Maternal stress in the early postpartum period is associated with alterations in human milk microbiome composition

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Supplementary Figures

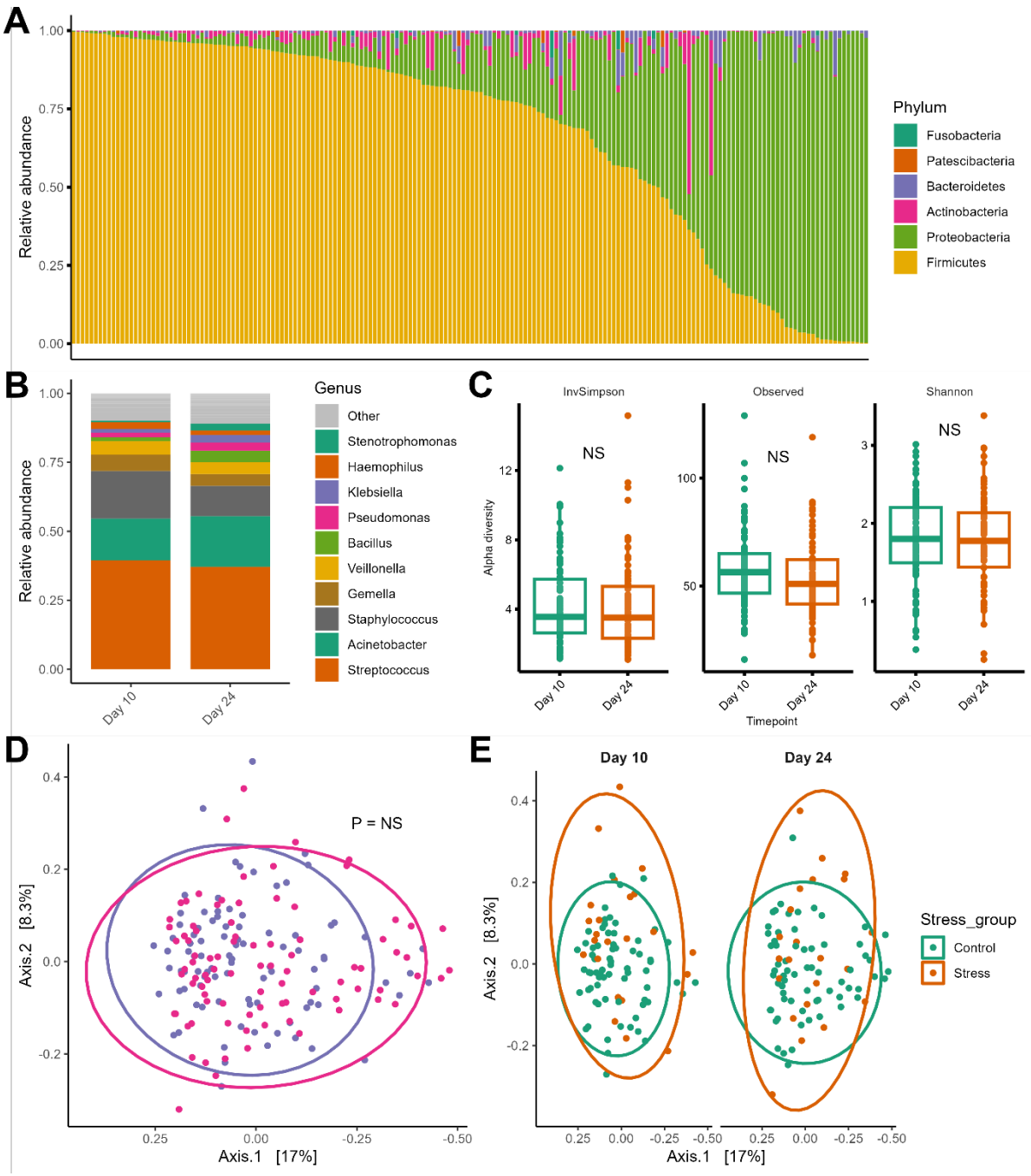

Figure S1. Milk bacterial composition comparison between time points. (A) Relative abundance barplot of bacterial composition summarized at phylum level for all samples and collapsed by (B) time point. (C) Within-sample diversity by stress group, using multiple alfa diversity metrics. No significant differences detected using Analysis of Variance (ANOVA). (E) PCoA plot of Bray-Curtis dissimilrities between samples by time point, p-value calculated using distance-based Permutational Multivariate Analysis of Variance (db-PERMANOVA).

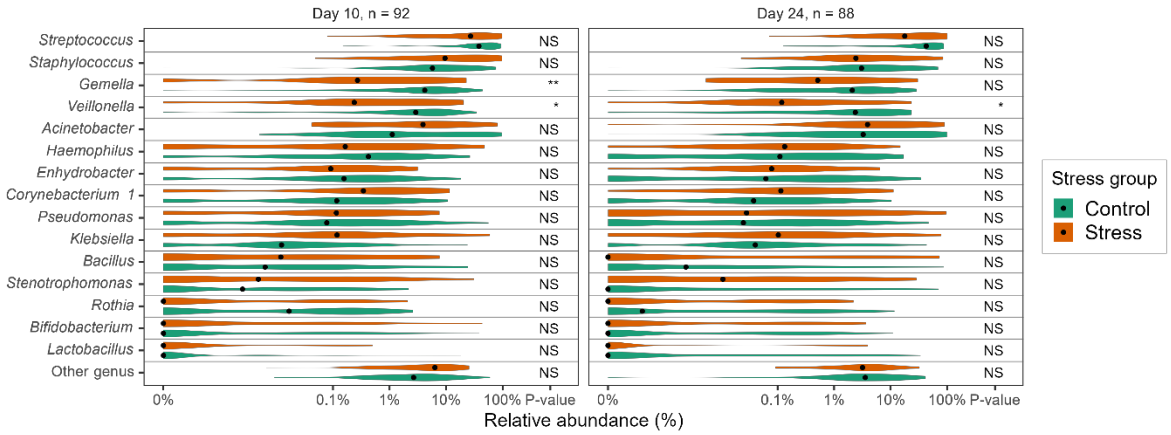

Figure S2. Bacterial differential abundances between groups split by time point. Genus level differences in relative abundances by stress group split by sample timepoint, arranged by mean relative abundance, p-values denote Pearson correlation after FDR-correction.

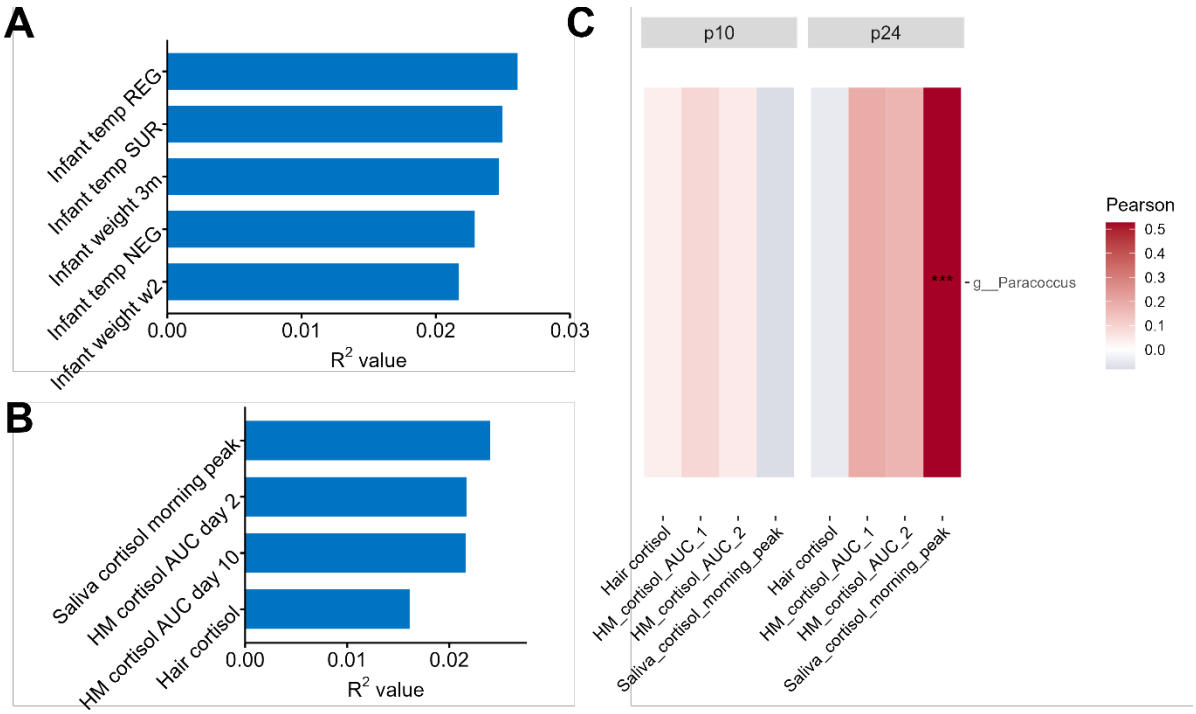

Figure S3. Microbiome correlation with infant outcomes and cortisol measurements. Effect-size plot of the strength of correlation between the composition of the bacterial community and (A) key infant outcomes or (B) cortisol measurements. Db-PERMANOVA was run individually for each variable using CSS-normalized Bray-Curtis dissimilarity matrices and FDR correction performed. (C) Correlation between bacterial genus-level relative abundances and cortisol measurements for each time point, p-values denote Pearson correlations after FDR-correction.

Supplementary Tables

Supplementary table 1. Maternal dietary intake per study group as measured bij Food Frequency Questionnaire

	Maternal dietary intake – median (IQR)		
Food component	**Control**	**High stress**	*p*-value
Total energy (Kjoule)	9133 (3479)	8552 (4626)	0.63
Total protein (gr)	75.8 (27.8)	68.1 (30.2)	0.64
Plant protein (gr)	38.0 (13.1)	34.3 (18.9)	0.74
Animal protein (gr)	36.0 (20.1)	37.8 (19.7)	0.93
Total fat (gr)	94.1 (30.4)	87.2 (38.8)	0.29
SFA (gr)	33.6 (14.9)	29.4 (22.2)	0.24
MUFA (gr)	33.9 (10.4)	32.9 (17.2)	0.67
PUFA (gr)	18.1 (9.6)	15.2 (10.7)	0.42
LA (gr)	14.4 (7.8)	12.5 (9.6)	0.49
Trans fatty acids (gr)	1.5 (0.9)	1.3 (1.1)	0.09
N3 fatty acids (gr)	2.1 (1.1)	2.2 (1.3)	0.53
N6 fatty acids (gr)	13.5 (7.7)	11.9 (7.9)	0.40
ALA (gr)	1.6 (1.0)	1.5 (1.1)	0.87
EPA (gr)	0.10 (0.1)	0.17 (0.17)	0.17
DHA (gr)	0.15 (0.2)	0.26 (0.3)	0.09
Cholesterol (mg)	218.4 (89.7)	194.0 (105.1)	0.24
Total carbohydrates (gr)	242.8 (103.0)	215.8 (126.0)	0.92
Monosaccharides (gr)	106.0 (47.6)	102.8 (73.0)	0.35
Polysaccharides (gr)	142.0 (56.5)	123.8 (48.4)	0.37
Total fiber (gr)	25.5 (8.1)	24.5 (13.0)	0.99
Alcohol (gr)	0.46 (1.6)	0.45 (1.6)	0.99
Calcium (mg)	894.0 (419.4)	723.7 (387.7)	0.14
Total iron (mg)	11.6 (3.9)	10.2 (6.2)	0.46
Iron heam (mg)	0.77 (0.64)	0.67 (0.42)	0.57
Iron nonheam (mg)	10.6 (3.8)	9.9 (5.2)	0.51
Natrium (mg)	2336.2 (967.6)	2100.3 (829.8)	0.63
Magnesium (mg)	371.1 (113.7)	329.2 (210.6)	0.30
Zinc (mg)	9.7 (3.2)	8.6 (4.2)	0.16
Vitamin B1 (mg)	1.0 (0.4)	0.9 (0.4)	0.54
Vitamin B2 (mg)	1.4 (0.8)	1.2 (0.5)	0.31
Vitamin B6 (mg)	1.7 (0.6)	1.7 (0.6)	0.87
Vitamin B12 (ug)	3.9 (2.5)	4.1 (3.3)	0.85
Vitamin D (ug)	3.3 (2.4)	4.2 (4.0)	0.19
Vitamin E (mg)	14.6 (5.7)	13.4 (8.9)	0.88
Vitamin C (mg)	104.3 (37.7)	99.1 (32.4)	0.89
Total Folic acid (ug)	249.9 (78.6)	230.3 (76.5)	0.23
Niacine (mg)	17.4 (6.5)	16.1 (7.4)	0.86
Retinol activity equivalent (ug)	709.6 (367.9)	648.6 (366.6)	0.30
Folic acid equivalents (ug)	271.4 (77.6)	241.6 (94.1)	0.29

Abbreviations: IQR = interquartile range, mg = miligrams, gr = grams, ug = micrograms, Kjoule = kilo joule, SFA = saturated fatty acids, MUFA = monounsaturated fatty acids, PUFA = polyunsaturated fatty acids, n3 = omega 3, n6 = omega 6, LA = linoleic acid, ALA = alfa linoleic acid, EPA = eicosapentaenoic acid, DHA = docosahexaenoic acid