

Leigh Anne Riedman

Department of Earth Science & Earth Research Institute

University of California, Santa Barbara

Santa Barbara, CA 93106

lriedman@ucsb.edu

lriedman.com

Positions

- 2023– Assistant Researcher, Step III, Earth Research Institute, University of California, Santa Barbara
- 2023– Associate, Strategic Research Initiatives, Science and Engineering, Office of Research, University of California, Santa Barbara
- 2020–2023 Postdoctoral Researcher, Simons and Moore Foundations Project on the Origin of the Eukaryotic Cell
- 2018–2020 Lecturer, University of California, Santa Barbara
- 2015–2017 NASA Astrobiology Postdoctoral Research Fellow, Harvard University
- 2007–2014 Graduate Researcher and Graduate Teaching Assistant, UCSB
- 2007 Lecturer, Physical Geology, California State University, Long Beach
- 2005 Lecturer, General Geology, California State University, Dominguez Hills

Education

- 2014 Ph.D., Geological Sciences, with emphasis in paleontology, University of California, Santa Barbara, Dissertation: Studies in Neoproterozoic Paleontology
- 2004 M.S., Geology, with emphasis in paleontology, University of California, Los Angeles
- 2000 B.S., Geology, minor in Mathematics, Louisiana Tech University

Publications

- In review* Porter, S. M., **Riedman, L. A.**, Woltz, C. M., Gold, D. A. The Diversity of Early Eukaryotes: A Review. *Paleobiology*.
- In review* Tang, Q., Zheng, W., Zhang, S., Fan, J., **Riedman, L. A.**, Hou, X., Muscente, A. D., Bykova, N., Sadler, P. M., Wang, X., Zhang, F., Yuan, X., Zhou, C., Wan, B., Pang, K., Ouyang, Q., Mackenzie, R., Zhao, G., Shen, S., Xiao, S. Quantifying the global biodiversity of Proterozoic eukaryotes. *Science*.
- 2023 **Riedman, L. A.**, Porter, S. M., Lechte, M. A., dos Santos, A., Halverson, G. P. Late Paleoproterozoic fossils of the Limbunya Group, Birrindudu Basin, Northern Australia. *Papers in Palaeontology*. e1538. [doi: 10.1002/spp2.1538](https://doi.org/10.1002/spp2.1538)
- 2023 Porter, S. M. and **Riedman, L. A.** Frameworks for interpreting the early fossil record of eukaryotes. *Annual Reviews of Microbiology*. 77: 173–191. <https://doi.org/10.1146/annurev-micro-032421-113254>

- 2021 **Riedman, L. A.**, Porter, S. M., Czaja, A. D. Phosphatic scales in vase-shaped microfossil assemblages from Death Valley, Grand Canyon, Tasmania and Svalbard. *Geobiology*. 19: 364–375. <https://doi.org/10.1111/gbi.12439>
- 2021 Woltz, C. R., Porter, S. M., Agić, H., Dehler, C. M., Junium, C. K., **Riedman, L. A.**, Hodgskiss, M. S. W., Wörndle, S., Halverson, G. P. Total organic carbon and the preservation of organic-walled microfossils in Precambrian shale. *Geology*. 49: 556–560. <https://doi.org/10.1130/G48116.1>
- 2020 Gomes, M., **Riedman, L. A.**, O'Reilly, S. S., Lingappa, U., Metcalfe, K., Fike, D., Grotzinger, J. P., Fischer, W. W. and Knoll, A. H., Taphonomy of Biosignatures in Microbial Mats on Little Ambergris Cay, Turks and Caicos Islands, *Frontiers in Earth Science*. 8:576712. <https://doi.org/10.3389/feart.2020.576712>
- 2019 Porter, S. M., **Riedman, L. A.**, Evolution- Ancient fossilized amoebae find their home in the tree, *Current Biology*. 20: R212–R215. <https://doi.org/10.1016/j.cub.2019.02.003>
- 2018 **Riedman, L. A.**, Sadler, P. M., Global species richness record and biostratigraphic potential of early to middle Neoproterozoic eukaryote fossils. *Precambrian Research*. 319: 6–18. <http://dx.doi.org/10.1016/j.precamres.2017.10.008>
- 2018 **Riedman, L. A.**, Porter, S. M. and Calver, C., Vase-shaped microfossil biostratigraphy with new data from Tasmania, Svalbard, Greenland, Sweden and the Yukon. *Precambrian Research*. 319: 19-36. <http://dx.doi.org/10.1016/j.precamres.2017.09.019>
- 2018 Cohen, P. A., **Riedman, L. A.**, It's a protist-eat-protist world: recalcitrance, predation, and evolution in the Tonian-Cryogenian oceans, *Emerging Topics in Life Sciences*. 2: 173–180. ETLS20170145; <https://doi.org/10.1042/ETLS20170145>
- 2018 Porter, S. M., Agić, H., **Riedman, L. A.**, Anoxic ecosystems and early eukaryotes, *Emerging Topics in Life Sciences*. 2: 299–309. ETLS20170162; <https://doi.org/10.1042/ETLS20170162>
- 2018 Muscente, A. D., Czaja, A., **Riedman, L. A.**, Colleary, C., Organic Matter in Fossils in Encyclopedia of Earth Sciences Series, *Encyclopedia of Geochemistry*, W. M. White (ed.). Springer. https://doi.org/10.1007/978-3-319-39193-9_185-1
- 2016 **Riedman, L. A.**, Porter, S. M., Organic-walled microfossils of the mid-Neoproterozoic Alinya Formation, Officer Basin, Australia. *Journal of Paleontology*. v. 90, pp. 854–887. <https://doi.org/10.1017/jpa.2016.49>
- 2016 Porter, S. M., **Riedman, L. A.**, Systematics of organic-walled microfossils from the ~780–740 Ma Chuar Group, Grand Canyon, Arizona. *Journal of Paleontology*. v. 90, pp. 815–853. <https://doi.org/10.1017/jpa.2016.57>
- 2015 **Riedman, L. A.**, Life during Snowball Earth. AccessScience, McGraw-Hill Education. doi: 10.1036/1097-8542.YB150676.
- 2014 **Riedman, L. A.**, Porter, S. M., Halverson, G. P., Hurtgen, M. T., Junium, C. K., Organic-walled microfossil assemblages from glacial and interglacial Neoproterozoic units of Australia and Svalbard. *Geology* v. 42, pp. 1011–1014. <https://doi.org/10.1130/G35901.1>

- 2011 Yin, C., Liu, P., Awramik, S. M., Chen, S., Tang, F., Gao, L., Wang, Z., **Riedman, L. A.** Acanthomorphic Biostratigraphic Succession of the Ediacaran Doushantuo Formation in the East Yangtze Gorges, South China. *Acta Geologica Sinica*. 85:283-295. <https://doi.org/10.1111/j.1755-6724.2011.00398.x>

Technical Reports

- 2024 **Riedman, L. A.** and Lechte, M. Paleontological and Geochemical report for Paleoproterozoic and Mesoproterozoic units of the Birrindudu and McArthur Basins, NT. Northern Territory Geological Survey Drill Core Sampling Report CSR0536. <https://geoscience.nt.gov.au/gemis/ntgsjspui/handle/1/92841>

Media and Press Coverage

- 2024 Coverage of Riedman et al., 2023: [Our oldest microbial ancestors were way ahead of their time](#). *Ars Technica*. 2/2/2024.
- 2024 Coverage of Riedman et al., 2023: [Even the oldest eukaryote fossils show dazzling diversity and complexity](#). *UCSB Current*. 1/11/2024.
- 2024 Press interview for opinion: [Microbes that gave rise to all plants and animals became multicellular 1.6 billion years ago, tiny fossils reveal](#). *Science*. 1/24/2024

Courses Taught

As lecturer

Physical Geology (California State University, Dominguez Hills; California State University, Long Beach)
Paleobiology of Dinosaurs (UCSB)
Principles of Historical Geology (UCSB)

As Teaching Assistant

Early Life on Earth (UCSB)
Principles of Paleontology (UCSB)
Invertebrate Paleobiology (UCSB)
Dinosaurs (UCSB)

Professional Activities

Recent Presentations (2015-present)

- 2023 Speaker, Palaeontological Annual Meeting, University of Cambridge, UK. **Riedman, L.A.**, Porter, S. M., Lechte, M. A., Dos Santos, A., Halverson, G. P. "Organic-walled Microfossils of the late Paleoproterozoic Limbunya Group and implications for early eukaryotic evolution"
- 2021 Invited Speaker, GSA Annual meeting, **Riedman, L. A.**, Lechte, M., Porter, S. M., Halverson, G., "Organic-walled microfossils of the Paleoproterozoic and Mesoproterozoic McArthur and Birrindudu basins, Northern Territory, Australia"
- 2020 Invited Speaker, Center for the Origin, Dynamics and Evolution of Planets (CODEP)/IGPP Seminar Series
- 2018 Geological Society of America, Annual Meeting, **Riedman, L. A.**, Porter, S. M., Czaja, A., "Globally widespread apatitic scale microfossils of the mid-Tonian"

- 2017 Geological Society of America, Annual Meeting, **Riedman, L. A.** and Sadler, P. M., "Global species richness record of early to middle Neoproterozoic eukaryote fossils"
- 2017 International Meeting of Sedimentology, **Riedman, L. A.** and Sadler, P. M., "Global species richness record of early to middle Neoproterozoic eukaryote fossils"
- 2016 Geological Society of America, Annual Meeting, **Riedman, L. A.** and Porter, S. M., "Vase-shaped microfossils of the Togari Group, Tasmania and implications for Biostratigraphic Subdivision of the Tonian Period"
- 2016 8th International Symposium on Testate Amoebae, São Paulo, Brazil, **Riedman, L. A.**, "Vase shaped microfossils of Neoproterozoic (~750 MA) Tasmania and their global fossil record"
- 2015 Geological Society of America, Annual Meeting, **Riedman, L. A.** and Sadler, P., "Global species richness record and biostratigraphic potential of early to middle Neoproterozoic eukaryotes fossils"
- 2015 Second International Congress on Stratigraphy, STRATI2015- **Riedman, L. A.** and Sadler, P., "Global species richness record and biostratigraphic potential of early to middle Neoproterozoic eukaryotes fossils"

Service Activities within Academic community (2014-present)

- 2018 Organizer, GSA Annual Meeting topical session: "Earth and Life Co-evolution in the Early to Middle Neoproterozoic (1000 to ca. 635 Ma)"
- 2015–present Peer Reviewer: *Journal of Paleontology*, *Precambrian Research*, *Palaeontology*, *Geology*, *European Journal of Protistology*, *Emerging Topics in Life Sciences*, *Geobiology*, *Gondwana Research*, *Palaeoworld*, *Nature*, *Science Advances*, *Palaeogeography*, *Palaeoclimatology*, *Palaeoecology*
- 2017–present Reviewer, NASA Earth and Space Science Fellowship Program, National Geographic Society Grants, American Philosophical Society Lewis and Clark Grant
- 2016 Judge, Geobiology and Geomicrobiology Division Student Awards, GSA Annual Meeting
- 2016 Organizer, Northeastern Geobiology Symposium, Harvard University
- 2014 Organizer, GSA Annual Meeting technical session: "The Tonian-Cryogenian World"

Community Service and Mentoring

- 2022 Science outreach, Kellogg Elementary, Goleta, CA
- 2018 Primary mentor of undergraduate researcher, EUREKA program of Center for Science and Engineering Partnerships
- 2017 Interviewed by Palaeocast, paleontological podcast, Episode 84: Neoproterozoic Acritarchs <http://www.palaeocast.com/category/precambrian/>
- 2017 Science Skype outreach with Live Oak High School, Denham Springs, Louisiana
- 2015–2017 Outreach paleontology and science presentations, Oxford Street Daycare Cooperative, Cambridge, MA
- 2014–2015, Weekly Kindergarten classroom volunteer, outreach paleontology, science

2010–2011 presentations, Mountain View Elementary, Goleta, CA

Professional Awards and Recognition (2015-present)

- 2020 Simons and Moore Foundations Project on the Origin of the Eukaryotic Cell
- 2019 Lewis and Clark Fund for Exploration and Field Research in Astrobiology
- 2019 Palaeontological Association Research Grant
- 2018 Paleontological Society and Cushman Foundation A.J. Boucot Research Grant
- 2016 Young Testate Amoebae Researcher Award, International Society for Protistologists
- 2015 NASA Astrobiology Postdoctoral Fellowship: proposal, “Resolving early eukaryotic evolution with ultrastructure of Neoproterozoic microfossils”

Professional Affiliations

- ICS Cryogenian Subcommittee (Voting Member)
- Paleontological Society
- Palaeontological Association
- Geological Society of America
- International Association of Sedimentologists
- International Society for Evolutionary Protistology