

JULIAN DAMASHEK, PHD

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Utica College

Assistant Professor of Biology, August 2019 to present

EDUCATION

University of Georgia

Postdoctoral research associate, September 2016 to July 2019

Advisors: Tim Hollibaugh (Marine Sciences), Liz Ottesen (Microbiology)

Stanford University

Ph.D. in Earth System Science, September 2016

Advisor: Chris Francis

Amherst College

B.A. (*Summa Cum Laude* with distinction) in Biology, May 2009

Thesis advisor: Rachel Levin

RESEARCH OVERVIEW: MOTIVATING QUESTIONS

- What is the ecology and physiology of archaea in aquatic ecosystems?
- How do aquatic microbes compete for nitrogen?
- How do microbial diversity and activity affect aquatic nitrogen cycling rates?

My group uses techniques from microbial ecology, 'omics, cultivation-based microbiology, and isotope geochemistry to explore these questions.

PUBLICATIONS

(† indicates undergraduate mentee)

- 11) **Damashek J.**, A.O. Okotie-Oyekan†, S.M. Gifford, A. Vorobev, M.A. Moran, and J.T. Hollibaugh. (*In review*) Transcriptional activity differentiates families of Marine Group II *Euryarchaeota* in the coastal ocean. *Preprint available*: <https://doi.org/10.1101/2020.09.16.299958>.
- 10) Rasmussen A.N., **J. Damashek**, E.A. Eloë-Fadrosh, and C.A. Francis. (2020) In-depth spatiotemporal characterization of planktonic archaeal and bacterial communities in North and South San Francisco Bay. *Microbial Ecology*. doi.org/10.1007/s00248-020-01621-7
- 9) **Damashek J.**, C.F. Edwardson, B.B. Tolar, S.M. Gifford, M.A. Moran, and J.T. Hollibaugh. (2019) Coastal ocean metagenomes and curated metagenome-assembled genomes (MAGs) from Marsh Landing, Sapelo Island (Georgia, USA). *Microbiology Resource Announcements* 8:e00934-19. doi.org/10.1128/MRA.00934-19
- 8) **Damashek J.**, B.B. Tolar, Q. Liu, A.O. Okotie-Oyekan†, N.J. Wallsgrove, B.N. Popp, and J.T. Hollibaugh. (2019) Microbial oxidation of nitrogen supplied as selected organic nitrogen compounds in the South Atlantic Bight. *Limnology and Oceanography* 64(3):982-995. doi.org/10.1002/lno.11089

- 7) **Damashek J.** and C.A. Francis. (2018) Microbial nitrogen cycling in estuaries: from genes to ecosystem processes. *Estuaries and Coasts* 41(3):626-660. doi.org/10.1007/s12237-017-0306-2
- 6) **Damashek J.**, K.P. Pettie[†], Z.W. Brown, M.M. Mills, K.R. Arrigo, and C.A. Francis. (2017) Regional patterns in ammonia-oxidizing communities throughout Chukchi Sea waters from the Bering Strait to the Beaufort Sea. *Aquatic Microbial Ecology* 79(3):273-286. doi.org/10.3354/ame01834
- 5) **Damashek J.**, K.L. Casciotti, and C.A. Francis. (2016) Variable nitrification rates across environmental gradients in turbid, nutrient-rich estuary waters of San Francisco Bay. *Estuaries and Coasts* 39(4):1050-1071. doi.org/10.1007/s12237-016-0071-7
- 4) Smith J.M., **J. Damashek**, F.P. Chavez, and C.A. Francis. (2016) Factors influencing nitrification rates and the abundance and transcriptional activity of ammonia oxidizing microorganisms in the dark realm of the northeast Pacific Ocean. *Limnology and Oceanography* 61(2):596-609. doi.org/10.1002/lno.10235
- 3) Ying S.C., **J. Damashek**, S. Fendorf, and C.A. Francis. (2015) Indigenous arsenic(V)-reducing microbial communities in redox-fluctuating near-surface sediments of the Mekong Delta. *Geobiology* 13(6):581-587. doi.org/10.1111/gbi.12152
- 2) **Damashek J.**, J.M. Smith, A.C. Mosier, and C.A. Francis. (2015) Benthic ammonia oxidizers differ in community structure and biogeochemical potential across a riverine delta. *Frontiers in Microbiology* 5:743. doi.org/10.3389/fmicb.2014.00743
- 1) Miller J.S., A. Kamath, **J. Damashek**, and R.A. Levin. (2011) Out of America to Africa or Asia: Inference of dispersal histories using nuclear and plastid DNA and the *S-RNase* self-incompatibility locus. *Molecular Biology and Evolution* 28(1):793-801. doi.org/10.1093/molbev/msq253

RESEARCH FUNDING

“Understanding gut-microbiome interactions following mass deworming against soil-transmitted helminths (STHs) among young Ethiopian schoolchildren.” Co-PIs: Ken Belanger (Colgate University), Bineyam Taye (Colgate University), Zeleke Mekonnen (Jimma University, Ethiopia). Picker Interdisciplinary Science Institute at Colgate University, 2020-2023, \$149,000.

TEACHING

General Biology

General Biology Lab

Research Methods II

Ecology Lab

Bioinformatics (Selected topics course)

Antibiotic Resistance (Selected topics course)

Independent study (bioinformatics)

UNDERGRADUATE MENTORSHIP

Matt Fedullo *Utica College '20 (Spring 2020)*

Antibiotic resistance in the Mohawk River.

Sammet Braun *Utica College '20 (Spring 2020)*

Diversity and transcription of ammonium uptake genes.

Arijana Dautovic *Utica College '23 (Spring 2020)*

Ammonia-oxidizing microbes in the Mohawk River.

Carrilynn Garrett *Utica College '23 (Spring 2020)*

Nitrogen biogeochemistry in the Mohawk River.

Hailey Goldberg *University of Georgia '20 (Summer 2018)*

Analysis of *Thaumarchaeota* in freshwater metagenomes.

Aimee Okotie-Oyekan *University of Georgia '17 (Fall 2016 to Summer 2018)*

Abundance of Marine Group II *Euryarchaeota* in coastal Georgia waters and nitrifiers in coastal Antarctic waters; all-around DNA extraction and qPCR magician. Co-author on a [manuscript published in *Limnology and Oceanography*](#) and another [recently-submitted manuscript](#).

- Currently: M.S. student, University of Oregon Environmental Studies Program.

Tynan Challenor *Stanford University '17 (Summer 2014 to Summer 2016)*

Biogeochemistry and microbial ecology of nitrification in Artesian Slough and the Sacramento River. First-author poster presentation, 2014 AGU Fall Meeting; completed honors thesis (2017) studying ammonia oxidizers in the Sacramento River.

- Currently: M.S. student, Stanford University Biomedical Informatics Program.

Aubriana Menendez *Stanford University '17 (Summer 2014)*

Microbial ecology of Artesian Slough (San José, CA). Co-author on poster presentation, 2014 AGU Fall Meeting.

- Currently: design specialist at Change Healthcare.

Kade Pettie *Amherst College '15 (Summer 2013, 2014)*

Microbial ecology of ammonia oxidizers in Arctic Sea waters. Co-author on manuscript [published in *Aquatic Microbial Ecology* \(2017\)](#).

- Currently: Ph.D. student, Stanford University Department of Biology.

Kofi Christie *Morehouse College '14 (Summer 2013)*

Biogeochemistry of nitrogen cycling in creeks and sloughs throughout the Baylands Nature Preserve (Palo Alto, CA).

- Currently: Ph.D. student, Vanderbilt University Department of Environmental Engineering.

Yari Greaney *Stanford University '15 (Fall 2012 to Spring 2013)*.

Microbial ecology of ammonia oxidizers in San Francisco Bay sediments.

- Currently: program officer at Global Water 2020.

Samuel Miller *Amherst College '10 (Summer 2009 to Spring 2010)*

Bacterial diversity of natural gas well water in the New Albany Shale. First-author poster presentation, 2010 GSA Northeastern/Southeastern Joint Section Meeting.

- Currently: postdoc, University of Chicago Department of Medicine.

GRADUATE MENTORSHIP

Emily McIntyre *University of Georgia, Microbiology PhD program (Fall 2016).*

Microbial ecology of ammonia oxidizers in Narragansett Bay (rotation in the Hollibaugh Lab).

- Currently: Ph.D. student, University of Georgia Department of Microbiology.

FELLOWSHIPS AND AWARDS

Early Career Travel Award

ASLO Aquatic Sciences Meeting (2019; \$500)

CERF Biennial Conference (2017; \$300)

Stanford-USGS Graduate Fellowship

Stanford University (2014-2015 academic year)

Oral Presentation Award

ASLO Aquatic Sciences Meeting (2015)

Northeast Undergraduate Research and Development Symposium (2009)

McGee Research Grant

Stanford University (2014, \$2,200; 2011, \$3,800)

John Mason Clarke 1877 Fellowship in Paleontology and Geology

Amherst College (2011-2012 academic year, \$3,300; 2010-2011 academic year, \$5,200)

Oscar E. Schotte Award & Scholarship Prize

Amherst College Department of Biology (2009)

Funded Summer Research Internship

Five College Coastal and Marine Sciences Program (Summer 2007)

William C. Young Prize

Amherst College Department of Biology (Summer 2007)

Howard Hughes Medical Institute Summer Fellow

Amherst College (Summer 2006)

PROFESSIONAL AND INSTITUTIONAL SERVICE

Social Media Team Lead (Communications Committee)

Coastal and Estuarine Research Federation (CERF; Fall 2017 to Fall 2019)

Coordinate social media outreach, develop strategies and standard operating procedures for social media team and interactions with CERF headquarters and other committees.

Conference Attendee Experience Committee Member

2019, 2017 Coastal & Estuarine Research Federation (CERF) Biennial Conference (November 2019 and 2017)

Co-leader of social media committee.

Conference Session Organizer

2017 Coastal & Estuarine Research Federation (CERF) Biennial Conference (November 2017)

Organized session: "Microbial Communities and the Dynamics and Resilience of Ecosystem Function" (<https://cerf.confex.com/cerf/2017/webprogrampreliminary/Session1364.html>).

2016 Ocean Sciences Meeting (February 2016)

Organized session: "Nitrogen at the Interface: The N-Cycle across Physical and Disciplinary Boundaries" (<http://agu.confex.com/agu/os16/preliminaryview.cgi/Session9274>).

2014 American Geophysical Union (AGU) Fall Meeting (December 2014)

Organized judges for student presentations for the "Marine Microbial Genomics" session (<https://agu.confex.com/agu/fm14/webprogrampreliminary/Session3363.html>).

Graduate Student Consultant

Stanford University Center for Teaching and Learning (Autumn 2013 to Winter 2015)

Provided teaching feedback to Stanford TAs. Ran small group evaluations, workshops, video consultations, and microteaching sessions. Developed a workshop on strategies for the first day of teaching, a short description of which can be seen in this blog post: <http://stanford.io/1Fwj9z> (scroll to "The First Day: Starting Off Right").

Geobiology Faculty Search Committee (Student Liaison)

Stanford University School of Earth, Energy, and Environmental Sciences (Autumn 2011 to Spring 2012)

Peer Reviewer

Funding agencies: NSF OCE (Chemical Oceanography, ad hoc), Maryland Sea Grant (ad hoc).

Journals: *Applied & Environmental Microbiology*, *Aquatic Microbial Ecology*, *Aquatic Sciences*, *Biogeosciences*, *Environmental Microbiology*, *Estuaries and Coasts*, *Frontiers in Marine Science*, *Frontiers in Microbiology*, *ISME Journal*, *Journal of Geophysical Research: Biogeosciences*, *Limnology & Oceanography*, *Microbial Ecology*, *Microbiome*, *mSphere*, *PeerJ*, *Science of the Total Environment*, *Water Resources Research*.

INVITED SEMINARS

"Using publicly-available 'omics data to unravel the ecology of freshwater archaea, from the Amazon River to Central New York lakes." *Asa Gray Seminar Series, Utica College*, 10/21/19.

"Understanding nitrogen uptake in the ocean using metatranscriptomics, or: How I learned to stop worrying and love the command line." *Amherst College Department of Biology*, 3/5/18.

"Using microbial and biogeochemical techniques to investigate hotspots of aerobic nitrogen cycling in San Francisco Bay." *University of Georgia Marine Sciences Seminar Series*, 11/7/16.

“Nitrification from the Pacific Ocean to the Sacramento River: Do distinct microbial communities affect biogeochemical nitrogen cycling in a large urban estuary?” *Stanford University Seminar in Prokaryotic Molecular Biology*, 11/16/15.

CONFERENCE ORAL PRESENTATIONS

(† designates undergraduate mentee)

Damashek J., A.O. Okotie-Oyekan†, N.J. Wallsgrove, B. Bayer, G.J. Herndl, B.N. Popp, and J.T. Hollibaugh. “Field rates and physiological mechanisms of polyamine-N oxidation by marine *Thaumarchaeota*.” *2019 Aquatic Sciences Meeting*, 2/25/19 (San Juan, Puerto Rico). **Early Career Travel Award recipient.**

Damashek J., B.M. Satinsky, H.V. Goldberg†, S. Sharma, J.P. Payet, B.C. Crump, J.T. Hollibaugh, and M.A. Moran. “Targeted analysis of ‘omics data reveals the prevalence of *Nitrosotenuis* spp. *Thaumarchaeota* in low-latitude freshwater ecosystems.” *2018 Southeastern Branch Annual Meeting, American Society for Microbiology (ASM)*, 12/1/2018 (Atlanta, GA).

Damashek J., P.J. Kearns, J.L. Bowen, K.L. Casciotti, and C.A. Francis. “Relating ammonia oxidizer diversity to nitrification throughout the northern San Francisco Bay water column.” *2017 Coastal and Estuarine Research Federation (CERF) Biennial Conference*, 11/8/17 (Providence, RI). **Early Career Travel Award recipient.**

Damashek J., K.L. Casciotti, and C.A. Francis. “Turbid bottom waters and ammonium-rich freshwaters as nitrification hotspots in a large urban estuary (San Francisco Bay, CA).” *2015 American Geophysical Union (AGU) Fall Meeting*, 12/18/15 (San Francisco, CA).

Damashek J., K.L. Casciotti, and C.A. Francis. “Relating ammonia oxidizer communities and gene expression to nitrification across diverse San Francisco Bay waters.” *2015 Coastal and Estuarine Research Federation (CERF) Biennial Conference*, 11/11/15 (Portland, OR).

Damashek J., K.L. Casciotti, and C.A. Francis. “Linking ammonia-oxidizing microbial communities to nitrification rates across the steep gradients of San Francisco Bay (CA, USA) waters.” *2015 Aquatic Sciences Meeting*, 2/24/15 (Granada, Spain). **Outstanding Student Presentation Award recipient.**

Damashek J., K.L. Casciotti, and C.A. Francis. “Microbial ecology and biogeochemical impacts of ammonia-oxidizing microbes in San Francisco Bay waters.” *2014 California Estuarine Research Society Fall Conference*, 9/27/14 (Bodega Bay, CA).

Damashek J., and C.A. Francis. “Population dynamics of ammonia-oxidizing archaea and bacteria during estuarine phytoplankton blooms: How fierce is the fight for ammonium?” *2014 Ocean Sciences Meeting*, 2/24/14 (Honolulu, HI).

Damashek J., K.L. Casciotti, and C.A. Francis. “Nitrification and ammonia-oxidizing microbial communities in the turbid, nutrient-replete waters of San Francisco Bay (CA).” *2013 Coastal and Estuarine Research Federation (CERF) Biennial Conference*, 11/7/13 (San Diego, CA).

Damashek J., S.E. Miller[†], M.F. Kirk, A.M. Martini, S.T. Petsch, J.C. McIntosh, and M.E. Schlegel. “Microbial community structure and geochemistry of the New Albany Shale (Illinois Basin) and its potential to produce biogenic methane.” *2010 Goldschmidt Conference*, 6/17/10 (Knoxville, TN).

Damashek J., J.S. Miller, and R.A. Levin. “Phylogenetics of Chinese *Lycium* (Solanaceae).” *2009 Northeast Undergraduate Research and Development Symposium*, 3/28/09 (Biddeford, ME). **Oral Presentation Award recipient.**

CONFERENCE POSTER PRESENTATIONS

([†] designates undergraduate mentee)

Damashek J., A. Dautovic[†], and C. Garrett[†]. “Relating microbial diversity to nitrogen cycling in the Mohawk River and diverse freshwater ecosystems.” *Mohawk Watershed Symposium 2020* (Schenectady, NY); *postponed due to COVID-19*.

Damashek J., N.J. Wallsgrave, B. Bayer, G.J. Herndl, B.N. Popp, and J.T. Hollibaugh. “Oxidation of polyamine nitrogen by *Thaumarchaeota*-dominated mixed communities and *Thaumarchaeota* isolates from the coastal ocean.” *Fifth International Conference on Nitrification and Related Processes (ICoN5)*, 7/26/17 (Vienna, Austria).

Damashek J., B. Bayer, G.J. Herndl, B.N. Popp, N.J. Wallsgrave, and J.T. Hollibaugh. “Oxidation of polyamine nitrogen by marine *Thaumarchaeota* in the coastal ocean and the laboratory.” *2017 Southeastern Biogeochemistry Symposium*, 4/1/17 (Athens, GA).

Damashek J., T. Challenor[†], K.L. Casciotti, and C.A. Francis. “Nitrification from the Pacific Ocean to the Sacramento River: Do distinct microbial communities affect biogeochemical nitrogen cycling in the waters of a large urban estuary?” *2016 Ocean Sciences Meeting*, 2/22/16 (New Orleans, LA).

Damashek J., T. Challenor[†], K.L. Casciotti, and C.A. Francis. “Factors influencing nitrification rates and ammonia-oxidizing microbes throughout the San Francisco Bay estuary.” *2015 Young Environmental Scholars Conference*, 12/2/15 (Stanford, CA).

Damashek J., T. Challenor[†], K.L. Casciotti, and C.A. Francis. “Biogeochemical effects of shifts in ammonia-oxidizing microbial community structure and gene expression in the waters of Suisun Bay and the Sacramento River.” *2015 State of the San Francisco Estuary Conference*, 9/17/15 (Oakland, CA).

Damashek J., K.L. Casciotti, and C.A. Francis. “Partitioning nitrification between specific archaeal and bacterial clades in a large, nitrogen-rich estuary (San Francisco Bay, CA).” *2014 American Geophysical Union (AGU) Fall Meeting*, 12/16/14 (San Francisco, CA).

Damashek J., K.L. Casciotti, and C.A. Francis. “Can San Francisco Bay ‘filter’ nitrogen between the land and the sea? The microbiology and biogeochemistry of nitrification in estuary waters.” *2014 Bay-Delta Science Conference*, 10/28/14 (Sacramento, CA).

Damashek J., K.L. Casciotti, and C.A. Francis. "Does pelagic nitrification in estuaries 'filter' nitrogen between the land and the sea? Microbial and biogeochemical considerations from San Francisco Bay (CA)." *2014 Marine Microbes Gordon Research Conference*, 6/22/14 (Waltham, MA).

Damashek J., and C.A. Francis. "Nitrogen cycling in the mud: Functional gene and biogeochemical analyses of nitrification in a large urban estuary." *2013 Aquatic Sciences Meeting*, 2/21/13 (New Orleans, LA).

Damashek J., and C.A. Francis. "Seasonal dynamics of microbial ammonia oxidation in San Francisco Bay." *2012 American Society for Microbiology General Meeting*, 6/18/12 (San Francisco, CA).

Damashek J., and C.A. Francis. "Aquatic microbial nitrogen cycling: Molecular evidence of planktonic ammonia oxidation in San Francisco Bay." *2011 Beyond the Golden Gate Symposium*, 11/1/11 (San Francisco, CA).

SOCIETY MEMBERSHIPS

American Society for Microbiology (ASM)

Association for the Sciences of Limnology and Oceanography (ASLO)

American Geophysical Union (AGU)

Coastal and Estuarine Research Federation (CERF)

Last updated: 11/5/2020

Squid cartoon by Melissa Weintraub