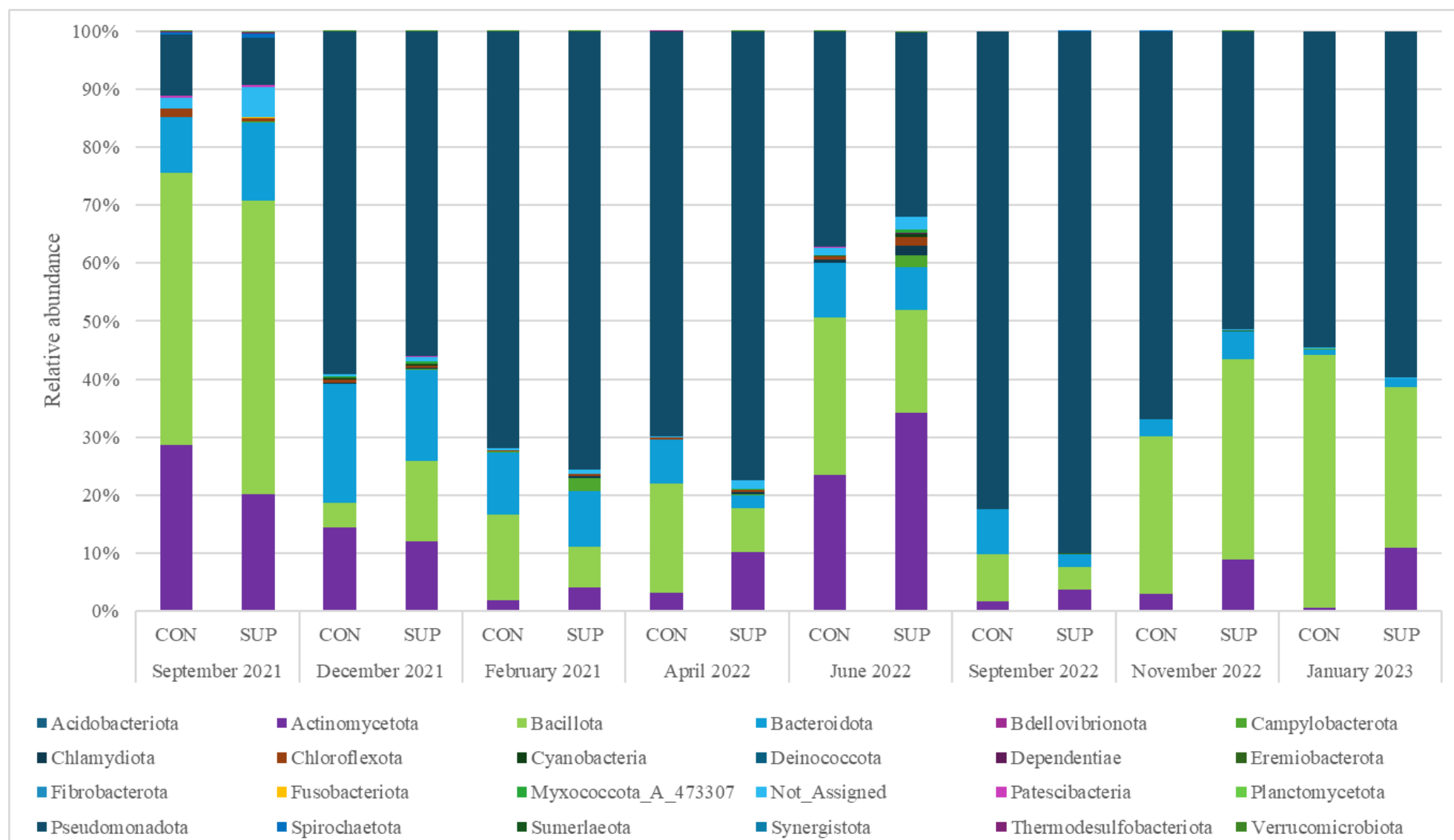


## **Supplemental Figures and Tables**



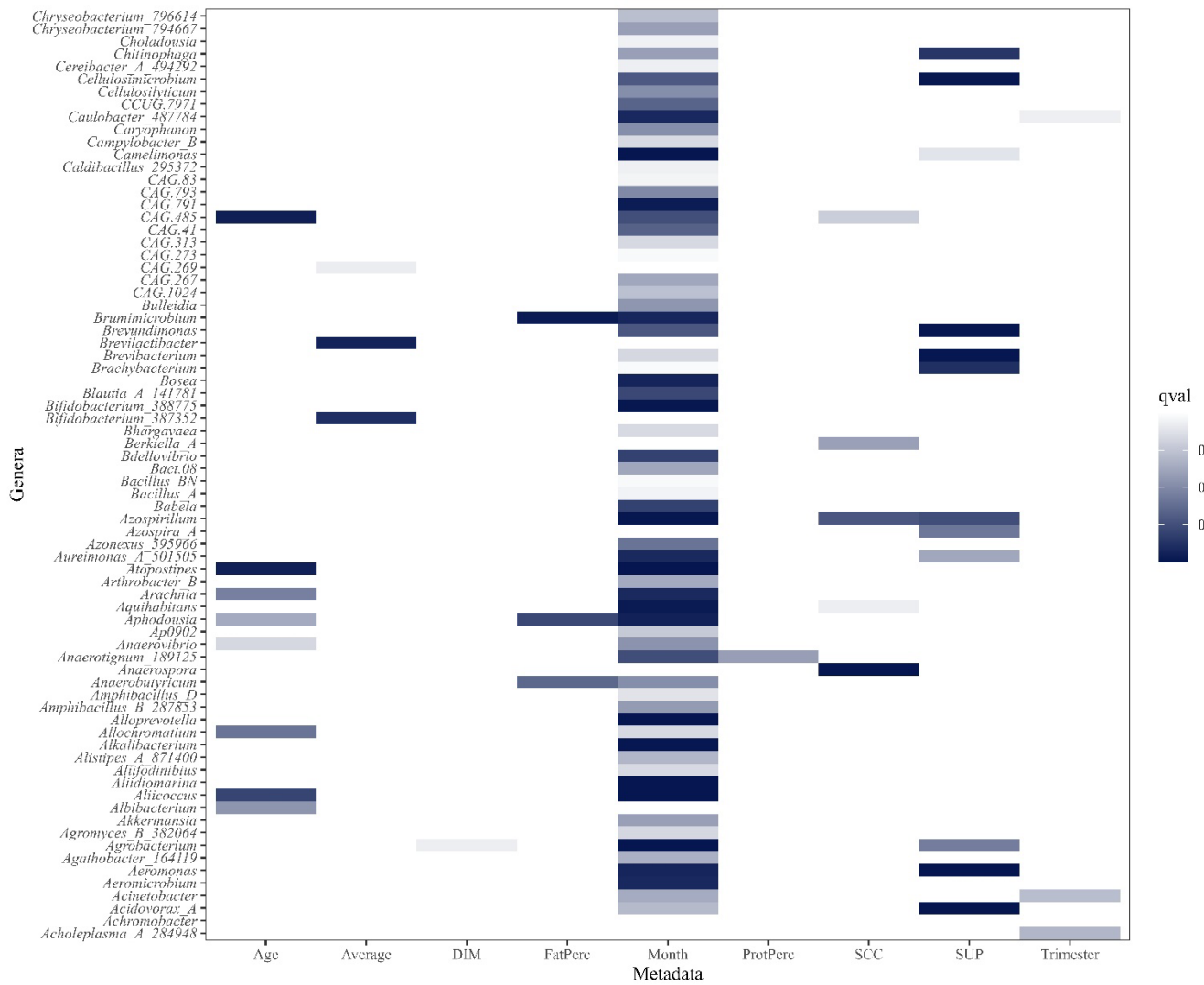
**Figure S1:** Relative abundance of bacterial phyla found in the milk of cows with (SUP) and without (CON) DFM supplementation over the course of the 16-month study.

**Table S1:** Alpha-diversity analysis (genus level) of within-treatment diversity of bacterial communities in milk from CON and SUP cows over the time points tested. Asterisks (\*) indicate p-values that are statistically significant ( $P \leq 0.05$ ).

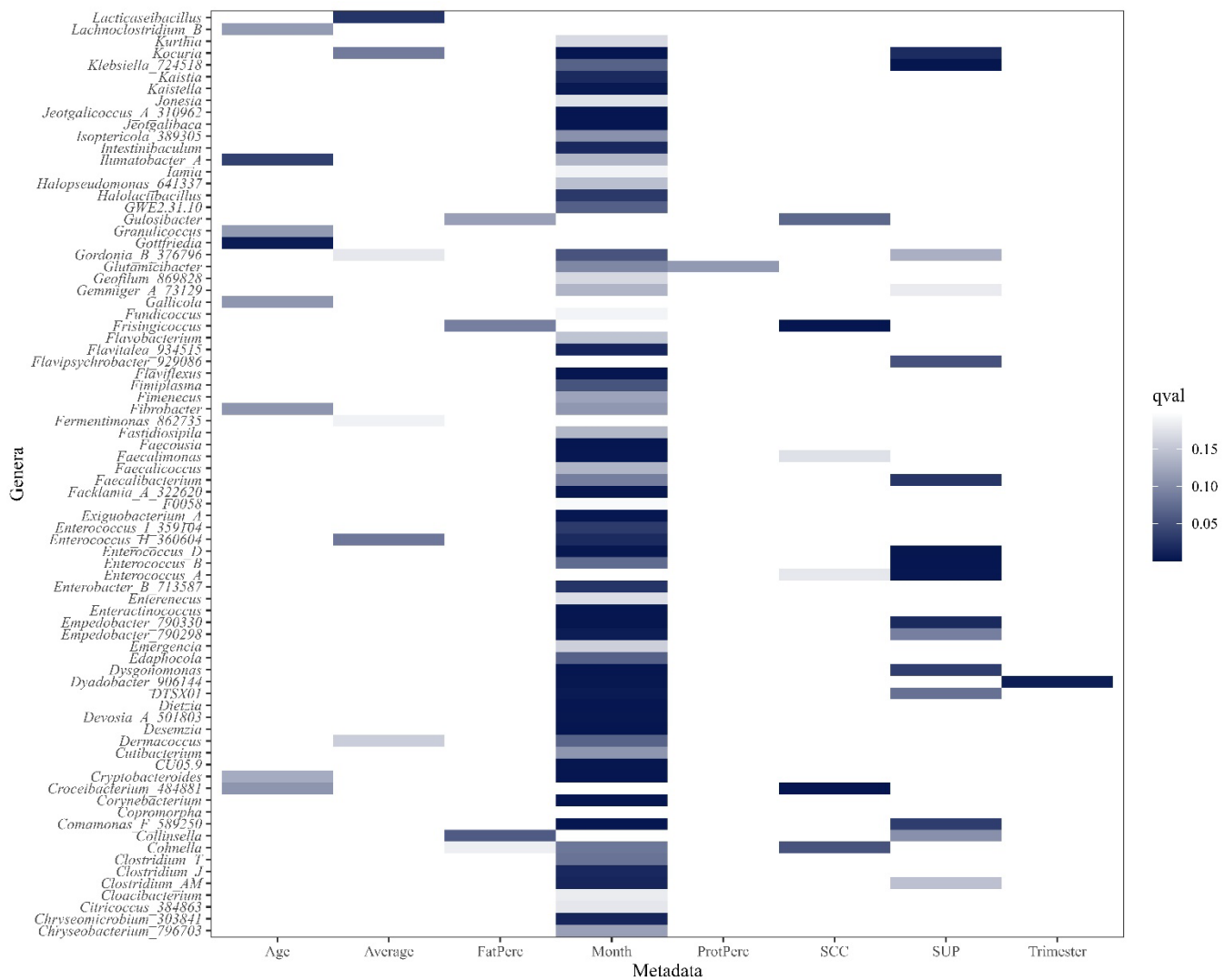
	Observed		Chao1		Shannon	
	p-value	T-test	p-value	T-test	p-value	T-test
September 2021	0.09	-1.7	0.09	-1.7	0.59	-0.5
December 2021	5.9E-06*	5.3	5.7E-06*	5.3	0.002*	3.4
February 2022	0.2	1.3	0.2	1.3	0.2	1.3
April 2022	0.7	-0.4	0.7	-0.4	0.02*	-2.5
June 2022	5.0E-08*	6.7	5.2E-08*	6.7	0.02*	2.3
September 2022	0.001*	-3.5	0.001*	-3.5	0.009*	-2.7
November 2022	0.4	0.9	0.4	0.9	0.2	1.4
January 2023	0.01*	2.6	0.01*	2.7	2.1E-06*	5.7

**Table S2:** Beta-diversity analysis (genus level) of the microbial diversity of milk from CON and SUP cows over the eight sampling time points. Asterisks (\*) indicate p-values that are statistically significant ( $P \leq 0.05$ ).

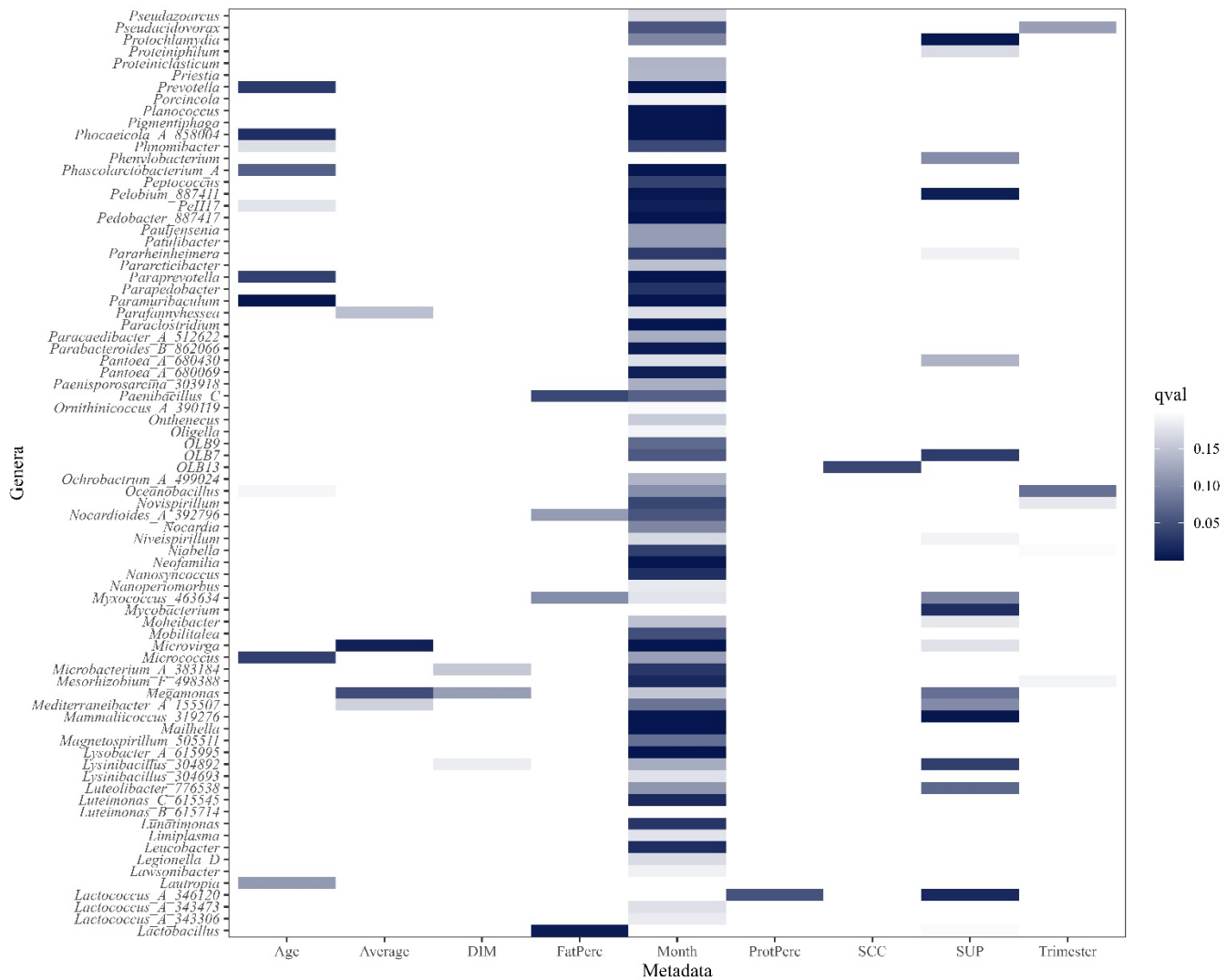
	F-value	R <sup>2</sup>	p-value	Stress
September 2021	3.8	0.07	0.001*	4.1563E-05
December 2021	4.4	0.08	0.001*	3.7006E-05
February 2022	6.1	0.2	0.001*	5.0684E-05
April 2022	3.7	0.1	0.001*	0.18
June 2022	7.6	0.2	0.001*	0.15
September 2022	9.5	0.2	0.001*	0.22
November 2022	2.4	0.6	0.017-0.02*	0.17
January 2023	23.4	0.4	0.001*	0.14



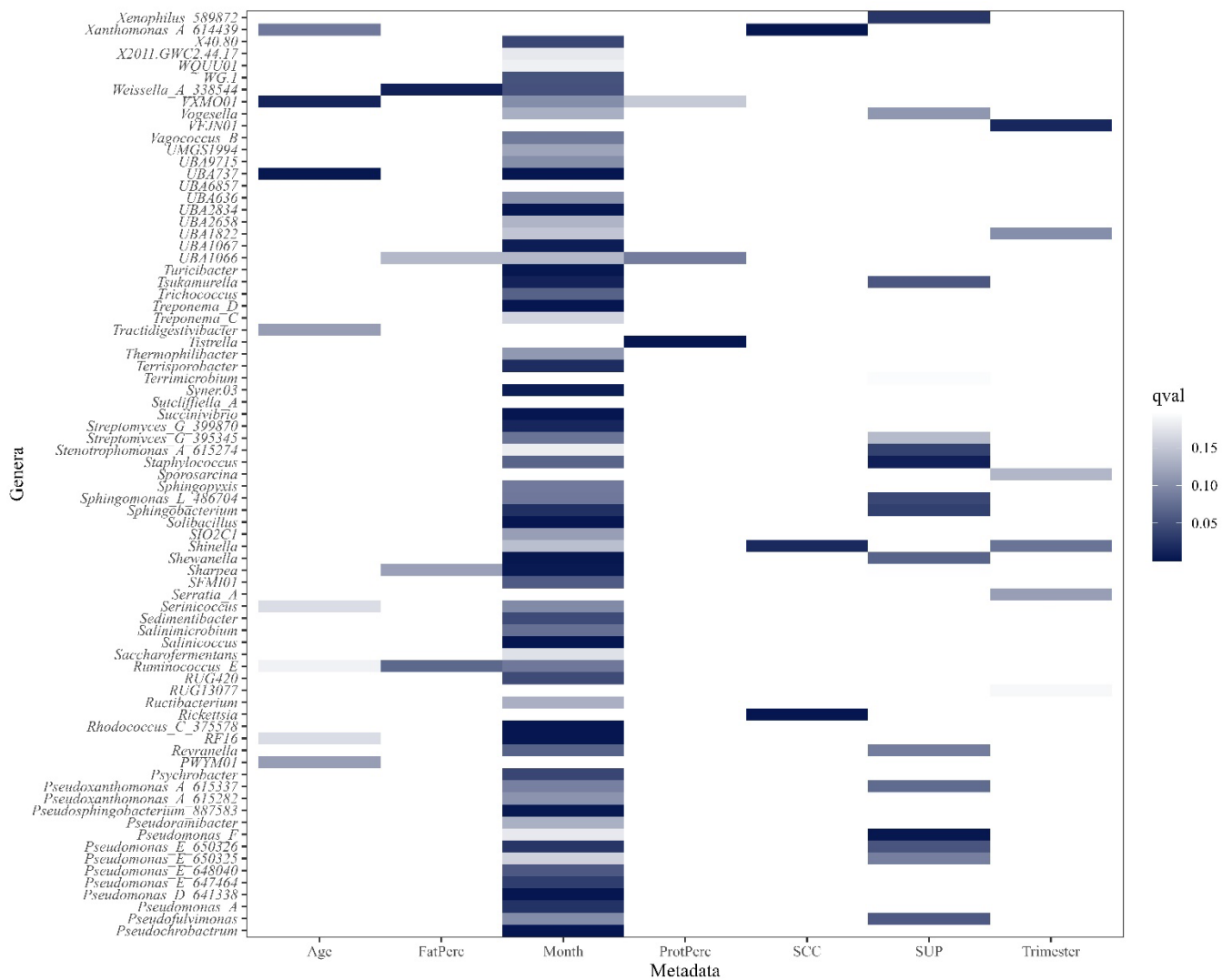
**Figure S2:** Heatmap of genera that are significantly associated with Age (years), Average milk (l/day), days in milk (DIM), percentage of fat (FatPerc) and protein (ProtPerc), calendar month (Month), somatic cell count (SCC), experimental group (SUP) and trimester of pregnancy (Trimester). Significant interactions ( $P \leq 0.05$ ,  $FDR < 0.2$ ) are colored in different shadings of blue, with the most intense being the most significant. Genera are in reverse alphabetical order.



**Figure S3:** Heatmap of genera that are significantly associated with Age (years), Average milk (l/day), days in milk (DIM), percentage of fat (FatPerc) and protein (ProtPerc), calendar month (Month), somatic cell count (SCC), experimental group (SUP) and trimester of pregnancy (Trimester). Significant interactions ( $P \leq 0.05$ ,  $FDR < 0.2$ ) are colored in different shadings of red, with the most intense being the most significant. Genera are in reverse alphabetical order.



**Figure S4:** Heatmap of genera that are significantly associated with Age (years), Average milk (l/day), days in milk (DIM), percentage of fat (FatPerc) and protein (ProtPerc), calendar month (Month), somatic cell count (SCC), experimental group (SUP) and trimester of pregnancy (Trimester). Significant interactions ( $P \leq 0.05$ ,  $FDR < 0.2$ ) are colored in different shadings of red, with the most intense being the most significant. Genera are in reverse alphabetical order.



**Figure S5:** Heatmap of genera that are significantly associated with Age (years), Average milk (l/day), days in milk (DIM), percentage of fat (FatPerc) and protein (ProtPerc), calendar month (Month), somatic cell count (SCC), experimental group (SUP) and trimester of pregnancy (Trimester). Significant interactions ( $P \leq 0.05$ ,  $FDR < 0.2$ ) are colored in different shadings of red, with the most intense being the most significant. Genera are in reverse alphabetical order.