

Shaena Montanari, PhD

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APPOINTMENTS

Newton International Fellow, University of Edinburgh — February 2015- Present

Stable isotope paleoecology of Paleocene mammals from New Mexico, USA. Modern isotope ecology of small mammal communities to establish reference frames for understanding the mammalian fossil record. Supervisor: Stephen Brusatte

Lecturer, Columbia Science Fellows, Columbia University — July 2013-January 2015

Seminar leader and curriculum development for Columbia's Core Curriculum course "Frontiers of Science". Lecturer in the Discipline of Ecology, Evolution, and Environmental Biology.

Postdoctoral Researcher, Sackler Institute for Comparative Genomics, American Museum of Natural History, New York, NY — November 2012-January 2015

Dietary ecology and conservation of vertebrates using stable isotopic and genomic methods. Supervisor: George Amato

EDUCATION

Richard Gilder Graduate School at the American Museum of Natural History

PhD in Comparative Biology; 2008-2012

Advisors: Mark Norell and John Flynn

Dissertation: "Stable isotope paleoecology and paleobiology of extinct terrestrial vertebrates"

University of North Carolina at Chapel Hill

BS Geological Sciences, Minor Marine Science; 2005-2008

Senior Honors Thesis Advisor: Donna Surge

Duke University

National Science Foundation Research Experience for Undergraduates; Summer 2007

Advisor: Emily Bernhardt

AWARDS AND GRANTS

- Palaeontological Association Engagement Grant: 2016
- Forbes 30 Under 30 in Science: 2015
- Newton International Fellowship—The Royal Society: 2015-2017
- Theodore Roosevelt Memorial Fund Grant: 2014
- GSA-U.S. National Committee for the International Union of Geological Sciences Early Career Scientist Travel Fellowship Grant Award: 2012
- Hutchison Young Scientist Award—International Union of Geological Sciences: 2012
- NSF Graduate Research Fellowship: 2009-2012
- NSF Doctoral Dissertation Improvement Grant: 2011-2012
- Jurassic Foundation Grant: 2011
- ExxonMobil Geosciences Award: 2010
- Society of Vertebrate Paleontology Student Member Travel Grant: 2010

PEER-REVIEWED PUBLICATIONS

12. Eagle, R.A., Enriquez, M., Grellet-Tinner, G., Pérez-Huerta, A., Hu, D., Tütken, T., **Montanari, S.**, Lloyd, S.J., Ramirez, P., Tripathi, A.K., Kohn, M.J., Cerling, T.E., Chiappe, L.M., Eiler, J.M. 2015. Isotopic (^{13}C - ^{18}O) ordering in calcium carbonate eggshells reflects body temperatures and suggests differing thermophysiology in two Cretaceous dinosaurs. *Nature Communications*. doi:10.1038/ncomms9296
11. **Montanari, S.**, Amato, G. 2015. Discrimination factors of carbon and nitrogen stable isotopes from diet to hair and scat in captive tigers (*Panthera tigris*) and snow leopards (*Uncia uncia*). *Rapid Communications in Mass Spectrometry* 29 (11), 1062-1068. doi: 10.1002/rcm.7194
10. Passey, B., Hu, H., Ji, H., **Montanari, S.**, Li, S., Henkes, G.A., Levin, N. E., 2014. Triple oxygen isotopes in biogenic and sedimentary carbonates. *Geochimica et Cosmochimica Acta* 141, 1-25. doi:10.1016/j.gca.2014.06.006
9. **Montanari, S.**, Louys, J., Price, G. 2013. Pliocene paleoenvironments of southeastern Queensland, Australia: inferences from stable isotopes of marsupial tooth enamel. *PLOS ONE* 8(6): e66221. doi:10.1371/journal.pone.0066221
8. **Montanari, S.**, Higgins, P., Norell, M. 2013. Dinosaur eggshell and tooth enamel geochemistry as an indicator of Mongolian Late Cretaceous paleoenvironments. *Palaeogeography, Palaeoclimatology, Palaeoecology* 370, 158-166. doi:10.1016/j.palaeo.2012.12.004

7. Louys, J., **Montanari, S.**, Plummer, T., Bishop, L., Hertel, F. 2013. Evolutionary divergence and convergence in shape and size within African antelope proximal phalanges. *Journal of Mammalian Evolution* 20(3), 239-248. doi:10.1007/s10914-012-9211-4
6. Brusatte, S., Sakamoto, M., **Montanari, S.**, Harcourt-Smith, W. 2012. The evolution of cranial form and function in theropod dinosaurs: insights from geometric morphometrics. *Journal of Evolutionary Biology* 25(2), 365-377. doi:10.1111/j.1420-9101.2011.02427.x
5. **Montanari, S.**, Brusatte, S., De Wolf, W., Norell, M. A. 2011. Variation of osteocyte lacunae size within the tetrapod skeleton: implications for palaeogenomics. *Biology Letters* 7(5), 751-754. doi:10.1098/rsbl.2011.0173
4. Brusatte, S., **Montanari, S.**, Yi, H., Norell, M. 2011. Phylogenetic corrections for morphological disparity analysis: new methodology and case studies. *Paleobiology* 37, 1-22. doi:10.1666/09057.1
3. Kvist, S., **Montanari, S.**, Yi, H., Fuks, B., Siddall, M.E. 2011. Teaching biodiversity and evolutionary biology in a North American marine coastal environment. *American Biology Teacher* 73(2), 72-77. doi:10.1525/abt.2011.73.2.4
2. Conrad, J., Ast, J., **Montanari, S.**, Norell, M.A. 2011. A combined evidence phylogenetic analysis of Anguimorpha (Reptilia: Squamata). *Cladistics* 27(3), 230-277. doi:10.1111/j.1096-0031.2010.00330.x
1. Ardon, M., **Montanari, S.**, Morse, J.L., Doyle, M.W., Bernhardt, E.S. 2010. Phosphorous export from a restored wetland ecosystem in response to natural and experimental hydrologic fluctuations. *Journal of Geophysical Research-Biogeosciences* 115, 1-12. doi:10.1029/2009JG001169

TEACHING AND MENTORING

Founder, Fossils for Everyone; September 2015-Present

Paleontology outreach and education for children confined to the hospital setting. Currently in pilot phase.

Frontiers of Science, Columbia University; July 2013-January 2015

Leader of two seminar sections for Frontiers of Science per semester, a Core Curriculum course for first-year Columbia University undergraduates. Develop and implement course content with a team of postdocs and Columbia faculty.

Co-Instructor, Science Research Mentorship Program, AMNH; Fall 2010

Co-Instructor for an afterschool high school class (Biodiversity) for the AMNH NSF-supported Science Research Mentorship Program (SRMP). Lecture and content developer, co-teacher, and lecturer.

Teaching Assistant, Columbia University; Spring 2010

TA for EESC 2300V (The Life System) at Columbia University. Ran weekly lab session for 20 students.

High school student mentor, AMNH; Summer 2009

Mentored NYC female high school student (Graduated B.Sc. Geosciences from Yale), resulted in her inclusion on final published article (Montanari et al. 2011).

CONFERENCE PRESENTATION AND ABSTRACTS

9. **Montanari, S.**, Brusatte, S. L., Secord, R., Williamson, T. Comparisons of stable isotope trophic niche metrics in extant small mammal communities: implications for understanding mammalian community composition at the K-Pg boundary. Society of Vertebrate Paleontology 75th Annual Meeting. 2015. Poster.
8. **Montanari, S.** and Amato, G. Assessing the Impact of Invasive Mammals on Endemic Vertebrate Fauna of the Bahamas: a Quantitative Approach Using Next-Generation Sequencing. 2nd Bahamas Natural History Conference. Nassau, Bahamas. March 2014. Poster presentation.
7. **Montanari, S.** and Amato, G. Molecular and isotopic methods for dietary analysis in big cats using scats and hair. Student Conference on Conservation Science- New York. American Museum of Natural History. October 2013. Speed talk.
6. **Montanari, S.** Stable isotope ecology of vertebrates in arid environments: Archives of environment and climate in the fossil record. Society of Vertebrate Paleontology 72nd Annual Meeting. 2012. Oral presentation: Romer Prize Competition session.
5. **Montanari, S.**, Louys, J., Price, G. Pliocene paleoenvironments of southeastern Queensland, Australia inferred from stable isotopes of marsupial tooth enamel. 34th International Geological Congress, Brisbane, Australia. 2012. Oral presentation.
4. **Montanari, S.**, Higgins, P., Norell, M.A. Dinosaur Eggshell Geochemistry as an Indicator of Central Asian Paleoenvironments. Society of Vertebrate Paleontology 71st Annual Meeting 2011 and American Geophysical Union Annual Meeting 2011. Poster presentation.
3. **Montanari, S.** and Norell, M. Late Cretaceous paleoenvironments of the Gobi Desert: Reconstructions from stable isotopes of dinosaur fossils. Society of Vertebrate Paleontology 70th Annual Meeting 2010. Oral presentation.

2. Conrad, J., Ast, J., **Montanari, S.**, Norell, M. A combined evidence phylogenetic analysis of Anguimorpha (Reptilia: Squamata). Willi Hennig Society Meeting XXIX 2010. Oral Presentation

1. **Montanari, S.** and Surge, D. Mid-latitude seasonality during the Middle Pliocene Warm Interval recorded in the extinct hard clam, *Mercenaria corrugata*, from the US Middle Atlantic Coastal Plain Geological Society of America 2008 Joint Annual Meeting, 302-4. Poster presentation.

PROFESSIONAL MEMBERSHIPS AND SERVICE

- **Member:** Society of Vertebrate Paleontology (Colbert Poster Prize Committee 2015-Present), Palaeontological Association
- **Reviewer:** BMC Evolutionary Biology, Palaeontologia Electronica
- **Contributor**
 - Forbes—May 2015-Present (<http://www.forbes.com/sites/shaenamontanari/>)
 - PLOS Blogs “The Integrative Paleontologists” (blogs.plos.org/paleo) (2012-2014)
- **Twitter:** @DrShaena

CO-AUTHORED ABSTRACTS AND BOOK REVIEWS

10. **Montanari, S.** From Clone to Bone: The Synergy of Morphological and Molecular Tools in Palaeobiology. Book Review. Quarterly Review of Biology. March 2014.

9. Hu, H., Passey, B., **Montanari, S.**, and Chin, K. Constraints on Late Jurassic and Cretaceous atmospheric pCO₂ and primary productivity from triple oxygen isotopes in dinosaur eggshells. Geological Society of America Meeting 2014, Vancouver, Canada.

8. Passey, B., Hu, H., Ji, H., **Montanari, S.**, Li, S., Henkes, G., and Levin, N. Triple Oxygen Isotopes in Terrestrial Carbonates. Invited Talk. Goldschmidt 2014, California.

7. Hu, H., Passey, B., **Montanari, S.**, Levin, N., and Li, S. A deep-time CO₂ barometer based on triple oxygen isotope compositions of dinosaurian eggshell carbonate. American Geophysical Union Fall Meeting 2013.

6. Passey, B., Hu, H., **Montanari, S.**, Li, S., Levin, N. Triple Oxygen Isotope Compositions of Late Cretaceous Dinosaur Eggshells and Implications for Atmospheric Carbon Dioxide. Goldschmidt 2013, Florence, Italy.

5. Enriquez M.V., Eagle, R., Eiler, J.M., Tripathi, A.K., Ramirez, P.C., Loyd, S.J., Chiappe, L., **Montanari, S.**, Norell, M., Tutken, T. Assessment of diagenetic alteration of dinosaur eggshells through petrography and geochemical analysis. American Geophysical Union Fall Meeting 2012.

4. Louys, J., **Montanari, S.**, Plummer, T., Hertel, F., Bishop, L. Divergent toes: evolution of African antelope distal phalanges and implications for divergence of shape and size. Society of Vertebrate Paleontology 71st Annual Meeting 2011.
3. Brusatte, S., Lloyd, G., Wang, S., **Montanari, S.**, Hong-yu, Y. How to Cope with Rock Record Biases in Studies of Morphological Evolution: New Methods for Analyzing Disparity and Evolutionary Rates. Society of Vertebrate Paleontology 71st Annual Meeting 2011.
2. Ardon, M., **Montanari, S.**, Morse, J.L., Doyle, M.W., and Bernhardt E.S. Phosphorus retention processes in a large-scale wetland restoration project under a changing climate. NABS 56th Annual Meeting 2008, 370.
1. **Montanari, S.** Global climate change linked to increasing world hunger. World Watch. Sept.-Oct. 2005: 6

FIELD EXPERIENCE AND PROFESSIONAL DEVELOPMENT

- Fieldwork First Aid, Marlin Training, Edinburgh, UK December 7-8, 2015.
- Writing About Your Research, The Royal Society, London. September 2, 2015.
- Understanding Grants Processes, The Royal Society, London. May 5-6. 2015
- University of Edinburgh Isle of Skye paleontological expedition. April 10-17, 2015
- Leadership Effectiveness, Imperial College Business School and the Royal Society, March 18-20, 2015
- Stable Isotopes in Ecology graduate course, University of Utah; June 11-22, 2012
- Non-Invasive Techniques in Genetics for Wildlife Conservation, Smithsonian Conservation Biology Institute; May 19-25, 2012
- ExxonMobil Deep Water Reservoir Characterization field course; La Jolla, CA, June 2011
- AMNH-Mongolian Academy of Sciences Expedition: Gobi Desert, Mongolia for 4 weeks; Summer 2009 and 2010
- Marine biodiversity survey course in St. Andrews, New Brunswick, Canada, a 2-week course at the Richard Gilder Graduate School (AMNH); May 2009
- Paleontological expedition, Bridger Basin, Southwestern Wyoming with the American Museum of Natural History; August 2008
- Geological field mapping transect through Utah, Nevada, and California with the University of Nevada Reno field camp class; May-July 2008

INVITED PRESENTATIONS

- Class lecture “Stable Isotopes in Conservation Biology” for G6905: Graduate Seminar in Conservation Biology. Columbia University. April 2013
- AMNH Board of Trustees Annual Meeting, 6 minute presentation on dissertation research followed by questioning, December 2012