

Phoebe A. Cohen
Education and Outreach Lead
Postdoctoral Associate
MIT NASA Astrobiology Team
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EDUCATION:

B.A. with distinction (2002) Cornell University College of Arts and Sciences
Major: Science of Earth Systems

Ph.D. (2010) Harvard University. Earth and Planetary Sciences
Dissertation: *Investigations of Enigmatic Neoproterozoic Eukaryotes*
Advisor: Andrew H. Knoll

PROFESSIONAL EXPERIENCE:

Postdoctoral Associate (2010 -) Department of Earth, Atmospheric, and Planetary Sciences,
Massachusetts Institute of Technology.

Education and Outreach Lead (2010 -) MIT NASA Astrobiology Team.

Assistant to the Director, Paleontological Research Institute (PRI) & The Museum of the Earth,
2002-2004.

AWARDS & GRANTS:

- NASA Astrobiology Education and Public Outreach Grant: 'A Traveling Astrobiology Exhibit: Combining Youth Engagement with Public Outreach'; 2011; (\$15,000).
- Paleontological Society Education and Outreach Grant Award: 'Telling Your Story: Facilitating Relationships between Paleontologists & Geoscientists and K-12 Classrooms; 2010; (\$2,500)
- Derek Bok Excellence in Teaching Award, Harvard University, 2009
- Paleontological Society Gould Student Research Award, 2008
- Cushman Foundation Loeblich and Tappan Student Research Award, 2008
- National Science Foundation Graduate Fellowship, 2005-2008
- Harvard University Department of Earth and Planetary Sciences Student Field Work grant, 2007
- Alfred W. Stickney Fellowship, Harvard University, 2005

PROFESSIONAL PUBLICATIONS:

Wilson, J.P., Grotzinger, J.P., Fisher, W.W., Hand, K.P., Jensen, S., Knoll, A.H., Abelson, J., Metz, J.M., McLoughlin, N., **Cohen, P.A.**, and M.M. Tice. Incised Valley Deposits at the Proterozoic-Cambrian Boundary in Southern Namibia Contain Abundant *Treptichnus pedum*. (submitted to *Palaios*)

Cohen, Phoebe A., J. William Schopf, Nicholas J. Butterfield, Anatoliy Kudryavtsev, & Francis Macdonald, 2011, Phosphate biomineralization in mid-Neoproterozoic protists. *Geology* (Boulder) doi:10.1130/G31833.1

Willman, Sebastian and **Phoebe A. Cohen**. 2011. Ultrastructural Approaches to the Microfossil Record: Assessing Biological Affinities by use of Transmission Electron Microscopy. *In: Quantifying the Evolution of Early Life* (Laflamme, M., Schiffbauer, J.D., and Dornbos, S.Q., Eds.) Springer, 462 p.

Macdonald, F.A., Schmitz, M.D., Crowley, J.L., Roots, C.F., Jones, D.S., Maloof, A.C., Strauss, J.V., **Cohen, P.A.**, Johnston, D.T., and Schrag, D.P., 2010, Calibrating the Cryogenian: *Science*, v. 327, no. 5970, p. 1241-1243.

Macdonald, F.A., **Cohen, P.A.**, Dudas, F.O., and Schrag, D.P., 2010, Early Neoproterozoic scale microfossils in the lower Tindir Group of Alaska and the Yukon Territory: *Geology* (Boulder), v. 38, no. 2, p. 143-146.

Macdonald, F.A., and **P. Cohen**. (in press) The upper Tindir, east-central Alaska. *In: Arnaud, E., Halverson, G., and Shields, G. Eds., The Geological Record of Neoproterozoic Glaciations*, Geological Society of London Memoir, London.

Cohen, Phoebe A., A.H. Knoll and R.B. Kodner. (2009) Large spinose microfossils in Ediacaran rocks as resting stages of early animals. *Proceedings of the National Academy of Sciences*. 106: 6519 – 6524

Cohen, Phoebe A. et al. (2009) Tubular Macrofossils from the Ediacaran Nama Group, Namibia. *Journal of Paleontology* 83: 110-122.

Allmon, W.D. and **P. Cohen** (2008). Palaeoecological significance of turritelline gastropod-dominated assemblages from the mid-Cretaceous (Albian-Cenomanian) of Texas and Oklahoma, USA. *Cretaceous Research* 29: 65-77

Knoll, A.H., Javaux, E.J., Hewitt, D., & **Cohen, P.** (2006). Eukaryotic organisms in Proterozoic oceans. *Philosophical Transactions - Royal Society of London. Biological Sciences*, 361(1470), 1023-1038.

INVITED TALKS:

Biomineralization and Exceptional Preservation in early Neoproterozoic Protistan Microfossils. MIT Chemical Oceanography and Biogeochemistry Seminar, October 15th, 2010.

Tracing the History of Eukaryotes in Precambrian Seas. Smithsonian Natural History Museum Paleobiology Seminar Series, June 24, 2010.

Tracing the History of Eukaryotes in Neoproterozoic Seas. Frontiers in Paleontology and Geomicrobiology, May 14-15, 2010, Yale University.

Two New Views of Neoproterozoic Life: Biomineralization in early Eukaryotes and an Ediacaran record of Metazoans. University of Chicago Department of Geophysical Sciences, October 2nd, 2009.

Making it in hostile waters: Metazoan evolution in stressful Ediacaran seas. Friday Harbor Marine Labs, July 23rd, 2009.

Beyond the Ediacarans: New Views of the Neoproterozoic. Cornell University Department of Earth and Atmospheric Sciences, January 21st 2009.

Fossils under the Gun: EM Applications to the study of early life. New England Society for Microscopy Annual Meeting, December 4th, 2008.

The expanding taxonomic affinity and hidden diversity of Neoproterozoic acritarchs. A world in transition: Geobiology of the Proterozoic-Cambrian Symposium, Yale University, 2007.

PROFESSIONAL TALKS & POSTERS:

Cohen, Phoebe A., Peter Mangiafico, David Patterson, and Roger E. Summons (2010). Moving WebQuests Forward in a Connected World: A Case Study using the Ediacaran Fauna. *Abstracts with Programs - Geological Society of America Annual Meeting.*

Cohen, Phoebe A., J. William Schopf, Nicholas J. Butterfield, Anatoliy Kudryavtsev, & Francis Macdonald (2009). Phosphatic Biomineralization of Early Neoproterozoic microfossils from the Yukon Territory. *Abstracts with Programs - Geological Society of America Annual Meeting.*

Cohen, Phoebe A., Schopf, W.J, Butterfield, N.J., Macdonald, F.M. (2009) Apatite microfossils from the Pre-Sturtian aged Lower Tindir Group, Yukon Territory. *Abstracts with Programs – North American Paleontological Convention.*

Cohen, Phoebe A., Robin B. Kodner, Andrew H. Knoll (2008). Evolutionary, Ecological, and Paleoenvironmental Implications of Acritarchs as Metazoan Resting Stages. *Abstracts with Programs - Geological Society of America Annual Meeting.*

Cohen, Phoebe A., Robin B. Kodner, Andrew H. Knoll (2007). Expanding the Taxonomic Affinities of Ediacaran and Phanerozoic Acritarchs. *Palaeontological Association Annual Meeting, Uppsala, Sweden.*

Cohen, Phoebe A. & A.H. Knoll (2007) Exploring the Taxonomic Affinities of Neoproterozoic and Paleozoic Acritarchs. *Abstracts with Programs - Geological Society of America Annual Meeting.*

Cohen, Phoebe A., Bradley, A. S., Knoll, A.H., *et al.* (2006). Tubular Macrofossils from the Nama Group, Namibia. *Abstracts with Programs - Geological Society of America, 38.*

Cohen, Phoebe A. & P. Sadler. (2005). High resolution biostratigraphic correlation of acritarch diversity in the Neoproterozoic and earliest Cambrian using CONOP9. *Abstracts with Programs - Geological Society of America, 37(7), 369.*

Allmon, W.D., Cohen, Phoebe A., (2003). Paleoeological significance of a Turritelline gastropod-dominated limestone in the Lower Cretaceous of Texas. *Abstracts with Programs - Geological Society of America*, 35(6), 502.

GENERAL AUDIENCE PUBLICATIONS:

Cohen, Phoebe A. (2006). A Long Fuse: Evolution in the Precambrian. *American Paleontologist Magazine*, 14(2), 21-23.

Education and Outreach blog posts, American Geophysical Union, *Plainspoken Scientist* blog: <http://blogs.agu.org/sciencecommunication>

SHORT COURSES:

- GSA short course 508 Education Research I: Conducting Qualitative Geoscience Education Research, 2010.
- GSA short course 518. Education Research II: Conducting Quantitative Geoscience Education Research, 2010.
- Agouron Institute, Advanced Geobiology Field course (Namibia), June 2006.
- USC Wrigley / Agouron Institute International Geobiology course, June-July 2005.

FIELD WORK:

- Flinders Range, Ediacaran localities, Southern Australia, April 2010.
- Neoproterozoic Tindir Group, Alaska and The Yukon Territory, June 2007.
- Ediacaran Nama Group, Namibia, June 2006.
- Ordovician Beaverfoot Formation, Canadian Rockies, September 2005.

TEACHING EXPERIENCE:

- **Head Teaching Fellow**, Paleobiological Perspectives on Ecology and Evolution, Harvard University Department of Organismic and Evolutionary Biology, Spring 2009.
- **Teaching Fellow**, Dinosaurs and Their Relatives, Harvard University Core Program, Spring 2008.
- **Teaching Fellow**, History of the Earth, Harvard University Department of Earth and Planetary Sciences, Spring 2006.
- **Teaching Fellow**, Environmental Risks & Disasters, Harvard University Core Program, Fall 2006.
- **Teaching Assistant**, Paleobiology, Cornell University Department of Earth and Atmospheric Sciences, Fall 2003.
- **Teaching Assistant**, Hawaii Earth Science Field Course, Cornell University Department of Earth and Atmospheric Sciences, January 2002.

GUEST LECTURES:

- Paleobiological Perspectives on Ecology and Evolution, Harvard University Department of Organismic and Evolutionary Biology, April 2009. Lecture on the early history of life on Earth.

- Astronomy PHYS 1111, Northeastern University, March 2011. Lecture on Astrobiology and the identification of life.
- Undergraduate Seminar 12.080, Department of Earth, Atmospheric, and Planetary Sciences, MIT, March 2011. Lecture on Precambrian Paleontology.

EDUCATION AND OUTREACH ACTIVITIES:

- Mentor and project coordinator, MIT Youth Astronomy Apprenticeship Program
- Created WebQuest geared towards middle school science audiences on the Ediacaran time period and its fossils: www.complex-life.org/the_first_animals
- Creation of Virtual Field Trips for college-level instruction and K-12 classrooms, in the Ediacaran Flinders region of South Australia and the Shark Bay stromatolites of Western Australia. In collaboration with Arizona State University and the Australian Center for Astrobiology.
- 2011 Cambridge Science Festival event organizer and creator: A Walk Through Geologic Time: <http://www.complex-life.org/csf2011>
- Organizer and Facilitator, *Telling Your Story* scientist-teacher partnership workshops, 2011: www.complex-life.org/tys
- Wrote and starred in Educational classroom-use video for MIT BLOSSOMS Program: Geologic Time: The Ticking of Our Planet's 4.6 Billion Year Clock: blossoms.mit.edu/video/geologic-time.html
- Presenter, Harvard Museum of Natural History public education and professional development programs, 2010-2011.
- Co-organizer, "sideWalk Through Time" collaborative art and science education program at the Harvard Museum of Natural History, September 2009.
- Instructor, Harvard Museum of Natural History adult education course, "From Bacteria to Bones: Exploring the Rise of Complex Life on Earth", March, 2008.
- Presentations on research and paleontology to elementary and middle school students across Massachusetts
- Instructor, Science Club For Girls, Spring 2005, Cambridge Middle Schools.

ORGANIZATIONAL AND COMMUNITY ACTIVITIES:

- MIT 150 Open House - Department of Earth, Atmospheric, and Planetary Sciences co-organizer.
- Paleontological Society Education and Outreach committee member, 2010 -
- Earth and Planetary Sciences Graduate Student Board Member, Harvard Graduate Women in Science and Engineering, 2007-2009
- Student Representative, The Paleontological Society, 2006-2008
- Seminar Co-organizer, Earth History and Paleobiology Seminar Series, Harvard University, 2006-2008
- Earth and Planetary Sciences Graduate Student Representative, Harvard University Graduate Student Council, 2007-2008
- Graduate Student Representative, Harvard University Earth and Planetary Sciences Green Team, 2005-2007.

- Symposium Co-organizer, Geobiology of the Neoproterozoic-Cambrian II, Harvard University, April 25th 2008

PHOTOGRAPHY

- Two images included in the NASA From Earth to the Solar System collection: <http://fettss.arc.nasa.gov/> and one selected for National Geographic blog Newswatch: <http://newswatch.nationalgeographic.com/2011/05/13/pictures-places-on-earth-aliens-could-thrive/>
- Three photographs selected for the State of the Art Gallery annual Juried Photo Show, Ithaca, NY, 2003.
- Wedding and special event photography