

WILLIAM DAVIE LEAVITT, PHD.

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Education

- 2009-2014 Harvard University (Cambridge, MA, USA)
Ph.D., Dept. Earth & Planetary Science, Advisor: David T. Johnston.
Dissertation: *On the mechanisms of sulfur isotope fractionation during microbial sulfate reduction.*
- 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

Professional Experience

- 2016-present Assistant Professor, Department of Earth Sciences, Dartmouth College, Hanover, NH
- 2016-present Adjunct Assistant Professor, Department of Biological Sciences, Dartmouth College, Hanover, NH
- 2015-2016 Visiting Scholar, Department of Earth Sciences, Dartmouth College, Hanover, NH
- 2014-2016 Steve Fossett Postdoctoral Fellow, Washington University in St. Louis, St. Louis, MO, Lab of Alexander Bradley.
- 2011-2015 Visiting Scientist, Instituto de Tecnologia Química e Biológica, Bacterial Energy Metabolism Group, Lab of Inês C. Pereira.
- 2014 Postdoctoral Researcher, Harvard University, Department of Earth & Planetary Sciences, Lab of David Johnston.
- 2006-2007 Research Assistant I, Harvard University, Department of Earth & Planetary Sciences, Lab of Ann Pearson.
- 2006 Research Assistant I, Montana State University, Department of Microbiology, Lab of Gill Geesey.
- 2003-2006 Research Assistant I, Hampshire College, School of Natural Sciences, Lab of Jason Tor.

Grants

- 2017-2019 American Chemical Society Petroleum Research Fund Doctoral New Investigator (\$110,000). Leavitt sole P.I.
- 2017-2018. Dartmouth College Office of the Provost RPF SEED funding. (\$49,000). Leavitt sole P.I.
- 2014-2017 NASA-Exobiology: Leavitt (Science Co-I.) with A.S. Bradley (PI), Washington University in St. Louis (\$388,253).
- 2013 Geochemical Society student travel grant, 23rd Goldschmidt
- 2012 Microbial Sciences Initiative, Harvard University, Travel grant
- 2011 NASA Travel Grant (Leavitt to visit the Pereira Lab at the ITQB)

2005 NSF-REU Yellowstone Microbial Observatory, Montana State University
 2004 NSF-REU Dept. of Biology, University of South Carolina

Awards

2017-2019 American Chemical Society Petroleum Research Fund Doctoral New Investigator
 2014-2016 Steven Fossett Postdoctoral Fellowship, Washington University in St. Louis
 2008-2011 NSF-Bio Graduate Research Fellowship

Teaching

2018 Spring, EARS272: Topics in Geobiology (graduate seminar)
 2018 Spring, EARS37: Global Biogeochemical Cycles
 2017, 2018 Winter, Dartmouth EARS 07: Is there life on Mars? (Freshman Seminar)
 2017 Spring, Dartmouth EARS 72: Advanced Geobiology
 2016 Dartmouth EARS FSP STRETCH: Yellowstone National Park segment
 2012 Structural Geology Field Trip, Canadian Rockies, *TF* Harvard University
 2012 Life as a Planetary Phenomenon, *TF* Harvard University
 2010 Low-T. Geochemistry I: Biogeochemical cycles, *TF* Harvard University
 2009 Aqueous and Environmental Chemistry, *TF* Harvard University
 2009, 2008 Geomicrobiology Field Course, *TA* Hampshire College
 2006, 2004 Gene Cloning, *TA* Hampshire College
 2004 Introduction to Microbial Ecology, *TA* Hampshire College
 2003 Natural History of Infectious Disease, *TA* Hampshire College

Papers in refereed journals & book chapters (**equal contribution, ★undergraduate*)

In review/submitted:

Published/ In press / Accepted:

[15] **Leavitt, 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: <http://dx.doi.org/10.1016/j.orggeochem.2017.06.020>

[14] **Leavitt, 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: <https://doi.org/10.1093/femsle/fnw226>

[13] **Leavitt, 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] **Leavitt, WD***, AS Bradley*, AA Santos, IAC Pereira and DT Johnston. 2015. Sulfur isotope fractionation by dissimilatory sulfite reductase. *Frontiers in Microbiology*. doi: 10.3389/fmicb.2015.01392

[11] 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

- [10] Fike, DA, AS Bradley and **WD Leavitt**. Ch. 20: Geomicrobiology of Sulfur. Ed: H.L. Erlich, D.K. Newman and A. Kappler. 2016. *Geomicrobiology*, 6th edition. CRC Press.
- [9] Bradley, AS*, **W.D. Leavitt***, 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
- [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. CO₂ 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 ¹³C 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.

Invited Talks

Upcoming

2018 American Chemical Society Spring Meeting, San Francisco, CA
2017 COGC³, 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 25th 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

Contributed Conference Proceedings (first author only)

Talks

2017 Deep Carbon Observatory Workshop, Catania, Italy
 2017 10th Northeast Geobiology Conference, Storrs, CT
 2015 4rd Midwest Geobiology Conference, Bloomington, IN
 2014 24th V.M. Goldschmidt Conference, Sacramento, CA
 2013 23rd V.M. Goldschmidt Conference, Florence, Italy
 2012 22nd V.M. Goldschmidt Conference, Montreal, Canada
 2012 EMBO Workshop on Microbial Sulfur Metabolism, Noordwijkerhout, Netherlands
 2012 Northeast Geobiology Conference, McGill University, Montreal, Canada

Posters (Leavitt first author only)

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 3rd Midwest Geobiology Conference, Chicago, IL
 2014 Northeast Geobiology Conference, Yale University, New Haven, CT
 2013 2nd Midwest Geobiology Conference, IUPUI in Indianapolis, IN
 2012 1st Midwest Geobiology Conference, Washington University, St. Louis, MO
 2008 9th 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

Presentations (advisees), *undergraduate, [†]graduate student

Gaube, J.* , A, Cobban*, W.D. Leavitt. Growth of marine bacteria *Pseudomonas stutzeri* HI00D01 on P⁵⁺ and P³⁺ compounds. Wetterham Symposium, Dartmouth College, 2017.

Field Work

- 2017 Deep Carbon Observatory Workshop, Mt. Etna, Sicily, Italy
 2016 Norris Geyser Basin, Yellowstone National Park, WY, USA
 2014 Little Sippewisset Marsh, Cape Cod, MA, USA
 2009 Long Island Sound (historical F.O.A.M site), CT, USA
 2008 Deep Springs Lake, Death Valley National Park, CA, USA
 2007 Panamait Valley, Deep Springs Lake and Hot Creek CA, USA
 2006, 2005 Norris Geyser Basin, Yellowstone National Park, WY, USA

Synergistic Activities*Conference Session Chair, Co-Chair:*

Upcoming: 2017: American Geophysical Union, New Orleans.

(Bio-isotopic) message in a (rock record) bottle. 3rd annual.

2017: 27th V.M. Goldschmidt Conference, Paris, France.

Microbial metabolic and isotopic processes.

2016: American Geophysical Union, San Francisco, CA

(Bio-isotopic) message in a (rock record) bottle. 2nd annual.

2015: American Geophysical Union, San Francisco, CA

(Bio-isotopic) message in a (rock record) bottle. 1st annual.

Grant review:

NSF-OCE Chemical Oceanography (ad-hoc);

NSF-EAR Low Temperature Geochemistry and Geobiology (panelist);

NSF-EAR Marine Geology & Geophysics (ad-hoc);

NASA Graduate student fellowship (panelist).

Journal review:

Geochimica et Cosmochimica Acta;

Environmental Microbiology & Environmental Microbiology Reports;

Frontiers in Microbiology;

Earth & Planetary Science Letters;

Geobiology;

Chemical Geology;

Marine Environmental Research.

Career Development & Short-courses:

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

2016 NSF and National Association of Geoscience Teachers Early Career Geoscience Faculty workshop

2011 Microscopy Workshop, Harvard Microbial Sciences Initiative (MSI)

2008 Microbial Diversity course, Marine Biological Laboratory (MBL)

Professional Affiliations

2016-present American Chemical Society (ACS)

2016-present American Society for Microbiology (ASM)

2012-present Geochemical Society (GS)

2007-present American Geophysical Union (AGU)

2010-2014 Geological Society of America (GSA)

2007-2014 Harvard Microbial Sciences Initiative (MSI)

2006-2012 American Society for Microbiology (ASM)

PhD Students:

2017-present: Anne Farrell (Dartmouth), PhD student Ecology, Evolution, Ecosystem, & Society program, Primary Advisor: Olga Zhaxybayeva (Biology)

2015-2016: Flavia Boidi, visiting PhD student & Fulbright Fellow visiting Washington University in St. Louis, from Universidad Nacional de Cordona, Argentina.

Masters Students:

2017-present: Alice Zhou (EARS, Dartmouth)

2017-present: Lina Taenzer (EARS, Dartmouth)

Undergraduate Students:

Senior Honors Thesis Advisee(s):

Janel Gaube (Dartmouth '18), Chemistry.

2016-present

Alec Cobban (Dartmouth '19), F'16, W'17, Sp '17, Su'17, F' 17.

Janel Gaube (Dartmouth '18), W'17, Sp'17, F'17, W'18, S'18.

Cameron Buxton (Dartmouth '19), W'17, Su'17.

2014-2015: Claire Wallace, undergraduate research, Washington University in St. Louis.

2011-2012: Marian Schmidt, post-baccalaureate scholar, Harvard University

2009-2011: Renata Cummins, undergraduate thesis, Harvard University.