iFAST: The International Forum on Advanced Environmental Sciences and Technology

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3:30 p.m. CST, 4:30 p.m. EST, 9:30 p.m. GMT, Tuesday, March 4, 2025
5:30 a.m. Wednesday, March 5, 2025, China

ZHILI HE
SOUTHERN MARINE SCIENCE AND ENGINEERING GUANGDONG
HTTPS://SML-ZHUHAI.CN/INFO/1668.HTML

Zhili He is a Professor/Chief Scientist at the Southern Marine Science and Engineering Guangdong Laboratory (Zhuhai), China. Prof. He has long worked on microbial ecology, environmental microbiomics, environmental microbiology, and bioinformatics, resulting in about 400 publications, >37,000 citations, and an H-index of 99. He established the Marine Synthetic Ecology Research Center (MSEC) at the current institution in 2024. Recently, Prof. He is particularly interested in synthetic microbial ecology and marine microbiology related to biogeochemical cycles of carbon, nitrogen and sulfur with foci on their coupling mechanisms in mangrove ecosystems.

Microbially-driven nutrient cycling and coupling mechanisms in mangrove ecosystems

Abstract Mangrove wetlands are important 'blue carbon' coastal ecosystems and hotspots of carbon (C), nitrogen (N) and sulfur (S) cycling with high productivity, high biodiversity and high C sequestration efficiency, yet microorganisms play critical roles in such biogeochemical cycling processes. However, microbially-driven C/N/S cycling and coupling mechanisms remain unclear in mangrove ecosystems. Our recent results indicated that the abundance of functional groups/genes (e.g., nitrifiers, S oxidizers, denitrifiers) decreased with the sediment depth, while some functional groups (e.g., methanogens, N2 fixers, sulfate reducers) were more abundant in the deep sediments. Also, sulfate reducers could interact with methanogens by electron transfer or S0, and sulfate reducers could co-exist with methanogens at the middle-deep layer. Additionally, acid-volatile sulfide (AVS) and pH were found to be important environmental factors driving methane, N and S cycling microbial communities divergent along the sediment depth. The findings advance our understanding of microbially-driven coupling mechanisms of C, N and S cycling processes, providing novel strategies (e.g., microbiome engineering) for mitigating global climate warming.

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Organizing Committee Chair: Jizhong Zhou (University of Oklahoma, USA; www.ou.edu/ieg)
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