



Emily R. Paris

Ph.D. Student in Earth System Science, admitted Autumn 2020

 Curriculum Vitae available Online

Bio

BIO

Emily is a graduate student with Anne Dekas at Stanford University and recently defended her PhD thesis on the limits of microbial life in hypersaline environments. In 2020, she earned her bachelor's degree in Biochemistry & Cell Biology with a minor in Marine Sciences from UC San Diego. As an undergraduate, she worked with Bradley Moore at the Scripps Institution of Oceanography to develop a technique for isolating previously unculturable marine microbes that could be used in pharmaceutical development. Now her research is based on culture-independent techniques, including single-cell analysis with nanoSIMS, microscopy, and fluorescence-activated cell sorting. Emily has completed eight research cruises and one land-based field expedition since 2019. Two of these field projects included snorkeling with orcas above the Arctic circle to understand how environmental change affects their bioacoustics and behavioral patterns and sampling Mars-analogue acidic brine lakes in Western Australia to look for signs of extreme microbial life in support of NASA's future life detection missions. Aside from her PhD work, Emily has supported research aimed at increasing the safety of human spaceflight as a volunteer test subject for NASA. She is also a certified scientific SCUBA diver and enjoys rock climbing, backpacking, and piloting gliders in her free time.

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, American Academy of Underwater Sciences (2025 - present)
- Member, Soaring Society of America (2025 - present)
- Member, Women Soaring Pilots Association (2025 - present)
- 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

- PhD, Stanford University , Earth System Science (2026)
- MS, Stanford University , Earth System Science (2025)
- 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

Private pilot - glider, SCUBA diving (Scientific), Backpacking, Rock Climbing, Mountaineering, Running

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
- **Abundance, Identity, and Potential Diazotrophic Activity of nifH-Containing Organisms at Marine Cold Seeps.** *Environmental microbiology*
Semler, A. C., Paris, E. R., Salvador, M., Dekas, A. E.
2025; 27 (3): e70058
- **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