

**WILLIAM DAVIE LEAVITT, PHD.**

Assistant Professor of Earth Sciences  
Department of Earth Sciences, Dartmouth College  
Hinman Box 6105, Hanover, NH, USA 03755  
+1.603.646.2978, William.D.Leavitt@Dartmouth.edu  
<http://www.geobio.rocks/>

Education

---

- 2009-2014 Harvard University (Cambridge, MA, USA)  
Ph.D., Dept. Earth & Planetary Science, Advisor: David T. Johnston.
- 2007-2009 Harvard University (Cambridge, MA, USA)  
M.A., Dept. Organismic & Evolutionary Biology, Advisor: Peter R. Girguis
- 2002-2006 Hampshire College (Amherst, MA, USA)  
B.A. Microbial Ecology & Molecular Biology, Advisor: Jason M. Tor
- 2008 Microbial Diversity, Marine Biological Laboratory (Woods Hole, MA, USA)

Professional Experience

---

- 2016-present Assistant Professor, Department of Earth Sciences, Dartmouth College, Hanover, NH
- 2018-present Adjunct Assistant Professor, Department of Chemistry, Dartmouth College, Hanover, NH
- 2017-2019 Adjunct Assistant Professor, Department of Biological Sciences, Dartmouth College, Hanover, NH
- 2014-2016 Steven Fossett Postdoctoral Fellow, Washington University in St. Louis, St. Louis, MO,
- 2011-2015 Visiting Scientist, Bacterial Energy Metabolism Group, Instituto de Tecnologia Química e Biológica,
- 2014 Postdoctoral Researcher, Department of Earth & Planetary Sciences, Harvard University
- 2006-2007 Research Assistant, Department of Earth & Planetary Sciences. Harvard University
- 2006 Research Assistant, Montana State University, Department of Microbiology

Research Interest

---

I combine classical and novel experimental techniques from microbiology with high-precision tools from stable isotope geochemistry to address major knowledge gaps in the microbial cycling of life-critical elements: hydrogen, carbon, nitrogen, oxygen, phosphorous, and sulfur). I develop and employ long-term continuous cultivation approaches to quantify the environmental constraints on molecular records of past climate, as well as large-scale cultivation of microbes to determine the isotopic signatures they imprint on greenhouse gases. The overarching goal of all my work is to improve our understanding of how microbes influence Earths' elemental cycles by mediating fluxes of matter and energy, how these cycles operated in the past, and how they may respond in the future.

## Awards

---

2019-2022 Simons Early Career Investigator in Marine Microbial Ecology and Evolution  
 2017-2019 American Chemical Society Petroleum Research Fund New Investigator  
 2014-2016 Steven Fossett Postdoctoral Fellowship, Washington University in St. Louis  
 2008-2011 NSF-BIO & EAR Graduate Research Fellowship

## Grants

---

### Active:

- National Aeronautics and Space Administration Exobiology (**Leavitt, Co-P.I.**; P.I. M. Palucis). \$~650k. *Toward predictive mapping of biosignatures across extreme aridity and salinity gradients in the Atacama Desert: A modern-day Mars analog*. October 2023 to Sept 2026.
- National Aeronautics and Space Administration Exobiology (**Leavitt, Co-P.I.**; Co-P.I. E. Young UCLA; Col T. McCollom, CU Boulder). *Developing methane isotopologues as interplanetary biosignatures*. Leavitt: \$282,990 (Dartmouth) of \$927,880 (total). Start: January 2021 – ongoing.
- Simons Foundation (**Leavitt, sole PI**). *Molecular fingerprinting of microbial surface ocean methane*. \$644,000. Start: April 2019, NCE thru 2024.
- National Science Foundation EAR Low Temperature Geochemistry and Geobiology (**Leavitt Co-PI**; Co-PI Kopf, CU Boulder). *Collaborative Proposal: Establishing the hydrogen isotopic window into Archaeal lipid biomarkers*; Leavitt: \$274,935 (+\$9,691 supplement) of \$564,806. September 2019 - August 2023. Grant#1928309. In NCE.

### Completed:

- National Science Foundation Major Research Initiation Grant (**Leavitt Co-I**; PI C. Hicks-Pries, Co.I J. Strauss, Dartmouth). *Acquisition of an Isotope Ratio Mass Spectrometer (IRMS) to enable interdisciplinary research at Dartmouth and beyond*. \$483,126. June 2018 - May 2021.
- American Chemical Society Petroleum Research Fund Doctoral New Investigator. (**Leavitt, sole P.I.**). *The inner lives of Archaea: the hydrogen isotopic composition of Archaeal lipids may represent a proxy of past metabolic state*. \$110,000. July 2017 - June 2019, (no cost extension thru August 2021).
- Department of Energy Joint Genome Institute Community Sequencing Project (**Leavitt P.I.**). *Identification of genes involved in Archaeal lipid cyclization*. RNAseq award. January 2019 – December 2020.
- Sloan Foundation, Deep Carbon Observatory. *The Deep Carbon Cycle through geological time: An interdisciplinary synthesis of the carbon cycle in the Earth's lithosphere-biosphere system*. (Lead: S. Zahirovic & D. Muller; **Co.I Leavitt & 22-** others), \$100,000. January 2018 to September 2019.
- Dartmouth College Office of Provost RPF SEED funding. (**Leavitt, Sole P.I.**). *From microbial enzymes to global climate: toward isotopically fingerprinting methane produced in Earths' surface waters*. (\$49,000). Active period: June 2017 to May 2018 (no cost extension from thru May 2019).

### Prior to 2016:

- 2014 to 2017: NASA-Exobiology (**Leavitt, Science I.**; Lead P.I.: A. Bradley, Washington Univ. St. Louis). *Coevolution of sulfate reducer biosignatures and the redox state of the early Earth*. \$388,253. Duration: 01 July 2014 to 30 June 2017.
- 2015 European Molecular Biology Organization International Sulfur Metabolism meeting travel award, Helsingør, Denmark.

- 2013 Geochemical Society student travel grant, 23<sup>rd</sup> Goldschmidt. Florence Italy  
 2012 Microbial Sciences Initiative, Harvard University, Travel grant, to ITQB, Portugal.  
 2012 NASA Travel Grant, to ITQB, Portugal.  
 2011 NSF-EAR Graduate Research Travel Grant  
 2008 to 2011 NSF Graduate Research Fellowship  
 2005 NSF-REU Yellowstone Microbial Observatory, Montana State University.  
 2004 NSF-REU Dept. of Biology, University of South Carolina.

### Peer Reviewed Publications

---

- Leavitt lab** #graduate student, †postdoc, \*undergrad author, \*Equal contribution;  
 §**Leavitt** senior and communicating; @**Leavitt** first & communicating. Other &student, %postdoc.
- [30] Chiu, B., J. Waldbauer, O. \*Mete, F. Elling, A. Zhang, L., A. Pearson, E. Eggleston, **WD §Leavitt**. *accepted*. Membrane lipid and expression responses of *Saccharolobus islandicus* REY15A to acid and cold stress. *Frontiers in Microbiology*, 2023.07.24. DOI: 10.3389/fmicb.2023.1219779.
- [29] Mete\*, Ö., Subhas, A., Kim, H., Dunlea, A., Whitmore, L., Shiller, A., Gilbert, M., **Leavitt, W.D.**, Horner, T. *accepted 2023.07.07*. Barium in seawater: Dissolved distribution, relationship to silicon, and barite saturation state determined using machine learning, *Earth Syst. Sci. Data Discuss*. <https://doi.org/10.5194/essd-2023-67>.
- [28] @**Leavitt, WD\***, S. Kopf\*, Weber†, Y., B. Chiu, McFarlin%, J., Zhou#, FJ Elling, A Pearson\*. 2023. Controls on the hydrogen isotope composition of tetraether lipids in an autotrophic ammonia-oxidizing marine archaeon. *Geochimica et Cosmochimica Acta*. DOI. <https://doi.org/10.1016/j.gca.2023.04.033>
- [27] #Blum, L.; D. Coleman, E. Boyd, E. Eloe-Fadrosh, M. Kellom, O. Zhaxybayeva, **W.D. §Leavitt**. 2023. Distribution and abundance of tetraether lipid cyclization genes in terrestrial hot springs reflect pH. *Environmental Microbiology*, 1– 15. DOI: <https://doi.org/10.1111/1462-2920.16375>
- [26] Ferreira, D., Venceslau, S.S., Bernardino, R., Preto, A., Zhang, L., Waldbauer, J.R., **Leavitt, W.D.** and Pereira, I.A., 2023. DsrC is involved in fermentative growth and interacts directly with the FlxABCD-HdrABC complex in *Desulfovibrio vulgaris* Hildenborough. *Environmental Microbiology*. <http://doi.org/10.1111/1462>.
- [25] Harris##, C.M, MT Maclay&\*, KA Lutz&, V Nathan&, NA Ortega Dominguez&, **WD §Leavitt**, and MC §Palucis. 2022. Remote and in-Situ Characterization of Mars Analogs: Coupling Scales to Improve the Search for Microbial Signatures on Mars. *Frontiers in Astronomy and Space Sciences*, 9, p.849078.
- [24] Lengger, S.K., Weber, Y., Taylor, K.W., Kopf, S.H., Berstan, R., Bull, I.D., Mayser, J.P., **Leavitt, W.D.**, Blewett, J., Pearson, A. and Pancost, R.D., 2021. Determination of the  $\delta^2\text{H}$  values of high molecular weight lipids by high temperature GC coupled to isotope ratio mass spectrometry. *Rapid Communications in Mass Spectrometry*. doi.org/10.1002/rcm.8983.
- [23] Cobban\*, A., Zhou#, Y †Weber, FJ %Elling, A Pearson, **WD §Leavitt**. 2020. Cyclization of *Sulfolobus acidocaldarius* GDGTs changes in response to temperature and pH. *Environmental Microbiology*. doi.org/10.1111/1462-2920.15194.

- [22] Luxem<sup>&</sup>, K., **WD Leavitt**, X Zhang. 2020. Large hydrogen isotope fractionation distinguish nitrogenase-derived methane from other sources. *Applied & Environmental Microbiology*. doi.org/10.1128/AEM.00849-20.
- [21] Taenzer<sup>#</sup>, L, J Labidi, A Masterson, X Feng, Rumble III, E Young, **WD Leavitt**<sup>s</sup>. 2020. Low apparent  $\Delta^{12}\text{CH}_2\text{D}_2$  in microbialgenic methane result from combinatorial isotope effects. *Geochimica et Cosmochimica Acta*. doi.org/10.1016/j.gca.2020.06.026.
- [20] Bertran<sup>&</sup>, E, A Waldeck<sup>&</sup>, BA Wing, I Halevy, **WD Leavitt**, AS Bradley, DT Johnston. 2020. Oxygen isotope effects during microbial sulfate reduction: Applications to sediment cell abundances. *Nature ISME*. doi.org/10.1038/s41396-020-0618-2.
- [19] Taenzer<sup>#</sup>, L, P Carini, J Gaube<sup>\*</sup>, B Bourque<sup>%</sup>, A Masterson, **WD Leavitt**<sup>s</sup>. 2020. Microbial Methane from Methylphosphonate Isotopically Records Source. *Geophysical Research Letters*. doi.org/10.1029/2019GL085872
- [18] Zhou<sup>#</sup>, A, Y Weber, B. Chiu, FJ Elling, A. Cobban<sup>\*</sup>, A Pearson, **WD Leavitt**<sup>s</sup>. 2020. Energy flux controls tetraether lipid cyclization in *Sulfolobus acidocaldarius*. *Environmental Microbiology*. doi.org/10.1111/1462-2920.14851
- [17] **Leavitt**<sup>@</sup>, **WD**, S Venceslau, J Waldbauer, D Smith, IAC Pereira, and AS Bradley. 2019. Proteomic and isotopic response of *Desulfovibrio vulgaris* to DsrC perturbation. *Frontiers in Microbiology*. doi: 10.3389/fmicb.2019.00658.
- [16] Bertran<sup>&</sup>, E, **W.D. Leavitt**, A.Pellerin, GM Zane, JD Wall, I Halevy, B. Wing, D.T. Johnston. 2018. Deconstructing the dissimilatory sulfate reduction pathway: Isotope fractionation of a mutant unable of growth on sulfate. *Frontiers in Microbiology*. doi.org/10.3389/fmicb.2018.03110
- [15] **Leavitt**<sup>@</sup>, **W.D.**, S. Jean-Loup Murphy, L. R. Lynd, A.S. Bradley. 2017. Hydrogen isotope composition of *Thermoanaerobacterium saccharolyticum* lipids: comparing wild type to a nfn- transhydrogenase mutant. *Organic Geochemistry*. doi.org/10.1016/j.orggeochem.2017.06.020
- [14] **Leavitt**<sup>@</sup>, **WD**, S Venceslau, DT Johnston, IAC Pereira and AS Bradley. 2016. Fractionation of sulfur and hydrogen isotopes in *Desulfovibrio vulgaris* with perturbed DsrC expression. *FEMS Microbiology Letters*. 363:20. doi.org/10.1093/femsle/fnw226
- From here up, work was generated and/or written at Dartmouth.***
- [13] **Leavitt**<sup>@</sup>, **WD**, Flynn, TM, Suess, MK and Bradley, AS. 2016. Transhydrogenase and Growth Substrate Influence Lipid Hydrogen Isotope Ratios in *Desulfovibrio alaskensis* G20. *Frontiers in Microbiology*. 7:918. doi: 10.3389/fmicb.2016.00918
- [12] Fike, DA, AS Bradley and **WD Leavitt**. Ch. 20: Geomicrobiology of Sulfur. Ed: H.L. Erlich, D.K. Newman and A. Kappler. 2016. *Geomicrobiology*. 6<sup>th</sup> edition. CRC Press.
- [11] Bradley, AS<sup>\*</sup>, **W.D. Leavitt**<sup>\*</sup>, M.L. Schmidt, A.H. Knoll, P.R. Girguis and D.T. Johnston. 2016. Patterns of sulfur isotope fractionation during Microbial Sulfate Reduction. *Geobiology* 10.1111/gbi.12149.
- [10] **Leavitt**, **WD**<sup>@\*</sup>, AS Bradley<sup>\*</sup>, AA Santos, IAC Pereira and DT Johnston. 2015. Sulfur isotope fractionation by dissimilatory sulfite reductase. *Frontiers in Microbiology*. doi: 10.3389/fmicb.2015.01392

- [9] Santos\*, A.A., S. Venceslau\* F. Grein, **WD Leavitt**, C. Dahl, D.T. Johnston and I.A.C Pereira. 2015. A protein trisulfide couples dissimilatory sulfate reduction to energy conservation. *Science*. 350: 1541-45.
- [8] **Leavitt**®, **WD**, R.C. Cummins, M.L. Schmidt, M.S. Sim, S. Ono, A.S. Bradley and D.T. Johnston. 2014. Multiple sulfur isotope signatures of sulfite and thiosulfate reduction by the model dissimilatory sulfate-reducer, *Desulfovibrio alaskensis* str. G20. *Frontiers in Microbiology* 5: 1- 16.
- [7] Reardon, C.L., T.S. Magnuson, E.S. Boyd, **W.D. Leavitt**, D.W. Reed and G.G. Geesey. 2014. Hydrogenase Activity of Mineral-Associated and Suspended Populations of *Desulfovibrio desulfuricans* Essex 6. *Microbial Ecology*. 67: 318-326.
- [6] **Leavitt**®, **W.D.**, I. Halevy, A.S. Bradley and D.T. Johnston. 2013. The influence of sulfate reduction rates on the Phanerozoic sulfur isotope record. *Proceedings of the National Academy of Science, USA*. 110: 11244-11249.
- [5] Bradley, A.B., **W.D. Leavitt** and D.T. Johnston. 2011. Revisiting the dissimilatory sulfate reduction pathway. *Geobiology*. 9: 446–457.
- [4] Pearson, A., **W.D. Leavitt**, J.P. Saenz, R.E. Summons, M.C.-M. Tam and H. Close. 2009. Diversity of hopanoids and squalene-hopene cyclases across a tropical land-sea gradient. *Environmental Microbiology*. 11: 1208-1223
- [3] Boyd, E.S., **W.D. Leavitt** and G.G. Geesey. 2009. CO<sub>2</sub> Uptake by a Thermoacidophilic Microbial Community Attached to Precipitated Sulfur in a Geothermal Spring. *Applied and Environmental Microbiology*. 75: 4289-4296.
- [2] Pearson, A., K.S. Kraunz, A.L. Sessions, A.E. Dekas, **W.D. Leavitt** and K.J. Edwards. 2008. Quantifying Microbial Utilization of Petroleum Hydrocarbons in Salt Marsh Sediments by using the <sup>13</sup>C Content of Bacterial rRNA. *Applied and Environmental Microbiology*. 74: 1157-1166.
- [1] Boyd, E.S., R.A. Jackson, G. Encarnacion, J.A. Zahn, T. Beard, **W.D. Leavitt**, Yundan Pi, C.L. Zhang, A. Pearson and G.G. Geesey. 2007. Isolation, Characterization, and Ecology of Sulfur-Respiring Crenarchaea Inhabiting Acid-Sulfate-Chloride-Containing Geothermal Springs in Yellowstone National Park. *Applied & Environmental Microbiology*. 73: 6669-6677.

Manuscripts in revision or review (with latest status):

- [i] **Leavitt**®, **WD**, J Waldbauer, MS Sim, S Venceslau, F Boidi, I.A.C Pereira, and AS Bradley. Energy availability drives net sulfur isotope fractionation and protein abundance in dissimilatory sulfate reducing bacteria. Submitted, *Geobiology*, Aug. 2023.
- [ii] Lyons, T., C. Tino, G. Fournier, R. Anderson, **W.D. Leavitt**, K. Konhauser, and E. Stüeken. In review: Co-evolution of early environments and microbial life. *Invited review, Nature Reviews in Microbiology*. as of June 2023.
- [iii] Liu<sup>&</sup>, J., T. Treude, O.R. Abbasov, E.E. Baloglanov, A.A. Aliyev, C.M. Harris<sup>#</sup>, **W.D. Leavitt**, Edward D. Young. Clumped isotope evidence for microbial alteration of thermogenic methane in terrestrial mud volcanoes. *under revision, Geology*, Aug. 2023.
- [iv] Rhim<sup>‡</sup>, J.R., Zhou<sup>#</sup>, Y. Zhang, M Amenabar, FJ Elling, A Pearson, E.S. Boyd, **WD Leavitt**<sup>§</sup>. Submitted. Mode of carbon and energy metabolism shifts lipid composition in the thermoacidophile *Acidianus*. *Applied & Environmental Microbiology*, as of Aug 2023.

Manuscripts in preparation, draft available upon request (est. submission date):

- a. Li<sup>#</sup>, J., B. Chiu, A. Piasecki, X. Feng, E. Young, and **WD Leavitt**. Clumped isotope fractionation during aerobic methane oxidation. Est. Fall 2023.
- b. Labidi, J., **Leavitt, WD**, McCollom, T., Young E.D. Experimental determination of the bulk and clumped isotope signatures of abiotic methane. Est. Fall 2023.
- c. **Leavitt**<sup>@</sup>, Ash, Li, Cobban, Nathan, Masterson, Feng, Young, et al., Clumped isotopes differentiate microbialgenetic methanogenesis pathways. Est. Fall 2023.
- d. Calhoun<sup>\*</sup>, Colman, Amenabar, Boyd, Pearson, **WD Leavitt**<sup>^</sup>. Cenarchaeol across pH and temperature gradients in Yellowstone National Park. Est. Winter 2024.
- e. Rhim<sup>‡</sup>, Kopf, McFarlin, Harris, Zhou, and **WD Leavitt**<sup>s</sup>. Lipid H isotope signatures during autotrophy or heterotrophy by *Archaeoglobus fulgidus*. Est. Winter 2024.

Active On-going Projects


---

Projects where experiments & data collection are underway, conference abstracts likely available.

- a. Harris<sup>#</sup>, Kopf, Zhou, Chiu, Cobban, McFarlin, <sup>#</sup>Weber, Pearson and Leavitt. Hydrogen isotope systematics GDGTs from *S. acidocaldarius*.
- b. Li<sup>#</sup>, Bornik, Young, Leavitt. Developing a Random Forest Classifier on Isotope Signatures of Methane from Different Sources.
- c. Benson<sup>#</sup>, J., **WD Leavitt**, S. Slotznick. Magnetic minerals in meromictic lakes of NH.
- d. Niu<sup>%</sup>, K. Luxem<sup>#</sup>, B. Chiu, J. Farquhar, X. Zhang, **WD Leavitt**. Clumped isotope composition of methane from nitrogenase.

Other Publications

- 
1. Young, E., **W.D. Leavitt**. 2021. Developing Methane Isotopologues as Interplanetary Biosignatures. *Bulletin of the American Astronomical Society*. 53: 4. (White Paper).
  2. Meadows, V., Graham, H., Abrahamsson, V., Adam, Z., Amador-French, E., Arney, G., Barge, L., Barlow, E., Berea, A., Bose, M., Bower, D., **Leavitt, WD**, et al. (76-authors). 2022. Community Report from the Biosignatures Standards of Evidence Workshop. *arXiv preprint arXiv:2210.14293*.
  3. Gomes M., **Leavitt WD**, Smith D. 2019. Sulfate Reduction. In: Gargaud M. et al. (eds) *Encyclopedia of Astrobiology*. Springer, Berlin, Heidelberg.

Teaching


---

*Dartmouth (\*new course developed)*

- EARS\_07\*: Life on Mars? (Freshman Seminar). W17, W18, W19, W20, W21; W23.  
 EARS\_34\*: Global Biogeochemical Cycles. S18, F18, X20, S23.  
 EARS\_72\*/172: Geobiology. S17, S20, F21.  
 EARS\_272\*: Historical Geobiology (graduate seminar, co-taught), S18, S19, S20, F21.  
 EARS\_88: The Earth System (co-taught). F18.  
 EARS\_202: Graduate Critical Analysis (co-taught or solo<sup>#</sup>). W18, W20, W23<sup>#</sup>.  
 EARS\_203: Graduate Proposal Writing (co-taught). S21, S23.

Synergistic Activities


---

*Conference Session Chair, Co-Chair:*

2023: Goldschmidt Conference, Lyon, France.

*Rare isotopes of common gases: Tools and applications for multiply substituted isotopologues in global (bio)geochemistry*

- 2022: American Chemical Society, San Diego, CA  
Microbially-Driven Geochemical Reactions: Kinetics and Communities.
- 2018: Goldschmidt Conference, Boston, MA.  
Traditional and Non-Traditional Stable Isotopes in Geobiology & Biogeochemistry
- 2017: American Geophysical Union, New Orleans.  
*3<sup>rd</sup> annual (Bio-isotopic) message in a (rock record) bottle.*
- 2017: Goldschmidt Conference, Paris, France.  
*Microbial metabolic and isotopic processes.*
- 2016: American Geophysical Union, San Francisco, CA  
*2<sup>nd</sup> annual (Bio-isotopic) message in a (rock record) bottle.*
- 2015: American Geophysical Union, San Francisco, CA  
*1<sup>st</sup> annual (Bio-isotopic) message in a (rock record) bottle.*

*Grant review (since 2016):*

NASA-Exobiology (panels & ad-hoc); French National Research Agency (ad-hoc); Austrian Science Foundation (ad-hoc); NSF-EAR Low Temperature Geochemistry and Geobiology (panels & ad-hoc); NSF-EAR Postdoc Fellowship (panels & ad-hoc); INACH (Chile, ad-hoc); NSERC (Canada, ad-hoc); NSF-OCE Biological Oceanography (ad-hoc); NSF-OCE Chemical Oceanography (ad-hoc); NSF-OCE Marine Geology & Geophysics (ad-hoc); NASA Planetary Sciences Graduate student fellowship (panel).

*Journal reviewer, editor. (15+ journals, since 2016)*

*Guest Editor: PNAS (2023);*

*Reviewer: Science Advances (AAAS); Nature ISME; Nature Microbiology; Nature Communications; Geology; Geochimica et Cosmochimica Acta; Astrobiology; Geomicrobiology; Limnology & Oceanography Methods; Applied & Environmental Microbiology; Environmental Microbiology; Earth & Planetary Science Letters; Geobiology; Geomicrobiology Journal; Chemical Geology; Frontiers in Microbiology.*

Postdoctoral Scholars & Staff Scientists:

- 2020-2023: Dr. Jeemin Rhim, PhD, Society of Fellows, Earth Science, Dartmouth  
2020-2021: Dr. Alison Piasecki, PhD, Earth Science, Dartmouth  
2017-2020: Dr. Yuki Weber, PhD, at Harvard (co-supervised).

Graduate Students, Primary Advisor

*Ongoing:*

- Carolynn Harris, PhD student, Earth Science, Dartmouth, 2020 to present
- Jiawen Li, PhD student, Earth Science, Dartmouth, 2021 to present
- Josephine Benson, MSc student, Earth Science, Dartmouth, 2021-present (co-advised)
- Mia Thompson, MSc student, Earth Science, Dartmouth, 2023 - present

*Completed:*

- Laura Blum, MS Student, Earth Science, Dartmouth, 2020-2022
- Alice Zhou, MS, Earth Science, Dartmouth, 2017-2019
- Lina Taenzer, MS, Earth Science, Dartmouth, 2017-2019.

Graduate Student Committee Member

*Ongoing:*

-Geniveve Goeble, PhD, Dartmouth EEES, Advisor: C. Hicks-Pries, 2020-present

-Anne Farrell, PhD, Dartmouth EEES, Advisor: O. Zhaxybayeva, 2017-present

*Completed:*

-James Busch, PhD, Dartmouth Earth Science, Advisor: J. Strauss, 2018-2022

-Virginia Wala, MS, Dartmouth Earth Science, Advisor: J. Strauss, 2017-2019.

Undergraduate Students:

Senior Honors Theses at Dartmouth:

Amanda Calhoun, Earth Science, 2023

Oyku Mete, Earth Science, 2022

Lucy Langenberg, Biology, 2022

Carter Boyd, Earth Science, 2021

Alec Cobban, Biology, 2019

Janel Gaube, Chemistry, 2018

Emma Rieb, Earth Science, 2018

Lab trainees at Dartmouth (UGAR or project-funded):

Olivia Pendas ('25); Abigail Sheppard ('23); Whitney Thomas ('25); Rowan Gregoire ('24); Oyku Mete ('22); Theo Green ('21); Rachael Rubin ('20); Cameron Buxton ('19).

Presidential Fellows at Dartmouth:

Carter Boyd ('21).

Women in Science Project (WISP) at Dartmouth:

Melanie Prakash ('21); Maria Trevino ('23); Soyeon Cho ('24), Madison Spivak ('24), and Crystal Igwe ('24); Emily Masuda ('24); Katherine Takoudes ('24).

*Other trainees*

Vinitra Nathan, MSc candidate (2021-2022);

Beverly Chiu, MS (2017-2022), lab manager and research associate;

Alec Cobban, BA (2019-2020), lab technician;

Alan Hicking (2018-2020), River Valley Community College & Dartmouth College;

Flavia Boidi (2015-16) PhD Fulbright Fellow, Washington University in St. Louis;

Claire Wallace (2014-15) undergraduate research, WashU. in St. Louis;

Marian Schmidt (2011-12) post-baccalaureate scholar, Harvard University;

Renata Cummins (2009-11) undergraduate thesis, Harvard University.

*Outreach*

2017 to 2022: Faculty Advisor, Dartmouth *ManyMentors*

2019 Pathways to STEM, Hanover High School

2023 visiting scientist project week, Hanover High School.

*Professional Development:*

2022 NCFDD Faculty Success Program.

2021 URGE: Dartmouth Pod <https://urgeoscience.org/pods/dartmouth-earth-science/>

2020 The Center for the Improvement of Mentored Experiences in Research (CIMER) Dartmouth "Entering Mentoring" and "Training the Trainor" series.

2017 Sloan Foundation Deep Carbon Observatory Workshop, Catania, Italy.

2016 NSF and Science Education Resource Center (SERC) National Association of Geoscience Teachers (NAGT) Early Career Geoscience Faculty workshop,

2016 to present: numerous workshops through DCAL (at Dartmouth).



Field Work

2023 El Tatio hot springs and Atacama Desert, Chile  
2016-2019, 2022 Yellowstone National Park, WY, USA  
2021-2022 Meromictic lakes across NH, USA.  
2017 Deep Carbon Observatory, Mt. Etna, Sicily, Italy  
2014 Little Sippewisset Marsh, Cape Cod, MA, USA  
2009 F.O.A.M., Long Island Sound, CT, USA  
2008 Deep Springs Lake, Death Valley National Park, CA, USA  
2007 Panamait Valley, Deep Springs Lake and Hot Creek CA, USA  
2005-2006 Yellowstone National Park, WY, USA

Professional Affiliations (present & past)

Geochemical Society  
American Chemical Society  
American Society for Microbiology  
American Geophysical Union  
Sigma Xi

Invited Talks

2024 Indiana University Indianapolis, Earth Sciences, (upcoming, April 2024)  
2023 UMass Boston, School for the Environment (upcoming. Sept. 2023)  
2023 Penn State Geosciences, State College, PA.  
2022 American Chemical Society Spring Meeting, San Diego, CA.  
2021 University of Oklahoma Department of Microbiology, Norman, OK.  
2020 American Chemical Society Spring Meeting, Philadelphia, PA (cancelled, COVID)  
2019 Carnegie Science Laboratory for Earth & Planets, Washington D.C.  
2019 Woods Hole Oceanographic Institution, Falmouth, MA  
2019 University of Arizona, Tucson, AZ  
2019 2<sup>nd</sup> International Geobiology Conference, Banff, Canada  
2019 McGill University, Dept. Earth & Planetary Sciences, Montreal, Canada  
2018 Montana State University, Bozeman, MT  
2018 American Chemical Society Spring Meeting, San Francisco, CA  
2017 COGC<sup>3</sup>, Massachusetts Institute of Technology, Cambridge, MA  
2017 University of Connecticut, Storrs, CT  
2017 American Chemical Society Spring Meeting, San Francisco, CA  
2016 Williams College, Geology Department, Williams, MA  
2016 Dartmouth College, Biology Department, Hanover, MA  
2016 Woods Hole Oceanographic Institution, Falmouth, MA  
2016 Bigelow Marine Science Labs, Boothbay, ME  
2016 Princeton University, Dept. of Geosciences, Princeton, NJ  
2015 25<sup>th</sup> V.M. Goldschmidt Conference, Prague, Czech Republic  
2015 Cambridge University, Isotope Coffee, Cambridge, UK  
2015 Dartmouth College, Earth Science Dept., Hanover, NH  
2014 American Geophysical Union Annual Meeting, San Francisco, CA  
2014 Southern Illinois U., Geology Dept., Carbondale, IL  
2014 Agouron Institute, Sulfur Cycle Symposium, Rancho Palos Verdes, CA  
2014 Cornell University, Microbiology Dept. Seminar, Ithaca, NY  
2014 Woods Hole Oceanographic Institution, Marine Chem. & Geochem., Falmouth, MA  
2014 Hampshire College, School of Natural Sciences, Amherst, MA

2013 Instituto de Tecnologia Química e Biológica, Oeiras, Portugal  
 2013 Origins of Life Initiative Chalk Talk series, Harvard University, Cambridge, MA  
 2013 Microbial Sciences Initiative Chalk Talk series, Harvard University, Cambridge, MA  
 2012 Washington University in St. Louis, Dept. Earth & Planetary Sciences, MO  
 2012 Max Planck Institute for Marine Microbiol., Biogeochem. Dept., Bremen, Germany

*Conference Talks, submitted (Leavitt first author):*

2021 ASLO Aquatic Sciences, virtual global conference  
 2019 Sloan Fdn., Deep Carbon Observatory, Deep Energy Meeting, La Clusaz, France  
 2017 Sloan Fdn., Deep Carbon Observatory, Early Career Workshop, Catania, Italy  
 2017 10<sup>th</sup> Northeast Geobiology Conference, Storrs, CT  
 2015 4<sup>rd</sup> Midwest Geobiology Conference, Bloomington, IN  
 2014 24<sup>th</sup> V.M. Goldschmidt Conference, Sacramento, CA  
 2013 23<sup>rd</sup> V.M. Goldschmidt Conference, Florence, Italy  
 2012 22<sup>nd</sup> V.M. Goldschmidt Conference, Montreal, Canada  
 2012 EMBO Workshop on Microbial Sulfur Metabolism, Noordwijkerhout, Netherlands  
 2012 Northeast Geobiology Conference, McGill University, Montreal, Canada

*Conference Posters, submitted (Leavitt first author):*

2022 Organic Geochemistry Gordon Research Conference, Holderness, NH.  
 2022 Simons Foundation, Marine Microbial Ecol. Evol., in-person.  
 2021 Simons Foundation, Marine Microbial Ecol. Evol., Remote.  
 2017 American Geophysical Union Annual Meeting, New Orleans, LA  
 2017 Archaea Gordon Research Conference, Waterville Valley, NH  
 2016 American Geophysical Union Annual Meeting, San Francisco, CA  
 2016 C1-Metabolism Gordon Research Conference, Waterville Valley, NH  
 2016 Geobiology Gordon Research Conference, Galveston, TX  
 2015 American Geophysical Union Annual Meeting, San Francisco, CA  
 2015 EMBO Workshop on Microbial Sulfur Metabolism, Helsingør, Denmark  
 2014 Plant & Microbial Biosciences Workshop, Tyson Research Center, St. Louis, MO  
 2014 3<sup>rd</sup> Midwest Geobiology Conference, Chicago, IL  
 2014 Northeast Geobiology Conference, Yale University, New Haven, CT  
 2013 2<sup>nd</sup> Midwest Geobiology Conference, IUPUI in Indianapolis, IN  
 2012 1<sup>st</sup> Midwest Geobiology Conference, Washington University, St. Louis, MO  
 2008 9<sup>th</sup> International Conference on Gas in Marine Sediments, Bremen, Germany  
 2008 American Society for Microbiology General Meeting, Boston, MA  
 2007 American Geophysical Union General Meeting, San Francisco, CA  
 2006 American Society for Microbiology General Meeting, Orlando, FL

*Conference Proceedings, 2016-present, \$undergraduate, #graduate, \*postdoc*

2022. Pearson, A., Phelps, S.R., Weber, Y., \$Calhoun, A.N., #Nathan, V., McCann, S.E.H., Elling, F.J., Hurley, S. and **Leavitt, W.** Carbon Isotope Fractionation in the 3HP/4HB Pathway and Prospects for an Archaeal Lipid pCO<sub>2</sub> Paleobarometer. In AGU.  
 2022. \*Rhim, J.H., #Harris, C.M., Batther, H., McFarlin, J., Kopf, S. and **Leavitt, W.D.** Archaeal Lipid Hydrogen Isotope Signatures of the Metabolically Flexible *Archaeoglobus fulgidus* During Autotrophy and Heterotrophy. In *Goldschmidt Conference*.  
 2022. #Li, J., Chiu, B., Cobban, A., \*Piasecki, A., #Nathan, V., \*Rhim, J.H., Young, E.D. and **Leavitt, W.D.** Combinatorial and rate effects on the multiply-substituted isotope

signatures in methane during biological production and consumption. In *Goldschmidt Conference*.

2022. AbSciCon, Atlanta, GA. *Abstract*. #Blum, L; D Coleman, E Elie-Fadrosh, Kellom, ES Boyd, O Zhaxybayeva, **WD Leavitt**. *Distribution of GDGT Membrane Lipid Cyclization Genes in Terrestrial Thermal Springs Linked to pH*.

2021. Rhim, J., Harris, C., Bather, H., McFarlin, J., Kopf, S. and **Leavitt, W.** Factors Controlling the Hydrogen Isotope Composition of Lipids from Thermophilic Archaea. In *AGU Fall Meeting Abstracts*.

2021. IMOG. *Abstract*: S Lengger, S Kelly, KWR Taylor, Y Weber, S Kopf, R Berstan, M Seed, I Bull, J Meyser, **WD Leavitt**, J Blewett, A Abraham, A Cannavan, A Pearson, R Pancost. *New Frontiers in Compound-Specific  $\delta^2\text{H}$  Analysis*.

2019. 29<sup>th</sup> V.M. Goldschmidt Conference, Barcelona, Spain. *Abstract*. #Taenzer, L, **WD Leavitt**, J Labidi, E Young. The origin of  $^{12}\text{CH}_2\text{D}_2$  depletions in microbialgenic methane gases.

2019. Luxem#, K, L Taenzer#, **WD Leavitt**, X Zhang. *Large hydrogen isotope fractionation distinguishes nitrogenase-derived methane from other sources*. Gordon Research Conference in Applied and Environmental Microbiology.

2019. Talk. #Taenzer, L, D. Rumble III, E.D. Young, J Labidi, P Carini, B #Bourquez, S Lincoln, X Feng, J §Gaube, **WD Leavitt**. *Bulk and clumped isotope signature of aerobic methane reveals production pathway*. Northeast Regional Geobiology Conference XIII, Amherst, College.

2019. Poster. #Zhou, A, B Chiu, A §Cobban, Y Weber, F Elling, A Pearson, **WD Leavitt**. *Continuous and batch culture constraints with *Sulfolobus acidocaldarius* on the  $\text{TEX}_{86}$  paleo temperature proxy*. Northeast Regional Geobiology Conference XIII, Amherst, College.

2019. Poster. &Cobban, A, A #Zhou, B Chiu, Y Weber, F Elling, A Pearson, **WD Leavitt**. *Quantifying the Effect of Environmental Drivers on Lipid Composition Shifts in *S. acidocaldarius**. Northeast Regional Geobiology Conference XIII, Amherst, College.

2019. Poster. Chiu, B., A #Zhou, C Zhang, Y Weber, R Whitaker, A Pearson, **WD Leavitt**. *The role of geranylgeranyl reductase in *Sulfolobus islandicus* GDGT lipid cyclization*. Northeast Regional Geobiology Conference XIII, Amherst, College.

2018, 28<sup>th</sup> V.M. Goldschmidt Conference, Boston, MA, USA. *Talk*. Taenzer#, L, J §Gaube, D Rumble III, ED Young, **WD Leavitt**. *Clumped and bulk isotopic fingerprints of methane produced by C~P lyase*.

2018, 28<sup>th</sup> V.M. Goldschmidt Conference, Boston, MA, USA. *Talk*. Bertran#, E, **WD Leavitt**, A Pellerin#, GM Zane, JD Wall, I Halevy, B Wing, DT Johnston. *Deconstructing the dissimilatory sulfate reduction pathway: Isotope fractionation of a mutant unable of growth on sulfate*.

2018, 28<sup>th</sup> V.M. Goldschmidt Conference, Boston, MA, USA. *Poster*. Zhou#, A, M Amenabar, Y Weber, FJ Elling, A Pearson, **WD Leavitt**. *Archaeal GDGT profiles as recorders of free energy availability*. (poster)

2018, January. Geobiology Gordon Research Conference, Galveston, TX. *Talk*. Bertran#, E, A Waldeck#, BA Wing, I Halevy, **WD Leavitt**, AS Bradley, DT Johnston.

2017. *Oxygen isotope trends during microbial sulfate reduction*.

2017, Wetterham Symposium, Dartmouth College. *Poster*. §Gaube, J, A, §Cobban, W.D. Leavitt. Growth of marine bacteria *Pseudomonas stutzeri* HI00D01 on P<sup>5+</sup> and P<sup>3+</sup> compounds.

2017, 27<sup>th</sup> V.M. Goldschmidt Conference, Paris, France. *Poster*. Venceslau, SS, Santos, AA, **Leavitt, WD**, Johnston, D, Bradley, AS & Pereira, IAC. Dissimilatory Sulfate Reduction is a Four-Step Pathway.

2017, 27<sup>th</sup> V.M. Goldschmidt Conference, Paris, France. *Talk*. The Role of Reversibility and S Intermediates in the S Metabolism. Farquhar J, **Leavitt WD**, Guo W, D Eldridge, & D Bojanova.

2016, 26<sup>th</sup> V.M. Goldschmidt Conference, Yokohama, Japan. *Talk*. Relating Geochemical Signatures to the Metabolic State of Cells. Bradley, A, **Leavitt, WD** & Waldbauer, J.

/end