



Protists as key controllers of microbiome functioning in soils

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Soils host the vast majority of biodiversity on the planet. Soil organisms are key for ecosystem functioning by controlling nutrient fluxes and plant performance. These roles are fundamentally influenced by protists, the smallest microbial predators. However, the diversity and more importantly function of protists as potential microbiome engineers is largely unknown.

Here I will provide a short overview of recent advances that revealed an enormous taxonomical diversity of soil protists. These recent findings have also started to shift our perspective of the functional importance of protists in soils that is much wider than previously assumed and include key roles influencing ecosystem functioning. Using three studies I will showcase the importance of protists as (1) structural elements shaping bacterial communities that drive bacterial rarity, (2) most sensible bioindicators in a field-scale fertilization study across China and (3) key microbiome hubs shaping plant vegetation in the Brazilian Cerrado.

Using the results of these studies I will show that protists are key biota in shaping soil microbiome composition that has immediate consequences for plant performance and consequently vegetation dynamics. In turn, anthropogenic influences such as induced by climate change or through fertilization affects protists most strongly among all soil microbiome members, which could directly affect ecosystem functioning.

Together, I will use protists to exemplify that it is essential to take a more ecological perspective on soil biodiversity including predators to increase our understanding on soil biodiversity-driven ecosystem functions rather than focusing on single, commonly studied groups within the soil microbiome.