



Emily R. Paris

- Ph.D. Student in Earth System Science, admitted Autumn 2020
- Masters Student in Earth System Science, admitted Winter 2024
- 📄 Curriculum Vitae available Online

Bio

BIO

Emily is a PhD candidate in the Dekas Lab at Stanford University. She earned her Bachelor's degree in Biochemistry & Cell Biology (minor: Marine Sciences) from UC San Diego in 2020 where she worked to develop a new technique for isolating previously unculturable marine microbes that could be used in pharmaceutical development (Moore Lab, Scripps Institution of Oceanography). Now her research is based on culture-independent techniques, including stable isotope probing, gene sequencing, and single-cell analyses like nanoSIMS, microscopy, and flow cytometry. Emily has completed 5 research cruises and 2 land-based field expeditions since 2018. Two of these field projects included snorkeling with orcas above the Arctic circle to record their bioacoustic and behavioral patterns and sampling Mars-analogue acidic brine lakes in Western Australia to look for signs of extreme microbial life (Oceans Across Space and Time, OAST).

Emily enjoys teaching and mentoring: At UC San Diego she worked as a STEAM instructor for the Sally Ride Science Academy's Library NExT program where she designed free science workshops for elementary and middle school students. Since 2021 she has mentored three Stanford undergraduates through the Women in STEM program at the Women's Community Center and has tutored 5+ students in a range of subjects from math to organic chemistry. Emily shares her research experiences annually with high schoolers around the country as a volunteer scientist for Skype a Scientist.

HONORS AND AWARDS

- McGee Grant, Stanford University (Spring 2024)
- Scholarship Recipient, Historical Diving Society (May 2023)
- Outstanding Poster Award, Northern California Geobiology Symposium (April 2023)
- Presenter, Ancient and Future Brines Conference (May 2023)
- Presenter, Astrobiology Graduate Conference (May 2023)
- Presenter, Ocean Sciences Meeting (February 2022)
- Revelle College Commencement Speaker, UC San Diego (June 2020)
- UC San Diego Alumni Association Outstanding Senior Award, UC San Diego (June 2020)
- Oceanids Outstanding Service Award, UC San Diego (June 2019)
- Town and Gown Scholar, UC San Diego (May 2019)
- Eureka! Undergraduate Research Scholar, UC San Diego (June 2019)
- Triton Experiential Learning Scholar, UC San Diego (2018, 2018, 2019)
- Provost Academic Honors, Revelle College, UC San Diego (2017, 2018, 2019)
- SMUD Powering Futures Scholarship, Sacramento Municipal Utility District (May 2018)

- Ernest C. Mort Leadership Excellence Award, UC San Diego (June 2017)

PROFESSIONAL AFFILIATIONS AND ACTIVITIES

- Member, Geochemical Society (2024 - present)
- Member, American Alpine Club (2022 - present)
- Member, Explorers Club (2021 - present)
- Member, Society for Women in Marine Science (2020 - present)
- Scientist, Skype a Scientist (2020 - present)
- Early Career Committee, NASA Network for Life Detection (NfoLD) (2020 - present)
- Volunteer, Walter Munk Foundation (2018 - 2019)

EDUCATION AND CERTIFICATIONS

- Minor, UC San Diego, Scripps Institution of Oceanography , Marine Sciences (2020)
- BS, UC San Diego , Biochemistry & Cell Biology (2020)

SERVICE, VOLUNTEER, AND COMMUNITY WORK

- SSTEP Mentor (10/23/2023 - 11/3/2023)
- WCC STEM Program Mentor (October 2021 - June 2023)

PERSONAL INTERESTS

Scuba diving, Backpacking, Rock Climbing, Mountaineering

Research & Scholarship

CURRENT RESEARCH AND SCHOLARLY INTERESTS

Did life exist on Mars? My research addresses the salinity limits of microbial life in extreme environments on Earth to determine how and where to look for life on other planets. As a member of the NASA-funded Oceans Across Space and Time Team (OAST), I am targeting three hypersaline brine ecosystems: solar salterns (San Diego, CA), acidic brines (Western Australia), and deep hypersaline anoxic basins (Gulf of Mexico). By analyzing how microbial metabolism changes with salinity and additional environmental extremes (low pH, high pressure, etc.) we can constrain how the environment impacts global biogeochemical cycling on Earth and beyond.

LAB AFFILIATIONS

- Anne Dekas (9/14/2020)

Professional

WORK EXPERIENCE

- Laboratory Technician - Scripps Institution of Oceanography (June 2020 - August 2020)
- STEAM Instructor - Sally Ride Science (March 2019 - June 2020)

Publications

PUBLICATIONS

- **Single-cell analysis in hypersaline brines predicts a water-activity limit of microbial anabolic activity.** *Science advances*
Paris, E. R., Arandia-Gorostidi, N., Klempay, B., Bowman, J. S., Pontefract, A., Elbon, C. E., Glass, J. B., Ingall, E. D., Doran, P. T., Som, S. M., Schmidt, B. E., Dekas, A. E.
2023; 9 (51): eadj3594

- **Biosignature Molecules Accumulate and Persist in Evaporitic Brines: Implications for Planetary Exploration.** *Astrobiology*
Pozarycki, C., Seaton, K. M., C Vincent, E., Novak Sanders, C., Nuñez, N., Castillo, M., Ingall, E., Klempay, B., Pontefract, A., Fisher, L. A., Paris, E. R., Buessecker, S., Alansson, et al
2024; 24 (8): 795-812
- **Autochthonous carbon loading of macroalgae stimulates benthic biological nitrogen fixation rates in shallow coastal marine sediments** *Frontiers in Microbiology*
Raut, Y., Barr, C. R., Paris, E. R., Kapili, B. J., Dekas, A. E., Capone, D. G.
2024; 14