AMELIA R. FREELAND

Northwestern University
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RESEARCH INTERESTS

Investigating the function of microbes across diverse environments drives my work on a grand scale. More granularly, I am interested in tracing the cyclical relationships between extremophiles and their environment using 'omics, microscopy, and isotopic biosignatures.

EDUCATION

- **B.A., Biological Sciences**
  Cell and Developmental Biology Concentration
  Northwestern University, Expected 2027
  GPA 3.74/4.00

PROFESSIONAL EXPERIENCE

- **Undergraduate Researcher**
  Northwestern University, Department of Earth, Environmental, & Planetary Sciences, Osburn Isotope Geobiology Lab
  April 2024 – Present
  Investigating potential microbial biosignatures in epigenic karst caves.

TECHNICAL SKILLS

Nucleic acid extraction, polymerase chain reaction, R coding language, QIIME2, command line (HPC clusters), light microscopy, fluorescent cell staining, photogrammetry, FlashEA-IRMS.

RELEVANT NON-DEGREE COURSEWORK

- **EARTH 371 Biogeochemistry** Winter 2026
- **EARTH 450 The Subsurface: Real Estate, Residents, & Resources** Spring 2025
- **EARTH 201 Earth Systems Revealed** Spring 2025
- **EARTH 204 Communication for Geoscientists** Winter 2025
- **EARTH 370 Geobiology** Fall 2024

FIELD CAMPAIGNS

- **Exploration of Biovermiculations in Mid-Latitude Epigenic Caves**
  Indiana, West Virginia, Virginia, Tennessee, Missouri
  October 2026
- **Mammoth Cave National Park**
  Kentucky

September 2026, February 2026, July 2025, January 2025, August 2024

HONORS AND AWARDS

- **Cave Conservancy of the Virginias Grant** 2026
  $1,500
- **Northwestern OUR Advanced Summer Undergraduate Research Grant** 2026
  $4,000
- **OUR Conference Travel Grant** 2026
  $500
- **Weinberg Conference Travel Grant** 2026
  $500
- **Northwestern OUR Summer Undergraduate Research Grant** 2025
  $4,000
- **DEEPS Undergraduate Service Award** 2025
  $500

SERVICE AND EXTRACURRICULARS

- **Volunteer** *Virginia Department of Conservation and Recreation*
  October 2026
- **Midwest Geobiology Symposium** *Co-chair of Planning Committee*
  October 2026
- **Northwestern Department of Earth, Environmental & Planetary Sciences**
  Student Communications Officer
  April 2025 – Present
- **Northwestern GeoClub** *Co-founder, President*
  September 2024 – Present
- **TBD Performance Group** *Ensemble, Writer*
  November 2024 – Present
- **Chi Omega Fraternity**
  April 2024 – Present
- **CRUSH Magazine** *Creative Writing Editor*
  September 2024 – June 2025

PUBLICATIONS AND PRESENTATIONS

Freeland, A.R., Kuiper, E.Q., Stevenson, B.S., Osburn M.R. (2026). Grand, gloomy, and peculiar: Investigating how life takes shape in epigenic karst caves. University of Tennessee, Chattanooga, TN. *Presentation.*

Freeland, A.R., Kuiper, E.Q., Stevenson, B.S., Osburn M.R. (2026). What are Biovermiculations? Characterizing potential biosignatures in Mammoth Cave National Park, KY, USA. Midwest Geobiology Symposium, Chicago, IL. *Poster.*

Freeland, A.R., Kuiper, E.Q., Stevenson, B.S., Osburn M.R. (2026). Evaluating the biogenicity of biovermiculations in Mammoth Cave, KY, USA. Goldschmidt Conference, Montreal, QC, Canada. *Poster.*

Freeland, A.R., Kuiper, E.Q., Stevenson, B.S., Osburn M.R. (2026). Evaluating the biogenicity of biovermiculations in Mammoth Cave, KY, USA. National Speleological Society Convention, Corydon, IN. *Presentation.*

Freeland, A.R., Kuiper, E.Q., Stevenson, B.S., Osburn M.R. (2026). Decoding Cave Wall Patterns to Search for Life Elsewhere. Northwestern Undergraduate Research Expo and Creative Arts Festival, Evanston, IL. *Poster.*