

# **Aeration and mineral composition of soil determine microbial CUE**

Jolanta Niedźwiecka<sup>1,2</sup>, Roey Angel<sup>1,2,4</sup>, Petr Čapek<sup>2</sup>, Ana Catalina Lara<sup>1,3</sup>, Stanislav Jabinski<sup>1,2</sup>, Travis B. Meador<sup>1,2</sup>, Hana Šantrůčková<sup>2,4</sup>

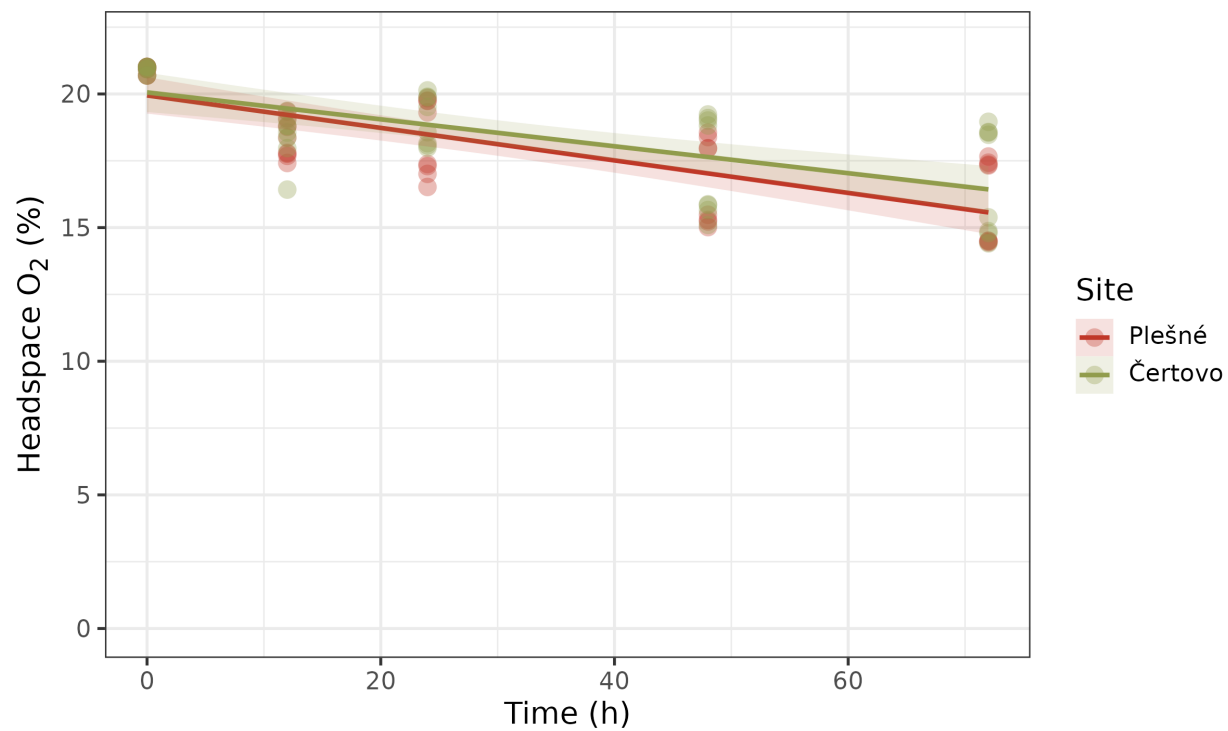
1. Institute of Soil Biology and Biogeochemistry, Biology Centre CAS, České Budějovice, Czechia

2. Faculty of Science, University of South Bohemia in České Budějovice, Czechia

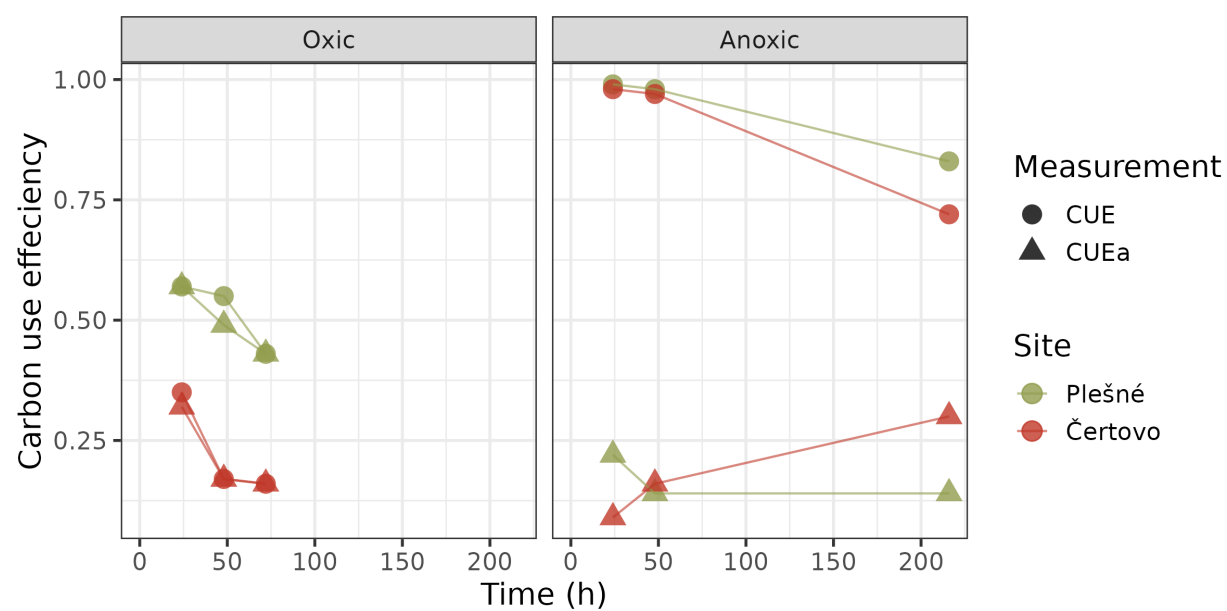
3. Present address: Department of Biochemistry and Microbiology, University of Chemistry and Technology, Praha, Czechia.

4. Correspondence: roey.angel@bc.cas.cz or hasan@prf.jcu.cz

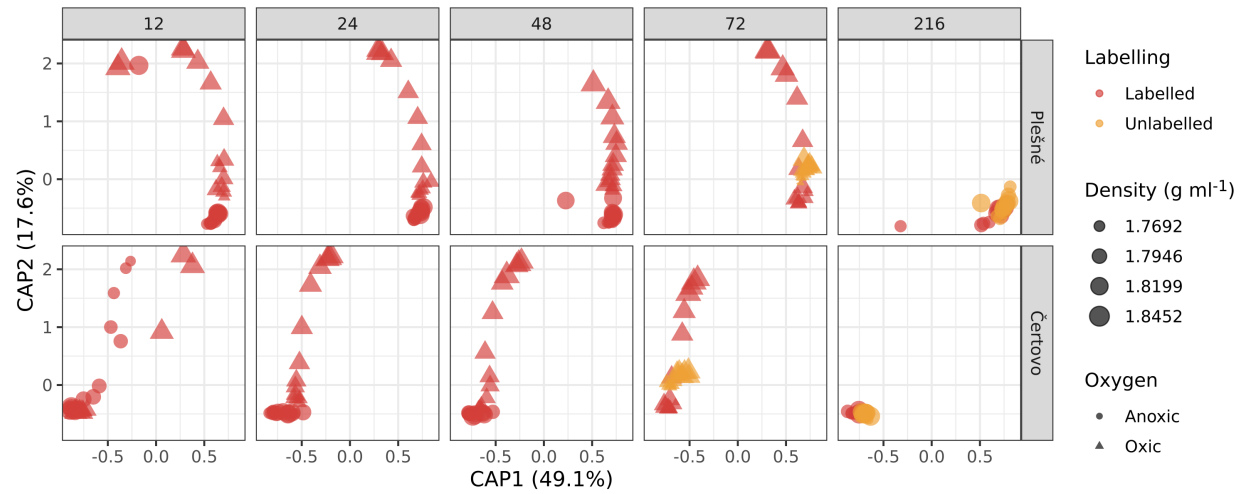
## **Supplementary material**



**Figure S1.** Headspace oxygen values during the incubation of forest soil from PL (Plešné) and CT (Čertovo) sites (oxic incubations only).

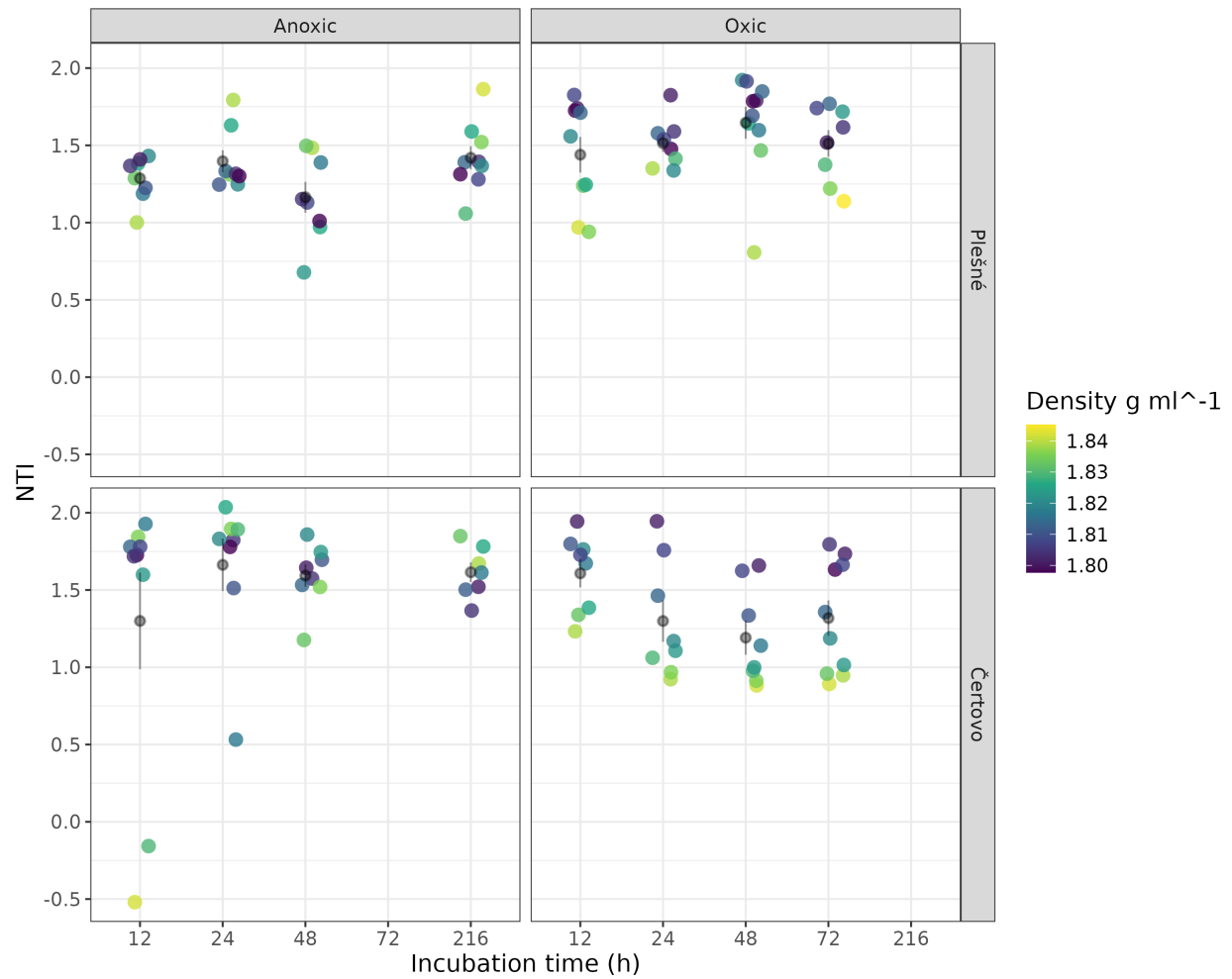


**Figure S2.** Changes in CUE and CUEa over time in the oxic and anoxic incubations.

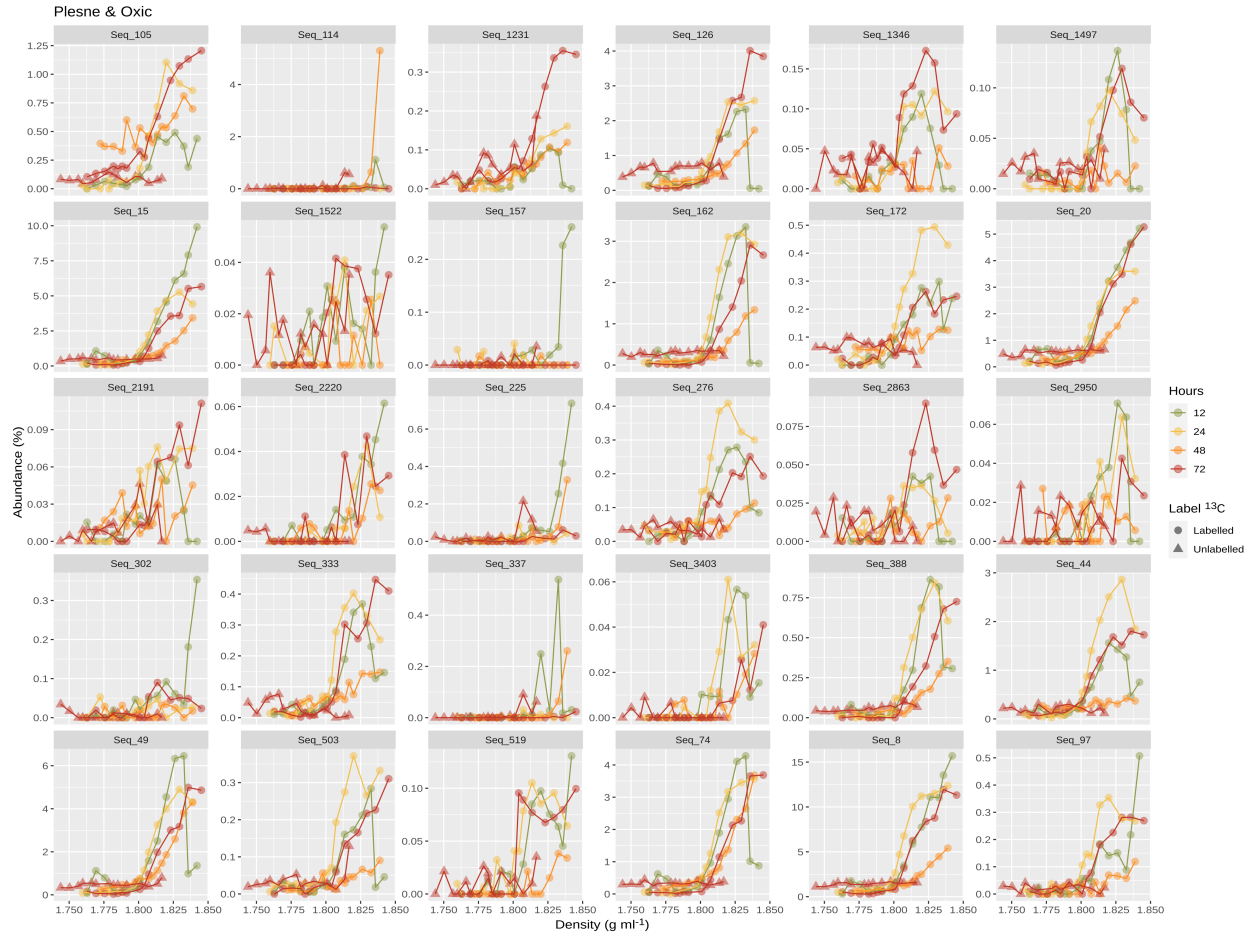


**Figure S3.** Principal coordinate analyses plots of the bacterial community composition based on Morisita–Horn distances in the different SIP fractions. The plots represent a single model obtained using the constrained model: distance matrix Site \* Oxygen \* Time \* Density.zone. The plot was faceted for visual clarity.

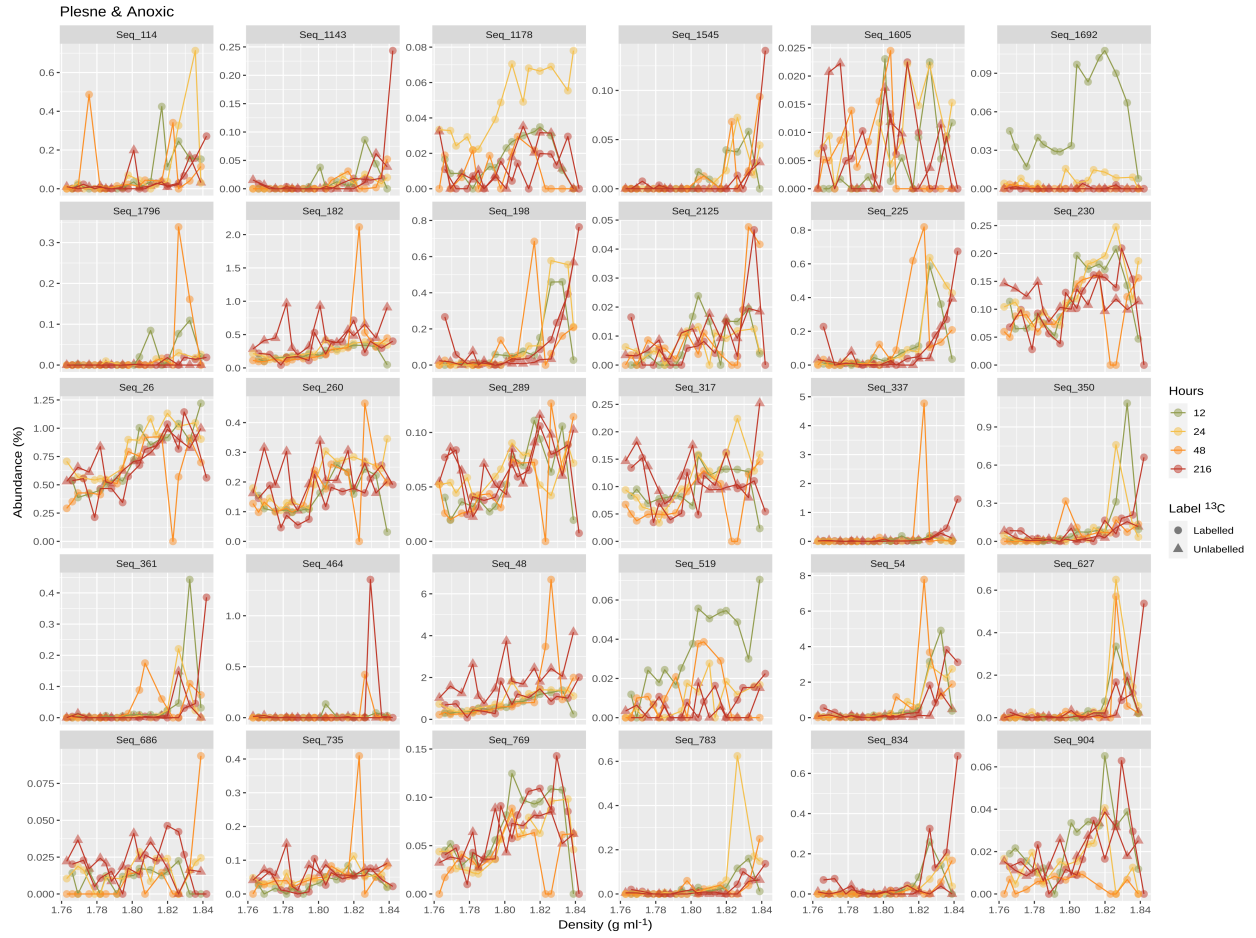




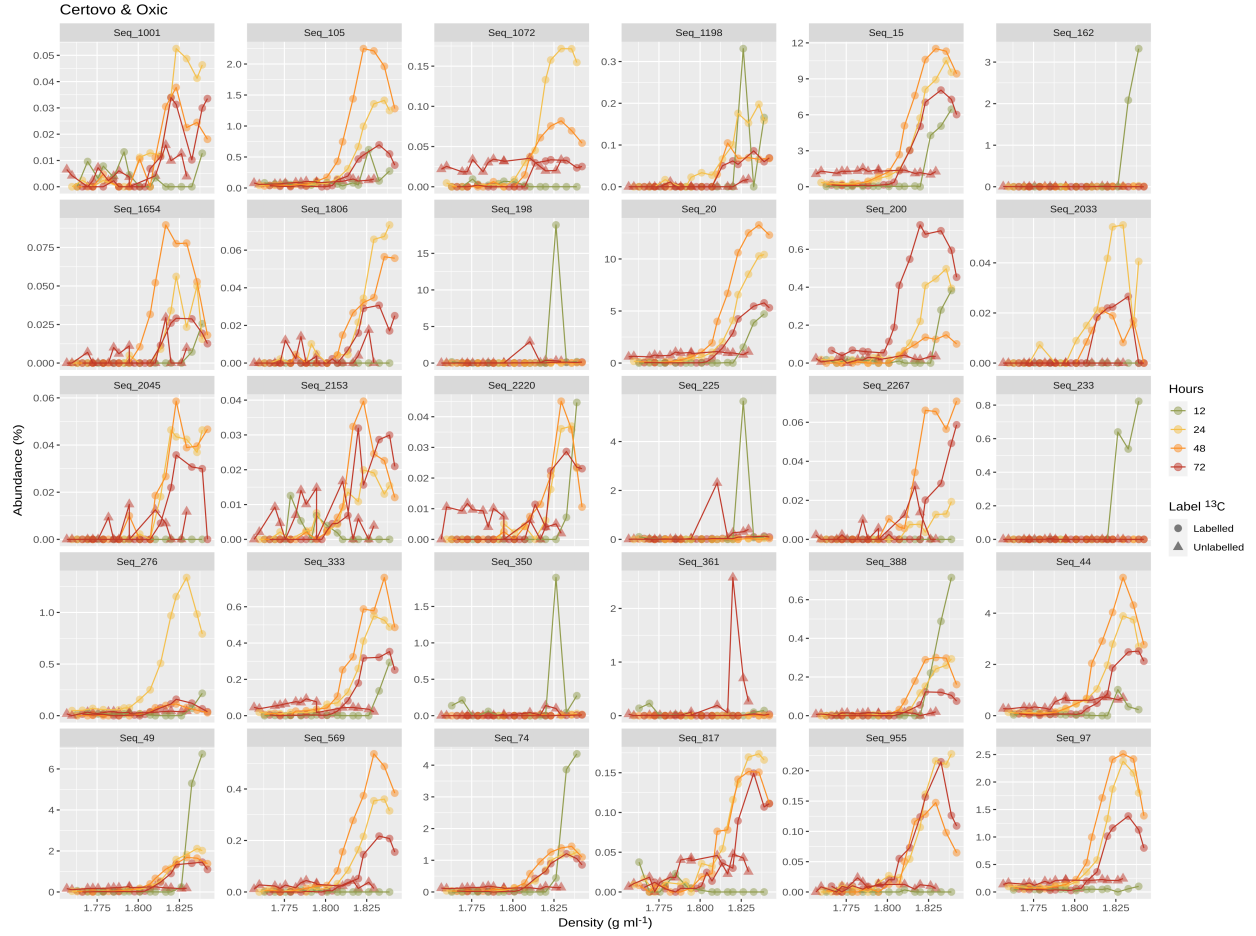
**Figure S4.** Nearest taxon index (NTI) values for phylogenetic trees comprised of labelled ASVs from the ‘heavy’ fractions of each labelled gradient. Positive values indicate higher phylogenetic clustering than expected by chance.



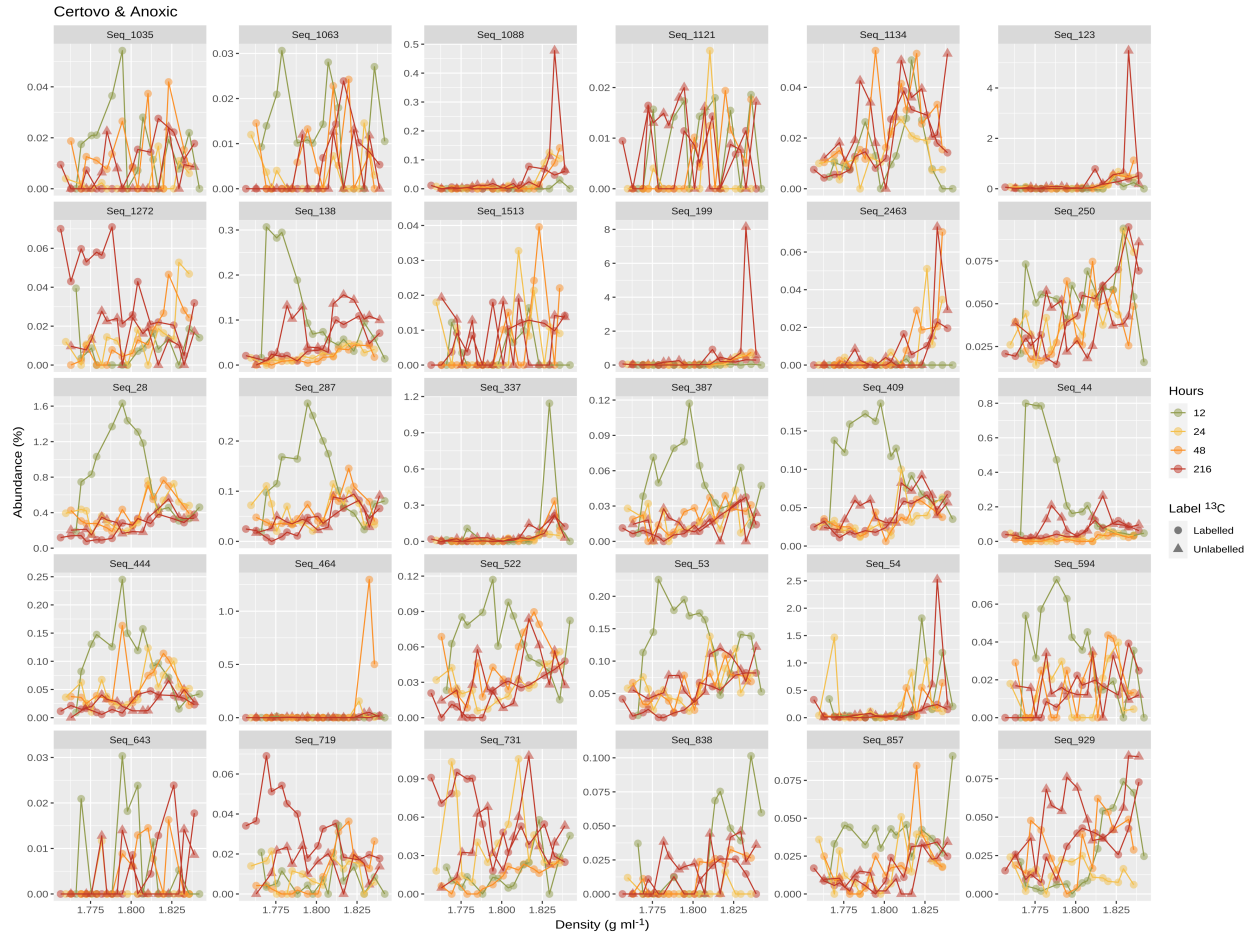
**Figure S5.** Relative abundances of 30 ASVs with the highest fold change ( $\log_2$ ) between 'heavy' and 'light' density gradient zones detected using DESeq2. Plešné Lake soil incubated under oxic conditions.



**Figure S6.** Relative abundances of 30 ASVs with the highest fold change (log<sub>2</sub>) between 'heavy' and 'light' density gradient zones detected using DESeq2. Plešné Lake soil incubated under anaerobic conditions.



**Figure S7.** Relative abundances of 30 ASVs with the highest fold change (log<sub>2</sub>) between 'heavy' and 'light' density gradient zones detected using DESeq2. Čertovo Lake soil incubated under oxic conditions.



**Figure S8.** Relative abundances of 30 ASVs with the highest fold change ( $\log_2$ ) between 'heavy' and 'light' density gradient zones detected using DESeq2. Čertovo Lake soil incubated under anoxic conditions.