

# ANDREA CORPOLONGO

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University of Cincinnati  
Department of Geosciences  
500 Geology-Physics Building  
Cincinnati, OH 45221-0013

## EDUCATION

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<b>PhD</b>	University of Cincinnati, Geoscience Dissertation: <i>Neoarchean Microfossils and Microbialites Inform the Search for Extraterrestrial Life in the Solar System</i> Advisor: Dr. Andrew Czaja	2024
<b>MA</b>	University of Cincinnati, Philosophy of Science Supervisor: Dr. Melissa Jacquart	2024
<b>BS</b>	Michigan State University, Plant Biology	2004

## PROFESSIONAL EXPERIENCE

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<b>Postdoctoral Fellow</b> University of Cincinnati, Department of Geoscience	2024-Current
<b>Mars 2020 Mission Science Team Student Collaborator</b> Documentarian SHERLOC Instrument team Astrobiology and Geochemistry working group	2021-2024
<b>Contributing Editor</b> Sciworthy	2020-Current
<b>Invertebrate Paleontology Collections Assistant</b> Cincinnati Museum Center, Geier Collections and Research Center	2019-20

## SKILLS

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### Instrumentation

*Highly skilled*

Raman microspectroscopy, transmitted light microscopy, confocal laser scanning microscopy

*Experienced*

SEM/EDX

### Data Analysis

*Highly skilled*

ImageJ image processing program, Loupe: M2020 SHERLOC visualization software

*Proficient*

Fytik peak fitting software, Excel

*Experienced*

R programming language

## Sample Preparation

*Highly skilled*

Petrographic thin section preparation, wet mount slide preparation

## RESEARCH

### PEER-REVIEWED PUBLICATIONS

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Jakubek, R., Corpolongo, A., Bhartia, R., Morris, R., Uckert, K., Asher, S., Burton, A., ... Steele, A. (2024). Spectral Background Calibration of SHERLOC Raman and Fluorescence Spectrometer Onboard the Perseverance Rover Enables Identification of a Ubiquitous Martian Spectral Component. *Applied Spectroscopy*.

<https://doi.org/10.1177/00037028241280081>

Siljeström, S., Czaja, A. D., Corpolongo, A., Berger, E. L., Li, A. Y., Cardarelli, E., Abbey, W., Asher, S. A., Beegle, L. W., Benison, K. C., Bhartia, R., Bleefeld, B. L., Burton, A. S., Bykov, S. V., Clark, B., DeFlores, L., Ehlmann, B. L., Fornaro, T., Fox, A., ... Zorzano, M.-P. (2024). Evidence of Sulfate-Rich Fluid Alteration in Jezero Crater Floor, Mars. *Journal of Geophysical Research: Planets*, 129(1), e2023JE007989.

<https://doi.org/10.1029/2023JE007989>

Neveu, M., Quinn, R., Barge, L., Craft, K., German, C., Getty, S., Glein, C., Parra, M., Burton, A., Cary, F., Corpolongo, A., ... Timm, J. (2024). Future of the search for Life: Workshop report. *Astrobiology*, 24(114-129).

<https://doi.org/10.1089/ast.2022.0158>

Sharma, S., Roppel, R., Murphy, A., Beegle, L., Steele, A., Razzell Hollis, J., Siljeström, S., McCubbin, F., Asher, S., Abbey, W., Allwood, A., Berger, E., Bleefeld, B., Burton, Bykov, Cardarelli, E., Conrad, P., Corpolongo, A., ... Steadman, K. (2023). Diverse organic-mineral associations in Jezero crater, Mars. *Nature*, 619(724–732).

<https://doi.org/10.1038/s41586-023-06143-z>

Sun, V. Z., Hand, K. P., Stack, K. M., Farley, K. A., Simon, J. I., Newman, C., Sharma, S., Liu, Y., Wiens, R. C., Williams, A. J., Tosca, N., Alwmark, S., Beyssac, O., Brown, A., Calef, F., Cardarelli, E. L., Clavé, E., Cohen, B., Corpolongo, A., ... Wogsland, B. (2023). Overview and Results from the Mars 2020 Perseverance Rover's First Science Campaign on the Jezero Crater Floor. *JGR: Planets*, 128(6), e2022JE007613.

<https://doi.org/10.1029/2022JE007613>

Corpolongo, A., Jakubek, R., Abbey, W., Asher, S., Baker, D., Beegle, L., Berger, E., ... Yanchilina, A. (2023). SHERLOC Raman mineral detections of the Mars 2020 Crater Floor Campaign. *JGR Planets*, 128(3). <https://doi.org/10.1029/2022JE007455>

Razzell Hollis, J., Moore, K. R., Sharma, S., Beegle, L., Grotzinger, J. P., Allwood, A., Abbey, W., Bhartia, R., Brown, A. J., Clark, B., Cloutis, E., Corpolongo, A., ... Yanchilina, A. (2022). The power of paired proximity science observations: Co-located data from SHERLOC and PIXL on Mars. *Icarus*, 387, 115179.

<https://doi.org/10.1016/j.icarus.2022.115179>

### PREPRINTS AND WHITE PAPERS

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Meadows, V., Graham, H., Abrahamsson, V., Adam, Z., Amador-French, E., Arney, G., Barge, L., Barlow, E., Berea, A., Bose, M., Bower, D., Chan, M., Cleaves, J., Corpolongo, A., Currie, M., Domagal-Goldman, S., Dong, C., Eigenbrode, J., Enright, A., ... Young, L.

(2022). Community Report from the Biosignatures Standards of Evidence Workshop. *arXiv*. <https://doi.org/10.48550/arXiv.2210.14293>

Czaja, A., Corpolongo, A., Gangidine, A., Horgan, B., Kah, L., Osterhout, J., Ruff, S., Shkolyar, S., & Zaloumis, J. (2021). Mars as a compelling target in the continuing search for signs of ancient extraterrestrial life. *Bulletin of the AAS*, 53(4).  
<https://doi.org/10.3847/25c2cfcb.514f9ffb>

## AWARDS, GRANTS, AND FELLOWSHIPS

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**University of Cincinnati, Department of Geosciences** 2024  
**\$250** Graduate Research Award

**University of Cincinnati** 2023  
Excellence in Undergraduate Research Mentorship

**University of Cincinnati, Department of Geosciences** 2023  
**\$1000** Kenneth E. Caster Award for Paleontological Research

**Lewis and Clark Fund for Exploration and Field Research in Astrobiology** 2022  
**\$2905** in support of fieldwork in the Green River Formation

**NASA Future of the Search for Life (FoSL) Workshop Honorarium** 2022  
**\$500** in recognition of workshop contributions

**University of Cincinnati, Department of Geosciences** 2021  
**\$250** Graduate Research Award

**NSF, Sedimentary Geology and Paleobiology** 2020-24  
**\$312,000** to fund the project: "Life on an oxidizing planet: Microbial ecosystems of a Neoproterozoic carbonate platform"

\*The PI on this grant is Dr. Andrew Czaja. Authorship of the proposal was approximately 50% A. Corpolongo and 50% A. Czaja. NSF does not allow graduate students to act as Co-PI on project proposals.

**NSF, Graduate Research Fellowship** 2020-24  
**\$138,000** in stipend and scholarship funding

**Geological Society of America** 2020  
Graduate Student Research Award  
**\$575** in support of stable isotope analysis of Archean microbialites

**NASA Astrobiology Institute** 2019  
Early Career Collaboration Award  
**\$5000** in support of fieldwork in South Africa

**Paleontological Society** 2019  
Student Research Grant  
**\$1200** in support of fieldwork in South Africa

**Paleontological Society** 2019  
Richard K. Bambach Award

## SELECT PRESENTATIONS

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\* denotes mentee presenter

- Corpolongo, A., Czaja, A., George, A., Jakubek, R. (2024). "Comparing relative peak positions in DUV and visible Raman spectra of biogenic calcite, Mg-calcite, and dolomite to support SHERLOC data interpretation" Poster Presentation. *AbSciCon24*. Providence, Rhode Island.
- Clark, J. V., Conrad, P., Corpolongo, A., Cardarelli, E., Jakubek, R. S., Buckner, D., Steele, A., & Fries, M. (2024). Deep-UV Raman and Fluorescence of Perchlorates and Chlorates: Implications for the Detection of Oxychlorines by the SHERLOC Instrument in Jezero Crater, Mars. *LPSC 2024*. The Woodlands, Texas.
- Jakubek, R. S., Corpolongo, A., Bhartia, R., Uckert, K., Asher, S. A., Burton, A. S., Fries, M. D., Hug, W. F., Lee, C., Scheller, E. L., Sharma, S., & Steele, A. (2024). Raman Spectral Background of SHERLOC. *LPSC 2024*. The Woodlands, Texas.
- Corpolongo, A., Czaja, A., Jakubek, R., George, A., Kohl, J. (2023). "Morphological and geochemical analyses of Neoarchean microbialites inform the search for life on Mars" Oral Presentation. *ISSOL 2023*. Quito, Ecuador.
- Corpolongo, A. (2023). "Do Astrobiologists Need a Definition of Life?" Poster Presentation. *ISSOL 2023*. Quito, Ecuador.
- Corpolongo, A., Potochnik, A. (2023). "Astrobiologists Don't Need a Definition of Life" Oral Presentation. *ISHPSSB 2023*. Toronto, Canada.
- George, A.\*, Corpolongo, A., Czaja, A., (2023) "Archean Paleontology as an Analog for Possible Martian Life" Poster. *University of Cincinnati Undergraduate Scholarly Showcase 2023*. Cincinnati, OH.
- Corpolongo, A., Jakubek, R., Abbey, W., Asher, S., Baker, D., Beegle, L., Berger, E., ...Yanchilina, A. "SHERLOC Raman Mineral Detections of the Mars 2020 Crater Floor Campaign" Virtual Poster Presentation. *AGU Fall Meeting 2022*.
- Kohl, J.\*, Czaja, A., Corpolongo, A. (2022). "Sources of silica and carbon in organic-rich cherts from the Neoarchean Gamohaan Formation, South Africa" Poster Presentation. *GSA Connects 2022*. Denver, CO.
- Corpolongo, A., Czaja, A.D. (2022). "Evaluating Neoarchean microbial communities through three-dimensional visualization of microbialite structures" Oral Presentation. *Astrobiology Science Conference (AbSciCon 2022)*. Atlanta, GA.
- Sharma, S., Beegle, L., Bhartia, R., Shkolyar, S., Berger, E., Corpolongo, A., Czaja, A., Murphy, A., Cloutis, E., Siljeström, S., Steele, A., Yanchilina, A. (2022) "On the hunt for detectable biosignatures in Jezero Crater: What to look for and where" Oral Presentation. *Astrobiology Science Conference (AbSciCon 2022)*. Atlanta, GA.
- Corpolongo, A. (2022). "NASA's Perseverance Rover is searching for signs of ancient life on Mars" Virtual Oral Presentation. *2022 Joint North-Central & Southeastern GSA Section Meeting*. Cincinnati, OH.
- Corpolongo, A. (2022). "Deep ultraviolet Raman spectroscopy of Neoarchean microbialites as analogs to possible Mars 2020 samples" Oral Presentation. *2022 Joint North-Central & Southeastern GSA Section Meeting*. Cincinnati, OH.
- Czaja, A., Sharma, S., Allwood, A., Benison, K., Corpolongo, A., Gómez, F., Mayhew, L., Sephton, M., Siljeström, S., Williams, A. (2022). "Sampling potential biosignatures with

- the Mars 2020 Perseverance Rover” Oral Presentation. *2022 Joint North-Central & Southeastern GSA Section Meeting*. Cincinnati, OH.
- Kohl, J.\*, Corpolongo, A. (2022). “Using 3D Projections to Understand Precambrian Microbialite Morphology” Poster Presentation. *2022 Joint North-Central & Southeastern GSA Section Meeting*. Cincinnati, OH.
- Corpolongo, A., Czaja, A.D. (2021). “Neoarchean microorganisms took advantage of a sub-wavebase O<sub>2</sub> gradient approximately 100-200 million years prior to the GOE” Virtual Oral Presentation. *GSA Connects 2021*.
- Corpolongo, A. (2021). “Possible Neoarchean Microaerophilic Iron Oxidizing Microorganisms” Oral Presentation. *University of Cincinnati*. Cincinnati, OH.
- Corpolongo, A., Czaja, A.D. (2020). “2.5 Ga sub-tidal microfossils of the Campbellrand-Malmani carbonate platform, Kaapvaal Craton, South Africa” Virtual Oral Presentation. *GSA 2020 Connects Online*.
- Corpolongo, A., Czaja, A.D. (2020). “Sub-tidal microfossils of the 2.5 Ga Campbellrand-Malmani carbonate platform, Kaapvaal Craton, South Africa” Virtual Oral Presentation. *Virtual AbGradE 2020*.
- Corpolongo, A. (2020). “Sub-wavebase microbialites of the Neoarchean Campbellrand-Malmani carbonate platform” Oral Presentation. *University of Cincinnati*. Cincinnati, OH.
- Corpolongo, A., Czaja, A.D., Beukes, N.J. (2019). “Microfossils across the Neoarchean Campbellrand-Malmani Carbonate Platform, Kaapvaal Craton, South Africa” Virtual Poster Presentation. *AGU Fall Meeting 2019*.
- Corpolongo, A., Czaja, A.D., Beukes, N.J. (2019). “Microfossils from a Range of Depositional Environments across the Neoarchean Campbellrand-Malmani Carbonate Platform, Kaapvaal Craton, South Africa” Oral Presentation. *The Great Lakes Student Paleoconference*. Ann Arbor, MI.
- Corpolongo, A., Czaja, A.D., Beukes, N.J. (2019). “Organic-Walled Microfossils from Basinal to Supratidal Microbialite Facies across the Neoarchean Campbellrand-Malmani Carbonate Platform, Kaapvaal Craton, South Africa” Poster Presentation. *GSA 2019*. Phoenix, AZ.
- Corpolongo, A., Czaja, A.D. (2019). “Extra-Large and Morphologically Unique Microfossils of the 2.52 Ga Gamohaam Formation, South Africa” Poster Presentation. *Astrobiology Science Conference (AbSciCon)*. Bellevue, WA.
- Corpolongo, A. (2019). “Active Learning: Going Beyond Textbook + Lecture = Class” Oral Presentation. *Get Up and Go*, University of Cincinnati. Cincinnati, OH.
- Corpolongo, A. (2019). “What Triggered the GOE? Neoarchean Microfossils of the Gamohaam and Frisco Formations” Oral Presentation. *University of Cincinnati*. Cincinnati, OH.

## FIELD WORK

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- Neoarchean Gamohaam Formation, Campbellrand-Malmani Carbonate Platform, South Africa, July 2024
- Paleoarchean Moodies Group, Barberton Greenstone Belt, South Africa, July 2022
- Neoarchean Gamohaam Formation, Campbellrand-Malmani Carbonate Platform, South Africa, July 2022
- Eocene Lake Gosiute, Green River Formation, Colorado/Wyoming, June 2022

Neoproterozoic Campbellrand-Malmani Carbonate Platform, South Africa, August 2019

## **PROFESSIONAL DEVELOPMENT**

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<b>Astrobiology Mission Ideation Factory II</b> NASA Ames Research Center	November 2024
<b>SHERLOC Team Meeting</b> Carnegie Science Institute	September 2023
<b>Astrobiology Mission Ideation Factory I</b> NASA Goddard Space Center	August 2023
<b>Gunflint Formation Field Trip Participant</b> University of Cincinnati Department of Geosciences	August 2022
<b>Unlearning Racism in the Geosciences (URGE)</b> Pod participant	2021
<b>Science Writing for the People Online Course</b> Sciworthy	May 2020
<b>Sharing Science Workshop and Practicum</b> Cincinnati Museum Center	February 2020
<b>2019 IAGD Accessible Field Trip</b> Petrified Forest National Park	September 2019
<b>Mentor Training</b> University of Cincinnati Grad/Undergrad Research Connections	September 2019
<b>Origins of Life Online Course</b> Santa Fe Institute	Summer 2019
<b>Ion Microprobe Student Workshop</b> University of California Los Angeles SIMS facility	February 2019

## **TEACHING**

### **RECENT TEACHING AND MENTORING EXPERIENCE**

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<b>Undergraduate Research Mentor</b> University of Cincinnati	2020-Current
<b>Seminar Co-leader "Colonialism and Geoscience"</b> University of Cincinnati Department of Geosciences	Spring 2021
<b>Teaching Assistant "Earthquakes and Society"</b> University of Cincinnati Department of Geosciences	Spring 2020
<b>Teaching Assistant "Astrobiology: Life in the Universe"</b> University of Cincinnati Department of Geoscience	Fall 2019
<b>Teaching Assistant "Geochemistry"</b>	Fall 2019

University of Cincinnati Department of Geosciences

**Teaching Assistant “Environmental Studies II”**

Spring 2019

University of Cincinnati Department of Geoscience

**Teaching Assistant “Environmental Volcanology”**

Fall 2018

University of Cincinnati Department of Geosciences

## **SERVICE**

### **SERVICE TO THE PROFESSION**

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**AbSciCon 2024 Session Chair**

2024

Biosignature detection techniques for returned samples

**Peer Reviewer**

2024

For the journals Geobiology, JGR: Planets, Vibrational Spectroscopy, and Chemical Geology

**Geology Outreach Group**

2020-Current

University of Cincinnati Department of Geosciences

**Social Media Team Member**

2021-23

Network for Life Detection, NASA Research Coordination Network

**NASA Workshop Participant/Report Contributor**

2022

Future of the Search for Life (FoSL) workshop

**AbSciCon 2022 Session Chair**

2022

Recent Advances, Development, and New Challenges in Understanding Early Life

**Joint North-Central & Southeastern GSA Section Meeting Session Leader**

2022

Directions in Geoscience and Careers: Virtual Student Outreach Event

**Joint North-Central & Southeastern GSA Section Meeting Session Leader**

2022

Geoscience in Plain Language

**Expert Reviewer**

2022

Life Detection Knowledge Base

**North-Central/Southeastern GSA Section Meeting Planning Committee**

2021-22

Outreach Subcommittee

**NASA Workshop Participant/Report Co-author**

2021

Biosignatures Standards of Evidence Workshop

**DE&I Committee Student Representative**

2020

University of Cincinnati Department of Geosciences

**Get Up and Go Teaching Workshop Co-organizer**

August 2019

University of Cincinnati Graduate Association for Teaching Enhancement

**Teach Me to Teach Workshop Co-organizer**

April 2019

University of Cincinnati Graduate Association for Teaching Enhancement

## PUBLIC ENGAGEMENT AND OUTREACH

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<b>Library Outreach Presentation</b> Fossils in the Walls	March 2024
<b>Library Outreach Presentation</b> Fossils in the Walls	April 2023
<b>Cincinnati Fossil Hunt Leader</b> Girl Scouts of the USA	May 2022
<b>Trammel Fossil Park Open House Co-leader</b> Sharonville Parks and Recreation	April 2022
<b>Cincinnati Fossil Hunt Co-Leader</b> Pleasant Ridge Montessori	May 2021
<b>Physical Geology Virtual Workshop Co-Leader</b> Scouts BSA	March 2021
<b>Elementary School Virtual Outreach Presentation</b> Fossils in the Walls	February 2021
<b>Elementary School Virtual Outreach Presentation</b> What is Precambrian Paleontology?	February 2021
<b>Educational Activity Kit Co-creator</b> <a href="#">Discover Fossils of Ohio</a>	May 2020
<b>Elementary School Virtual Outreach Presentation</b> What is Precambrian Paleontology?	April 2020
<b>Virtual Science Expo Judge</b> 2020 Virtual Southwest Ohio Science and Engineering Expo	April 2020
<b>UC Undergraduate Scholarly Showcase Judge</b>	April 2019
<b>Science Expo Judge</b> 2019 Southwest Ohio Science and Engineering Expo	April 2019
<b>Physical Geology Workshop Co-Leader</b> Scouts BSA	March 2019
<b>Elementary School Virtual Outreach Presentation</b> What is Precambrian Paleontology?	April 2019

## OUTREACH PUBLICATIONS

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- Corpolongo, A. (2024, September 9) *How will the melting Greenland Ice Sheet affect ocean currents?* Sciworthy. <https://sciworthy.com/could-the-melting-greenland-ice-sheet-change-ocean-currents/>
- Corpolongo, A. (2021, December 6). *How can we search for life as we don't know it?* Sciworthy. <https://sciworthy.com/how-can-we-search-for-life-as-we-dont-know-it/>



- Corpolongo, A. (2021, October 21). *Mars could host a deep underground biosphere*. Sciworthy. <https://sciworthy.com/mars-could-host-a-deep-underground-biosphere/>
- Corpolongo, A. (2021, August 11). *3.42 billion-year-old fossilized microbes in an ancient hydrothermal vent*. Sciworthy. <https://sciworthy.com/3-42-billion-year-old-fossilized-microbes-in-an-ancient-hydrothermal-vent/>
- Corpolongo, A. (2021, June 22). *How long ago did we learn to move?* Sciworthy. <https://sciworthy.com/how-long-ago-did-we-learn-to-move/>
- Corpolongo, A. (2020, September 1). *Deep-sea mining impacts on diverse ocean ecosystems*. Sciworthy. <https://sciworthy.com/deep-sea-mining-threatens-the-foundation-of-diverse-ocean-ecosystems/>
- Corpolongo, A. (2020, July 28). *Ancient microbes reveal Earth's response to the asteroid that killed the dinosaurs*. Sciworthy. <https://sciworthy.com/ancient-microbes-reveal-earths-response-to-the-asteroid-that-killed-the-dinosaurs/>
- Corpolongo, A. (2020, June 5). *A new way to look for signs of ancient life on Earth and Mars*. Sciworthy. <https://sciworthy.com/a-new-way-to-look-for-signs-of-ancient-life-on-earth-and-mars/>

## **MEDIA COVERAGE**

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- Miller, M. (2024, February 22). *The search for signs of life on Mars continues*. Earth.com. <https://www.uc.edu/news/articles/2024/02/search-for-life-on-mars-continues-on-third-anniversary-of-rover-mission.html>
- Gangidine, A. (Host). (2023, January 19). *The Perseverance Mars Rover and Ancient Life* (No. 10) [Audio Podcast Episode]. In *Cranbrook Paleo Podcast*. Cranbrook Institute of Science. <https://science.cranbrook.edu/explore/paleo-podcast>
- Bangert, B. (2022, September 20). *UC geologists uncover the stories rocks tell, exploring ancient formations along Lake Superior*. UC News. <https://www.uc.edu/news/articles/2022/08/on-field-trip-uc-students-faculty-alumni-have-the-stones-and-skills-to-uncover-stories-rocks-can-tell.html>
- Czaja, A., Corpolongo, A., (2022, August 1). *University of Cincinnati professor, students take part in NASA's Mars research*. Spectrum News 1. <https://spectrumnews1.com/oh/columbus/news/2022/08/01/university-of-cincinnati-mars-research#>
- Miller, M. (2022, July 11). *The Search for Life on Mars*. UC News. <https://www.uc.edu/news/articles/2022/06/uc-geology-students-help-nasa-search-for-evidence-of-ancient-life-on-mars.html>
- Emery, E. (2022, June 23). *The search for life on Mars: how the University of Cincinnati is involved*. Fox 19 Now. <https://www.fox19.com/2022/06/23/search-life-mars-how-university-cincinnati-is-involved/>

## **PROFESSIONAL SOCIETIES**

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International Association for Geoscience Diversity  
 Geological Society of America  
 Paleontological Society  
 Philosophy of Science Association