

Emily L. Cardarelli

473 Via Ortega, Y2E2 Room 140
Stanford, CA 94305

571-332-7252
ecardare@stanford.edu

EDUCATION

- 2015-2018 STANFORD UNIVERSITY, Stanford, CA
Ph.D. in Earth System Science, Geobiology. December 2018 (expected)
Thesis: Nitrogen-Cycling Communities in the Terrestrial Subsurface: An analysis of the distribution, diversity, and geochemical controls. *Dissertation Advisor:* Christopher Francis.
Thesis Advisory Committee: Kabir Peay, Scott Fendorf, John Bargar, Anne Dekas
- 2012-2015 STANFORD UNIVERSITY, Stanford, CA
M.S. in Environmental Earth System Science. 2015.
- 2008-2012 TULANE UNIVERSITY, New Orleans, LA
B.S. in Earth and Environmental Science, Geology Minor, *magna cum laude with departmental honors*. 2012.
Thesis: Seasonal impacts influencing denitrification in wetlands. *Advisor:* Brad Rosenheim

RESEARCH EXPERIENCE

- 2012-present STANFORD UNIVERSITY, Stanford, CA
Doctoral Candidate, Department of Earth System Science, PI: Christopher Francis
- 2010-2012 TULANE UNIVERSITY, New Orleans, LA
Undergraduate Researcher, Department of Earth and Environmental Science, PI: Brad Rosenheim
- 2009-2011, Summer PENTAGON, Washington, D.C.
Research Assistant, Department of the U.S. Army, PI: Naomi Verdugo

TEACHING EXPERIENCE

- 2017 SAN JOSE COMMUNITY COLLEGE, San Jose, CA
• Co-Instructor; Geology 015: Physical Geology
- 2017 STANFORD UNIVERSITY, Stanford, CA
• Teaching Assistant; Stanford Earth Young Investigators
- 2013 STANFORD UNIVERSITY, Stanford, CA
• Co-Instructor; ESS 212: Measurements in Earth Systems

MANAGING/MENTORING/TUTORING EXPERIENCE

- 2015-Present Lab Manager for the Francis Lab
- 2017-2018 Stanford EDGE Mentor
- 2017, Summer Rijul Amin; Thomas Jefferson High School '18
- 2017, Summer Natalie Wright; STEM teacher researcher
- 2017, Summer Alexandra Gutierrez; STEM teacher researcher
- 2016, Summer Kolyne DeJesus; California State University East Bay '17, Presently: M.A. Ed. student, University of Portland
- 2015-2016 Alan Wei; Stanford University '18
- 2015, Summer Madison Jackson; University of Miami '17, Presently: M.S. student, UC Berkeley-UCSF Translational Medicine
- 2015, Summer Emilie Dirck; California State Monterey Bay '17
- 2014, Summer Craig McLean; University of Arkansas '16, Presently: Ph.D. student, MIT/WHOI Oceanography/Applied Ocean Science & Engineering
- 2014, Spring Angela Khov; Sequoia High School '18

GRANTS, FELLOWSHIPS, AND AWARDS

- 2018 Preparing Future Professor Fellow, Stanford University
- 2016 Outstanding Achievement in Mentoring, Stanford University (\$300)
- 2015 Department of Energy, Office of Biological and Environmental Research, Environmental System Science Principal Investigator's Meeting Student Travel Fellowship (\$2,000)

2013, 2014 McGee/Levorsen Research Grant Recipient, Stanford University (\$2,060; \$3,940)
 2013, 2014 Graduate Research Fellowship Honorable Mention Recipient, National Science Foundation
 2013 Microbial Diversity Course Scholarship, National Science Foundation (\$6,180)
 2012 Tulane 34 Award, awarded for leadership, service, and academic contributions to the Tulane community
 2012 Department of Earth and Environmental Science Senior Honors' Scholar, awarded for top senior thesis
 2012 Chairman's Award, awarded for high academic standing and research contributions
 2012 Harold A. Vokes Award, awarded for high academic standing
 2012 The Under the Oaks Award, awarded for advancing women's education
 2012 Oak Wreath Award, awarded for leadership in student activities and contributions to the Newcomb-Tulane community
 2011 Research Grant Proposal Author, Department of the U.S. Army (\$450,000)
 2011 Undergraduate Research Opportunity Program Grant, Louisiana SeaGrant (\$2,500)
 2010 Certificate of Achievement Award, Department of the U.S. Army
 2008-2011 Dean's List
 2008-2012 Tulane Presidential Scholars Award

CONFERENCE PRESENTATIONS

Presentation titles and co-authors can be found at the end of the CV

Oral,
 2016 American Geophysical Union (AGU) Fall Meeting

Poster,
 2017 Department of Energy SSRL/LCLS Users' Meeting
 2017 Department of Energy Environmental System Science PI Meeting
 2017 Department of Energy Joint Genome Institute User Meeting
 2016 International Society for Microbial Ecology (ISME) Biannual Meeting
 2016 Department of Energy Environmental System Science PI Meeting
 2016 Department of Energy Joint Genome Institute User Meeting
 2015 American Geophysical Union (AGU) Fall Meeting
 2015 Department of Energy Environmental System Science PI Meeting
 2014 American Geophysical Union (AGU) Fall Meeting
 2013 American Geophysical Union (AGU) Fall Meeting

FIELD WORK

Sample Collection

2016 Riverton, WY, Dept. of Energy-Legacy Management (DOE-LM) site formerly processed U- and V-ore; soil collection
 • Chief Scientist

2015 Riverton, WY, DOE-LM site formerly processed U- and V-ore; soil collection
 • Lead Microbiologist

2015 Shiprock, NM, DOE-LM site formerly processed U- and V-ore; soil collection
 • Lead Microbiologist

2015 Naturita, CO, DOE-LM site formerly processed U- and V-ore; soil collection
 • Lead Microbiologist

2014-2015 R/V *Rachel Carson*, MBARI, Monterey Canyon, CA; water column monthly time-series

2014 Grand Junction, CO, DOE-LM site formerly processed U- and V-ore; soil collection
 • Lead Microbiologist

2014 Rifle, CO, DOE-LM site formerly processed U- and V-ore; soil collection
 • Lead Microbiologist

2014 Elkhorn Slough Estuary, CA; whole-sediment coring
 • Chief Scientist

2014 R/V *Questuary*, Sacramento River/San Francisco Bay, CA; water column

2013 Elkhorn Slough Estuary, CA; whole-sediment coring
 • Chief Scientist

2011 Davis Pond River Diversion, Boutte, LA; water column and sediment collection
 • Chief Scientist

PUBLICATIONS

Peer-reviewed publications

2017 Noël, V., Boye, K., Kukkadapu, R. K., Bone, S., Lezama-Pacheco, J., **Cardarelli, E.**, Janot, N., Fendorf, S., & Bargar, J. R. Understanding controls on redox processes in floodplain sediments of the Upper Colorado River Basin. *Science of The Total Environment*. <https://doi.org/10.1016/j.scitotenv.2017.01.109>

- 2017 Noël, V., Boye, K., Lezama-Pacheco, J., Bone, S., Janot, N., **Cardarelli, E.**, Williams, K., & Bargar, J. Redox controls over the stability of U(IV) in floodplains of the Upper Colorado River Basin. *Environmental Science and Technology*. doi:[10.1021/acs.est.7b02203](https://doi.org/10.1021/acs.est.7b02203)
- 2017 Peay, K., von Sperber, C., **Cardarelli, E.**, Toju, H., Francis, C., Chadwick, O., & Vitousek, P. Convergence and contrast in the community structure of Bacteria, Fungi and Archaea along a tropical elevation-climate gradient. *FEMS Microbiology Ecology*. <https://doi.org/10.1093/femsec/fix045>

Additional publications

- 2017 **Cardarelli, E.L.**, Bargar, J.R., & Francis, C.A. Merging ammonia-oxidizing community metrics with geochemical measurements in the Colorado River Basin. *Environmental Microbiology*. (Submitted).
- 2013 **Cardarelli, E.L.** Unraveling the black box of aquaria biofilter function: FISHing for novel ammonia-oxidizing archaea associations. Online Publication, *Marine Biological Laboratory*, Woods' Hole, MA.
- 2011 **Cardarelli, E.L.** Seasonal impacts influencing denitrification in wetlands. Online Publication, *Louisiana SeaGrant-Undergraduate Research Opportunities Program*.

SYNERGISTIC ACTIVITIES AND OUTREACH

Additional Education: Workshops and Summer Courses

- 2016, April Department of Energy Joint Genome Institute, Microbial Genomics & Metagenomics Workshop
- 2013, Summer Marine Biological Laboratory, Microbial Diversity Summer Course

Departmental/Institutional Service

- 2014-2015 Vice-President, Graduate Student Advisory Council, Stanford University
- 2013-2014 Secretary, Graduate Student Advisory Council, Stanford University
- 2013-2014 Student Liason, ESS Geobiology Faculty Search Committee
- 2012-2016 Instructor, Geokids, Stanford University

Community Outreach

- 2015-2016 Host and Tour Guide of Stanford, Hillsdale High School (10 high school students)
- 2009 Intern, Mayor's Office of Recovery and Development, City of New Orleans, LA (24 middle school students)
- 2009 Volunteer, Gulf Restoration Network, New Orleans, LA

CONFERENCE PRESENTATION TITLES/AUTHORS

Previously summarized in sections above

- 2017 **Cardarelli, E.L.**, Bargar, J.R., Dam, W., and C.A. Francis. Effects of microbial communities on uranium oxidation and mobilization in the presence of nitrate, nitrite, and oxygen. Department of Energy Environmental System Science PI Meeting, Potomac, M.D.
- 2017 **Cardarelli, E.L.**, Bargar, J.R., and C.A. Francis. Subsurface microbial communities involved in nitrogen cycling with implications for uranium release in the Upper Colorado River Basin. Department of Energy Joint Genome Institute User Meeting, Walnut Creek, M.D.
- 2016 **Cardarelli, E.L.**, Francis, C.A., Boye, K., Bone, S., Noël, V., Lezama-Pacheco, J., Dam, W.L., Johnson, R.H., Williams, K.H., and J.R. Bargar. Diversity and biogeography of subsurface nitrogen-cycling communities at uranium contaminated DOE-LM sites in the Upper Colorado River Basin. Department of Energy Environmental System Science PI Meeting, Potomac, M.D.
- 2016 **Cardarelli, E.L.**, Bargar, J.R., and C.A. Francis. Subsurface microbial communities involved in nitrogen cycling with implications for uranium release in the Upper Colorado River Basin. Department of Energy Joint Genome Institute User Meeting, Walnut Creek, M.D.
- 2016 **Cardarelli, E.L.**, Bargar, J.R., Dam, W., and C.A. Francis. Characterization of nitrogen-cycling microbial communities impacting uranium release in the Colorado River Basin. International Society for Microbial Ecology Meeting, Montreal, QC, Canada.
- 2015 **Cardarelli, E.L.**, Bargar, J.R., Williams, K.H., and C.A. Francis. Subsurface microbial nitrogen-cycling communities of uranium contaminated sites. Department of Energy Environmental System Science PI Meeting, Potomac, M.D.

- 2015 **Cardarelli, E.L.**, Bargar, J.R., Williams, K., Dam, W., and C.A. Francis. Subsurface nitrogen-cycling microbial communities at uranium contaminated sites in the Colorado River Basin. American Geophysical Union Fall Meeting, San Francisco, CA.
- 2014 **Cardarelli, E.L.** and C.A. Francis. The abundance and activity of nitrate-reducing microbial populations in estuarine sediments. American Geophysical Union Fall Meeting, San Francisco, CA.
- 2013 **Cardarelli, E.L.** and C.A. Francis. The relative importance of microbial nitrate reduction processes in an agriculturally-impacted estuary. American Geophysical Union Fall Meeting, San Francisco, CA.