



Chao is a soil ecologist, broadly focusing on microbial ecology and biogeochemistry, with a goal to understand how microbial adaptation, survival, and death in soils may act as a bottleneck and impact the functioning of natural and managed ecosystems. Through integrating approaches from microbiology, organic chemistry, and modelling, he aims to apply his studies for developing guiding practices that improve ecosystem processes and management.

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# Soil microbial carbon pump: Mechanism, application & appraisal

*presented by*

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## **ABSTRACT**

Soil carbon (C) transformation and stabilization have received significant interest in recent years due to its potential importance in climate mitigation. Microorganisms are central to biogeochemical processes; however, there remains largely unknown how microbe-mediated processes lead to soil C sequestration. Here, I will present the recently-recognized notion on microbial necromass, a significant source for soil organic matter genesis. I will define two microbial channels that jointly explain soil C dynamics and establish a conceptual framework, consisting of soil “*microbial carbon pump*” (sMCP), to describe how microbes act as an active player in soil C storage. I will inspire new studies that utilize sMCP as a conceptual guideline for advancing our relevant knowledge.

**KEY WORDS:** Microbial necromass, soil organic matter, carbon stabilization, climate change

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