

Title: Supplementary Data 1

Description: Genes of *Ca. Micrarchaeum harzensis* with a function in central metabolic pathways with gene ID and annotation. Annotations according to Suppl. Data S5 and S6.

Title: Supplementary Data 2

Description: The table lists all used lectins with carbohydrate binding specificity, linkage type, fluorescence label as well as supplier. Lectins, which bound either *Ca. Micrarchaeum harzensis* and/or *Ca. Schefflerioplasma hospitalis* EPS are marked in light orange.

Title: Supplementary Data 3

Description: Genes in *Ca. Micrarchaeum harzensis* and *Ca. Schefflerioplasma hospitalis* genome with function in glycosylation and synthesis of carbohydrate precursors for EPS matrix. Listed are the gene ID, gene product, arCOG/TIGR numbers and e-values, respectively, as well as TPM expression values in co- and pure culture. Annotations were done with KEGG Annotation Server and compared to results of Suppl. Data S5-S6.

Title: Supplementary Data 4

Description: Relative abundance of lipids in co-culture (*S. hospitalis*+*M. harzensis*) and pure culture (*S. hospitalis*). Abbreviations are CL: core lipids, IPL: intact polar lipids.

Title: Supplementary Data 5

Description: Annotation of protein files of *Ca. Micrarchaeum harzensis* and Micrarchaeota reference genomes across different databases. The table was created as described in Methods section Genome annotations.

Title: Supplementary Data 6

Description: Annotation of protein files of *Ca. Schefflerioplasma hospitalis* and *Thermoplasmatales* reference genomes across different databases. The table was developed as described in Methods section Genome annotations.

Title: Supplementary Data 7

Description: Genes used for phylogenetic analyses in this study.

Title: Supplementary Data 8

Description: Reference genomes used for phylogenetic analyses in this study.

Title: Supplementary Data 9

Description: Primers used for calculation of the cell numbers of *Ca. Micrarchaeum harzensis* to *Ca. Schefflerioplasma hospitalis* via qPCR and monitoring of composition of cultures via PCR.

Title: Supplementary Movie 1

Description: Tomogram displaying a *Ca. Micrarchaeum harzensis* cell.

Title: Supplementary Movie 2

Description: Tomogram displaying a *Ca. Schefflerioplasma hospitalis* cell.

Title: Supplementary Movie 3

Description: Tomogram of Figure 8c displaying a *Ca. Schefflerioplasma hospitalis* cell interacting with two *Ca. Micrarchaeum harzensis* cells.