative Raman-FM-SEM-nanoSIMS links identity, biochemistry, and morphology of environmental microbes*

- Oct 21, Schaible G, graduate student, Symposium on New Lineages of Life, *Correlative Raman-FM-SEM-EDS-nanoSIMS microscopy links identity, biochemistry, and morphology* of environmental microbes
- Sep 23, Kohtz A, graduate student, Symposium on New Lineages of Life, *Culexarchaeota: a novel thermophilic archaeal lineage with diverse metabolisms*
- Sep 16, Schaible G, graduate student, Woods Hole Oceanographic Institution. *Exploring the evolution of bacterial complexity using Multicellular Magnetotactic Bacteria*. Woods Hole, MA
- Aug 30, Hatzenpichler R, Genomics of Energy & Environment (Annual user) meeting of the Joint Genome Institute, *Methanogenic archaea and aerobic methane-synthesizing bacteria from diverse Yellowstone habitats.* **Most Impactful Science Poster Award**

◊ Sep 14, Schaible G, graduate student, Astrobiology Graduate Conference, *Cellular differentiation within multicellular magnetotactic bacteria: implications to the evolution of complex life on Earth*

◊ Jul 28, Lynes M, graduate student, Archaea Online, *Methanogenic archaea outside the Euryarchaeota are widespread and active in Yellowstone hot springs*

- Jul 27, Kohtz A, graduate student, Archaea Online, *Culexarchaeota: a novel archaeal lineage with diverse metabolisms that is globally distributed in geothermal habitats*

◊ Jun 21, Christian W, graduate student, ASM Microbe, *Methane production via a single enzyme gene widely distributed in environmental bacteria*

◊ Jun 21, Schaible G, graduate student, ASM Microbe, *Multicellular Magnetotactic Bacteria: Organized Complexity in the Domain Bacteria*

2020 (all presentations past February held online because of Covid-19 pandemic)

◊ Dec 3, Gurney J, undergraduate, MSU Undergraduate research symposium, *Developing Screening Procedures for Microbial Conversion of Methylamine to Methane*, Bozeman, MT

◊ Dec 3, Hatzenpichler R, NSF Center for Dark Energy Biosphere Investigations. *Next-generation physiology: studying the activity and physiology of uncultured microbes*

◊ Oct 19, Schaible G, graduate student, MONT Annual Users Meeting, *Correlative Analysis for Improved Single Cell Characterization*, Bozeman, MT

- Jun 25, Reichart N, graduate student, Joint Genome Institute Science Forum, *Investigating Yellowstone National Park hot springs for cellulolytic microbes through molecular approaches*, Berkeley, CA

◊ Mar 23, Reichart N, graduate student Joint Genome Institute User Meeting: Genomics of Energy and Environment, *Activity-based cell sorting reveals response of uncultured archaea and bacteria to substrate amendment*, Oakland, CA

◊ Feb 2, Schaible G, graduate student, American Academy for the Advancement of Science, *Multicellular Magnetotactic Bacteria: Organized Complexity in the Domain Bacteria*, Seattle, WA

2019

- Jul 22, Krukenberg V, postdoctoral scholar. Gordon Research Conference on Archaea: Ecology, Metabolism, and Molecular Biology, Les Diablerets, Switzerland. *Potential methanogenic Korarchaeota: From genome-based metabolic predictions towards enrichment cultivation*

◊ Jul 19, Lynes M, graduate student. BuG ReMeDEE annual meeting, Rapid City, SD. *Identifying and describing methane cycling organisms in a Yellowstone National Park hot spring*

- Jun 23, Hatzenpichler R. American Society of Microbiology General Meeting Microbe 2019, San Francisco, CA. *In situ activity and metabolisms of uncultured thermophiles revealed by a "Next Generation Physiology" approach*

◊ Jun 10, Reichart N, graduate student. 2nd International Geobiology Conference, Banff, Canada. *Bioorthogonal labeling as a high-throughput approach for screening microbial cultivation conditions*

◊ Jun 10, Spietz R, postdoctoral scholar. 2nd International Geobiology Conference, Banff, Canada. *Tiny spaces, busy places: Illuminating spatial organization of microbial activity in sediments from nanometer to centimeter scale*

◊ Jun 10, Krukenberg V, postdoctoral scholar. 2nd International Geobiology Conference, Banff, Canada. *Enrichment of potential methanogenic Korarchaeota from terrestrial hot springs*

◊ Jun 10, Lynes M, graduate student. 2nd International Geobiology Conference, Banff, Canada. *Exploring microbial diversity and chemistry of geothermal features in Yellowstone National Park: Searching for methane cycling organisms*

◊ Jun 10, Jay Z, staff scientist. 2nd International Geobiology Conference, Banff, Canada. *Geomicrobiology of five hot springs in the Culex Basin Thermal Complex, Yellowstone*

◊ May 13, Schaible G, graduate student, MONT user meeting, Montana State University. *Exploring marine environments using scanning electron microscopy*

- Apr 8, Reichart N, graduate student. Thermal Biology Institute seminar, Montana State University, Bozeman, MT. *Identification of cellulolytic hot spring organisms through bioorthogonal labeling*
- Apr 6, Reichart N, graduate student. Montana Academy of Sciences Annual Meeting, Butte, MT. *Identification of cellulolytic hot spring organisms through bioorthogonal labeling*

◊ Apr 2, Hatzenpichler R. From New Lineages of Life to New Functions Symposium, DOE Joint Genome Institute, San Francisco, CA. *Linking identity and in situ metabolism of uncultured microbes by "Next Generation Physiology"*

2018

- Aug 16, Hatzenpichler R. International Symposium on Microbial Ecology, Leipzig, Germany. *In situ activity and metabolism of uncultured thermophiles experimentally determined at single cell resolution through Next Generation Physiology*

◊ Aug 13, Reichart N, graduate student. International Symposium on Microbial Ecology, Leipzig, Germany. *High-throughput screening of cellulolytic community shifts in Yellowstone hot springs*

◊ Aug 14, Krukenberg V, postdoc. International Symposium on Microbial Ecology, Leipzig, Germany. *Activity-based metabolic screening to enhance cultivation of environmentally relevant microbes*

2017

◊ Aug 28, Beauchene J, undergraduate. International meeting on thermophiles, Kruger National Park, South Africa. *Discovering the metabolic adaptations of alkaliphilic hyperthermophilic archaea to their extreme environment in Yellowstone National Park*

Professional memberships

- American Association for the Advancement of Science (AAAS)
- Austrian Scientists and Scholars in North America (ASCINA)
- American Society for Microbiology (ASM)
- International Society for Microbial Ecology (ISME)

External grants and funding

Total extramural funding to Hatzenpichler lab: $5,337,035
Total additional value of institutional proposals to MSU: $5,336,316
Total awarded 'in kind' instrumentation value to Hatzenpichler lab: $1,229,174
Total extramural funding raised or helped to raise in any role since at MSU: $17,541,035

Proposals with direct funding to Hatzenpichler lab. Total: $11.8M. Total to Hatzenpichler: $5.3M

13. Title: The need for speed: Stimulated Raman Spectroscopy for human gut microbiome research
Role: **Sole PI**
Sponsor: National Institutes of Health
Award: 3R35GM147166-01S1
Requested: $150,000
Start/End date: 09/30/2022-09/29/2023

12. Title: Developing Next-Generation Physiology approaches for human gut microbiome research
Role: **Sole PI**
Award number: 1R35GM147166-01
Sponsor: National Institutes of Health, Maximizing Investigators' Research Award (MIRA)
Award: $1,754,560
Start/End Date: 01/01/2023-12/31/2027

11. Title: Collaborative research: Regulation and dynamics of microbial communities and biogeochemical cycling in hydrothermally-influenced habitats in the Gulf of California
Role: **Co-PI** (PI: Samantha Joye; Co-PI: Karthik Anantharaman)
Award number: OCE-2049445
Sponsors: NSF Biological Oceanography and Chemical Oceanography
Award: $1,424,559 ($240,650 to Hatzenpichler)
Start/End Date: 01/01/2021-12/31/2023

10. Title: Collaborative research: IODP-enabled insights into Fungi and their metabolic interactions with other microorganisms in deep subsurface hydrothermal sediments
Role: **Co-PI** (PI: Virginia Edgcomb; Co-PIs: Andreas Teske)
Award number: OCE-2046056
Sponsor: NSF Biological Oceanography
Award: $600,140 ($58,842 to Hatzenpichler)
Start/End Date: 01/01/2021-12/31/2023

9. Title: Cell differentiation of multicellular magnetotactic bacteria: implications for microbial life on other worlds?
Role: **PI.** ***This is a fellowship to graduate student George Schaible that is administered by Hatzenpichler.***
Award number: 80NSSC20K1365
Sponsor: Future Investigators in NASA Earth and Space Science and Technology (FINESST)
Award: $133,237
Start/End Date: 09/01/2020-08/31/2023

8. Title: IIBR Instrumentation: Development of a Stimulated Raman Scattering Activated Cell Sorter to Enable Phenotype-Based Separation of Microbial Cells From Environmental Samples
Role: **PI** (Co-PIs: Erik Grumstrup, Stephan Warnat)
Award number: DBI-2016360
Sponsor: NSF Infrastructure Innovation for Biological Research

Award: $860,073 ($288,032 to Hatzenpichler)
Start/End Date: 08/01/2020-07/31/2023

7. Title: Diversity, genomics, physiology, and ultrastructure of Asgard archaea and implications for eukaryogenesis
Role: **Co-PI** (PI: Brett Baker; other Co-PIs: Thijs Ettema, Mark Ellisman)
Sponsor: Moore–Simons Project on the Origin of the Eukaryotic Cell
Award number: 737750
Award: $2,016,438 ($576,437 to Hatzenpichler)
Start/End Date: 09/01/2020-08/30/2023

6. Title: Ecophysiology of uncultured archaea in geothermal features of Yellowstone National Park
Role: **Sole PI**
Sponsor: NASA Exobiology
Award number: 80NSSC19K1633
Award: $537,942
Start/End Date: 09/01/2019-8/31/2022

5. Title: Collaborative research: Next generation physiology: a systems-level understanding of microbes driving carbon cycling in marine sediments
Role: **PI** (Co-PIs: Brett Baker, Andreas Teske)
Sponsor: NSF Systems and Synthetic Biology
Award number: MCB-1817428
Award: $1,078,875 ($436,385 to Hatzenpichler)
Start/End Date: 10/01/2018-07/31/2022

#4. Title: Tiny spaces, busy places: illuminating spatial organizations of microbial activity in sediments from nanometer to centimeter scales
Role: **PI** (Co-Is: Peter Girguis, Mark Ellisman)
Sponsor: Gordon and Betty Moore Foundation Marine Microbiology Initiative
Award number: 5999
Award: $981,779 ($519,375 to Hatzenpichler)
Start/End Date: 11/01/2017-09/30/2021

3. Title: RII Track-2 FEC: Building Genome-to-Phenome Infrastructure for Regulating Methane in Deep and Extreme Environments (BuG ReMeDEE)
Role: **Co-PI** (PI: Rajesh Sani; MSU-PI: Robin Gerlach)
Sponsor: NSF EPSCoR
Award number: DBI-1736255
Award: $1,819,132 ($110,000 to Hatzenpichler)
Start/End Date: 10/01/2017-09/30/2022

2. Title: Ecophysiology, cell differentiation, and genomics of multicellular magnetotactic bacteria
Role: **Sole P**I
Sponsor: NASA Exobiology
Award number: NNX17AK85G
Award: $431,418
Start/End Date: 07/01/2017-12/31/2022

#1. Title: Development and application of novel bioorthogonal labeling approaches for studying microbial metabolic activity at environmental extremes
Role: **Sole P**I
Sponsor: NASA Early Career Fellowship Start-up Program for Named Fellows (Exobiology program)
Award number: 80NSSC19K0449
Award: $100,158
Start/End Date: 03/11/2019-08/10/2021

Awarded institutional funding without direct support to Hatzenpichler (MRI, Murdock Foundation, NRT, and REU programs; # indicates that the project has ended) **Total: $5.33M**

6. Supplement to W911NF1910288: Unlocking Microbial Phenotypes with Stimulated Raman Spectroscopy
Role: **PI** (Co-PIs: Heidi Smith, Matthew Fields)
Sponsor: U.S. Army Research Office
Award number: W911NF1910288
Awarded: $1,000,000 (no direct funding to Hatzenpichler)
Start/End Date: 10/01/2022-09/30/2024

5. Title: NRT-URoL: Decoding the Mechanisms Underpinning Biofilm Function and Architecture in Extreme Environment
Role: **Senior Personnel** (PIs: Brent Peyton, Dana Skuropa, Matthew Fields)
Sponsor: NSF Research Traineeship (NRT) Program
Award number: 2125748
Awarded: $2,984,140 (no direct funding to Hatzenpichler)
Start/End Date: 09/01/2021-08/31/2026

4. Title: REU Site: Exploring the Limits of Life. Understanding Biofilms in Extreme Environments
Role: **Senior Personnel** (PI: Brent Peyton; Co-PI Dana Skorupa)
Sponsor: NSF REU Sites
Award number: 2050856
Awarded: $397,090 (no direct funding to Hatzenpichler)
Start/End Date: 04/01/2021-03/31/2024

3. Title: REU Site: Microbiology of Low Oxygen Ecosystems (MLOxE) at Montana State
Role: **Senior Personnel** (PI: Frank Stewart; Co-PI: Eric Boyd)
Award number: 2051065
Sponsor: NSF REU Sites
Awarded: $426,825 (no direct funding to Hatzenpichler)
Start/End Date: 02/15/2021-01/31/2024

#2. Title: Transforming single cell microbiology at Montana State University
Role: **PI** (Co-PI: Matthew Fields)
Sponsor: MJ Murdock Charitable Trust
Award number: SR-2017331
Award: $173,503 (no direct funding to Hatzenpichler)
Start/End Date: 07/01/2018-12/31/2020

#1. Title: MRI: Acquisition of a Confocal Raman microscope with cell-sorting capability at Montana State University
Role: **PI** (Co-PIs: Matthew Fields, Robin Gerlach, Seth Walk)
Sponsor: NSF Major Research Instrumentation

Award number: DBI-1726561
Award: $354,758 (no direct funding to Hatzenpichler)
Start/End Date: 08/01/2017-07/31/2021

Awarded instrumentation support (in kind $ value listed; no direct funding to Hatzenpichler; # indicates that the project has concluded) **Total: $897k**

8. Title: (Eco)Physiology of methanogens of the phylum Thermoproteota
Role: **Sole PI**
Sponsor: DOE Joint Genome Institute and Environmental Molecular Sciences Laboratory Facilities Integrating Collaborations for User Science (FICUS) program
Requested: instrument time only; no direct funding to Hatzenpichler
Start/End Date: 10/01/2023-09/30/2025

7. Title: Exploring the microbial methane cycle in terrestrial geothermal environments
Role: **Co-PI** (PI: Viola Krukenberg; Co-PIs: Anthony Kohtz, Zackary Jay)
Sponsor: DOE Joint Genome Institute Community Science Program (CSP)
Award number: 508087; Award DOI: 10.46936/10.25585/60008108
Award: $333,000 (instrument time only; no direct funding support to Hatzenpichler)
Start/End Date: 09/01/2021-08/30/2023

6. Title: Taxonomic, genomic, metabolic, and functional heterogeneity in Yellowstone geothermal features
Role: **PI** (Co-PIs: James Hemp, Peter Dunfield; Zackary Jay)
Sponsor: DOE Joint Genome Institute Community Science Program (CSP)
Award number: 507064; Award DOI: 10.46936/10.25585/60000487
Award: $326,333 (instrument time only; no direct funding support to Hatzenpichler)
Start/End Date: 10/01/2020-09/30/2022

5. Title: Ecophysiology, inter-domain interactions, and biogeochemical impact of an aerobic methane-producing freshwater bacterium
Role: **PI** (Co-PI: Timothy McDermott)
Sponsor: DOE Joint Genome Institute and Environmental Molecular Sciences Laboratory Facilities Integrating Collaborations for User Science (FICUS) program
Award number: 506720; Award DOI: 10.46936/fics.proj.2020.51544/60000211
Award: $175,003 (instrument time only; no direct funding support to Hatzenpichler)
Start/End Date: 10/01/2020-03/31/2023

4. Title: Optimization of methylamine conversion to methane via synthetic biology
Role: **Co-PI** (PI: Timothy McDermott)
Sponsor: DOE Joint Genome Institute DNA Synthesis Community Science Program
Award number: 504607; Award DOI: 10.46936/10.25585/60001212
Award: $156,000 (instrument time only; no direct funding support to Hatzenpichler)
Start/End Date: 08/01/2019-07/31/2022

#3. Title: Tracking substrate uptake and mRNA expression of aerobic methane-producing bacteria in pelagic waters of Yellowstone Lake
Role: **Co-PI** (PI: Timothy McDermott)
Sponsor: DOE Environmental Molecular Sciences Laboratory
Award number: 505222
Award: $49,764 (instrument time only; no direct funding to Hatzenpichler)
Start/End Date: 10/21/2018-09/30/2019

2. Title: From phenotype to genotype and back again: large scale functional characterization of microbial dark matter by combining activity-based cell sorting, isotope labeling, and genomic sequencing
Role: **Sole PI**
Sponsor: DOE Joint Genome Institute and Environmental Molecular Sciences Laboratory Facilities Integrating Collaborations for User Science (FICUS) program
Award number: 503546; Award DOI: 10.46936/fics.proj.2017.49972/6000002
Award: $180,474 (instrument time only; no direct funding to Hatzenpichler)
Start/End Date: 10/01/2017-12/31/2022

#1. Title: Genomic characterization of cosmopolitan sediment-dwelling archaea hypothesized to be involved in anaerobic carbon cycling
Role: **Sole PI**
Sponsor: DOE Joint Genome Institute Small Scale Community Science Program
Award number: 503183; Award DOI: 10.46936/10.25585/60001107
Award: ~$9,000 (instrument time only; no direct funding to Hatzenpichler)
Start/End Date: 01/01/2017-11/16/2021

Pending funding support

1. Strengthening cross-departmental infrastructure for greenhouse gas research at Montana State University
Role: **Co-PI** (PI: Frank Stewart; other Co-PIs: Timothy McDermott, Timothy Covino, Jack Brookshire)
Sponsor: MSU College of Agriculture Equipment Grant Program
Requested: $38,068
Start/End Date: 01/01/2024-06/30/2024

Service

Service to the Chemistry and Biochemistry Department

- Aug 2017-present, wrote and evaluated 13 microbiology proficiency exams for new graduate students
- Jun 2017-2023, Member and Departmental representative of the Molecular Biosciences Program Faculty Committee. Reviewed graduate student applications, interviewed final candidates, helped organize recruiting weekends.
- Jun 2017-2019, organized and led trip to Yellowstone National Park as part of the departmental graduate student recruiting weekend. This event did not take place since 2020 because of the Covid-19 pandemic.
- Nov 2016-May 2017, Member of Graduate Recruiting and Admissions Committee. Reviewed graduate student applications, helped organize recruiting weekends

Service to the College or University

- Jan 2022-present, Member of Research Subcommittee of NRT *Decoding the Mechanisms Underpinning Biofilm Function and Architecture in Extreme Environment* housed in the TBI and CBE
- Jan 2022-present, Member of Curriculum Subcommittee of NRT *Decoding the Mechanisms Underpinning Biofilm Function and Architecture in Extreme Environment* housed in the TBI and CBE
- **Jan 2020-present, Member of Early Career Faculty Advisory Panel of the CBE**
- Aug 2020-present, Faculty advisor to MSU's Astrobiology Journal Club
- **Jan 2019-present. PI of Chemical Imaging Laboratory, a core facility of MSU located in the CBE**
- Jun 2017-2023, Member of Molecular BioSciences Program Faculty Committee. Reviewed graduate student applications, interviewed final candidates, helped organize recruiting weekends.
- Jan 28, 2020, Guest presenter in Center for Faculty Excellence. *Grant-Writing Bootcamp: Understanding the Review Process*
- Jan 2019-May 2020, Committee chair overseeing distribution of seed funds provided by the M.J. Murdock Charitable Trust for use of new Raman microscope; reviewed all proposals and administered finances of the seed fund program

Professional Service

- 2027, Elected co-chair for the Gordon Research Conference on Applied and Environmental Microbiology, South Hadley, MA.
- 2025, Elected co-vice-chair for the Gordon Research Conference on Applied and Environmental Microbiology, South Hadley, MA.
- **2021-present, Member, User Executive Committee of the Joint Genome Institute (JGI)**. The JGI is a US Department of Energy Office of Science user facility of Lawrence Berkely National Laboratory.
- **2020-present, Editorial Board Member of the journals Environmental Microbiology and Environmental Microbiology Reports.** Impact factors: 5.48 and 3.54, respectively
- 2020, Co-author of Decadal White Paper on Life Detection on NASA missions. Co-authored as Steering committee member of the Network for Life Detection
- **2019-present, Steering committee member, Network for Life Detection (Nfold).** Nfold is a NASA research coordination network which goal is to inform strategies and enhance capabilities for detecting life beyond Earth.
- **2018-present, Editorial Board Member of The ISME Journal.** Impact factor: 11.2
- 2015-2022, Associate Editor of Frontiers in Microbiology, Microbial Physiology and Metabolism. Impact factor: 6.06
- **2014-2017, member of Junior Advisory Group of the American Society for Microbiology.** Until this day, I remain the only non-US citizen to have served in that capacity
- 2017, convener of plenary session at the ASM General Meeting
    - **reviewed 101 manuscripts**; this list is ranked by the approximate number of manuscripts per journal ranked in decreasing order since starting my TT. Note: since fall 2021, I refuse unpaid

review services from journals that are run by for-profit organizations without ties to a society (e..g, most Nature Springer journals)
  - The ISME Journal [editorial board member]
  - Environmental Microbiology [editorial board member]
  - ISME Communications; Frontiers in Microbiology; Nature Microbiology; mSphere; mBio; Micro Spectrum; Nature Communications; PNAS; Nature Reviews; Applied and Environmental Microbiology; Scientific Reports; FEMS Microbiology Reviews; Environmental Microbiology Reports; FEMS Microbiology Ecology; PLoS One; Microbiology; mSystems; eLife; Nature Biofilms and Microbiomes; Water Research; Environmental Science and Technology

- **reviewer of 134 grant proposals and fellowship applications track**; this list is ranked by the approximate number of proposals per program reviewed since starting my faculty position.
  *year as panellist; #year as panel chair/group chief (YEARS REDACTED FOR ONLINE VERSION)
  - NASA Exobiology [redacted]
  - DOE Environmental Molecular Sciences Laboratory user program [redacted]
  - DOE Joint Genome Institute Community Science Program [redacted]
  - NSF Major Research Instrumentation program BIO [redacted]
  - NSF Infrastructure Innovation for Biological Research [redacted]
  - DOE BER Biological Systems Science [redacted]
  - NSF Symbiosis, Defense, & Self-Recognition [redacted]
  - NSF Biological Oceanography [redacted]
  - Future Investigators in NASA Earth and Space Science and Technology [redacted]
  - Natural Sciences and Engineering Research Council of Canada [redacted]
  - NASA Astrobiology Institute [redacted]
  - NASA Earth and Space Sciences Graduate Fellowship program [redacted]
  - Montana NASA EPSCoR [redacted]
  - French National Research Agency [redacted]
  - Austrian Science Fund [redacted]
  - US Army Research Office [redacted]
  - MJ Murdock Charitable Trust [redacted]
  - NASA Interdisciplinary Consortia for Astrobiology Research [redacted]
  - NSF Poorly Sampled and Unknown Taxa [redacted]