The vineyard soil microbiome can distinguish wine producing regions

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BACKGROUND
• Regional characteristics of wines are critical features of product identity which consumers test through sensory appreciation. Aroma of wine is an important factor of sensory, and is in part determined by fermentation by wine microbes.
• The origin of wine microbes is likely to be the soil.

OBJECTIVES
• Can soil microbes define regionality through affecting wine composition?
• Measure soil microbiome distribution in a region dependent manner
• Test if soil microbial biogeography corresponds to local environmental conditions, e.g. weather, geographic features, and soil physicochemical properties

METHODS
• 13 vineyards spanning ~ 400 km
• GC-MS for wine aroma
• NGS for soil microbiome (bacteria, fungi)
• Soil physicochemical properties
• Weather and geographical data

CONCLUSIONS
• Wine aroma profiles segregate wine producing regions
• Regional origin defines vineyard soil microbial patterns
• Vineyard soil fungal communities display large predictive power of wine producing regions
• Weather parameters mainly drive the biogeographic distribution patterns of vineyard soil

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