

Table S3. Output of linear mixed effects models for the bacterial abundance of specific members of the bee gut microbiota (*G. apicola*, *F. perrara*, *S. alvi*, *B. apis*, *B. asteroides*, *Lactobacillus Firm-4*, *Lactobacillus Firm-5*) or universally all bacteria (16S). Listed are estimates, confidence intervals (CI) and associated p-values for the predictors in the models, random effects variances (between groups: σ^2 and within-groups: τ_{00}), intraclass correlation coefficient (ICC), number of groups, number of observations, marginal and conditional R² as well as post-hoc tests (Westfall corrected) between predictor levels.

	16S			<i>G. apicola</i>			<i>S. alvi</i>			<i>B. asteroides</i>			<i>Firm4</i>			<i>Firm5</i>			<i>F. perrara</i>			<i>B. apis</i>		
Predictors	Estimates	CI	p	Estimates	CI	p	Estimates	CI	p	Estimates	CI	p	Estimates	CI	p	Estimates	CI	p	Estimates	CI	p	Estimates	CI	p
(Intercept)	19.99	18.53 – 21.46	<0.001	18.21	14.16 – 22.27	<0.001	16.97	14.23 – 19.71	<0.001	15.37	11.69 – 19.06	<0.001	14.67	11.81 – 17.54	<0.001	17.49	14.96 – 20.02	<0.001	13.42	11.14 – 15.71	<0.001	16.83	12.16 – 21.51	<0.001
colony	Reference			Reference			Reference			Reference			Reference			Reference			Reference			Reference		
microbiota+	-0.38	-1.62 – 0.85	0.542	-5.12	-7.08 – -3.15	<0.001	0.12	-2.11 – 2.35	0.917	-0.98	-3.88 – 1.92	0.508	-0.82	-3.52 – 1.88	0.552	0.37	-2.66 – 3.40	0.812	0.38	-1.48 – 2.25	0.686	-0.31	-3.27 – 2.64	0.836
microbiota-	-2.19	-3.43 – -0.96	<0.001	-8.13	-10.10 – -6.17	<0.001	-12.77	-15.00 – -10.54	<0.001	-5.79	-8.69 – -2.88	<0.001	-6.10	-8.80 – -3.40	<0.001	-4.01	-7.04 – -0.98	0.009	-9.48	-11.34 – -7.61	<0.001	-11.92	-14.88 – -8.96	<0.001
Random Effects																								
σ ²	1.72			4.88			5.58			10.67			9.22			11.65			4.41			11.06		
τ ₀₀	0.53	colony		7.15	colony		2.01	colony		4.02	colony		1.64	colony		0.00	colony		1.45	colony		8.21	colony	
ICC	0.24			0.59			0.26			0.27			0.15						0.25			0.43		
N	2	colony		2	colony		2	colony		2	colony		2	colony		2	colony		2	colony		2	colony	
Observations	38			39			38			39			39			39			39			39		
Marginal R ² / Conditional R ²	0.294 / 0.462			0.415 / 0.763			0.845 / 0.886			0.310 / 0.499			0.414 / 0.502			0.280 / NA			0.801 / 0.850			0.638 / 0.792		
Post-hoc tests (Westfall corrected)																								
Comparison	Estimates	p		Estimates	p		Estimates	p		Estimates	p		Estimates	p		Estimates	p		Estimates	p		Estimates	p	
colony vs. microbiota+	-0.38	0.542		-5.12	<0.001		0.23	0.834		-0.98	0.508		-0.82	0.552		0.37	0.812		0.38	0.686		-0.31	0.836	
colony vs. microbiota-	-2.19	<0.001		-8.13	<0.001		-13.34	<0.001		-5.79	<0.001		-6.10	<0.001		-4.01	0.010		-9.48	<0.001		-11.92	<0.001	
microbiota+ vs. microbiota-	-1.81	<0.001		-3.01	<0.001		-13.57	<0.001		-4.81	<0.001		-5.28	<0.001		-4.38	0.001		-9.86	<0.001		-11.61	<0.001	