Tingting Zeng

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Education

Sep. 2022 – present *M.Sc.* student in Geology, China University of Geosciences. GPA 87.9/100
Sep. 2018 – Jul. 2022 *B.Sc.* in Geology, China University of Geosciences. GPA 3.61/5

Publications & Presentations

Peer-reviewed article

Zeng, T., Wang, C., Li, Z., Bendle, J., Yang, Y., Xie, S., 2024. The influence of Gram-negative bacterial community on the distribution of 3-OH-FAs in soils. *Chemical Geology,* 122309. https://doi.org/10.1016/j.chemgeo.2024.122309

Manuscripts in preparation

Zeng, T., Chen, Y., Feng, X., Yang, Y., Xie, S., Wang, C.. Adaptation of membrane lipids in Gram-negative bacteria to soil pH: Evidence from laboratory culture and data collection.

Zeng, T., Li, T., Yao, H., Xie, S., Wang, C.. Establishment of novel temperature and pH proxies based on 3-OH-FAs using machine learning.

Conference Presentations

Zeng, T., Wang, C., Li, Z., Bendle, J., Yang, Y., Xie, S.. The response mechanism of Gram-negative bacterial 3-OH-FAs to soil pH: Community changes vs. Membrane adaption. ***American Geophysical Union (AGU) Fall Meeting***, Francisco, CA. Dec. 2023 (Oral) https://ui.adsabs.harvard.edu/abs/2023AGUFMPP11B..01Z/abstract.

Zeng, T., Wang, C., Li, Z., Yang, Y., Xie, S.. The response mechanism of Gram-negative bacterial 3-OH-FAs to soil pH: Community changes vs. Membrane adaption. ***Annual Academic Conference of Geobiology,*** Xishuangbanna, China. Aug. 2023 (Poster).

Research Projects

*All as **student project leader**, supervised by **Prof. Shucheng Xie** and **Prof. Canfa Wang** in Molecular Geobiology Group.*

The influence of Gram-negative bacterial community on the distribution of 3-OH-FAs in soils. *Feb. 2021 – Apr. 2024*

- Collected 28 soil samples with significant pH gradients from central and southwestern China and measured their environmental parameters. **(Completed)**
- Conducted organic pretreatment of these samples to extract 3-OH-FAs and analyzed them using GC-MS. **(Completed)**
- Processed the 16S rRNA sequencing data with Qiime2 and predict Gram-negative bacteria using online BugBase. **(Completed)**
- Performed data analysis using R, Canoco, Igor, and Origin to explore how bacterial community and other environmental parameter influence 3-OH-FA distributions; drafted and revised manuscript for publication. **(Completed)**

Adaptation of membrane lipids in Gram-negative bacteria to soil pH. *Sep. 2022 – Present*

- Cultured three strains from different phyla of Gram-negative bacteria under varying pH conditions in the laboratory, then extracted and analyzed membrane lipids of harvested cells. **(Completed)**
- Collected the published data on membrane lipids of soil Gram-negative bacteria, and established a database with information on over 1700 strains and their lipids. **(Completed)**
- Perform data analysis to understand how membrane lipids respond to soil pH, with a focus on the distinct role of molecular adjustments and community changes; currently draft and revise manuscript for publication. **(In progress)**

Establishment of novel temperature and pH proxies based on 3-OH-FAs using machine learning. *Dec. 2023 – Present*

- Collected 3-OH-FAs, environmental and location data from articles on reconstructing temperature and soil pH with 3-OH-FA-based proxies. **(Completed)**
- Collaborate with Prof. Hong Yao's team at the School of Computer Science, China University of Geosciences, to develop novel 3-OH-FA-based environmental proxies, aiming to address the regional differences in paleoclimatic reconstruction. **(In progress)**

Research Experiences

Team member of Molecular Geobiology Group in China University of Geosciences *Feb. 2020 – Present*

- Acquired proficiency in organic pretreatment techniques for different membrane lipids, including brGDGTs, fatty acids.
- Mastered lipid and isotope detection using GC-MS, CG-IRMS, and GC, along with identification through specialized software.
- Led three research projects as a student project leader.

Research Assistant of Molecular Geobiology Group in China University of Geosciences *Sep. 2022 – Present*

- Maintained and repaired the Thermo Fisher GC-MS in the laboratory to ensure its daily operation, assisting teachers and students from different universities with lipids analysis of over 1300 samples over the past two years.

Visiting Student in Department of Ocean Science and Engineering, Southern University of Science and Technology
Apr. 2023 – Jul. 2023

- Acquired proficiency in bacterial culture and preservation procedures, as well as DNA and RNA extraction methods in Zeng Lab (**PI**: Prof. Zhirui Zeng).
- Cultured a strain of Acidobacteria under varying pH conditions and conducted qPCR experiments on harvested cells to investigate the function of target genes in response to pH changes.

Honors and Awards

2024.10	National Scholarship, Ministry of Education of the People's Republic of China
2024.10	The First Prize of Graduate Study Scholarship, China university of Geosciences
2023.10	The First Prize of Graduate Study Scholarship, China university of Geosciences
2022.10	The First Prize of Graduate Study Scholarship, China university of Geosciences
2021.12	Ruiming Alumni Scholarship, China University of Geosciences
2020.12	Ruiming Alumni Scholarship, China University of Geosciences
2020.08	Outstanding student, Industrial-Academic-Research Base, Zigui, China
2019.12	Social Practice Scholarship, China University of Geosciences

Skills and Language

Skills

Organic pretreatment for membrane lipids extraction; Instrumental analysis of lipids and related isotopes; Laboratorial bacteria culture; Basic molecular biology experiments; Data analysis with R, Canoco, SPSS, Igor pro, Origin, and Qiime2.

Language

Mandarin (native); English (IELTS 7 & TOFEL 95); Spanish (elementary)