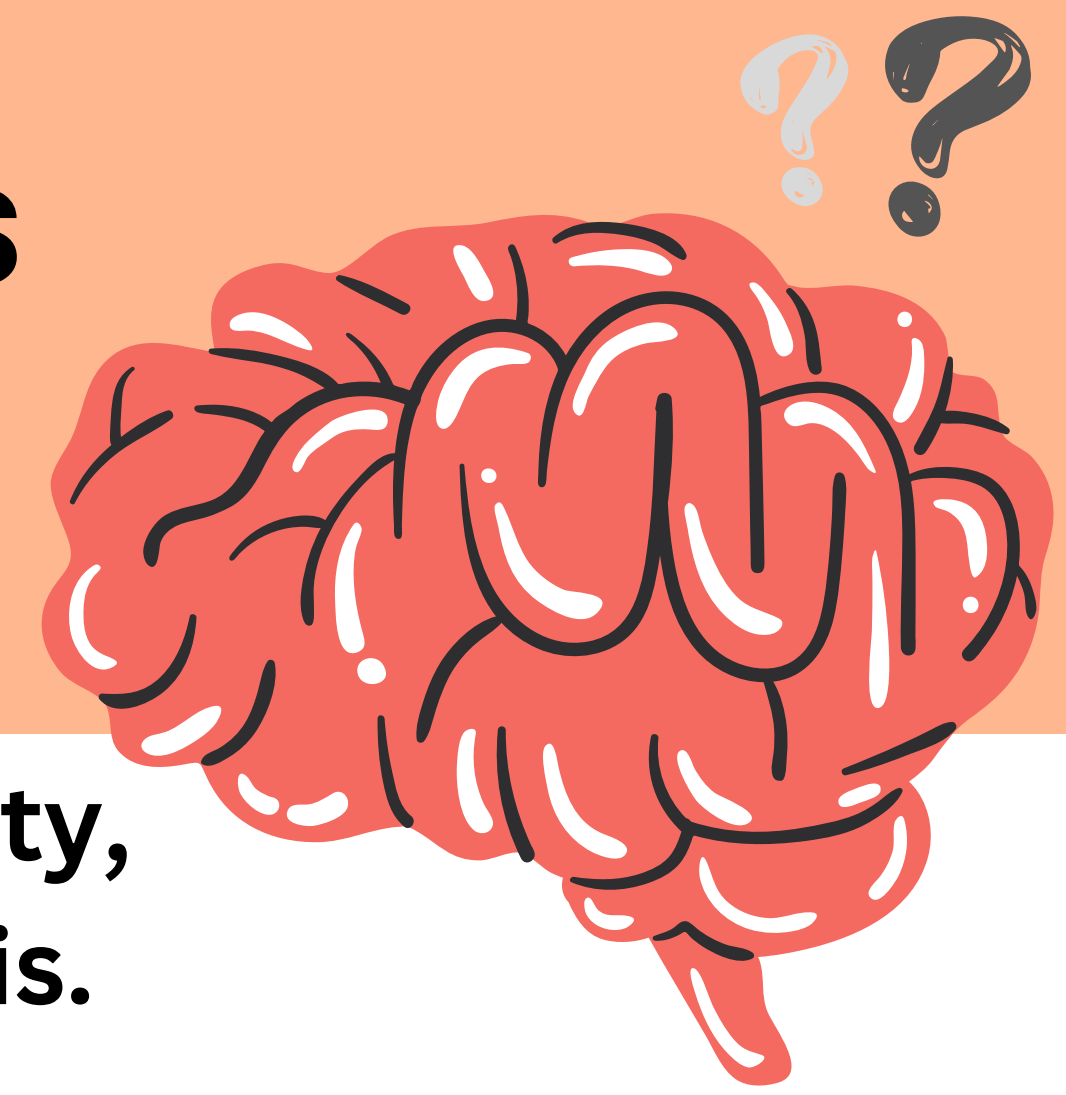


Deciphering Gut and Oral Microbiomes in Psychiatric Disorders

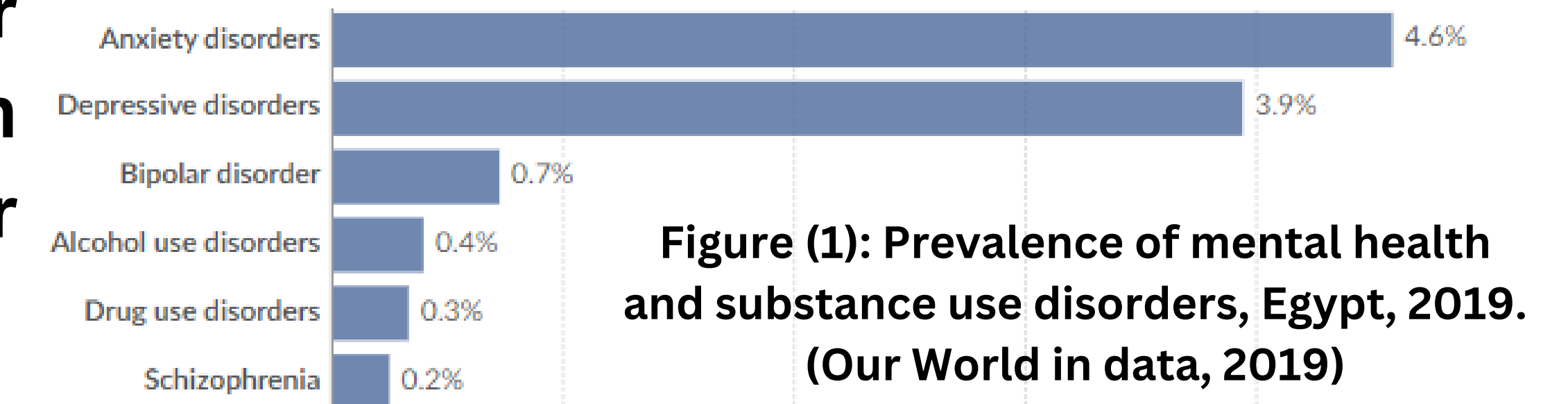
Rana Salah, Ahmed Moustafa



Introduction

Recent research links gut and oral microbiomes to psychiatric disorders like depression, anxiety, schizophrenia, and bipolar disorder. They influence mood, cognition & behavior via the gut-brain axis.

Dysbiosis, marked by microbial imbalance, links to inflammation and neurotransmitter dysregulation, common in psychiatric conditions. Rising global and local prevalence rates, shown in figure(1), underscore the urgency of understanding these microbiome-psychiatric disorder associations. This insight could revolutionize therapeutic approaches in mental health care.



Objective: To meta-analyze gut/oral microbiome studies in psychiatric disorders to detect possible diagnostic patterns.

Methodology

- Data Retrieval/ Preprocessing (16 Studies, 1420 Samples)
- Taxonomic Assignment
- Differential Abundance Analysis
- Data Visualization

EXCLUSION & INCLUSION CRITERIA

Conclusion

Based on our preliminary results, Schizophrenia & GAD show higher levels of microbial dysbiosis. However, many of the differentially abundant species are understudied in the literature. Moreover, there are limited publically available data of oral samples from psychiatric patients.

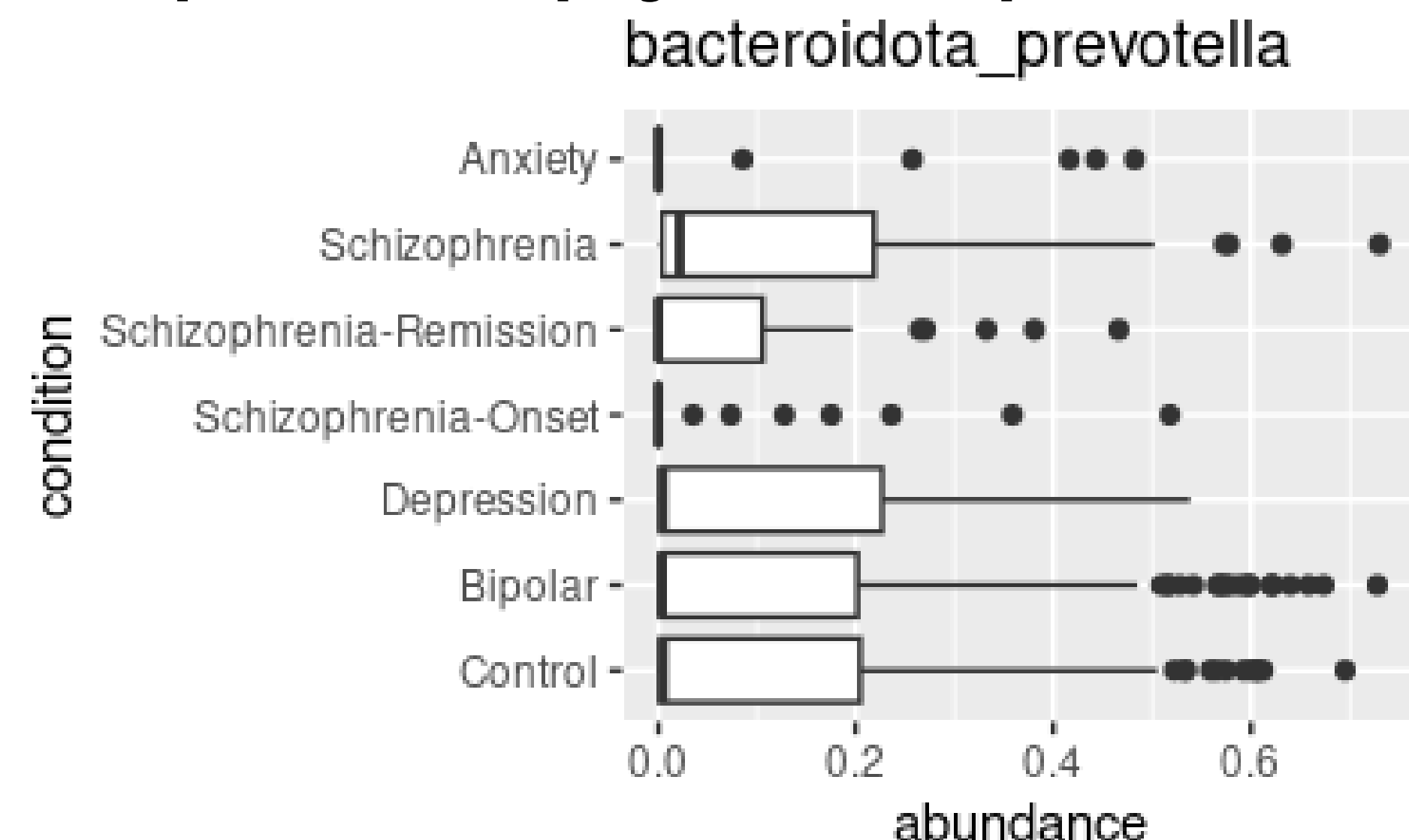


Figure (6): differential abundance of bacteroidota_prevotella across psychiatric disorders & controls.

Results

SZ 157 208 DP 193 46 BP 301 AX 21
 Gut (Stool) Samples Oral (Saliva) Samples

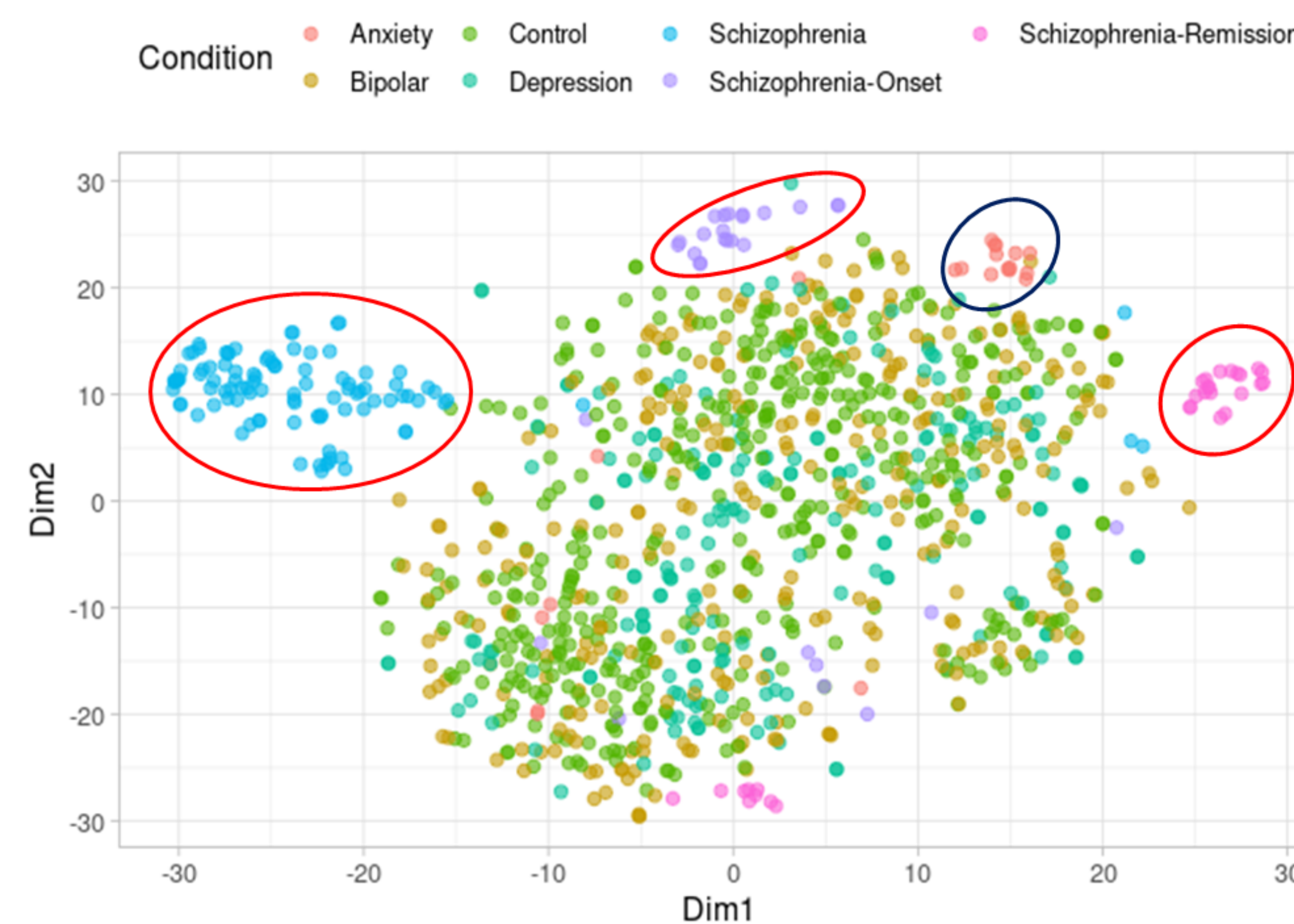


Figure (2): PCA plot illustrating differential abundance of gut microbiome across psychiatric disorders & matched controls.

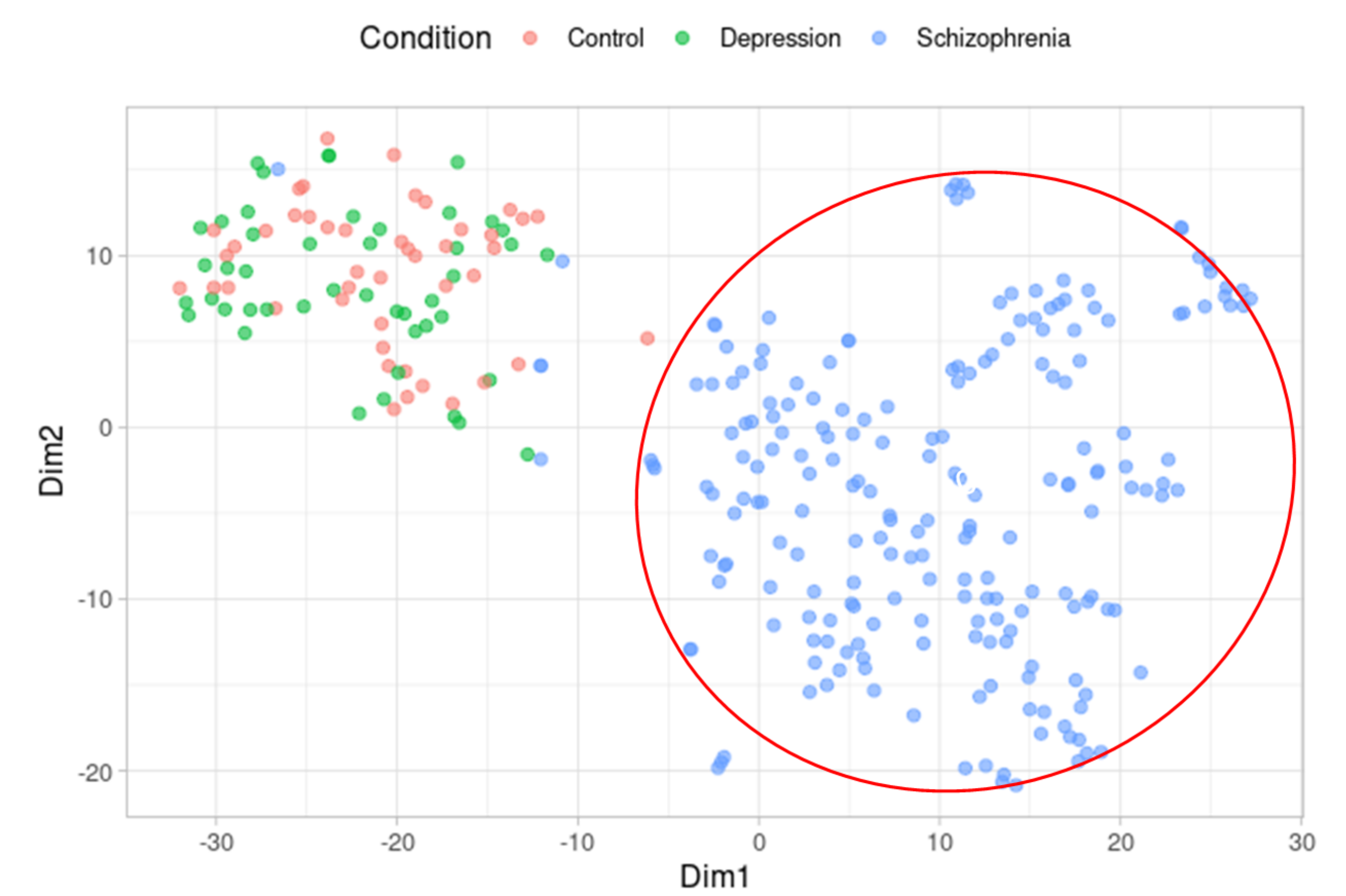


Figure (3): PCA plot illustrating differential abundance of oral microbiome across psychiatric disorders & controls.

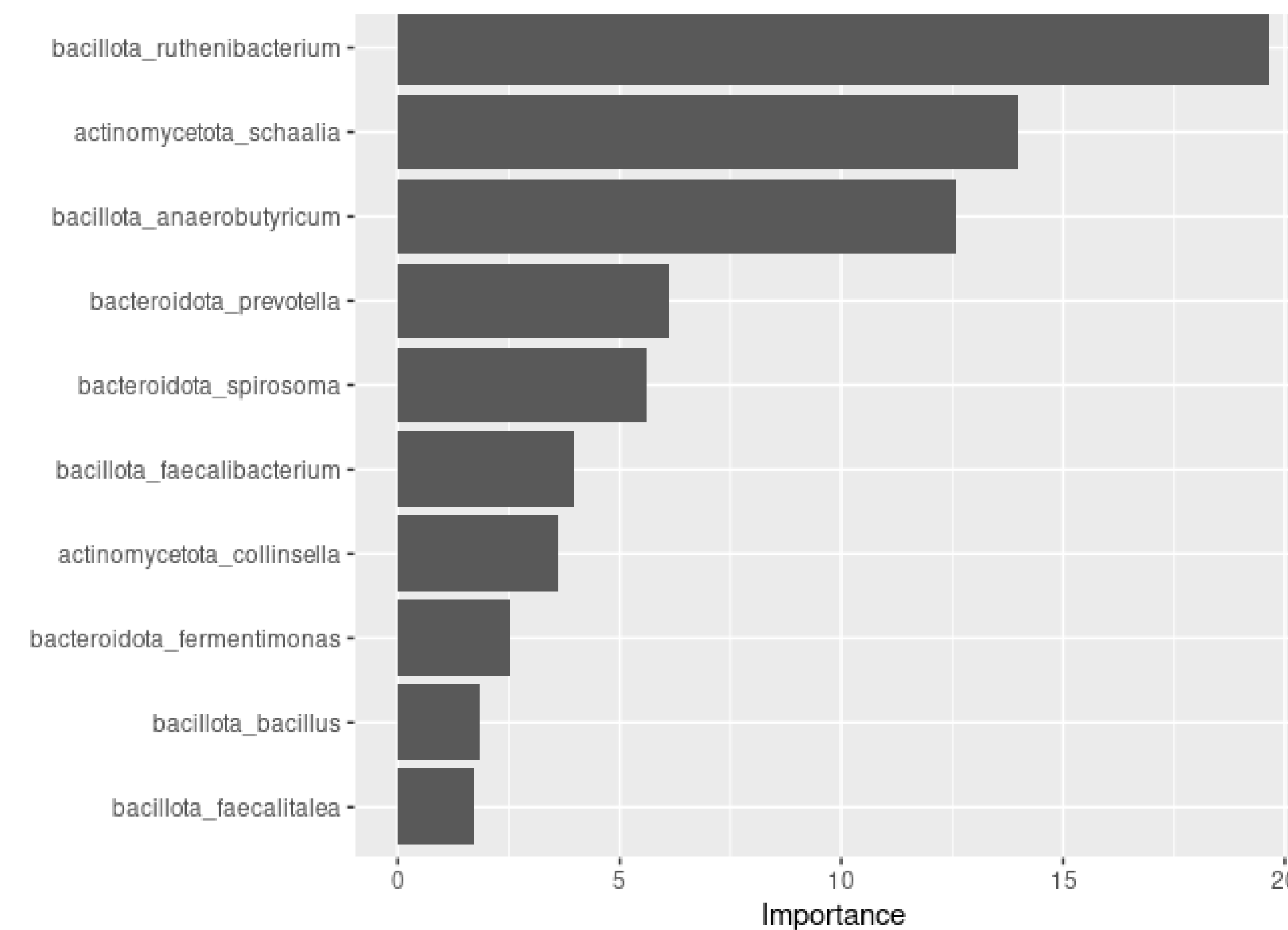


Figure (4): the genera showing the highest gut microbiome dysbiosis patterns across the groups.

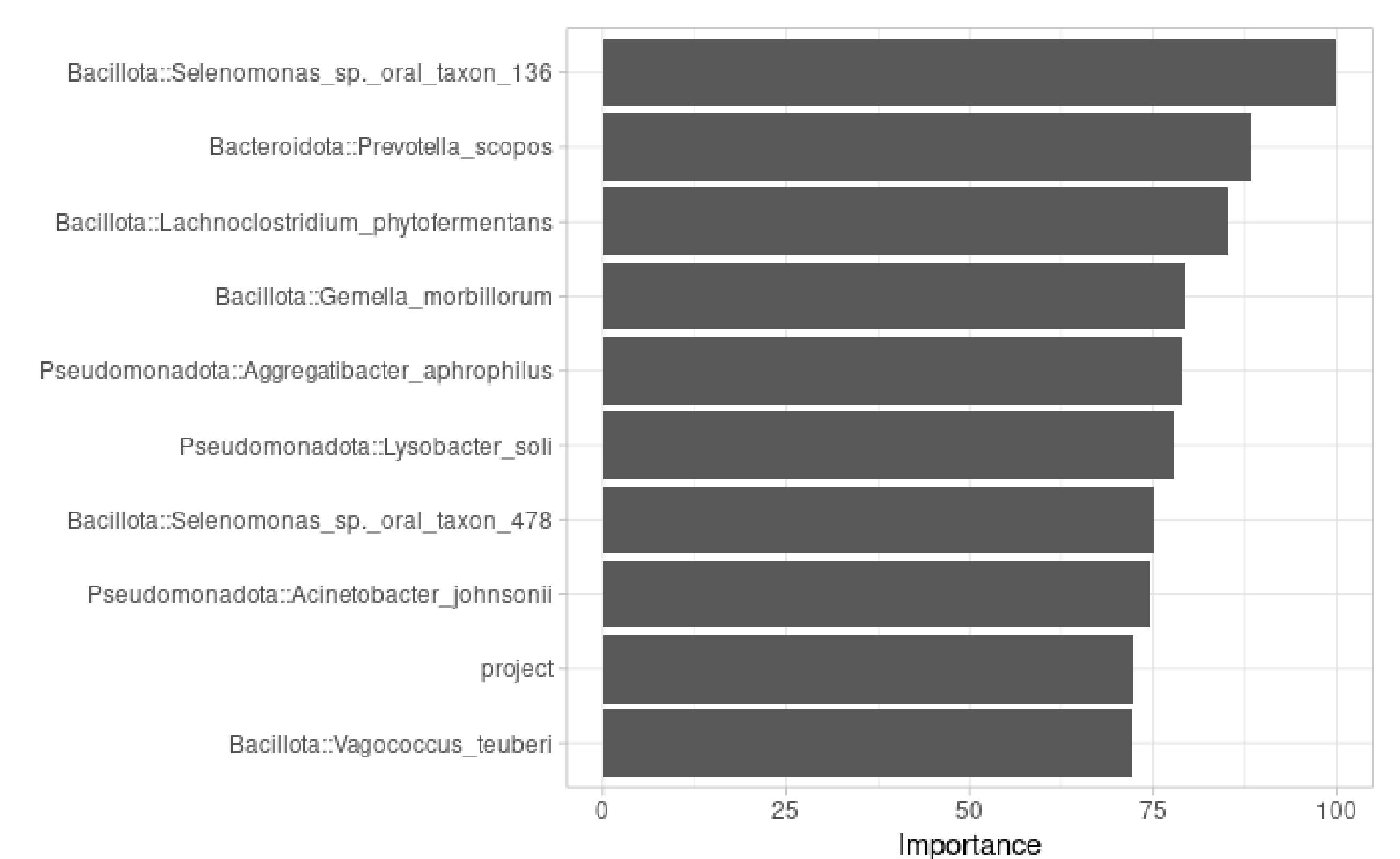


Figure (5): the species showing the highest oral microbiome dysbiosis patterns across the groups.

Next Step



References

Nikolova VL, Smith MRB, Hall LJ, Cleare AJ, Stone JM, Young AH. (2021). Perturbations in Gut Microbiota Composition in Psychiatric Disorders: A Review and Meta-analysis. JAMA Psychiatry. 78(12),1343–1354. doi:10.1001/jamapsychiatry.2021.2573.



References List