Meet the Authors

David Catling is a planetary scientist and astrobiologist interested in planetary habitability and how Earth’s environment and life co-evolved. His work ranges from numerical simulations to laboratory experiments. He has also been involved in Mars exploration. After finishing a doctorate at the University of Oxford (UK) in 1994, he worked at NASA Ames (USA). Then, in 2001, he became a faculty member at the University of Washington, Seattle (USA), where he currently resides. In addition to scholarly papers, he has written two books: Astrobiology: A Very Short Introduction for the layperson and, with Jim Kasting, Atmospheric Evolution on Inhabited and Lifeless Worlds for researchers.

Woodward Fischer is a geobiologist laboring to understand the relationships between life and surface environments through diverse and fundamental transitions in Earth’s history. He earned his PhD from Harvard University (USA) and is a member of the faculty at Caltech (USA) in the Division of Geological and Planetary Sciences. In addition to working on the Mars Science Laboratory and Mars 2020 missions, his group studies the emergence and early evolution of life, the innovation of photosynthesis and the rise of atmospheric oxygen, and the past, present, and future of the global carbon cycle.

Joel Hurowitz is a geochemist and planetary scientist working on the exploration of Mars, the study of modern and ancient Mars analog environments on Earth, and the sedimentary rock record of the Earth’s ancient oceans. Dr. Hurowitz is the deputy principal investigator of the PIXL instrument onboard the NASA Mars 2020 Perseverance rover mission. Dr. Hurowitz received his PhD from Stony Brook University (USA) in 2006 and was a research scientist at the NASA Jet Propulsion Laboratory (USA) from 2007 to 2013. In 2013, he joined the faculty of the Department of Geosciences at Stony Brook University where he is an associate professor.

Marianne Haines wants to use microbes to reimagine how future products and processes are created and accomplished. In her utopia, microbes—with their incredible capacity to produce useful materials and degrade wastes—are harnessed to improve the sustainability of society’s endeavors. Marianne has a BSc majoring in microbiology and biochemistry from La Trobe University (Australia). During her PhD at the University of Calgary (Canada), she specialized in the pilot scale cultivation of cyanobacteria, microbial ecology, photobioreactor technology, and alkaline soda lakes. Marianne is always happy to share the wonders of microbiology with anyone who is willing to listen.

Varada Khot is currently a PhD student in the Department of Geoscience at the University of Calgary (Canada). Her background is in chemical engineering with a focus on energy and the environment. During her PhD, Varada has applied genomic and computational techniques to explore her research interests in environmental microbiology, virology, alkaline environments, computational biology, and biotechnology.

Bree Morgan is a senior lecturer and researcher in the School of Geosciences at the University of Sydney (Australia). She obtained a PhD from the University of Western Australia in 2013 before completing an Office of the Chief Executive (OCE) post-doctoral fellowship with CSIRO’s mineral resources flagship. Morgan’s research within the Geocoastal Research Group teases apart the biogeochemical and mineralogical signatures of sediments to better understand how matter and energy cycle through the Earth’s surface and how this delicate balance is impacted by humans.

Maija Raudsepp is a low-temperature geochemist and geomicrobiologist. She is currently a research associate in the Environmental Economic Geology Laboratory at the University of Alberta, Canada. Maija completed her PhD at the University of Queensland, Australia, in 2016, examining biogenic methane cycling in coal mines. Her research focuses on the formation of carbonate minerals in alkaline lakes, differentiating classical and non-classical crystallization in natural environments, microbe–mineral interactions, and deep subsurface geomicrobiology. She is generally interested in (bio)geochemical processes that remove methane and CO₂ from the atmosphere.

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Marc Strous is a professor of microbiology at the University of Calgary (Canada). Previously, he completed his PhD at Delft University of Technology (Netherlands) and was an independent group leader at the Max Planck Institute for Marine Microbiology in Bremen (Germany). He pioneered the microbiology, ecology, and application of bacteria performing the anaerobic oxidation of ammonium and methane. Currently, he studies carbon and nitrogen cycling in microbial mats of alkaline soda lakes with applications to sustainable protein production.

Nicholas Tosca is a professor of mineralogy and petrology at the University of Cambridge (UK). His research focuses on the application of aqueous geochemistry and mineralogy to understand the processes that shape planetary surfaces and their environments through time. His research group integrates theoretical, experimental, and field-based observations to constrain the chemistry of natural waters that have interacted with modern and ancient sediments and rocks. He is the Associate Director for the Leverhulme Centre for Life in the Universe and a science team member of the Mars 2020 Perseverance rover mission.

Benjamin Tutolo is an associate professor in the Department of Geoscience at the University of Calgary (Canada). He is a geochemist and hydrogeologist who works to understand how interactions between rocks, water, and gases affect life on Earth and Mars. Alongside a large number of mentees and collaborators, he has been investigating alkaline lakes in the lab and field and using numerical models since 2015. He is currently Secretary of the Geochemical Society, Chair of the Ocean Networks Canada Ocean Observatory Council, and a science team member of the Mars Science Laboratory Curiosity rover mission.

Sasha Wilson is a professor and Canada Research Chair in Biogeochemistry of Sustainable Mineral Resources at the University of Alberta in Canada. Wilson obtained a PhD from the University of British Columbia (Canada) in 2010 and was a post-doctoral fellow at the NASA Astrobiology Institute at Indiana University (USA; 2010–2011) and a faculty member at Monash University (Australia; 2011–2017). Wilson is a mineralogist whose work focuses on low-temperature fluid–mineral interactions, particularly as they relate to carbon dioxide removal, enhanced recovery of critical metals from mine wastes, and cycling of nutrients and metals in natural sediments.

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