

Additional file 7: PERMANOVA results for key environmental covariates where R^2 explains percentage variability (scaled to 1) when significant ($p \leq 0.05$). Each abundance table is an N samples x P features table mainly from METABOLIC software with the Bray-Curtis distance between samples supplied to the PERMANOVA procedure along with the covariate's data. Here N.S. represents non-significant results.

Covariate	Taxonomic Abundance Table	METABOLIC Recovered Functions					
		dbCAN2 (CAZy) Table	HMMs Table	Functions Table	KEGG Modules Table	KEGG Module Steps Table	MEROPS (Peptidase) Table
Day	$R^2 = 0.50762$ ($p = 0.0001$, ***)	$R^2 = 0.1713$ ($p = 0.0035$, **)	$R^2 = 0.2195$ ($p = 0.0005$, ***)	$R^2 = 0.19109$ ($p = 0.0026$, **)	$R^2 = 0.20115$ ($p = 0.0036$, **)	$R^2 = 0.1327$ ($p = 0.0334$, *)	$R^2 = 0.28641$ ($p = 0.0001$, ***)
Phase	$R^2 = 0.62278$ ($p = 0.0001$, ***)	$R^2 = 0.27796$ ($p = 0.0002$, ***)	$R^2 = 0.28163$ ($p = 0.0001$, ***)	$R^2 = 0.25553$ ($p = 0.0013$, **)	$R^2 = 0.24435$ ($p = 0.0041$, **)	N.S.	$R^2 = 0.39873$ ($p = 0.0001$, ***)
Reactor	N.S.	$R^2 = 0.27163$ ($p = 0.0004$, ***)	$R^2 = 0.21697$ ($p = 0.003$, **)	$R^2 = 0.23948$ ($p = 0.0013$, **)	$R^2 = 0.24612$ ($p = 0.0039$, **)	$R^2 = 0.26182$ ($p = 0.0036$, **)	$R^2 = 0.17985$ ($p = 0.0359$, *)
Methane	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.
Ammonia	$R^2 = 0.19723$ ($p = 0.0042$, **)	$R^2 = 0.13311$ ($p = 0.012$, *)	$R^2 = 0.12735$ ($p = 0.0141$, *)	$R^2 = 0.11586$ ($p = 0.0261$, *)	N.S.	N.S.	$R^2 = 0.17514$ ($p = 0.0037$, **)
E. Coli	$R^2 = 0.33528$ ($p = 0.0001$, ***)	$R^2 = 0.11363$ ($p = 0.0273$, *)	$R^2 = 0.13434$ ($p = 0.0156$, *)	$R^2 = 0.11291$ ($p = 0.0304$, *)	N.S.	N.S.	$R^2 = 0.1995$ ($p = 0.0013$, **)