

Roland Hatzenpichler, PhD

Montana State University • 111 Chemistry & Biochemistry Bldg • PO Box 173400 • Bozeman MT-59717
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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**
- **2024 - present, Associate Director, Thermal Biology Institute, MSU**
- 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 - 2023, Assistant Professor, Department of Chemistry and Biochemistry, 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
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Total publications: 45

>4,700 citations, h-index 22, i10 index 28

Hatzenpichler corresponding Hatzenpichler lab member #equal contribution

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36. #Krukenberg V, #Kohtz AJ, Jay ZJ, **Hatzenpichler R**. *Methyl-reducing methanogenesis by a thermophilic culture of Korarchaeia*. Nature, <https://doi.org/10.1038/s41586-024-07829-8> (2024) [PDF](#)
 35. 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*. PNAS, 121 (26) e2316422121 (2024) [PDF](#)
 34. Kohtz AJ, #Petrosian N, #Krukenberg V, #Jay ZJ, Pilhofer M, **Hatzenpichler R**. *Cultivation and visualization of a methanogen of the phylum Thermoproteota*. Nature, <https://doi.org/10.1038/s41586-024-07829-8> (2024) [PDF](#)
 33. Schaible GA, Jay JJ, Cliff J, Schulz F, Gauvin C, Goudeau D, Ruff E, Malmstrom RR, Edgcomb V, **Hatzenpichler R**. *Multicellular magnetotactic bacteria are genetically heterogeneous consortia with metabolically differentiated cells*. PLOS Biology, 11;22(7):e3002638 (2024) [PDF](#)
 32. Lee KS, Landry Z, Athar A, Alcolombri U, Ayutthaya PPN, Berry D, Bettignies P, Bisova K, Cheng J-X, Csucs G, Cui G, Garcia-Timmermans C, Goda K, **Hatzenpichler R**, Henshaw R, Huang WE, Ivleva N, Kneipp J, Kubryk P, Lee TK, Locke A, Lee SS, Ma B, Martinez-Perez C, Min W, Müller O, Nielsen PH, Notingher I, Ozeki Y, Palatinszky M, Pereira FC, Pezzotti G, Popp J, Riva A, Sapers HM, Schlücker S, Taylor GT, Wagner M, Yin H, Zenobi R, Sarkans U, and Stocker R. *MicrobioRaman: an open-access web repository for microbiological Raman spectroscopy data*. Nat Microbiol 9, 1152–1156 (2024)
 31. Lynes MM, Jay ZJ, Kohtz AJ, **Hatzenpichler R**. *Methylotrophic methanogenesis in the Archaeoglobi revealed by cultivation of Ca. Methanoglobus hypatiae from a Yellowstone hot spring*. The ISME J, 18(1) wrae026 (2024) [PDF](#)
 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-Pérez 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, #Skenneron 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, Alowafeer 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, Pflieger 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, Zumbärgel 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 photomagnetotactic 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, **Hatzenpichler 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, Udvary 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](#)

Manuscripts in review or in revision

Hatzenpichler corresponding Hatzenpichler lab member #equal contribution

- [Schaible GA](#), Cliff JB, Crandall JA, Bougoure JJ, Atwood J, **Hatzenpichler, R**. *Comparing Raman and NanoSIMS for heavy water labeling of single cells*. *Microbiology Spectrum*, submitted [PDF of preprint](#)
- #Hug L, #**Hatzenpichler R**, #Moraru C, #Soares A, #Meyer F, Heyder A, #Probst AJ. *A roadmap for fair reuse of public microbiome data*. *Nat Microbiol*, in revision; <https://doi.org/10.1101/2024.06.21.599698> [PDF of preprint](#)

Invited conference talks (◇, 20) and departmental seminars (●, 21); contributed talks are not shown

2025

- Date TBD, 2025 Donald C. Cox Lecture in Microbiology, University of Oklahoma, Norman, OK

2024

- Apr 25, FASI discovery meeting, The Broad Institute, Harvard-MIT, MA.
- May 16, Department of Microbial Ecology, University of Vienna, Vienna, Austria
- Aug 9, Marine Biological Laboratory Microbial Diversity Course, Woods Hole, MA
- Jan 31, Department of Microbiology, North Dakota State University, Fargo, ND

2023

- Feb 9, Synthetic Biology Young Speaker Series. Washington University in St. Louis, MO
- Mar 21, Cumming Foundation Mountain West Microbiome meeting, Snowbird, UT
- ◇ May 2, German Research Center for Geosciences GFZ, Potsdam, Germany
- ◇ Jun 10, Xcelerate Meeting, Metrodora Foundation, Salt Lake City, UT
- ◇ 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 family emergency
- ◇ Oct 11, Archaea Power Hour (virtual). <https://youtu.be/3MgdtaqVcrw?si=0ayHRylnHIMjrRLF&t=100>

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
- Mar 29, Faculty of Chemistry, Biofilm Centre, University of Duisburg-Essen, Germany
- Apr 21, San Francisco State University, San Francisco, CA
- ◇ Jun 2, Penn State Microbiome Symposium, Penn State Microbiome Center, State College, PA, USA

- ◇ Jul 12, Montana Biofilm Meeting, Bozeman, MT
- ◇ Aug 30, DOE Joint Genome Institute (JGI)'s 25th Anniversary Genomics of Energy & Environment meeting
- ◇ Oct 24, Department of Chemistry and Biochemistry, Montana State University, Bozeman, MT
- ◇ Nov 9, University of Texas at San Antonio
- ◇ Nov 17, Microbial Sciences Initiative, Harvard University, Cambridge, MA
- ◇ Dec 15, American Geophysical Union Fall meeting
- 2021** (all presentations held online because of Corona pandemic)
 - ◇ May 7, Center for Dark Energy Biosphere Investigations Virtual Meeting
 - ◇ Aug 4, Symbiosis Model Systems Virtual Gathering, Gordon and Betty Moore Foundation
 - ◇ Aug 23, Joint Academic Microbiology Seminars. Singapore
 - ◇ Oct 27, University of Innsbruck, Austria
 - ◇ Nov 29, Helmholtz Centre for Ocean Research Kiel, Germany
- 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 <https://www.youtube.com/watch?v=eNUn-1uChQw>
 - ◇ Jun 11, Workshop on Next-generation physiology approaches in microbial ecology for graduate students and postdocs. Annual meeting of NSF EPSCOR BuG ReMeDEE, University of Oklahoma, Norman, OK
 - ◇ Sep 4, Joint International Symposium on Microbial and Biomolecular Interactions, Friedrich Schiller University Jena
 - Oct 5, Dep. of Land Resources and Environmental Sciences, Montana State University, Bozeman, MT
 - ◇ Nov 18, Archaea Cafe, Medical University of Graz, Austria
- 2019**
 - ◇ Mar 19, John Lawrence Seminar, Environmental Genomics and Systems Biology Division, Lawrence Berkeley National Laboratory, Berkeley, CA
 - ◇ Jul 9, Workshop on next-generation sequencing technologies for graduate students and postdocs, Annual meeting of NSF EPSCOR BuG ReMeDEE. South Dakota School of Mines, Rapid City, SD
 - ◇ Jul 14-18, Session chair, Gordon Research Conference Applied and Environmental Microbiology. South Hadley, MA
- 2018**
 - Apr 5, Chemical Biology Initiative, Biotechnology Institute, University of Minnesota. St. Paul, MN
 - ◇ 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
 - ◇ Apr 27, Engineering the Microbiome workshop, University of Wisconsin. Madison, WI
 - Aug 21, Department of Microbiology, University of Hamburg, Hamburg, Germany
- 2017**
 - Jun 22, Department of Geoscience, University of Calgary. Calgary, Canada
 - ◇ Jul 24, Gordon Research Conference Archaea: Ecology, Metabolism, and Molecular Biology. Waterville, NH
 - Nov 14, NSF Center for Dark Energy Biosphere Investigations Annual Meeting. Marina, CA
 - Dec 1, The University of Texas at Austin, Marine Science Institute. Austin, TX
 - 23 invited seminars and 5 invited conference talks prior to starting tenure track faculty position

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: \$6,337,023

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: \$18,541,023

Proposals with direct funding to Hatzenpichler lab. Total: \$11.8M. Total to Hatzenpichler: \$6.3M

(*** indicates that the award has ended)

14. Title: Ecophysiology of non-Euryarchaeotal methanogens and their impact on carbon cycling

Sponsor: DOE EPSCoR, DOE BER

Award number: pending

Award: \$999,998

Start/End date: 09/1/2024-08/31/2028

13. Title: The need for speed: Stimulated Raman Spectroscopy for human gut microbiome research

Role: **Sole PI**

Sponsor: National Institutes of Health

Award number: 3R35GM147166-01S1

Award: \$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: 01/01/2021-12/31/2024

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: 08/01/2020-07/31/2024

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 PI**
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 PI**
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 award 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: 08/01/2019-06/30/2024

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

Advising and mentoring

Graduate students (● current; ○ graduated)

- Nicholas Reichart, Molecular Biosciences Program Fellow, Biochemistry, January 2017-July 2021. PhD awarded in July 2021, now postdoctoral scholar at Pacific Northwest National Laboratory
- Mackenzie Lynes, Biochemistry, August 2017-present
- Anthony Kohtz, Biochemistry, August 2018-present
- George Schaible, Molecular Biosciences Program Fellow; Biochemistry, August 2018-present
- William Christian, Molecular Biosciences Program Fellow; Biochemistry, August 2019-present
- Sylvia Nupp, Biochemistry, August 2021-present
- Stavros Trimmer, Biochemistry, August 2022-present
- Jacob Schimetz, Microbiology, August 2023-present
- Anthony McLean, Molecular Biosciences Program Fellow; March 2024-present

Postdoctoral scholars (● current; ○ previous)

- Andrew Montgomery, PhD in Oceanography, University of Georgia, July 2021-present, awarded NSF Postdoctoral Fellowship in Biology to join Hatzenpichler lab
- Ashley Cohen, PhD in Marine and Atmospheric Science, Stony Brook University, Jul 2021-2022. Now associate editor, Nature Communications
- Rachel Spietz, PhD in Oceanography, University of Washington (Seattle), Jan 2018-Dec 2019; now senior microbiologist at Enviromin Inc., Bozeman, MT and assistant research professor at Montana State University, Bozeman
- Viola Krukenberg, PhD in Marine Microbiology, Max Planck Institute for Marine Microbiology, May 2017-Dec 2021; then postdoc, University of Jena, Germany

Sponsored fellowships and awards to graduate students and postdocs, totaling \$391,069

- Nicholas Reichart, Montana Academy of Science, June 2018-May 2019, *Identifying novel cellulose degrading microbes in Yellowstone National Park hot springs through high-throughput activity screening*. Award: \$1,500
- George Schaible and Anthony Kohtz, Montana Academy of Science, June 2019-May 2020, *Bioorthogonal Click Chemistry Attachment of Gold Nanoparticles to Active Microorganisms for Cell Sorting Using Surface Enhanced Raman Spectroscopy to Evaluate Multiple Measures of Activity*. Award: \$1,470
- George Schaible and Anthony Kohtz, Seed funding to explore the use of MSU's Raman microscope, July 2019-June 2020, *Improved Surface Enhanced Raman Spectroscopy of Active Microorganisms Through Bioorthogonal Click Chemistry Attachment of Gold Nanoparticles*. Award: \$444
- Anthony Kohtz and Viola Krukenberg, Seed funding to explore the use of MSU's Raman microscope, July 2019-June 2020, *Connecting microbial function to taxonomy in deep-sea sediments from Guaymas Basin via Raman-activated cell sorting*. Award: \$1,418
- **Nicholas Reichart, U.S. Department of Energy, Graduate Student Research Program Award (SCGSR)** for research conducted at the Lawrence Berkeley National Laboratory (LBNL) in January-December 2020. *Revealing the cellulolytic potential of uncultured hot spring microbes via a multi-omics approach*. One-year pre-Doctoral award. **Award: \$34,000**
- **George Schaible, Future Investigators in NASA Earth and Space Science and Technology (FINESST)**, for research on the cell biology of multicellular magnetotactic bacteria. Three-year Pre-Doctoral Fellowship. August 2020-August 2023. **Award: \$133,237**
- **Andrew Montgomery, National Science Foundation, Three-year Postdoctoral Fellowship in Biology**, for research to be conducted in the Hatzenpichler lab. August 2021-July 2024. **Award: \$207,000**

- Mackenzie Lynes, Graduate Research Association, Montana State University, Travel grant to attend the ASM Microbe meeting in 2022. Award: \$1,000
- Anthony Kohtz, Montana Space Grant Fellowship, Graduate Student Fellowship. Award: \$11,000 (plus tuition and fees for one semester)

Sponsored undergraduate fellowships (INBRE or USP)

- Fall 2017, Michael Dorle, USP, *Studying uncultured, protein synthesizing microbes in Yellowstone hot springs and salt marshes at single cell resolution* (awarded but not used)
- Summer 2023, Chase Gray, INBRE, *First-time visualization of human gut methanogens*, \$3,000

Remote lectures given during Covid-19 pandemic in undergrad or grad classes at other universities

- Apr 23 2021, Lead discussion on next-generation analytical techniques in microbial ecology. The Pennsylvania State University (instructor: Estelle Couradeau). 8 graduate students.
- Jul 8 2020, Talk in the Microbial 'Omics Seminar Series: A brief introduction to microbial life. Title: *DNA-sequencing: A blessing and a curse*. Teaching and outreach event with >1,000 live participants. Since then, the talk was watched ~9,800 times. <https://www.youtube.com/watch?v=R9KLkCZ95cU>
- Apr 17 2020, Lead discussion of microbial ecology class. Colorado State University (instructor: Ed Hall). 24 graduate and undergraduate students. *Next-generation physiology approaches in microbial ecology*
- May 29 2020, Workshop on how to apply Next-generation physiology tools in graduate research. ~30 graduate students, undergraduate students, and postdocs at Montana State University, Oklahoma State University and South Dakota School of Mines. *Next-generation physiology approaches to identify new methanotrophs*

Service

Service to the Chemistry and Biochemistry Department

- 2017-present, wrote and evaluated 13 microbiology proficiency exams for new graduate students
- 2017-2023, Member and Departmental representative of the Molecular Biosciences Program Faculty Committee. Reviewed graduate student applications, interviewed final candidates, helped organize recruiting weekends.
- 2017-2019, 2024, 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.
- 2016-May 2017, Member of Graduate Recruiting and Admissions Committee. Reviewed graduate student applications, helped organize recruiting weekends

Service to the College or University

- 2024-present, Associate Director, Thermal Biology Institute
- 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
- 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
- **2020-present, Member of Early Career Faculty Advisory Panel of the CBE**
- 2020-present, Faculty advisor to MSU's Astrobiology Journal Club
- **2019-present, PI of Chemical Imaging Laboratory, a core facility of MSU located in the CBE**
- 2017-2023, Member of Molecular BioSciences Program Faculty Committee. Reviewed graduate student applications, interviewed final candidates, helped organize recruiting weekends.
- 28, 2020, Guest presenter in Center for Faculty Excellence. *Grant-Writing Bootcamp: Understanding the Review Process*
- 2019- 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.
- **2021-2024, 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.
- **2018-2024, 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 104 manuscripts**; this list is ranked by the approximate number of manuscripts per journal ranked in decreasing order since starting my TT.
- The ISME Journal [editorial board member]; Environmental Microbiology [editorial board member]; ISME Communications; Frontiers in Microbiology [Associate editor 2015-2022]; Nature Microbiology; mSphere; mBio; Micro Spectrum; Nature Communications; PNAS; Nature; 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 143 grant proposals**; 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]
 - NSF Major Research Instrumentation program BIO [REDACTED]
 - DOE Environmental Molecular Sciences Laboratory user program [REDACTED]
 - DOE Joint Genome Institute Community Science Program [REDACTED]
 - NSF Infrastructure Innovation for Biological Research [REDACTED]
 - DOE BER Biological Systems Science [REDACTED]
 - DOE BER Early Career Research Program [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]

Other noticeable achievements and selected outreach

- Spring 2024, outreach with three Bozeman schools on deep-sea research; presentations on work in the deep-sea were given; 2 schools had a live video chat with two Hatzenpichler lab members on board the RV Atlantis; students painted Styrofoam cups that were taken to the deep-sea with submersible Alvin and will be given back to students
- Winter 2021-present, Collaborative work with Mark Belan, a visual scientific communications specialist at Visual Capitalist, on an **infographic on the importance of methane in the global biochemical carbon cycle and the role of methanogenic archaea**. [Visit Mark Belan's website at Visual Capitalists](#)
- Sep 16 2020, Talk in the 24-hour marathon live webinar organized by the Federation of European Microbiological Societies (FEMS) held on International Microorganism Day. [Watch it on Youtube](#)
- Jan 17, 2019, Research covered by Northern News Network and National Public Radio (NPR); 1-minute radio air-time on deep-sea dive and research funded by the NSF
- Nov 16-28, 2018, Member of research cruise AT42-05 of RV Atlantis that completed dive nr. 5,000 of HOV Alvin; Guaymas basin, Gulf of California
- **Nov 24, 2018, First Montanan to dive to the deep sea.** Reached -2,011 m (-6,597 ft) in submersible *Alvin* in Guaymas basin, Gulf of California. The submersible carried an MSU banner with it to the deep-sea, which was later framed and handed to the office of MSU President Cruzado
- Aug 8, 2018, Research covered by Northern News Network and National Public Radio (NPR); 30 seconds radio air-time on deep-sea microbiology research
- Aug 23, 2017, Research covered by Northern News Network and National Public Radio (NPR); 30 seconds radio airtime on receiving NASA Early Career Fellowship