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| **Sharon A. Newman**  41 Pilgrim Street, Apartment 301  Cambridge, MA 02139  [sharon.newman4@gmail.com](mailto:sharon.newman4@gmail.com) | (978) 590-4284  https://bosaklab.scripts.mit.edu/SAN | |
| **EDUCATION** |  |
| **Massachusetts Institute of Technology,** Cambridge, MA  Department of Earth, Atmospheric and Planetary Sciences (EAPS)  Ph.D. Candidate in Geobiology  GPA: 5.0/5.0  Principle Adviser: T. Bosak  Secondary Adviser: R. Summons | Sept. 2012–August 2017 (expected date of graduation) |
| Thesis research: Experimentally investigate the preservation potential of microorganisms and soft-bodied organisms in siliciclastic environments, using a taphonomic approach; biogeochemical techniques include cell culturing, electron microscopy, water chemistry analyses, and identification of Fe speciation through synchrotron-based work.  Secondary research: Establish a lipid biomarker record for the Semail Ophiolite in Oman; biogeochemical techniques include gas chromatograph mass spectrometry and liquid chromatograph mass spectrometry. | |
| **Columbia University Graduate School of Arts and Sciences**,New York, NY  Master of Arts, Ecology, Evolution and Conservation Biology  GPA: 3.89/4.0  Principle Adviser: K. McFadden | Sept. 2008–Oct. 2010 |
| Thesis research: Determined population dynamics and feeding ecology of small mammal populations at Black Rock Forest in Cornwall, NY; biogeochemical techniques include stable carbon and nitrogen isotope analyses to reconstruct small mammal diet. | |
| **Wesleyan University**,Middletown, CT  Bachelor of Arts, Earth and Environmental Science and Psychology  GPA: 3.89/4.0  Principle Adviser: D. Royer | Sept. 2004–May 2008 |
| Thesis research: Reconstructed temperature and precipitation for the Paleocene/Eocene thermal maximum using a digital leaf physiognomic approach.  Secondary research: Reconstructed precipitation patterns and ecology in Puerto Rico; biogeochemical techniques include stable carbon isotopic analyses. | |
| **Research Statement** |  |
| My research focuses on interactions between organic matter (microorganisms, soft-bodied organisms, plant tissues) and sediment surfaces. I use biogeochemical approaches to (1) better understand how fossils form and (2) identify environmental conditions most conducive to fossilization. My work has implications for the fossil record on early Earth and can also highlight sites, facies, and minerals most likely to preserve ancient biosignatures on other terrestrial planets, such as Mars. | |
| **PROFESSIONAL RESEARCH EXPERIENCE** |  |
| **Research Associate I**, MIT, Cambridge, MA   * Worked independently on laboratory-based research projects; demonstrated skills in mass spectrometry and analytical reasoning. * Collaborated with teams from multiple universities to determine high-performance liquid chromatograph (HPLC-MS) instrument sensitivity and data reproducibility. | Feb. 2011–Sept. 2012 |
| **Research Assistant**, Columbia University, New York, NY   * Conducted comprehensive online literature search to determine the carbon footprint of mammalian species. * Compiled data into larger project which investigated the input of greenhouse gases into the atmosphere. | Oct. 2008–May 2010 |
| **AWARDS, FELLOWSHIPS AND GRANTS** |  |
| Student Travel Grant (to attend AbSciCon 2017, sponsored by the Lunar and Planetary Inst.)  Graduate Student Teaching Award (EAPS, MIT)  Student Travel Grant (to attend AbSciCon, sponsored by the SETI Inst. and NAI)  GSA Geobiology and Geomicrobiology Division Student Oral Presentation Award  Frank Research Fellow (EAPS, MIT)  Whiteman Fellow (EAPS, MIT)  MEDGATE: Marie Curie Studentship, Bristol University (offered but declined)  High Honors in Field of Study, Earth & Environmental Science, Wesleyan University  Phi Beta Kappa, Wesleyan University  Salem State Lecture Series Award (Essay Winner), Salem State University | Apr. 2017  May 2016  June 2015  Dec. 2015  2013 Academic Year  2012 Academic Year  Apr. 2012  May 2008  Oct. 2007  Jan. 2002 |
| **OUTREACH, ORGANIZATION AND INTERNSHIPS**  **Peer reviewer** for the following journals: *Geobiology*, *Geology*, *Palaios*, *Sedimentology* | |
| **Environmental Health and Safety (EHS) Representative**, MIT, Cambridge, MA   * Train new students and visitors on laboratory safety protocols. * Ensure compliance at the Bosak laboratory with university safety standards. * Serve as liaison between the EHS department and the members of the Bosak laboratory. | Sept. 2016–Present |
| **Department Lecture Series Student Organizer**, MIT, Cambridge, MA   * Co-organize seminar series for the entire Earth, Atmospheric and Planetary Sciences department. * Nominate and recruit weekly speakers and attend meetings to discuss and approve seminar schedule. | Sept. 2015–Present |
| **Geology and Geobiology Seminar Organizer**,MIT,Cambridge, MA   * Organize student-run seminar representing the interests of various sub-disciplines of the Earth, Atmospheric and Planetary Sciences Department. * Recruit and host speakers. * Establish seminar scheduling for each semester. | Sept. 2014–Present |
| **Laboratory Website Manager**, MIT, Cambridge, MA   * Maintain and update the Bosak laboratory website. * Utilize knowledge of WordPress and basic HTML coding. | Sept. 2014–Present |
| **Graduate Student Council Representative**,MIT, Cambridge, MA   * Attended monthly General Council meetings. * Participated in the MIT Activities Committee and helped to organize department- and university-wide social events. | Sept. 2012–Sept. 2013 |
| **Intern**, Bronx Zoo, New York, NY   * Participated in outreach/education programs and assisted in aviary maintenance. * Conducted research to better understand the mating dynamics of endangered/threatened species of birds. | Sept. 2009–May 2010 |
| **STUDENTS MENTORED** |  |
| Kelsey Moore, undergraduate student, Smith College  Madonna Yoder, undergraduate student, MIT  Matthew Joss, Master’s student, MIT  Erin Reynolds, undergraduate student, MIT | July 2014  2016 Academic year  2014 Academic year  2014 Summer semester |
| **TEACHING/CLASSROOM EXPERIENCE** |  |
| **Teaching Assistant**, Geobiology, MIT  Gave classroom lectures, graded exams and papers and led TA sessions. | 2016 Spring semester |
| **Course Facilitator**, Essentials of Geochemistry Seminar, MIT  Developed course content; organized and facilitated this student-run seminar. | 2012–15 Academic years |
| **Teaching Assistant**, Environmental Policy, SIPA, Columbia University  Graded papers, edited student work and led student discussions. | 2009 Summer semester |
| **Reading Assistant**, Environmental Biology II, Columbia University  Led weekly laboratory sessions (designed to supplement class lectures). | 2009 Spring semester |
| **Course Assistant**, Environmental Studies, Wesleyan University  Held discussion sections and provided guidance on class projects; developed, organized and facilitated this student-run seminar. | 2006–7 Spring semesters |
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| **SKILLS** |  |
| * Laboratory instruments:   + gas chromatograph-mass spectrometer (GC-MSD)   + high-performance liquid chromatograph-mass spectrometer (HPLC-MS)   + scanning electron microscope (SEM)   + transmission electron microscope (TEM)   + raman and fourier transform infrared microscopes   + X-ray microprobe (XAS, XFS and X-ray microdiffraction); received training at the Berkeley Lawrence Berkeley National Laboratory (Advanced Light Source), user status: Affiliate. * Computer: Data analysis (ImageJ, ChemStation, MassLynx and R), image processing (Adobe Photoshop and Illustrator), MS Office (Excel, PowerPoint and Word). | |
| **PUBLICATIONS** |  |
| * **Newman, S.A.** et al., 2017. Biomarker insights into the serpentinite-hosted ecosystem of the Semail, Ophiolite, Oman (*in prep*). * **Newman, S.A**. et al., 2017, Experimental fossilization of mat-forming cyanobacteria in coarse-grained siliciclastic sediments: *Geobiology*, p. 1–15, doi: 10.1111/gbi.12229. * Moore, K.R., Bosak, T., Macdonald, F.A., Lahr, D.J.G., **Newman, S.** et al., 2017, Biologically agglutinated eukaryotic microfossil from Cryogenian cap carbonates: *Geobiology*, p. 1–17, doi: 10.1111/gbi.12225. * **Newman, S.A.** et al., 2016, Insights into cyanobacterial fossilization in Ediacaran siliciclastic environments: *Geology*, v. 44, no. 7, p. 579–582. * O’Reilly, S., Mariotti, G., Winter, A., **Newman, S.**, et al., 2016, Molecular biosignatures reveal common benthic microbial sources of organic matter in ooids and grapestones from Pigeon Cay, the Bahamas: *Geobiology*, v. 15, no. 1, p. 112–130, doi: 10.1111/gbi.12196. * Arreguín-Rodríguez, G. J. Alegret, L., Sepúlveda, J., **Newman, S.,** and Summons, R.E., 2013, Enhanced terrestrial input supporting the *Glomospira* acme across the Paleocene-Eocene boundary in Southern Spain: *Micropaleontology*, v. 60, no. 1, p. 43–5. * Lincoln, S.A., Bradley, A.S., **Newman, S.A.**, and Summons, R.E., 2013, Archaeal and bacterial glycerol dialkyl glycerol tetraether lipids in chimneys of the Lost City Hydrothermal Field: *Organic Geochemistry,* v. 60, p. 45–53, doi: 10.1016/j.orggeochem.2013.04.010. * Peppe, D.J., Royer, D.L., Cariglino, B., Oliver, S.Y., **Newman, S.**, et al., 2011, Sensitivity of leaf size and shape to climate: Global patterns and paleoclimatic applications: *New Phytologist*, v. 190, no. 3, p. 724–739, doi: 10.1111/j.1469-8137.2010.03615.x. * Cubeta, U.S., Fischer, J., and **Newman, S**., 2010, Isotopic trends in bat guano as a proxy for climate and ecology in Puerto Rico: *Acta Cientifica*, v. 24, no. 1–3, p. 26–34. | |
| **PUBLISHED ABSTRACTS/PRESENTATIONS** |  |
| * **Newman, S.A.**, Fakra, S.C., Bosak, T. 2017, Preservation of soft-bodied organisms in coarse-grained siliciclastic environments. International Workshop on Konservat-Lagerstätten, Cork, Ireland (published abstract and oral presentation). * **Newman, S.A.**, Fakra, S.C., Marcus, M.A., Bosak, T., 2017, The role of microbial mats in the fossilization of soft bodied organisms in sandy sediments. Astrobiology Science Conference, Mesa, AZ (published abstract and poster presentation). * **Newman, S.A.**, The role of microbial mats in preservation processes during the rise of animals. National Museum of Natural History Colloquium Series, Smithsonian Institution, Washington, DC (invited speaker). * **Newman, S.A.**,Marcus, M., Bosak, T., 2016, The importance of microbial mats in the preservation of soft-bodied organisms in Ediacaran coarse-grained siliciclastic environments. Geological Society of America Annual Meeting, Denver, Colorado (published abstract and oral presentation). * **Newman, S.A.**,Bosak, T., 2016, Using experimental taphonomy to investigate environmental conditions during the rise of animals. NASA Astrobiology Institute Proposal Workshop, Williamstown, MA (oral presentation). * **Newman, S.**, Mariotti, G., Pruss, S., Bosak, T.,2016, Mechanisms of organic preservation in coarse-grained siliciclastics. Gordon Geobiology Conference, Galveston, TX (published abstract and poster presentation). * **Newman, S.A.**, Mariotti, G., Bosak, T.,2015, A recipe for cyanobacterial fossilization in siliciclastic environments. Geological Society of America Annual Meeting, Baltimore, MD (published abstract and oral presentation). * **Newman, S.A.**,Mariotti, G., Bosak, T.**,** 2015, Cyanobacterial fossilization through the formation and trapping of clays. Goldschmidt Conference, Prague, Czech Republic (published abstract and oral presentation). * **Newman, S.A.**,Mariotti, G., Bosak, T.,2015, Microbial fossilization through the formation of clay minerals. Astrobiology Student Conference, Chicago, IL (published abstract and oral presentation). * **Newman, S.**,Mariotti, G., Bosak, T.,2014, Cyanobacterial calcification and silicification as probes of seawater chemistry through time. Northeastern Geobiology Symposium, New Haven, CT (published abstract and poster presentation). * **Newman, S.A.**, Lincoln, S.A., Shock, E.L., Kelemen, P.B., and Summons, R.E., 2013, Ether lipid assessment at the Semail Ophiolite, Oman: Microbial diversity in a serpentinite hosted ecosystem. The International Meeting on Organic Geochemistry, Tenerife, Canary Islands, Spain (published abstract and poster presentation). * **Newman, S.A.**, Lincoln, S.A., Shock, E.L., Kelemen, P.B., and Summons, R.E., 2012, Biomarker Insights into Microbial Activity in the Serpentinite-Hosted Ecosystem of the Semail Ophiolite, Oman. American Geophysical Union, San Francisco, CA (published abstract and poster presentation). * Seto, S., **Newman, S.**, and McFadden, K., 2009, Small mammal abundance, distribution, and foraging habits in an oak dominated landscape: Black Rock Forest Research Symposium, Cornwall, NY (published abstract). * **Newman, S.A.**, Seto, S., 2009, Small mammal community dynamics on the north slope of Black Rock Forest. Black Rock Forest Sixth Research Symposium, Cornwall, NY (oral presentation). | |
| **Highlighted Research** |  |
| *Eos Earth and Space Science News* online magazine: https://eos.org/articles/how-did-fragile-early-microbes-become-fossils (Published Aug. 2016 by Lucas Joel). | |