



Supplement of

Liquid polymer enhances methanogenesis and restructures prokaryotic communities in freshwater sediments

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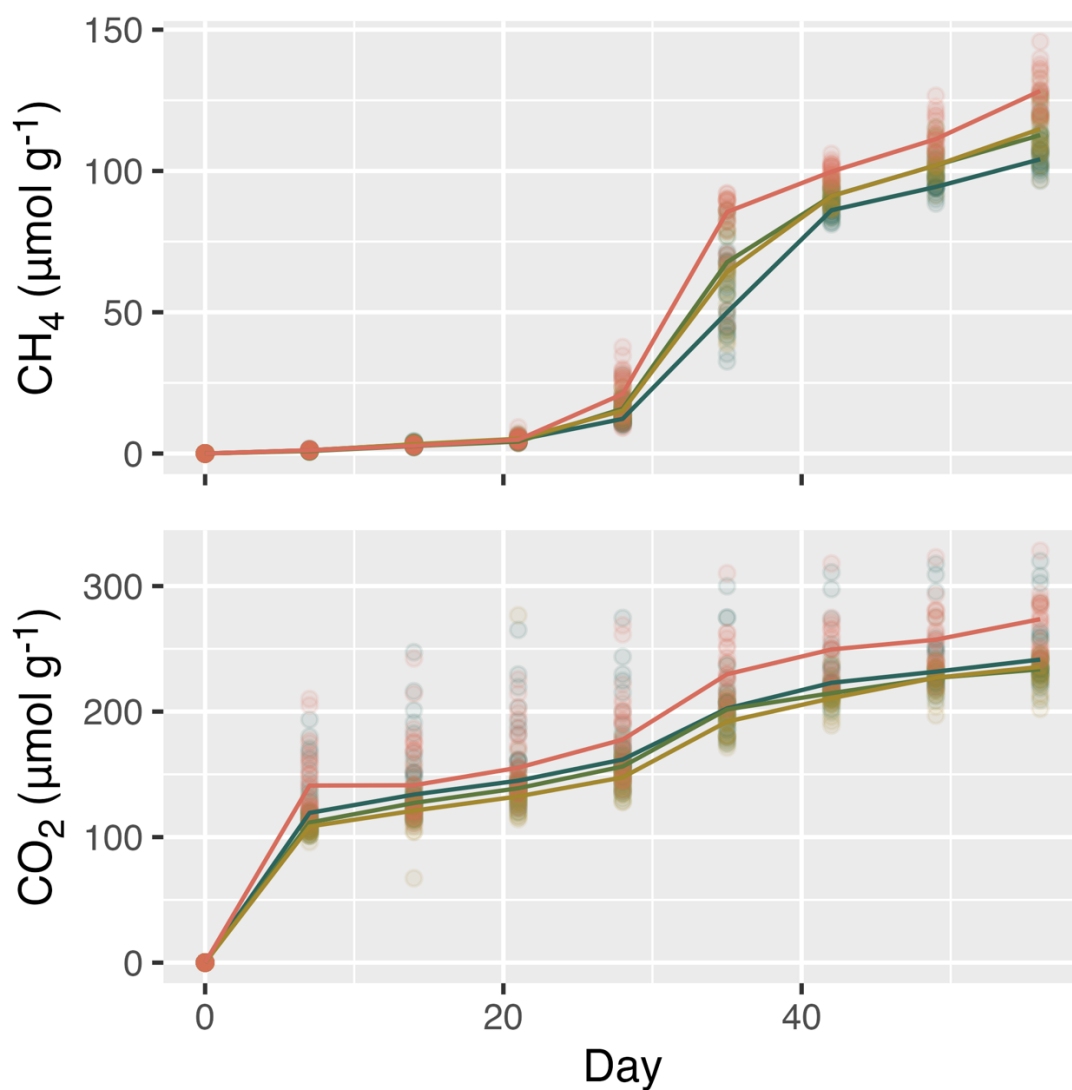


Figure S1. Raw measurements of CH_4 (top) and CO_2 (bottom) headspace concentrations. Solid lines are shown solely to illustrate the progression of mean values over the 56-day incubation and do not represent a regression. PVP concentrations are indicated by color: light blue = control, green = 0.5 mg L^{-1} , ochre = 50 mg L^{-1} , red = 5,000 mg L^{-1} .

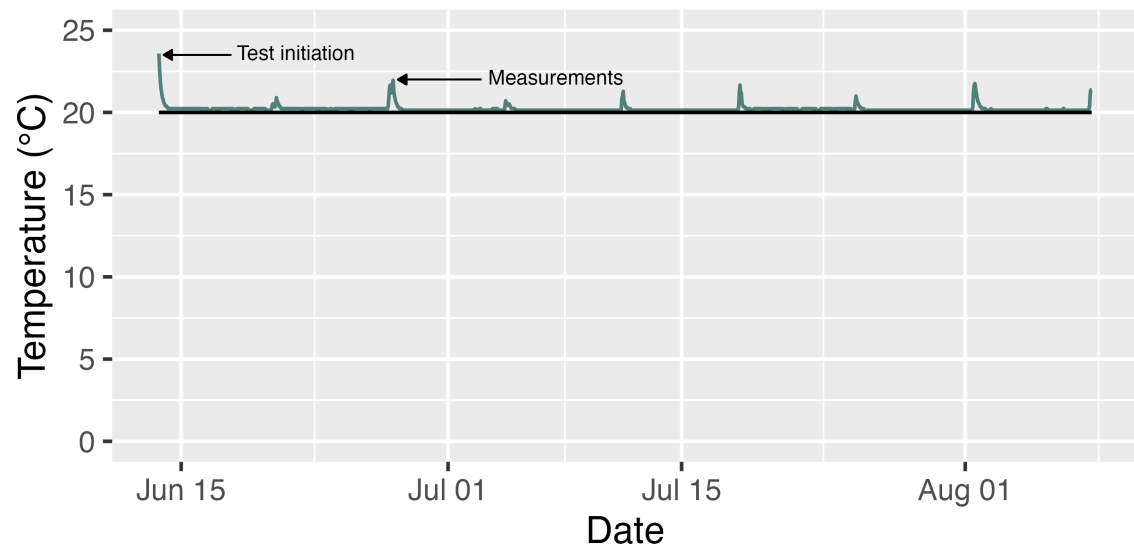


Figure S2. Temperature profile over the incubation period. Arrows indicate increased temperatures at test initiation and the weekly gas measurements.

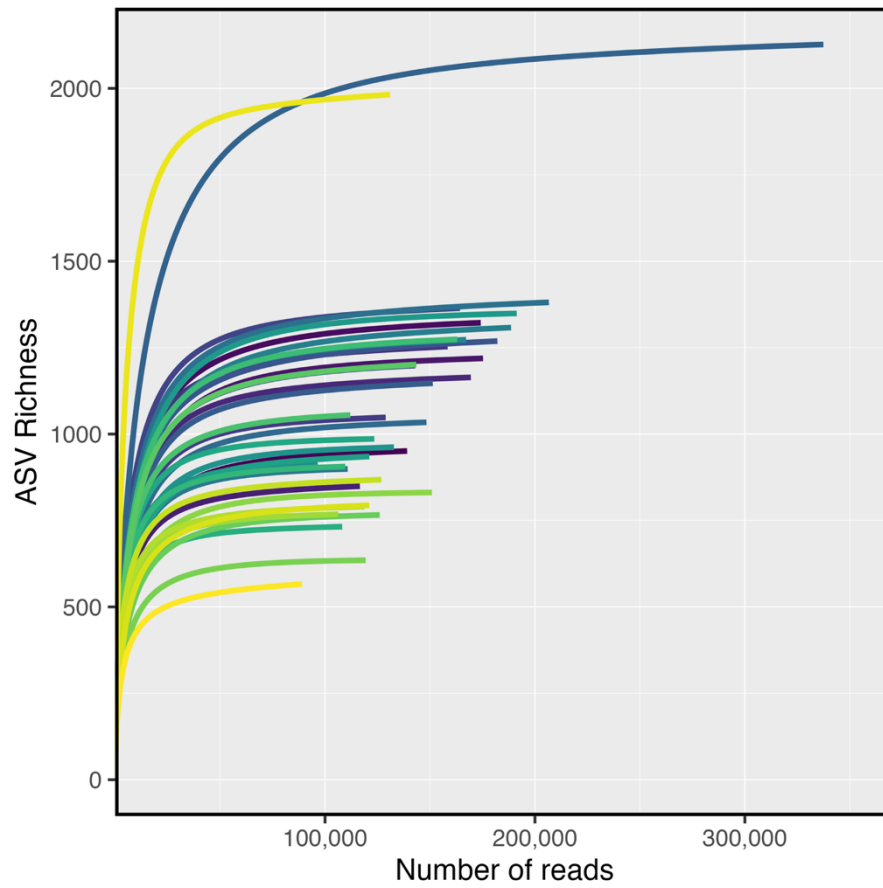


Figure S3. Rarefaction profile of prokaryotic sequences. Colored lines indicate individual samples.

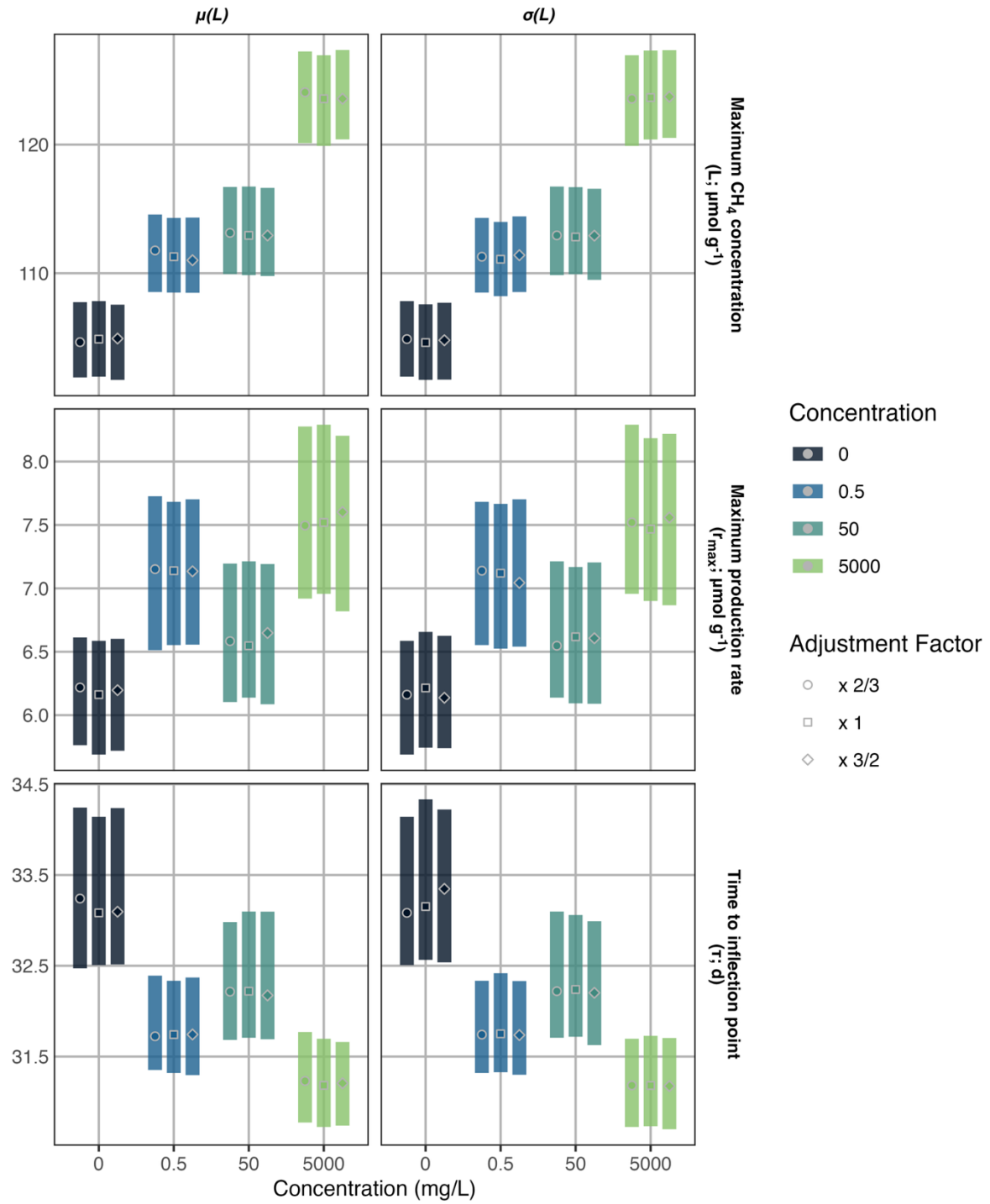


Figure S4. Sensitivity of posterior estimates to changes in prior parameters. The left column shows results when the prior mean is scaled, and the right column when the prior standard deviation is scaled, by factors of 2/3 (circles), 1 (squares), or 3/2 (diamonds). Each point represents the mean posterior estimate with 95% equal-tailed credible intervals. Rows correspond to the different parameters of interest.

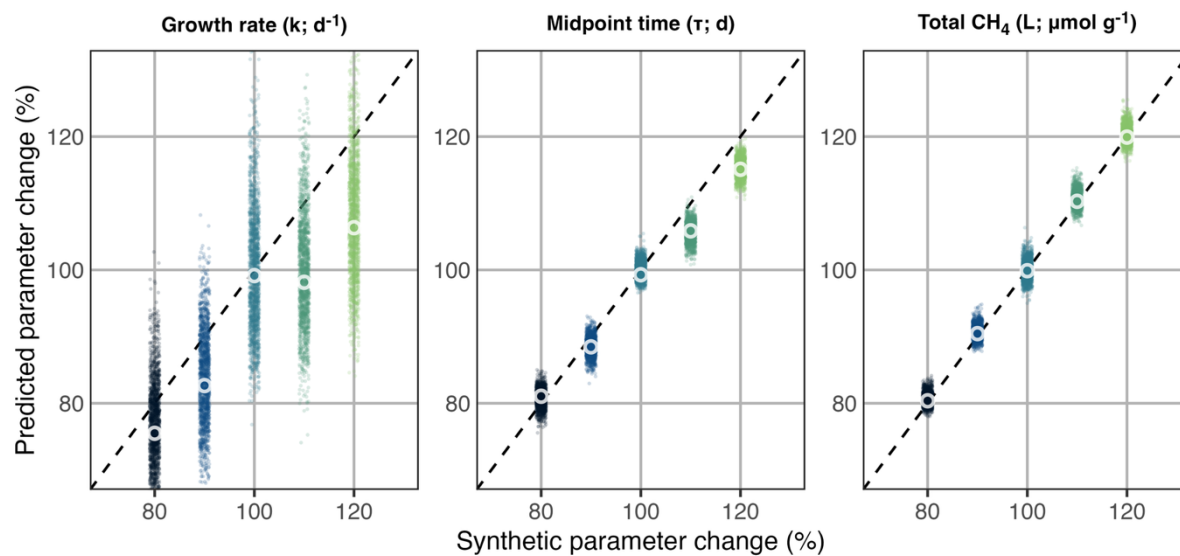


Figure S5. Relative changes in predicted parameter estimates compared with the actual parameter changes used to generate synthetic data structurally equivalent to the measured data. The dashed line indicates perfect agreement between synthetic and predicted parameter changes.

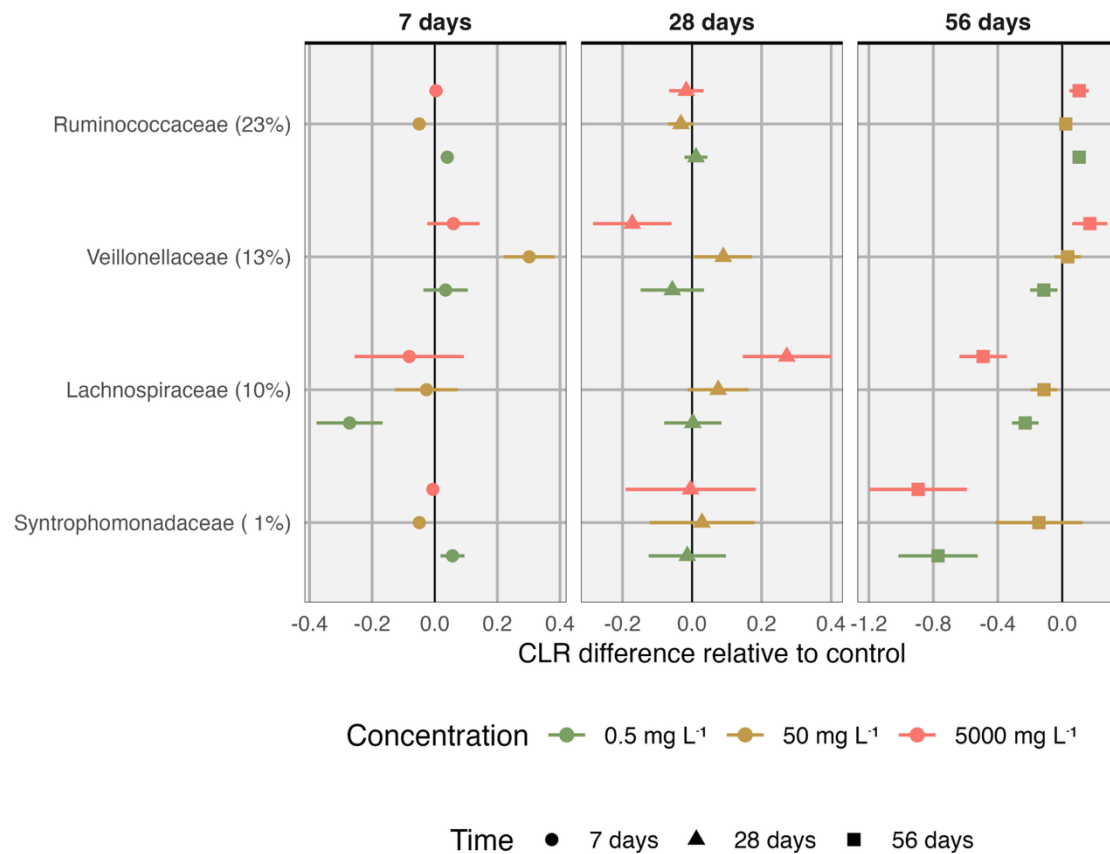


Figure S6. SIMPER analysis of fermentative prokaryotic families: average centered log-ratio (CLR) differences relative to the control (mean $\pm$ SE) for taxonomic classes after 7, 28, and 56 days of incubation. Negative CLR differences indicate taxa reduced relative to the control; positive values indicate taxa enriched under PVP exposure. Classes are ordered according to their contribution to the dissimilarity between the highest PVP concentration (5,000 mg L⁻¹) and the control, averaged across time points, with the mean contribution (%) shown in parentheses.