

Ellen K. Schaal

Visiting Assistant Professor, Geology Department
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EDUCATION

2014 Ph.D. Geological & Environmental Sciences, Stanford University
2005 B.A. Geology, B.A. Studio Art, Carleton College

EMPLOYMENT HISTORY

2014-Present Visiting Assistant Professor of Geology, Lawrence University
2012 Visiting Instructor in the Department of Geology, Carleton College
2006-2014 Research Assistant and Teaching Assistant, Stanford University
2005-2006 Educational Associate in Geology, Carleton College
2004-2005 Undergraduate Teaching and Research Assistant, Carleton College

HONORS AND AWARDS

2014 Certificate of Achievement in Mentoring in the School of Earth Sciences
2008-2011 Eugene Holman Stanford Graduate Fellowship
2007-2008 Thomas D. and Janice H. Barrow Fellowship
2005 Summa Cum Laude
2005 Phi Beta Kappa
2005 Sigma Xi
2005 Distinction in Geology Major
2004-2005 Laurence McKinley Gould Prize in Natural Sciences
2003-2004 Duncan Stewart Fellowship

RESEARCH EXPERIENCE

2006-2014 Dissertation Research, Department of Geological & Environmental Sciences, Stanford University (Research Advisor: Jonathan Payne)

- Quantification of Permian-Triassic body size evolution in multiple marine clades
- Analysis of Early Triassic conodont recovery patterns, including collection and processing of samples from south China
- Sr isotope analysis of Permian-Triassic carbonates and conodonts
- Numerical modeling of the Sr cycle through the Permian-Triassic

2006-2007 Research Assistant, Paleobiology Lab, Stanford University

- Curation of fossil collections

2005-2006 Research Assistant, Department of Geology, Carleton College (Research Advisor: Clint Cowan, Laboratory Mentor: David Fox [U of Minnesota])

- C and O isotope analysis of Cambrian phosphatic brachiopods

- 2004-2005
 - High viscosity seawater experiments on sedimentary structures
 Undergraduate Thesis Research, Department of Geology, Carleton College
 (Research Advisors: Bereket Haileab & Dave Barbeau [U of South Carolina])
 - Sandstone petrography and provenance in a foreland basin succession

TEACHING EXPERIENCE

- 2015-2016 Visiting Assistant Professor of Geology, Lawrence University
 - GEOL 550 - Geology of the Upper Mississippi River (Enrolled: 10)
 - GEOL 520 - Paradigm Shifts in the History of Geology (Enrolled: 7)
 - GEOL 360 - Sedimentology & Stratigraphy (Enrolled: 11)
 - GEOL 210 - History of Earth and Life (Enrolled: 27)
 - GEOL 110 - Introductory Geology (upcoming)
- 2014-2015 Visiting Assistant Professor of Geology, Lawrence University
 - GEOL 260 - Introduction to Paleobiology (Enrolled: 18)
 - GEOL 110 - Introductory Geology (Enrolled: 27)
 - GEOL 110 - Introductory Geology (Enrolled: 37)
- 2015 Guest lecturer, Lawrence University
 - CHEM 108 - The Chemistry of Art
- 2012 Visiting Instructor in the Department of Geology, Carleton College
 - GEOL 230 - Paleobiology (Enrolled: 22)
- 2009 Guest lecturer, Stanford University
 - GES 123 - Invertebrate Paleobiology
- 2007-2009 Teaching Assistant, Stanford University
 - GES 123 - Invertebrate Paleobiology
 - GES 1 - Fundamentals of Earth Science
 - Undergraduate Field Trip, San Juan River, Utah
 - Development of laboratory exercises for Invertebrate Paleobiology
- 2006 GES 200 - Professional Development in Geoscience Education course
- 2005-2006 Educational Associate in Geology, Carleton College
 - Assistance with classes and field trips
- 2004-2005 Undergraduate Teaching Assistant, Carleton College
 - GEOL 250 - Mineralogy
 - GEOL 230 - Paleobiology

ADDITIONAL EDUCATION & TRAINING

- 2013 Short Course “Applied Ichnology: The Use of Trace Fossils in Sequence Stratigraphy, Exploration & Production Geology.” Taught by George Pemberton (University of Alberta)
- 2011 Short Course “Carbonates Applied to Hydrocarbon Exploration and Exploitation.” Taught by Jeffery J. Dravis (Dravis Interests, Inc., Houston, TX)
- 2009 Short Course on Foraminifera. Taught by Demir Altiner (Middle East Technical University)

- 2008 Field Course “Carbonate Reservoir Architecture and Applied Sequence Stratigraphy, West Texas & Southeast New Mexico.” Lead by Art Saller (Chevron)
- 2007 Lecture and Laboratory Short Course “Stable Isotope Ecology.” Lead by Jim Ehleringer and Thure Cerling (SIRFER Stable Isotope Ratio Facility for Environmental Research, University of Utah)

MENTORING

- 2016 Directed 2 Independent Studies: senior project in paleoecology; junior project in sedimentology, Lawrence University
- 2015 Directing an Independent Study in Biomineralization, Lawrence University
- 2013 SES Mentoring in Research Workshop, Stanford University

Students:

- 2012-2014 Daniel Javier Morgan, Undergraduate Research Student, Stanford University
- Presented his project at AGU Annual Meeting, San Francisco, CA. Abstract #PP13A-1863.
- 2010-2012 Kathryn (Kit) Vanderboll, Undergraduate Research Student, Stanford University
- 2009-2010 Margaret Chapman, Undergraduate Research Student, Stanford University

PRINCIPAL FIELD EXPERIENCE

- 2015 Co-lead student field trip on the geology of the Upper Mississippi River Valley. One week.
- 2011 Geological transect of the Himalayas and the Tethyan sediments of Ladakh, India. Two weeks.
- 2009, 2010 Paleozoic carbonates, paleontology, and stratigraphy of Death Valley and Owens Valley, California. Two weeks.
- 2009 Geology of Iceland. Two weeks.
- 2009 Ordovician, Carboniferous, and Triassic paleontology and stratigraphy of the Basin and Range, Nevada and Utah. One week.
- 2009 Permian sequence stratigraphy, Guadalupe Mountains, west Texas. One week.
- 2007, 2008 Permian-Triassic paleontology and stratigraphy of carbonate platforms in the Nanpanjiang Basin, Guizhou Province, China. Three months.
- 2006 Geology of the St. Francois Mountain region, Missouri. One week.
- 2005 Geology of the Salt Lake City region, Utah. One week.
- 2004 Foreland basin stratigraphy, Catalan Coastal Range, Spain. Three weeks.
- 2003 Modern carbonate systems, San Salvador Island, Bahamas. Two weeks.

SERVICE

2014-2015 Environmental Studies Program Planning Committee, Lawrence University
 2011-2012 School of Earth Sciences Space Subcommittee, Stanford University
 2009-2012 Financial Officer, Stanford Alpine Project student group (educational geology field trips), Stanford University
 Reviews for Journals: *Science*, *Ecology*

PROFESSIONAL AFFILIATIONS

2011-Present The Paleontological Society (PS)
 2011-Present American Geophysical Union (AGU)
 2011-Present The Geological Society of America (GSA)
 2010-Present Society for Sedimentary Geology - Pacific Section (SEPM)

SOFTWARE & PROGRAMMING LANGUAGES

R – statistical programming language
 STELLA – numerical modeling software
 PAST – paleontological statistics software

PUBLICATIONS

- 2016 **Schaal EK**, Clapham ME, Rego BL, Wang SC, and Payne JL. Comparative size evolution of marine clades from the Late Permian through Middle Triassic. *Paleobiology* 42: 127-142. doi: 10.1017/pab.2015.36.
- 2015 Heim NA, Knope ML, **Schaal EK**, Wang SC, and Payne JL. Cope's rule in the evolution of marine animals. *Science* 374: 867-870. doi: 10.1126/science.1260065.
- 2015 **Schaal EK**, Payne JL, Meyer KM, Lau KV, and Silva-Tamayo JC. Ocean anoxia during the Permian-Triassic transition and links to volcanism. In *Volcanism and Global Environmental Change* L. Elkins-Tanton, A. Schmidt, and K. Fristad eds. Cambridge University Press.
- 2015 Lehrmann DJ, Bentz JM, Wood T, Goers A, Dhillon R, Akin S, Li X, Payne JL, Kelley BM, Meyer KM, **Schaal EK**, Suarez MB, Yu M, Qin Y, Li R, Minzoni M, and Henderson CM. Environmental controls on the genesis of marine microbialites and dissolution surface associated with the end-Permian mass extinction: new sections and observations from the Nanpanjiang Basin, south China. *Palaios* 30: 529-552. doi: 10.2110/palo.2014.088.
- 2015 Lehrmann DJ, Stepchinski L, Altiner D, Orchard MJ, Montgomery P, Enos P, Ellwood BB, Bowring SA, Ramezani J, Wang H, Wei J, Yu M, Griffiths JD, Minzoni M, **Schaal EK**, Li X, Meyer KM, and Payne JL. An integrated biostratigraphy (conodonts and foraminifers) and chronostratigraphy (paleomagnetic reversals, magnetic susceptibility, elemental chemistry, carbon isotopes and geochronology) for the Permian–Upper Triassic strata of Guandao section, Nanpanjiang Basin, south

China. *Journal of Asian Earth Sciences* 108: 117-135.
doi: 10.1016/j.jseas.2015.04.030.

- 2014 Minzoni M, Lehrmann DJ, Payne JL, Enos P, Wei J, Kelley BM, **Schaal EK**, Meyer KM, Montgomery P, Goers A, and Wood T. Triassic tank: platform margin and slope architecture in space and time, Nanpanjiang Basin, south China, in Verwer K, Playton TE, and Harris PM, eds. Deposits, architecture, and controls of carbonate margin, slope, and basinal settings. *SEPM Special Publication* 105: 83-113. doi: 10.2110/sepmsp.105.10.
- 2012 Lehrmann DJ, Minzoni M, Li X, Yu M, Payne JL, Kelley BM, **Schaal EK**, and Enos P. Lower Triassic oolites of the Nanpanjiang Basin, south China. *AAPG Bulletin* 96: 1389-1414. doi: 10.1306/01231211148.

FIELD GUIDES & ONLINE TEACHING TOOLS

- 2011 India: A Geologic Field Guide. Stanford Alpine Project student group. (<http://pangea.stanford.edu/groups/SAP/himalayainfo.html>)
- 2009 Iceland: A Geologic Field Guide. Stanford Alpine Project student group. (http://pangea.stanford.edu/groups/SAP/previous_expeditions/Iceland/Iceland_2009.html)

PRESENTATIONS

- 2016 **Invited Talk** – Oklahoma State University, Stillwater, OK. Permian-Triassic global change: The strontium cycle and body size evolution in marine clades.
- 2016 **Invited Talk** – State University of New York – Potsdam, NY. Permian-Triassic global change: The strontium cycle and body size evolution in marine clades.
- 2016 **Invited Talk** – Appalachian State University, Boone, NC. Permian-Triassic global change: The strontium cycle and body size evolution in marine clades.
- 2014 **Schaal EK**, Morgan DJ, Jost AB, Heim NA, and Payne JL. Measuring body size from genus-level compendia captures size evolution trends in component species: validation using Foraminifera, Ostracoda, and Conodonts. GSA Annual Meeting, Vancouver, BC. *Abstracts with Programs*, Vol. 46, No. 6, p. 643. Talk.
- 2013 Morgan DJ, Payne JL, and **Schaal EK** (presenting author). Body size evolution in conodonts from the Cambrian through the Triassic. GSA Annual Meeting, Denver, CO. *Abstracts with Programs*, Vol. 45, No. 7, p. 108. Poster.
- 2012 **Schaal EK**, Morgan DJ, Clapham ME, Rego BL, Wang SC, and Payne JL. Conodont body size and diversity trends after the end-Permian extinction: implications for the recovery of pelagic vs. benthic ecosystems. AGU Annual Meeting, San Francisco, CA. Abstract #PP31A-1994. Poster.
- 2012 **Schaal EK**, Morgan DJ, Clapham ME, Rego BL, Wang SC, and Payne JL. Conodont body size and diversity trends after the end-Permian extinction: implications for the recovery of pelagic vs. benthic ecosystems. GSA Annual

Meeting, Charlotte, NC. *Abstracts with Programs*, Vol. 44, No. 7, p. 166. Talk.

- 2011 **Schaal EK**, Paytan A, and Payne JL. Strontium isotope constraints on Permian-Triassic global change. AGU Annual Meeting, San Francisco, CA. Abstract #PP13D-1863. Poster.
- 2011 **Schaal EK**, Paytan A, and Payne JL. Strontium isotope constraints on Permian-Triassic global change. GSA Annual Meeting, Minneapolis, MN. *Abstracts with Programs*, Vol. 43, No. 5, p. 506. Talk.
- 2010 **Schaal EK**, Clapham ME, Rego BL, Wang SC, and Payne JL. Comparative size evolution of marine clades from the Late Permian through Middle Triassic. GSA Annual Meeting, Denver, CO. *Abstracts with Programs*, Vol. 42, No. 5, p. 481. Talk.
- 2008 **Invited Talk** – Chevron-Texaco, San Ramon, CA. Geochemical & paleobiological perspectives on the Early Triassic: the strontium cycle and conodont recovery patterns.

References

Jonathan Payne

(PhD advisor)

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Clinton Cowan

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