

Sara Gushgari-Doyle, Ph.D., P.E.

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- Profile** Environmental microbiologist with a background in environmental engineering. Excellent communication, collaboration, and organization skills. Industry work experience in environmental engineering. Interested in microbial community interactions, unique metabolisms, water security, high throughput community analyses using “-omics” technologies and machine learning, and improving diversity and inclusion in the sciences.
- Education**
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| Ph.D. | University of California, Berkeley
Environmental Engineering
Minors: Microbiology, Microbial Genetics and Genomics | 2019 |
| | <i>Robust Trichloroethene Reduction in Multi-contaminant Sites: Implications of Arsenic and Acetylene as Co-contaminants in Microbial Communities</i> | |
| | Committee: Lisa Alvarez-Cohen (chair), David Sedlak, and John Coates | |
| M.S. | University of California, Berkeley
Environmental Engineering | 2014 |
| B.S. | Cornell University
Civil Engineering | 2013 |

Employment History

Postdoctoral Scholar

Lawrence Berkeley National Laboratory, Berkeley, CA 2020 - present

PI: Romy Chakraborty

Lead scientist for ENIGMA Most Wanted Microbes research area organizing efforts from 13 institutions. Research areas include characterization of complex organic carbon degradation pathways, isolation and characterization of novel microorganisms, and elucidation of microbial community interactions. Focus on integration of genomic, transcriptomic, metabolomic, and isotopic analyses to study interaction among microorganisms in communities and evolutionary history of organisms with unique or beneficial functions.

Graduate Student Researcher/Instructor

2013-2015, 2017-2019

University of California, Berkeley, CA

PI: Lisa Alvarez-Cohen

Investigated effects of various co-contaminants (e.g. arsenic and acetylene) on cellular function and community interactions in bioremediation microbial communities. Used -omics techniques to determine the impacts of arsenic toxicity on chlorinated solvent-reducing microorganism *Dehalococcoides*

mccartyi. Developed model for identifying acetylene hydratase genes in metagenome data, resulting in discovery of first anaerobic acetylenotroph in the phylum *Actinobacteria*.

Senior Staff Engineer 2016-2017
Dresdner Robin Environmental Management, Jersey City, NJ

Laboratory Assistant 2012-2013
Cornell University, Ithaca, NY

Engineering Intern 2012
SKG Enterprises, Inc., Scottsdale, AZ

Publications

Gushgari-Doyle, S., Oremland, R., Keren, R., Baesman, S.M., Akob, D.M., Banfield, J.F., and Alvarez-Cohen, L. (2020). Acetylene-fueled trichloroethene reductive dechlorination in a groundwater enrichment culture. *mBio*. (submitted).

Wu, X., Spencer, S., **Gushgari-Doyle, S.**, Yee, M.O., Voriskova, J., Li, Y., Alm, E.J., and Chakraborty, R. (2020). Culturing of ‘unculturable’ subsurface microbes: Natural organic carbon source fuels the growth of diverse and distinct bacteria from groundwater. *mSystems*. (submitted).

Ge, X., Thorgersen, M. P., Poole, F.L., Deutschbauer, A.M., Chandonia, J.M., Novichkov, P.S., **Gushgari-Doyle, S.**, Lui, L., M., Nielsen, T., Chakraborty, R., Hazen, T.C., Adams, P.D., Arkin, A.P., and Adams, M.W.W. (2020). Characterization of a heavy metal-resistant *Bacillus* strain with a high molybdate affinity ModA from contaminated sediments at the Oak Ridge Reservation. *Front Microbiol*. (submitted).

Gushgari-Doyle, S. and Alvarez-Cohen, L. (2020). “Effects of arsenic on TCE dechlorination activities of *Dehalococcoides mccartyi* 195.” *Environ. Sci. Technol.* 54:(2), 1276-1285. DOI: 10.1021/acs.est.9b06527

Mao, X., Oremland, R.S., Liu, T., **Gushgari, S.**, Landers, A.A., Baesman, S.M., and Alvarez-Cohen, L. (2017). “Acetylene Fuels TCE Reductive Dechlorination by Defined *Dehalococcoides/Pelobacter* Consortia.” *Environ. Sci. Technol.* 51:(4), 2366-2372. DOI: 10.1021/acs.est.6b05770

Select Presentations

Gushgari-Doyle, S. A look at multi-contaminant sites: Effects of arsenic on TCE bioremediation and implications for vapor intrusion. USEPA, Region 5. Ann Arbor, MI. *Invited Speaker*. August 25, 2020.

Gushgari-Doyle, S., Sun, M., Olivares, C.I., and Alvarez-Cohen, L. “Microbial community interactions: A network approach.” Oral. Superfund Research Program 2019 Annual Meeting, Seattle, WA, November 18-20, 2019.

Gushgari, S., Oremland, R.S., Keren, R., Baesman, S.M., Akob, D.M., and Alvarez-Cohen, L. “Acetylene fermentation supports TCE reductive dechlorination in native groundwater enrichment culture.” Poster. American Society of Microbiology: Microbe, San Francisco, CA, June 20-24, 2019.

Gushgari, S., Sun, M., and Alvarez-Cohen, L. 2018. “Syntrophic interactions ameliorate arsenic inhibition on TCE-dechlorinating *Dehalococcoides mccartyi*.” Poster. Superfund Annual Meeting, Sacramento, CA, November 28-30, 2018.

Mao, X., **Gushgari, S.,** Mahandra, C, Baesman, SM, Oremland, RS, and Alvarez-Cohen, L. “Acetylene inhibition of TCE reductive dechlorination by *Dehalococcoides*-containing microbial consortia.” Poster. American Geophysical Union Fall Meeting, San Francisco, CA, December 14-18, 2015.

Gushgari, S., Bae JH, and Alvarez-Cohen, L. “Effects of arsenic and trichloroethene co-contamination on *Dehalococcoides mccartyi*-containing communities.” Oral. Superfund Research Program 2015 Annual Meeting, San Juan, Puerto Rico, November 17-20, 2015.

Gushgari, S. and Alvarez-Cohen, L. “Effects of ferrous and ferric iron on dechlorination kinetics of trichloroethene to ethene by *Dehalococcoides mccartyi*.” Poster. Superfund Research Program 2014 Annual Meeting, San Jose, CA, November 12-14, 2014.

Funding

Successful Funding Awards (Personal)

National Science Foundation Graduate Student Fellowship Awarded 2015. \$138,000

Bay Area Water Quality Fellowship. Awarded 2015. \$15,000

Successful Grant Proposals (Instrumental in writing)

Microbial communities that bioremediation chemical mixtures. NIEHS, P42ES004705. Awarded 2017.

P.I.: Lisa Alvarez-Cohen, University of California, Berkeley

Teaching Experience

Graduate student instructor

Environmental Biological Processes • University of California, Berkeley • Fall 2019

Environmental Microbiology • University of California, Berkeley • Spring 2015

Synergistic Activities

Pilot City Scientist Mentor

2020-present

Bay Area, CA

A startup connecting scientists to local high schools for in-class mentoring and summer internships

Expanding Your Horizons Conference Volunteer

2019-present

Berkeley, CA

An annual conference for girls in 5th – 8th grade who are interested in STEM fields

CEE High School Outreach Coordinator

2014

University of California, Berkeley

Graduate Student Society Chair

2013-2015

University of California, Berkeley

Licenses

Professional Engineer • State of California • ID: C88658 • Issued December 19, 2017

Honors & Awards

First place, Trainee Research in Env. Sci. & Eng., Superfund Research Program Annual Mtg, 2018
UC Berkeley Graduate Student Fellow, 2014
Charles Lee Crandall Essay Prize – Environmental Engineering, Cornell University, 2013
Charles Lee Crandall Essay Prize – Systems and Management, Cornell University, 2013
Winslow T. Shearman '32 Award, Cornell University, 2013

Undergraduate Mentees

Ria Gracielle Malana, Lawrence Berkeley National Lab, 2020
Arisa Nguyen, UC Berkeley, 2018
Coty Weathersby, ReNUWIt REU Program, 2017
Jae Ho Bae, UC Berkeley, 2015-2016
Michelle Wray, UC Berkeley, 2015

Professional Affiliations

American Geophysical Union	2020-present
American Society of Microbiology	2020-present