

Rowan R. Terra

Biogeochemistry Ph.D. Candidate and ORISE Research Fellow



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Pittsburgh, PA, USA



rowan-terra

EDUCATION

Duquesne University

Ph.D. in Biological Sciences

Pittsburgh, PA

Expected in Fall of 2026

Carnegie Mellon University

Graduate Coursework in Biology,
Chemistry, and Computer Science

University of Pittsburgh

M.A.T. in Science (2020)

B.S. in Biological Sciences (2019)

Pittsburgh, PA

SKILLS

General

- Biological Mining
- Geochemistry
- Machine Learning
- Field Surveys
- Mentorship

Languages

- Python
- R
- JavaScript
- HTML
- C#

Instrumentation

- IC
- ICP-MS and OES
- SEM + EDS
- Confocal

Writing

- Manuscripts
- Grants
- Audits

SELECT PUBLICATIONS

-Terra et al., 2025. Mountain Pass Rare Earth Mine Inspires a New Generation of Economic Geoscience Professionals. *SEG Discovery*.

-Terra & Hrach, 2026. Biology and Chemistry Ph. D. Student Perspectives on Graduate Teaching Assistant Experiences in Pennsylvania Identify Pedagogical Gaps. *NSTA Journal of College Science Teaching*.

Submitted

-Terra et al., 2026. Spatiotemporal Biogeochemistry of a Critical Mineral Rich Abandoned Mine Drainage Passive Remediation System.

In Progress

-Terra et al., 2026. Computational Prospecting for Rare Earth Element Feedstocks Across Appalachia.

SUMMARY STATEMENT

I am a Ph.D. candidate conducting research on biogeochemical processes in abandoned mine drainage at Duquesne University and NETL-DOE under an ORISE research fellowship. My current projects characterize AMD feedstocks using field and computational methods while also exploring microbiological avenues for critical mineral extraction and recovery.

I have a decade of research experience spanning biological, chemical, ecological, and computational sciences. These opportunities have helped me flesh out my preference for multi-disciplinary approaches to scientific questions and have solidified my long-term goal of working towards leading an independent research program as a Principal Investigator focused on integrative environmental systems.

RECENT EXPERIENCE

Graduate Student Researcher and Teaching Assistant

2022 - Current

Duquesne University

Pittsburgh, PA

- Use microbiological culture and enrichment techniques to elucidate avenues for biological mining from unconventional critical mineral feedstocks.
- Determine microbiological metabolic pathways contributing to findings in field and laboratory experimentation using assays and sequencing analysis.
- Mentor undergraduate and graduate student learner.
- Instruct biology laboratory coursework for >100 undergraduate student learners.

ORISE Research Fellow

2023 - Current

Dept. of Energy, National Energy Technology Laboratory

Pittsburgh, PA

- Characterize unconventional critical mineral and microbiological feedstocks for extraction of industrially relevant metals using ICP-MS, IC, and SEM.
- Developed a tool to test many machine learning approaches on published datasets to identify untapped rare earth element feedstocks using cheap indicator molecules and historic surveys.
- Standardized field and biological mining techniques through technical presentations to ensure data across laboratory groups is comparable.
- Contributed to geochemical theory by explaining field precipitation trends that alter from expected geochemical modeling software.

Principal

2024 - Current

Terra Artificial Intelligence

Pittsburgh, PA

- Assist clients in acquisition, visualization, and analysis of datasets across STEM and educational subfields.
- Design and implement machine learning approaches for classification, regression, and clustering to extract insights and enhance predictive capabilities.