Ecological factors that drive microbial communities in traditional fermented foods

Sabitri Sciences
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What is the significance of fermented foods?

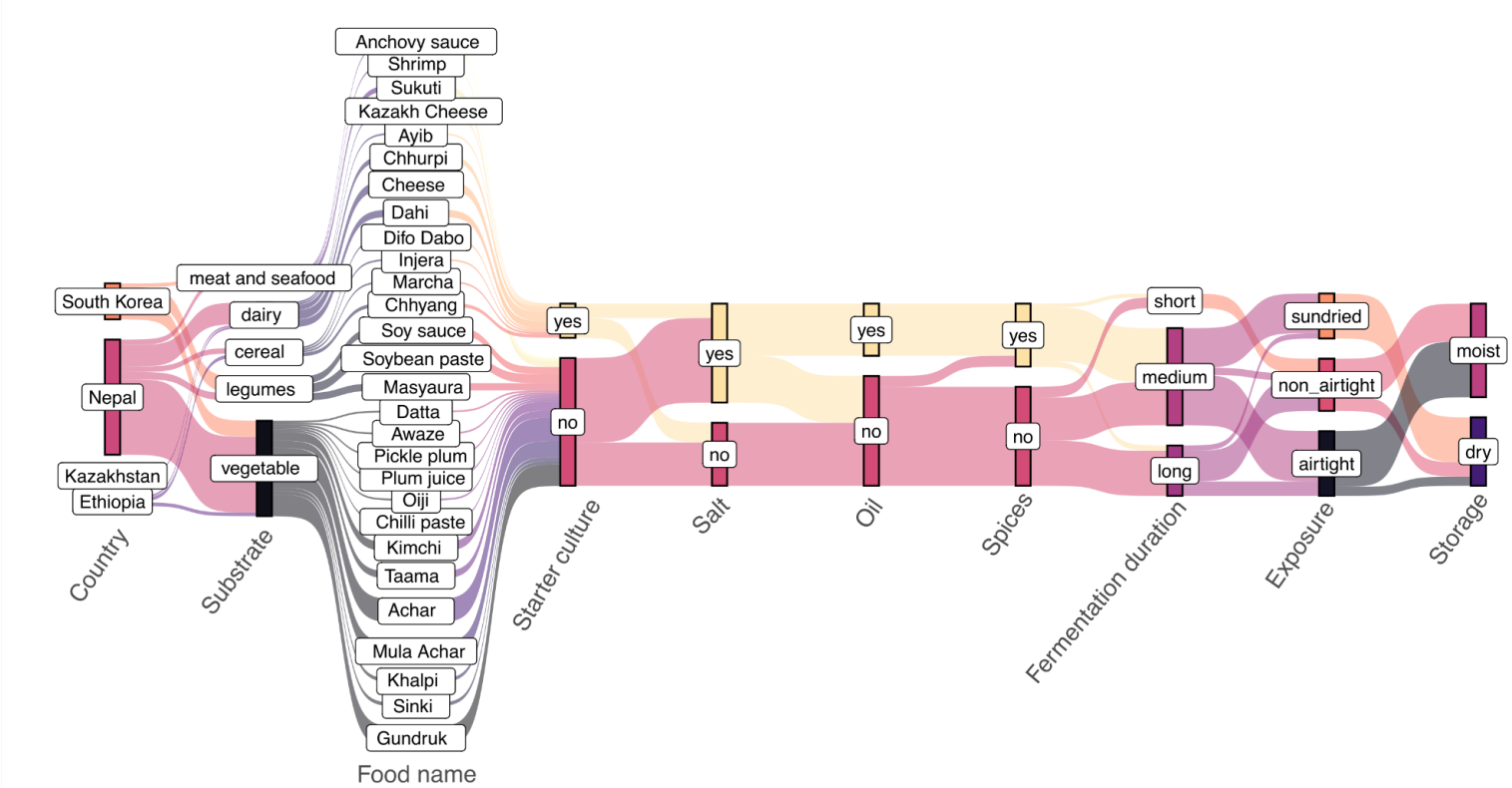
- ❏ Human culture
- ❏ Human health
- ❏ Sustainable food production

Why are we focusing on non-European traditional fermented foods?

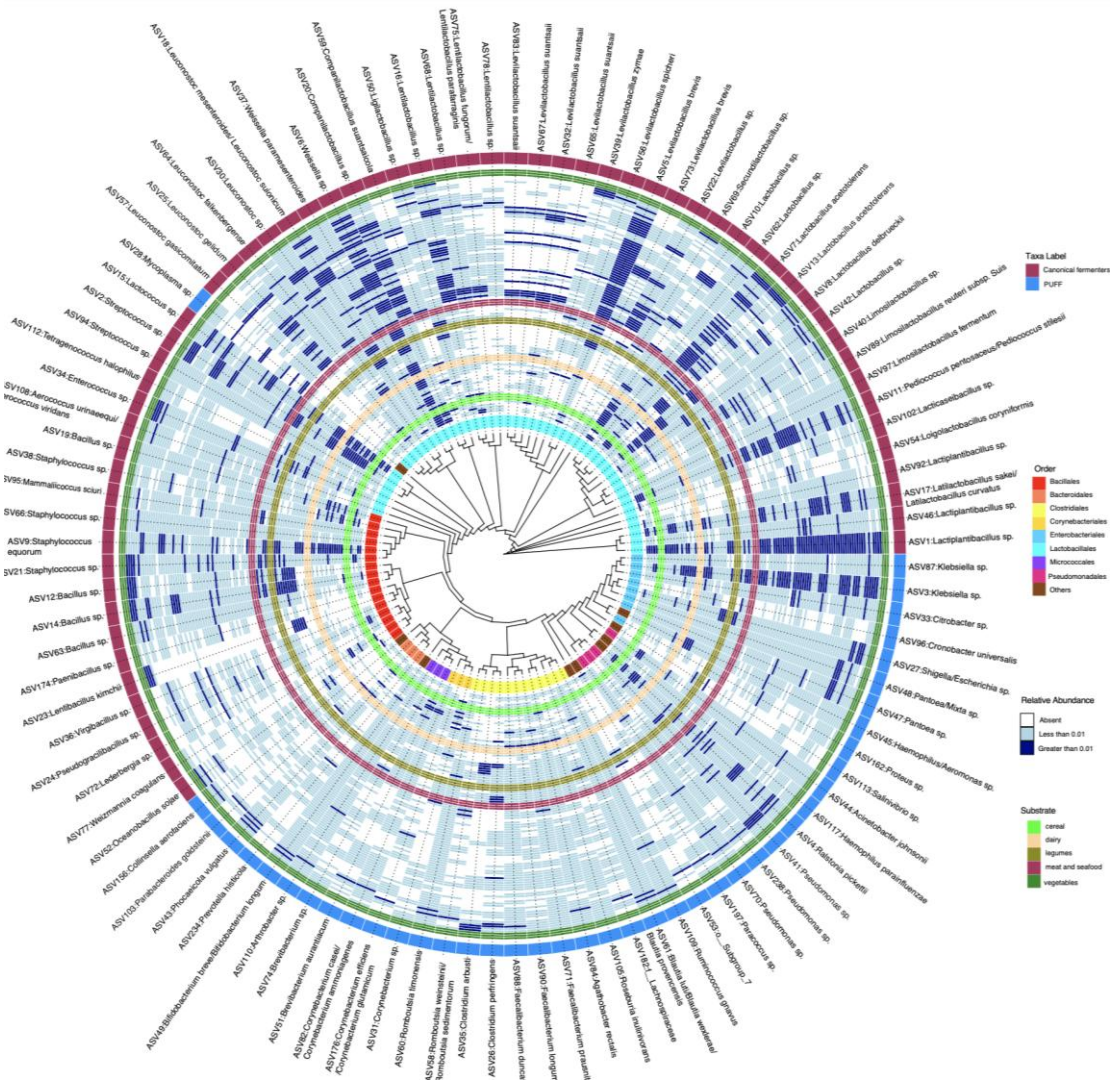
- ❏ Primarily relies on spontaneous fermentation unlike industrial fermentation
- ❏ The more diverse ecosystems of non-European traditional fermented food remain understudied

Community Engagement

A diverse group of traditional fermented foods from Asia and Africa were included in the study



Traditional fermented foods are natural sources of diverse bacteria and fungi but they are heterogeneous across samples



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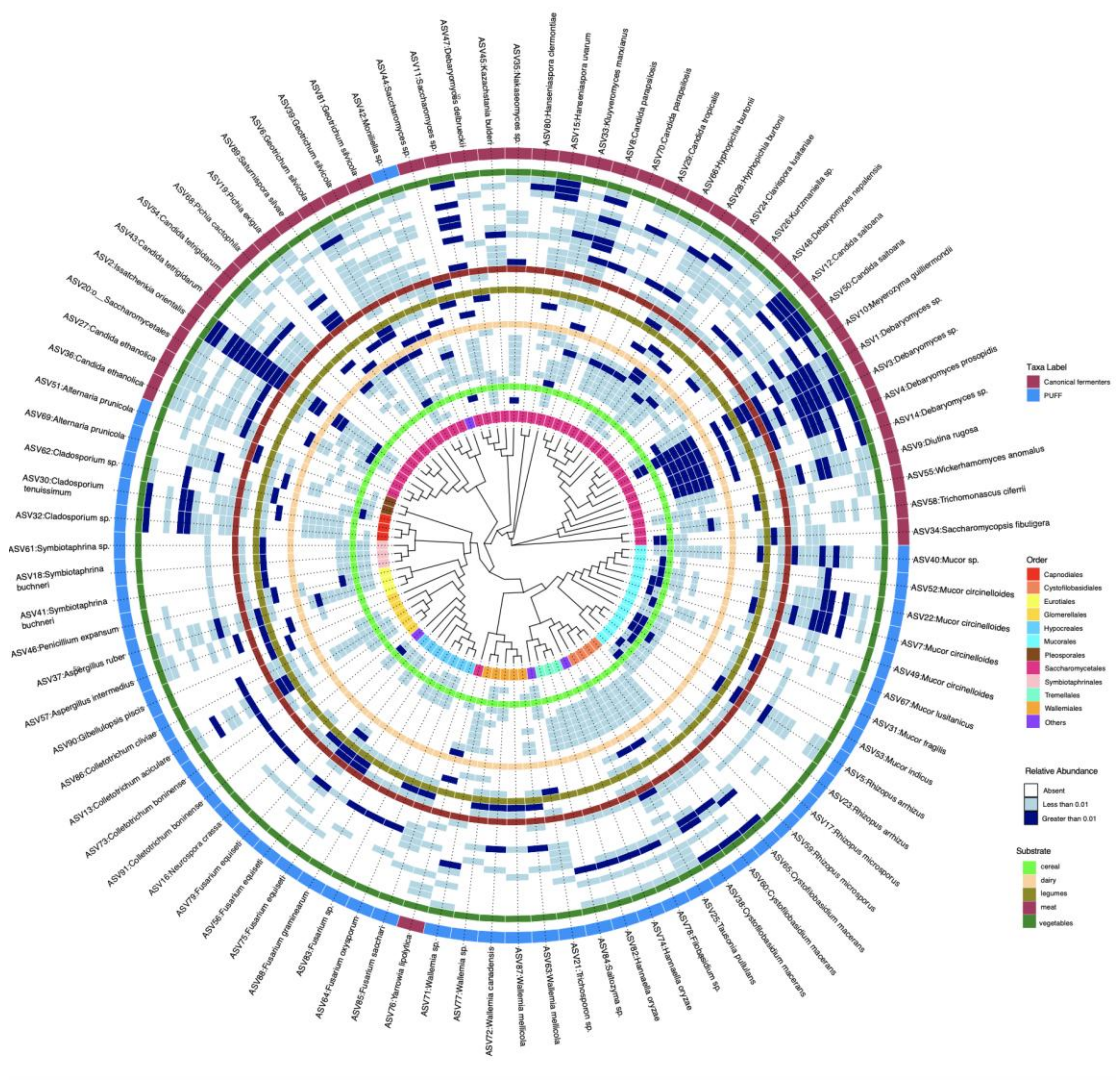
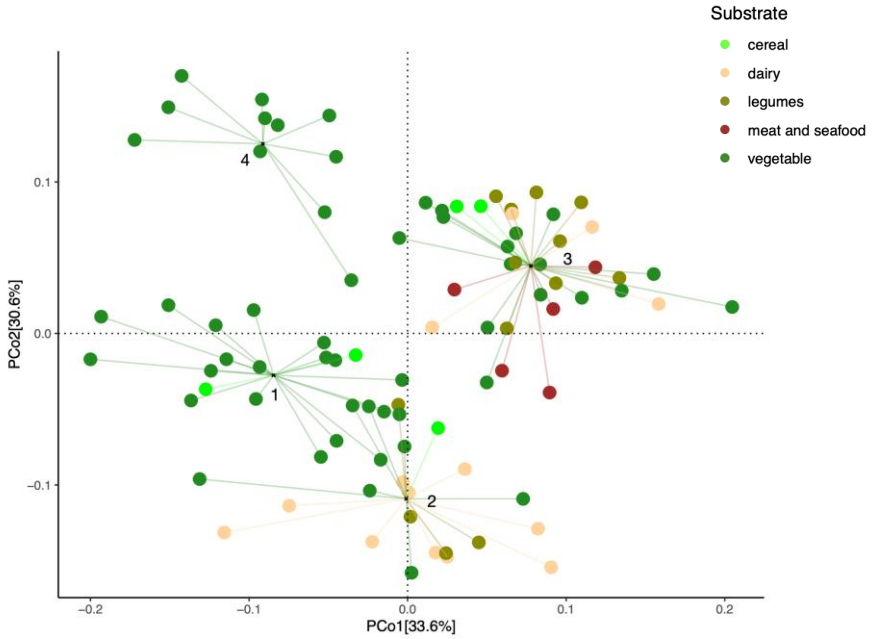
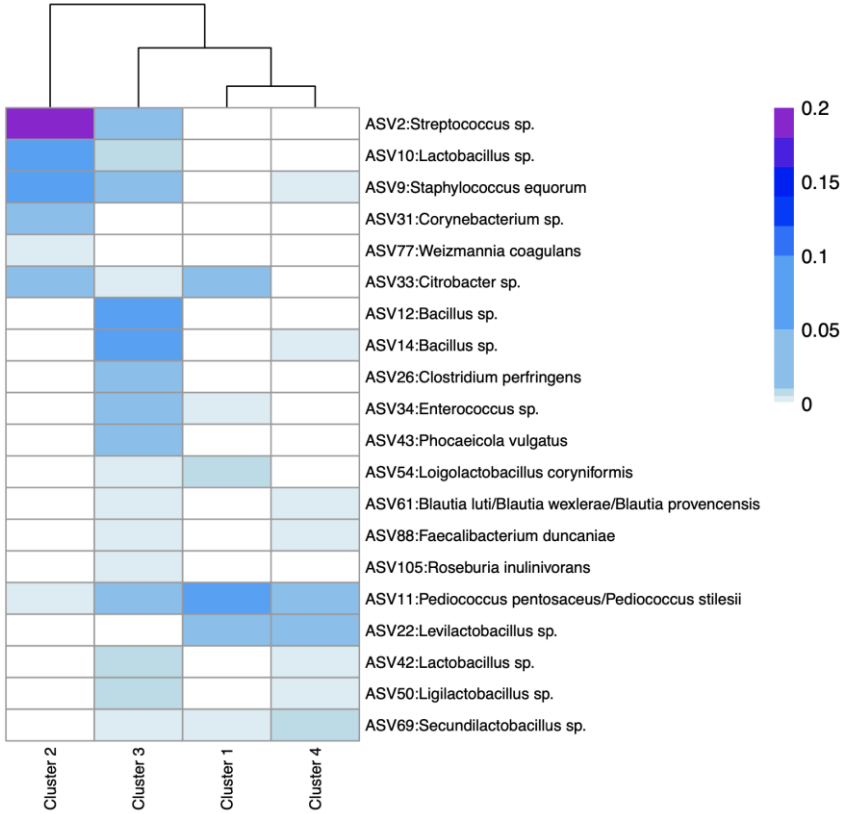


Substrate has the largest effect on the bacterial but not fungal community in traditional fermented foods





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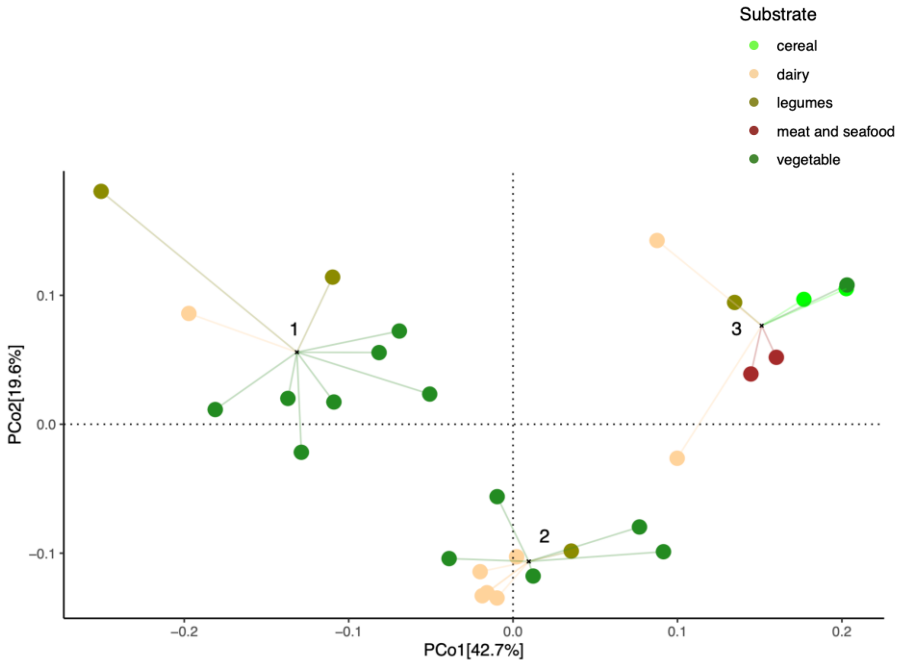
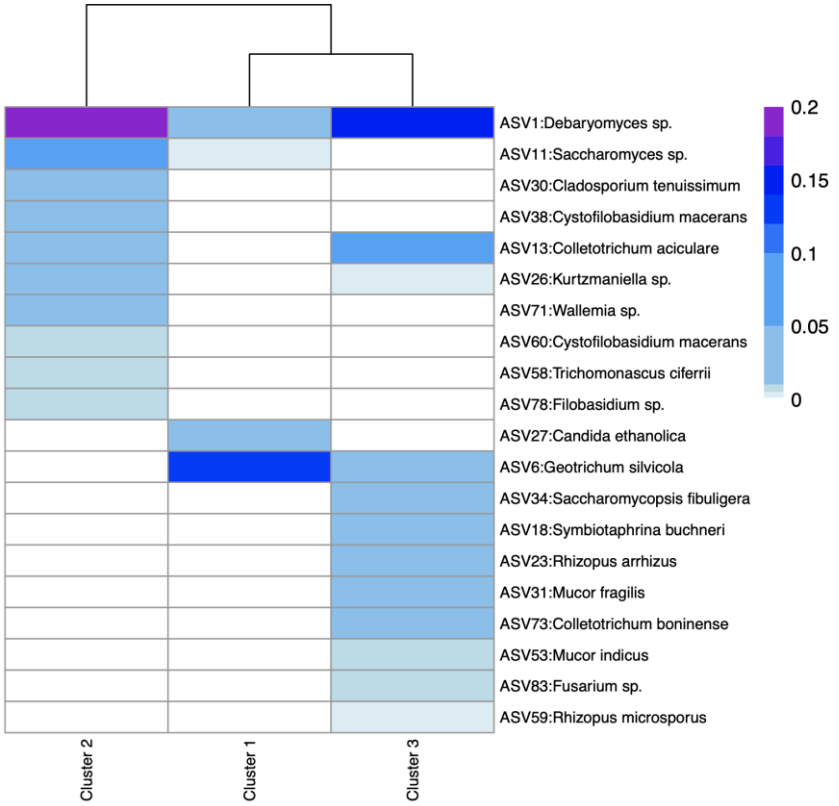
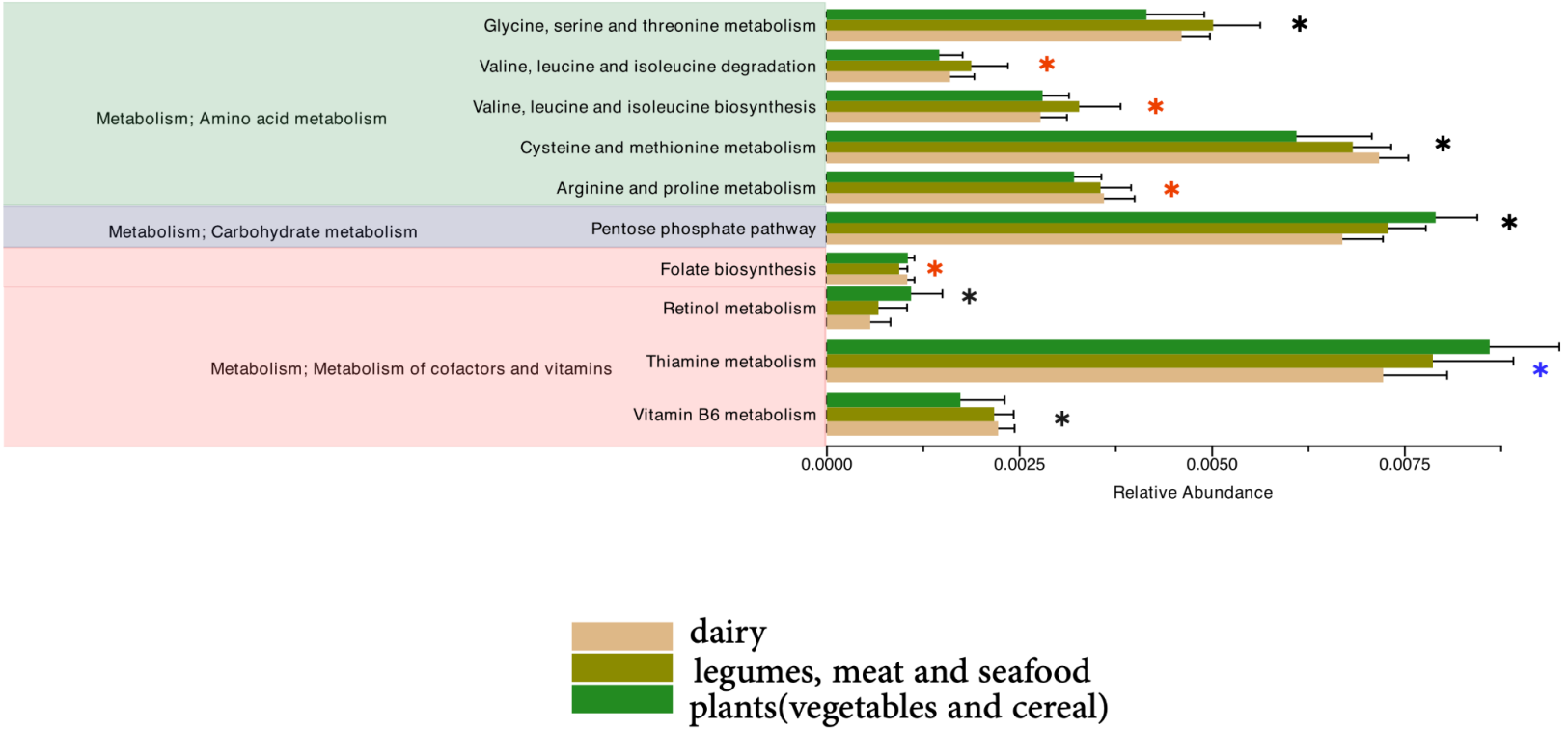
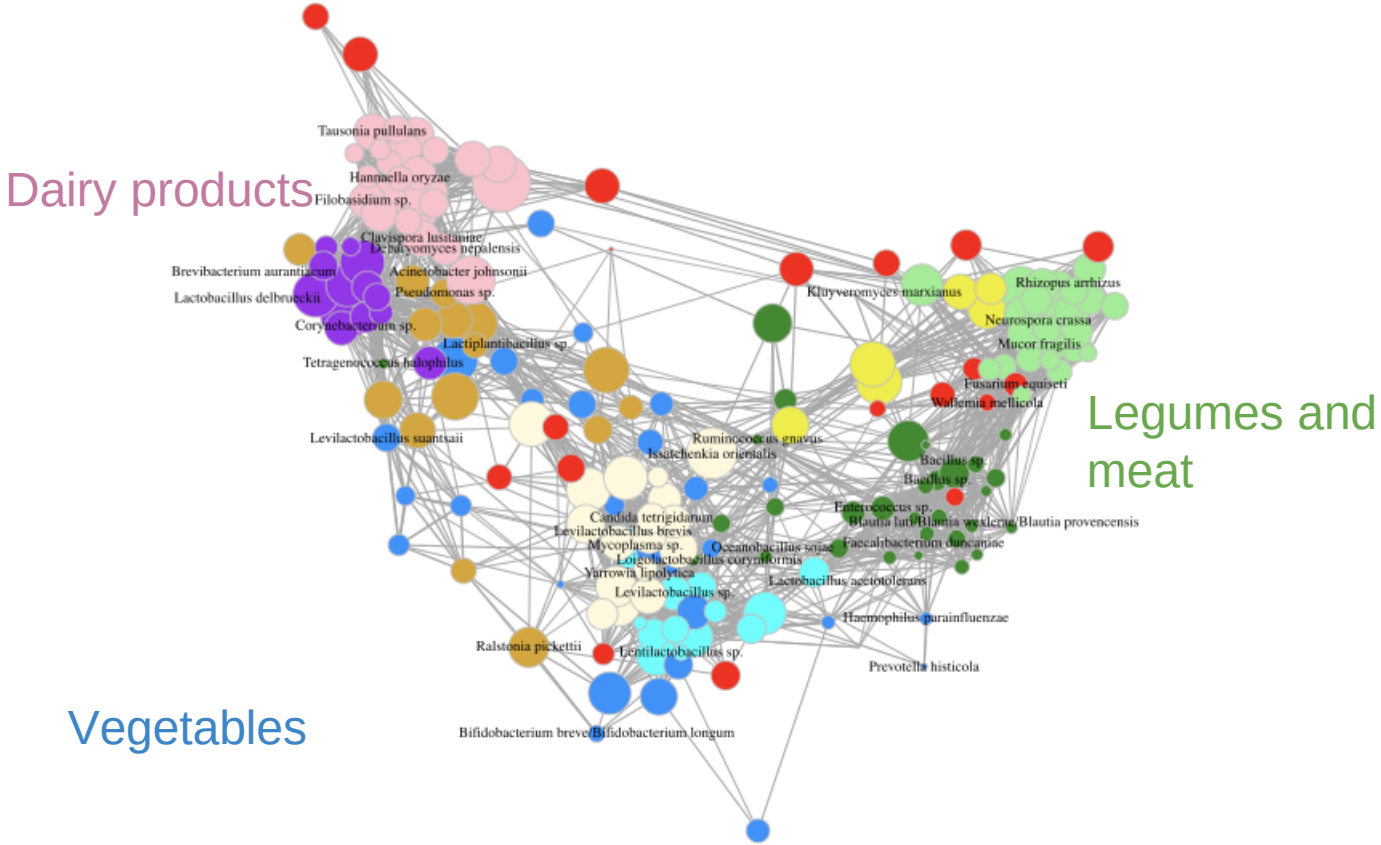




Predicted functions in traditional fermented foods vary by substrate



Co-occurrence analysis reveals substrate specific bacteria-bacteria and bacteria-fungi interactions



Conclusions

1. Traditional fermented foods are host to a diverse group of bacteria and fungi– many of their roles are not fully understood

1. Substrate plays a large role in determining the microbial communities and functional properties of fermented foods

1. Metagenomic sequencing of a large and diverse group of fermented foods coupled with culturing experiments will enable identification of specific microbes who can be utilized to prepare fermented foods with optimal flavor, design, and health benefits

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