

**Supplemental Table 1. PERMANOVA of Weighted and Unweighted UniFrac Distances for full dataset and stress dataset.** In full dataset (excluding native soil controls), PERMANOVA analyses were run to determine the significance of factors 'Category' and 'Replicate', and 'ModuleName' and 'Replicate' (note: these analyses were run separately due to the interdependence of 'Category' and 'ModuleName'), in explaining variation in beta-diversity (Weighted and Unweighted UniFrac distances). In stress dataset, analyses were run to determine the significance of 'Stress', 'Substrate', 'Replicate', and the interaction term 'Stress:Substrate', or 'ModuleName' and 'Replicate' (again, analyses were run separately due to interdependence). Analyses were run using the 'adonis' function within the 'vegan' package in R.

**Full Dataset - Weighted UniFrac**

Category						
Factor	Degrees of Freedom	Sum of Squares	Mean Squares	F Statistic	R2	Pr(>F)
Category	5	2.9932309	0.59864617	14.19904	0.18233	0.001 ***
Replicate	9	0.3959154	0.0439906	1.043395	0.02411633	0.4
Residuals	309	13.0277587	0.04216103		0.79355754	
Total	323	16.416905			1.00000	

**ModuleName**

Factor	Degrees of Freedom	Sum of Squares	Mean Squares	F Statistic	R2	Pr(>F)
ModuleName	65	11.3891171	0.17521719	9.208341	0.69374	0.001 ***
Replicate	9	0.2897922	0.03219913	1.692189	0.01765206	0.012 *
Residuals	249	4.7379957	0.0190281		0.28860468	
Total	323	16.416905			1.00000	

**Stress Dataset - Weighted UniFrac**

Factor	Degrees of Freedom	Sums of Squares	Mean Squares	F Statistic	R2	Pr(>F)
Stress	8	5.898029	0.73725363	18.259761	0.43130985	0.001 ***
Substrate	2	0.9027817	0.45139085	11.17972	0.06601843	0.001 ***
Replicate	6	0.4498698	0.07497829	1.857008	0.03289798	0.018 *
Stress:Substrate	16	2.3056727	0.14410454	3.569076	0.16860875	0.001 ***
Residuals	102	4.1183382	0.04037586		0.30116498	
Total	134	13.6746913			1	

Factor	Degrees of Freedom	Sums of Squares	Mean Squares	F Statistic	R2	Pr(>F)
ModuleName	26	9.1362106	0.35139271	8.703039	0.6681109	0.001 ***
Replicate	6	0.4201425	0.07002376	1.734297	0.0307241	0.022 *
Residuals	102	4.1183382	0.04037586		0.301165	
Total	134	13.6746913			1	

**Full Dataset - Unweighted UniFrac**

Category						
Factor	Degrees of Freedom	Sum of Squares	Mean Squares	F Statistic	R2	Pr(>F)
Category	5	7.015877	1.4031755	6.3235531	0.09051	0.001 ***
Replicate	9	1.934665	0.2149628	0.9687519	0.02495807	0.594
Residuals	309	68.566076	0.2218967		0.88453388	
Total	323	77.516619			1.00000	

**ModuleName**

Factor	Degrees of Freedom	Sum of Squares	Mean Squares	F Statistic	R2	Pr(>F)
ModuleName	65	36.032714	0.5543494	3.486361	0.4648386	0.001 ***
Replicate	9	1.891615	0.2101795	1.32184	0.0244027	0.008 **
Residuals	249	39.59229	0.1590052		0.5107587	
Total	323	77.516619			1	

**Stress Dataset - Unweighted UniFrac**

Factor	Degrees of Freedom	Sums of Squares	Mean Squares	F Statistic	R2	Pr(>F)
Stress	8	7.247521	0.9059401	6.848936	0.26416231	0.001 ***
Substrate	2	1.045564	0.522782	3.952249	0.0381094	0.001 ***
Replicate	6	1.03011	0.1716851	1.297945	0.03754613	0.05 *
Stress:Substrate	16	4.620661	0.2887913	2.183271	0.16841682	0.001 ***
Residuals	102	13.492006	0.1322746		0.49176534	
Total	134	27.435861			1	

Factor	Degrees of Freedom	Sums of Squares	Mean Squares	F Statistic	R2	Pr(>F)
ModuleName	26	12.9539636	0.4982294	3.76663	0.47215444	0.001 ***
Replicate	6	0.9898921	0.164982	1.247269	0.03608023	0.087 .
Residuals	102	13.4920056	0.1322746		0.49176534	
Total	134	27.4358612			1	