

Table S7: Differential Expression when Treating Strain as a Fixed or a Random Effect

Contrast	Model 1*	Model 2 [§]	Intersection
SEX	8715	9608	8715
DIET	13147	14785	13147
SEX:DIET	855	1014	855

* $Y = \mu + \text{SEX} + \text{DIET} + \text{STRAIN} + \text{SEX:DIET}$, where STRAIN is treated as a fixed effect

[§] $Y = \mu + \text{SEX} + \text{DIET} + \sim\text{STRAIN} + \text{SEX:DIET}$, where STRAIN is treated as a random effect

Differential expression is determined based on a false discovery threshold of 0.01.