



Research Associate



Karen Junge
Post-doctoral Research Associate
NASA Astrobiology Institute
NASA Ames Research Center

I am a post-doc (post-doctoral student: someone who has completed their Ph.D. and is not yet a professor, but is doing research and occasionally teaching) in the Department of Earth and Space Sciences at the University of Washington (UW). At UW, I have been affiliated with the NASA Astrobiology Institute program, first as a student and now as a post-doc. My research involves both laboratory work and fieldwork addressing microbial ecology questions.

My areas of expertise

- Ecology, physiology, diversity and molecular biology of microorganisms in marine environments, in particular cold environments such as sea ice
- Extremophiles
- Impacts of bacterial activities on atmospheric processes
- Astrobiology

How I first became interested in this profession

Early on in my academic training as an undergraduate, I became fascinated with microorganisms and their apparent ability to exist at every place on Earth where liquid water is present, over an incredibly wide range of temperature, salinity, pH, pressure, etc. Exploring their possible adaptation mechanisms for maintaining activity in ice at the extremes of cold and salinity during my Ph.D. thesis allowed me to fully embrace this fascination. It also became apparent early on that in order to better understand these mechanisms, it is of crucial importance to understand the physical and chemical environment that these organisms experience. The emerging field of astrobiology represented for me a logical and very natural step to expand and extend my curiosity about microbial life beyond Earth to possible extraterrestrial habitats for life, allowing me to look at my results from wintertime sea ice with a different perspective.

What helped prepare me for this job

My Ph.D. training at the School of Oceanography, which is by its very nature interdisciplinary, provided me with the skills and many opportunities to successfully continue on in my career path. It taught me to explore research questions that not only allow me to pursue my own interests, but are also of great general interest in many contexts ranging from polar microbial ecology and astrobiology to cryopreservation and medical or industrial applications.

My role models or inspirations

Along the way, both in undergraduate and graduate school, I have been inspired by many of my teachers, instructors and mentors. My former thesis advisors Jody W. Deming, Hajo Eicken, James Staley, John Hedges and Ginger Armbrust were particularly important to my career development.

My education and training

- Doctor of Philosophy, Oceanography (Biological Oceanography) 2002, University of Washington, Seattle, WA, USA
- Masters of Science, Oceanography (Biological Oceanography) 1998, University of Washington, Seattle, WA, USA
- Diplom in Biology (Marine Biology, Biochemistry, Zoology, Microbiology) 1995 *Suma Cum Laude* Christian-Albrechts University in Kiel, Germany

My career path

- As an undergraduate, I spent a year in Seattle as a visiting scientist working in Prof. James Staley's laboratory (UW, Microbiology) where I became interested in sea-ice bacterial research.
- I worked as a research scientist in two different departments (Fisheries and Marine Microbiology) for almost a year before starting graduate school in Seattle at the School of Oceanography
- Sea-ice bacterial research focusing on extremely low temperatures as a NAI-funded post-doc at the School of Oceanography

What I like about my job

I enjoy many aspects of my job. A few to mention are the excitement of discovery, the satisfaction that comes with doing good science and getting results that are meaningful, and challenge 'old' ways of thinking; to be working in an environment where learning and teaching stands as the highest priority; to explore exciting research places.

What I don't like about my job

Sometimes in science (as in many other job situations), I find that politics can get in the way of the best and most productive way to proceed in a research project and to answer a research question. By focusing on the positive and by keeping to ones own principles I find that these challenges can be managed positively, often to the satisfaction of everyone involved.

My advice to anyone interested in this occupation

Once you decide that this area of research is yours to pursue, commit yourself to it. As with any endeavor in life, once you are committed, new paths, new ideas and new opportunities will present themselves all the time and you will succeed.