

## **ANN PEARSON**

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### **Education**

Ph.D.: Marine Chemistry and Geochemistry, MIT/WHOI Joint Program in Oceanography, 1994-2000.  
B.A.: Chemistry, Oberlin College, Ohio, 1988-1992.

### **Professional Experience**

Affiliate Faculty, Department of Organismic and Evolutionary Biology, Harvard University, 2021-  
Chair, Department of Earth and Planetary Sciences, Harvard University, 2019-  
Affiliate Faculty, Harvard John A. Paulson School of Engineering and Applied Sciences, 2018-  
Harvard College Professor, 2016-2021.  
Murray and Martha Ross Professor of Environmental Sciences, Harvard University, 2013-  
Professor of Biogeochemistry, Harvard University, 2009-2013.  
Thomas D. Cabot Associate Professor of Earth and Planetary Sciences, Harvard University, 2005-2009.  
Assistant Professor of Geochemistry, Harvard University, 2001-2005.  
Reinhart Coastal Research Center (RCRC) Post-doctoral investigator, WHOI, 2000-2001.  
Volunteer, United States Peace Corps, Ecuador, 1993-94.

### **Fellowships and Awards**

Dartmouth Society of Fellows, Visiting Scholar, 2021.  
Joanne Simpson Medal, AGU, 2019.  
American Geophysical Union (AGU) Fellow, 2019.  
John M. Hayes Award, Geochemical Society, 2019.  
IAS Benjamin Meaker Visiting Professor, University of Bristol, Fall 2018.  
Paul Gast Lectureship, Geochemical Society, 2015.  
Gordon and Betty Moore Foundation Investigator, 2013-2019.  
Radcliffe Institute Fellow, 2009-2010.  
David and Lucille Packard Foundation Fellowship for Science and Engineering, 2004-2009.  
C. G. Rossby Award for Best Dissertation in the Program in Atmospheres, Oceans, and Climate;  
Department of Earth, Atmospheric, and Planetary Science; MIT, 2000.  
EPA STAR Graduate Student Fellowship, 1997-2000.  
Geological Society of America, Organic Geochemistry Division, Most Outstanding Paper, 1997.  
Ida M. Green Graduate Student Fellowship, MIT, 1994-1995.  
Harry Holmes Prize in Chemistry, Oberlin College, 1992.  
Phi Beta Kappa, Oberlin College, 1991.

### **Research Interests**

- Phylogenetically directed research on problems in organic geochemistry and environmental microbiology, with emphasis on the evolution of lipid biosynthetic pathways and their roles in tracing environmental processes in Earth systems and Earth history.
- Environmental ecology and metabolism of Archaea.
- Global nutrient cycles and marine biogeochemical history.
- Light isotope ( $^{13/12}\text{C}$ ,  $^{14/12}\text{C}$ ,  $^{15/14}\text{N}$ ,  $^{18/16}\text{O}$ , and D/H) biogeochemistry with application to pathways of carbon, nitrogen, and hydrogen assimilation.

**Selected Recent Publications** - complete list here <https://scholar.google.com/citations?user=Hwk4sP0AAAAAJ&hl=en>

- Elling FJ, Hemingway JD, Kharbush JJ, Becker KW, Polik CA, Pearson A (2021) Linking diatom-diazotroph symbioses to nitrogen cycle perturbations and deep-water anoxia: Insights from Mediterranean sapropel events. *Earth and Planetary Science Letters* **571**, 117110.
- Elling FJ, Hemingway JD, Evans TW, Kharbush JJ, Spieck E, Summons RE, Pearson A (2020) Vitamin B<sub>12</sub>-dependent biosynthesis ties amplified 2-methylhopanoid production during oceanic anoxic events to nitrification. *Proceedings of the National Academy of Sciences USA* **117**, 32996-33004.
- Lawrence KT, Pearson A, Castañeda IS, Ladlow C, Peterson LC, Lawrence CE (2020) Comparison of late Neogene U<sup>k</sup><sub>37</sub> and TEX<sub>86</sub> paleotemperature records from the Eastern Equatorial Pacific at orbital resolution. *Paleoceanography and Paleoclimatology* **35**, e2020PA003858.
- Wilkes EB, Pearson A (2019) A general model for carbon isotopes in red-lineage phytoplankton: Interplay between unidirectional processes and fractionation by RubisCO. *Geochimica et Cosmochimica Acta* **265**, 163-181.
- Elling FJ, Gottschalk J, Doeana KD, Kusch S, Hurley SJ, Pearson A (2019) Archaeal lipid biomarker constraints on the Paleocene-Eocene carbon isotope excursion. *Nature Communications* **10**, 4519, doi.org/10.1038/s41467-019-12553-3.
- Naafs BDA, Monteiro FM, Pearson A, Higgins MB, Pancost RD, Ridgwell A (2019) Fundamentally different global marine nitrogen cycling in response to severe ocean deoxygenation. *Proceedings of the National Academy of Sciences USA* **116**, 24979-24984.
- Kharbush J, Smith D, Powers M, Vanderploeg HA, Fanslow D, Robinson RL, Dick GJ, Pearson A (2019) Chlorophyll nitrogen isotope values track taxonomic shifts in a natural phytoplankton community in Lake Erie. *Organic Geochemistry* **128**, 71-77.
- Hurley SJ, Close HG, Elling FJ, Jasper CE, Pearson A (2019) CO<sub>2</sub>-dependent carbon isotope fractionation in Archaea, Part II: The marine water column. *Geochimica et Cosmochimica Acta* **261**, 383-395.
- Pearson A, Hurley SJ, Wilkes EB, Elling FJ (2019) CO<sub>2</sub>-dependent carbon isotope fractionation in Archaea, Part I: Modeling the 3HP/4HB pathway. *Geochimica et Cosmochimica Acta* **261**, 368-382.
- Hurley SJ, Elling FJ, Könneke M, Buchwald C, Wankel SD, Santoro AE, Lipp JS, Hinrichs KU, Pearson A (2016) Influence of ammonia oxidation rate on thaumarchaeal lipid composition and the TEX<sub>86</sub> temperature proxy. *Proceedings of the National Academy of Sciences USA* **113**, 7762-7767.
- Higgins MB, Robinson RS, Carter SJ, Husson J, Pearson A (2012) Dominant eukaryotic export production during ocean anoxic events reflects the importance of recycled NH<sub>4</sub><sup>+</sup>. *Proceedings of the National Academy of Sciences USA* **109**, 2269-2274.

**Outreach and Community Activities**

- Agouren Geobiology Summer Course, USC (Catalina), 2005, 2018.
- Darwin Summer School on Biogeosciences, Utrecht/Texel, The Netherlands (2011)
- 2014 – Gordon Research Conference on Organic Geochemistry, Vice-Chair.
- 2016 – Gordon Research Conference on Organic Geochemistry, Chair.
- 2016-2017 – Theme Chair, V.M. Goldschmidt Conference, Paris (2017).
- 2016-2018 – Science Committee, V.M. Goldschmidt Conference, Boston (2018).
- 2017-present, Steering Committee, Harvard Origins of Life Initiative.
- 2018-2019, Organizing Committee, 2<sup>nd</sup> Geobiology Society Conference, Banff AB (2019).

Editorial Service

*Geochimica et Cosmochimica Acta*

*Organic Geochemistry*

*Geobiology*

*Environmental Microbiology/Environmental Microbiology Reports*

**Doctoral and Post-Doctoral Advisors**

Timothy I. Eglinton, Ann P. McNichol, John M. Hayes (deceased), Katrina J. Edwards (deceased)