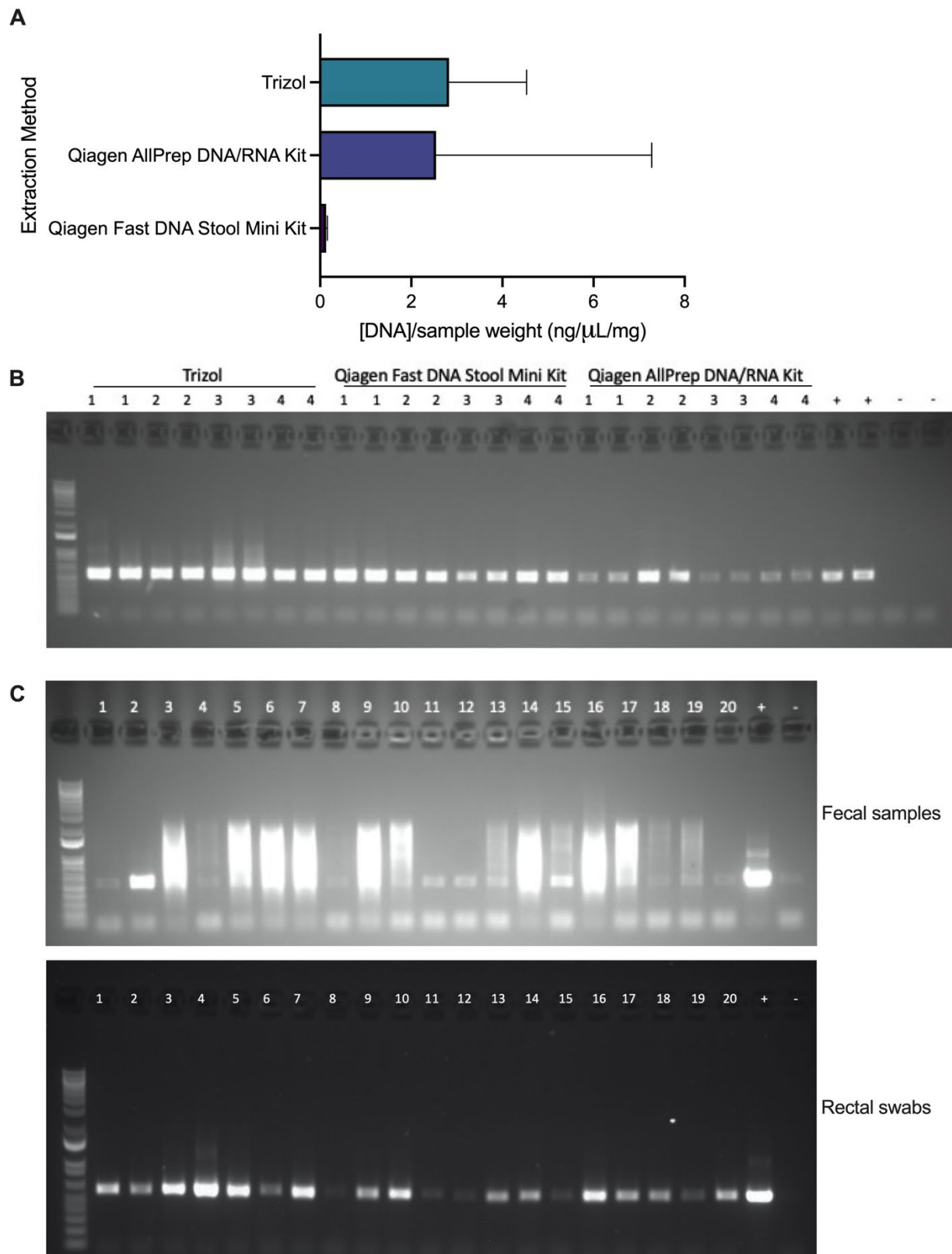
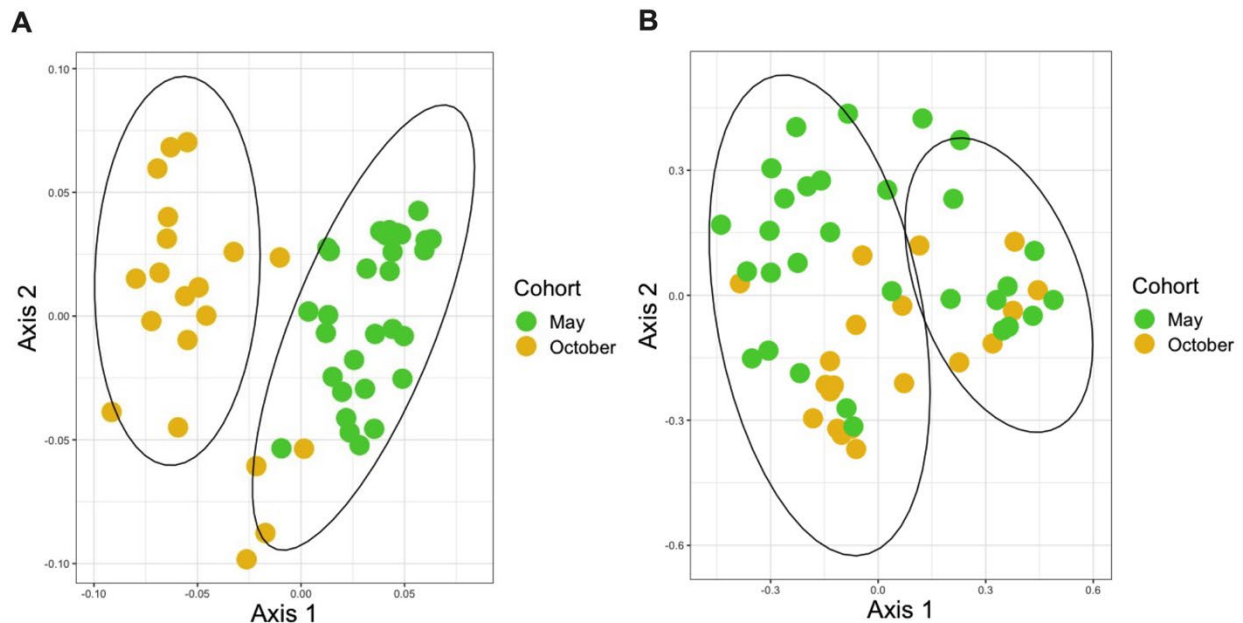


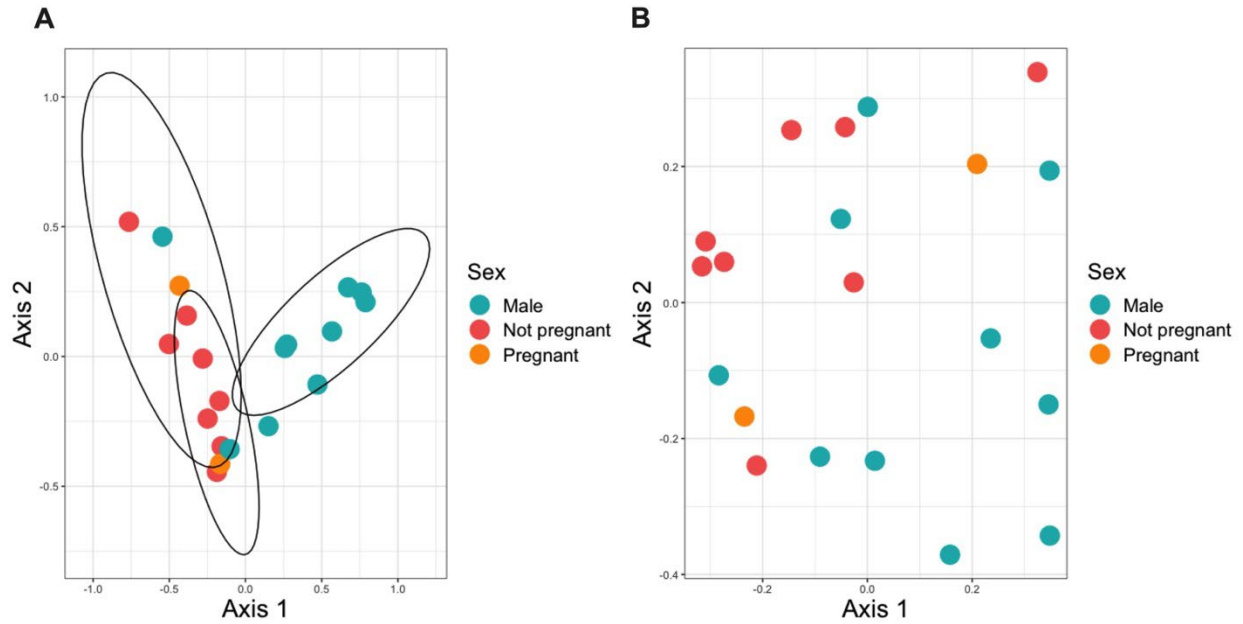


Supplemental Figure 1. Pipeline establishment for microbiome analysis of captive Jamaican fruit bats (*Artibeus jamaicensis*). **A.** Comparison of DNA yield of various nucleic acid extraction

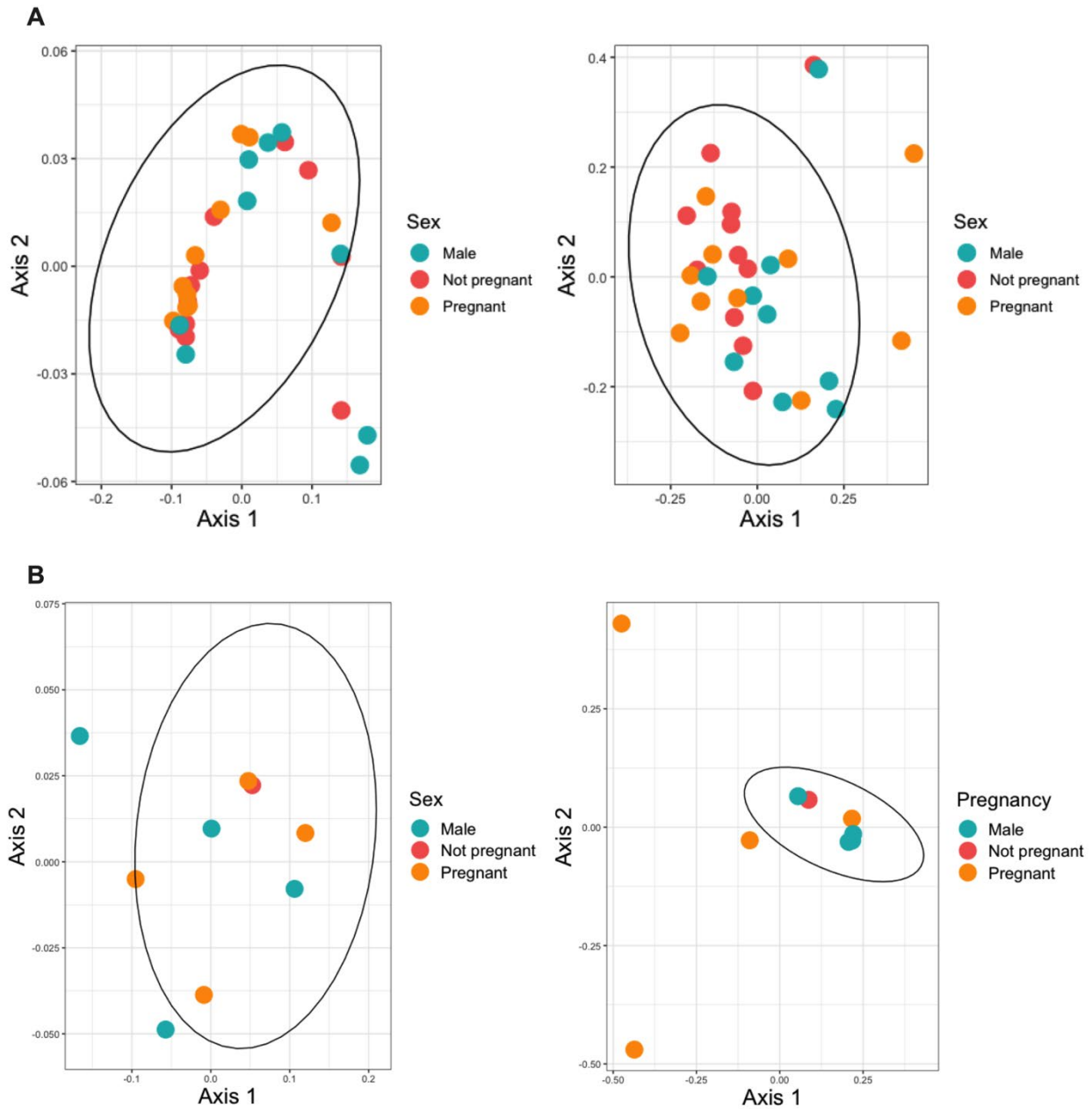
methods on multimammate rat (*Mastomys natalensis*) fecal samples as a proxy for Jamaican fruit bat feces. Median with 95% confidence interval (N = 4). **B.** Gel electrophoresis showing DNA amplification results of multimammate rat feces extracted with different nucleic acid extraction methods, with 1Kb Plus DNA Ladder on the left (Invitrogen). Extracted *E. coli* DNA was used as positive control; water was used as negative control. **C.** Gel electrophoresis showing DNA amplification results of 10 μ L of Jamaican fruit bat fecal sample (top) and rectal swab (bottom) PCR products taken from a cohort of captive adult Jamaican fruit bats. 1Kb Plus DNA Ladder is on the left. Complete gels are depicted with the edges cropped. Fecal and rectal samples were run on two separate gels.



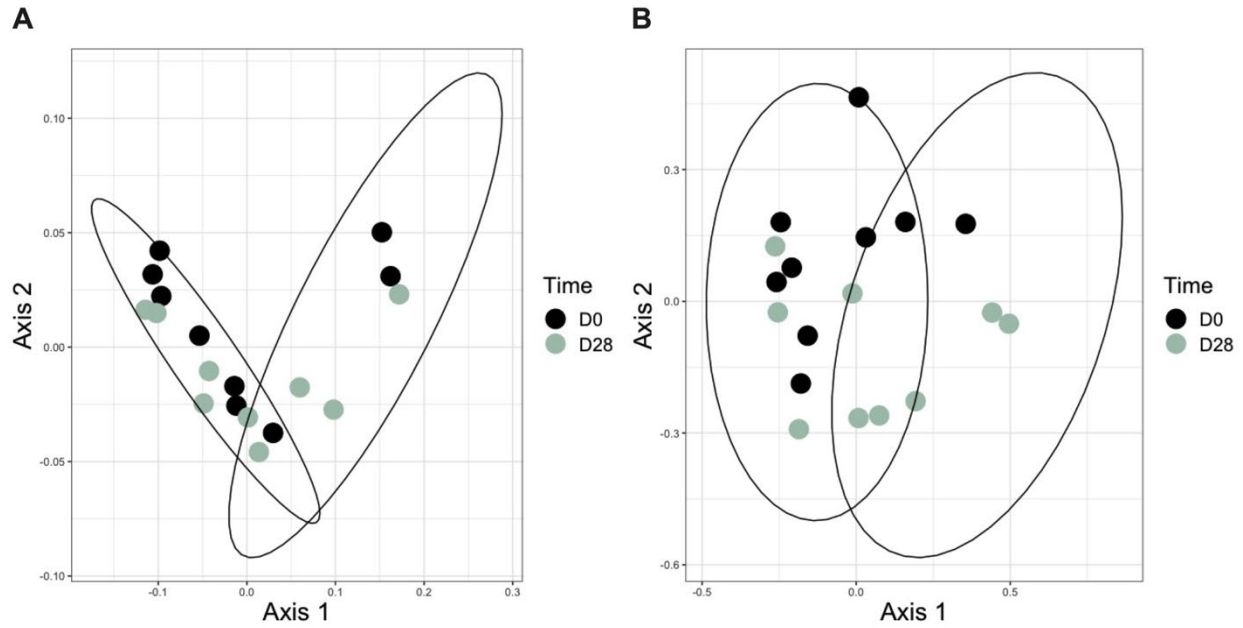
Supplemental Figure 2. Baseline intestinal microbial community composition differences between two cohorts (October, N = 20 and May, N = 30) of captive Jamaican fruit bats. **A.** Principal coordinate analysis showing weighted UniFrac distance by cohort. Ellipses denote significant (kmeans, $p < 0.05$) clusters. Points colored by cohort. **B.** Principal coordinate analysis showing Bray-Curtis distance by cohort. Ellipses denote significant (kmeans, $p < 0.05$) clusters. Points colored by cohort.



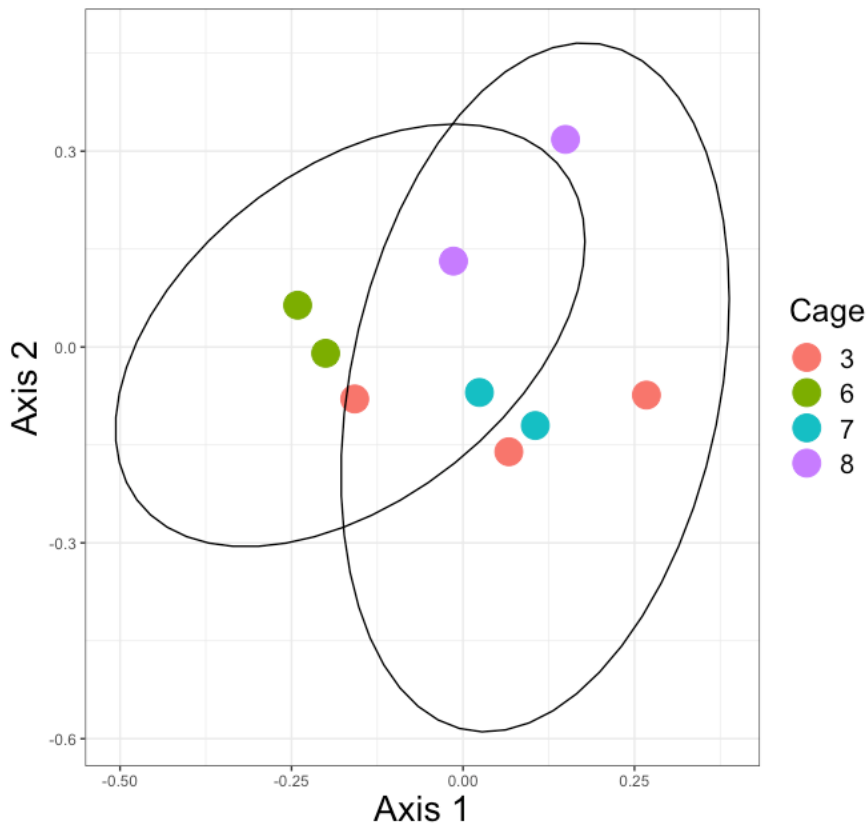
Supplemental Figure 3. Intestinal microbial community composition differences between male (N = 10) and female (N = 10) October cohort Jamaican fruit bats. **A.** Principal coordinate analysis showing weighted UniFrac distance by sex and pregnancy status. Ellipses denote significant (kmeans, $p < 0.05$) clusters. Points colored by sex and pregnancy status. **B.** Principal coordinate analysis showing Bray-Curtis distance by sex and pregnancy status. Ellipses denote significant (kmeans, $p < 0.05$) clusters. Points colored by sex and pregnancy status.



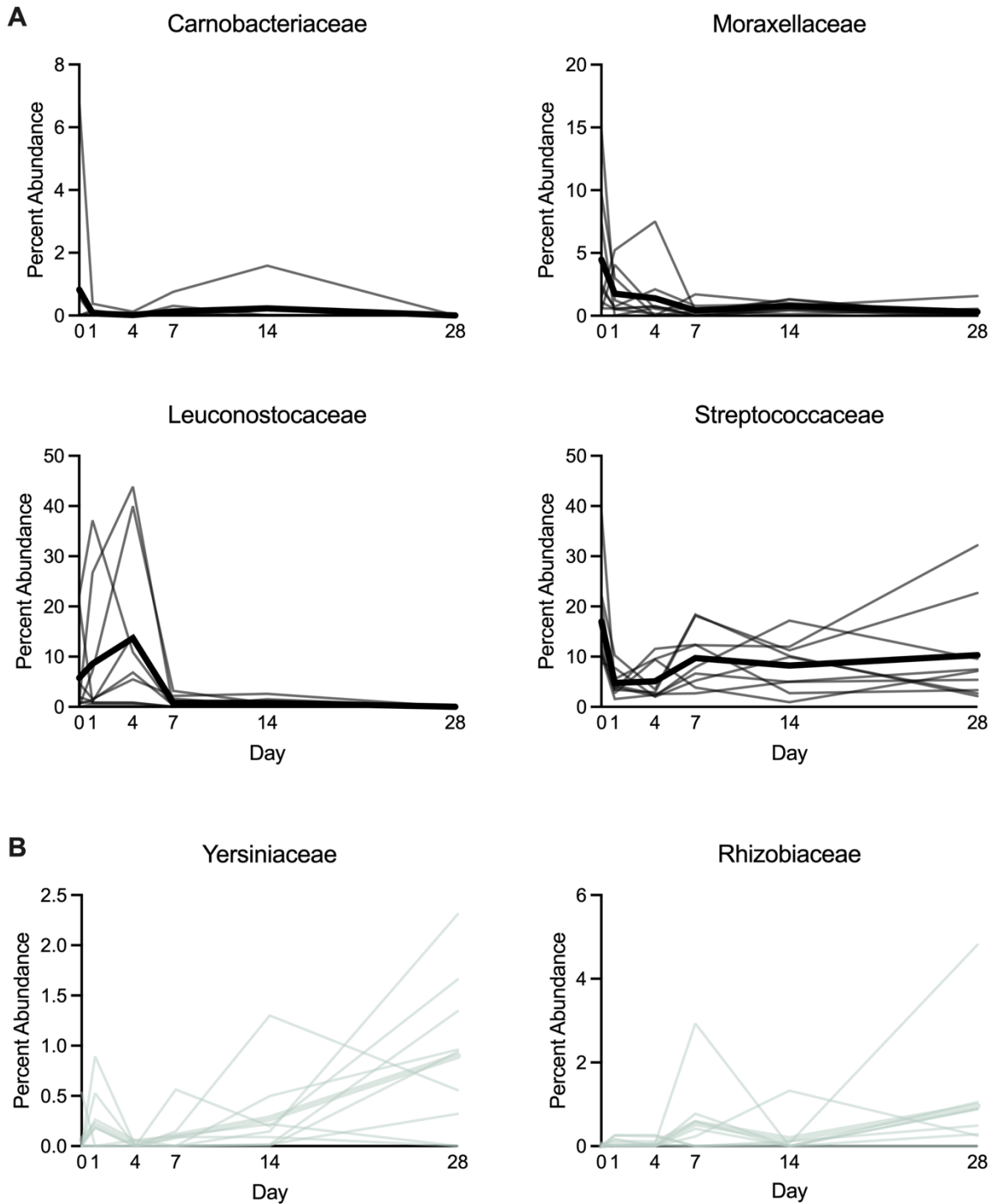
Supplemental Figure 4. Intestinal microbial community composition by sex in May cohort Jamaican fruit bats. **A.** Principal coordinate analysis showing weighted (left) and unweighted (right) UniFrac distance at D0 by sex (male, N = 9 and female, N = 21) and pregnancy status (pregnant, N = 10 and not pregnant, N = 11). Ellipses denote significant (kmeans, $p < 0.05$) clusters. Points colored by sex and pregnancy status. **B.** Principal coordinate analysis showing weighted (left) and unweighted (right) UniFrac distance at D28 by sex (female, N = 5 and male, N = 4) and pregnancy status (pregnant, N = 4 and not pregnant, N = 1). Ellipses denote significant (kmeans, $p < 0.05$) clusters. Points colored by sex and pregnancy status.



Supplemental Figure 5. Intestinal microbial community composition differences at baseline (D0, N = 9) and endpoint (D28, N = 9) in May cohort bats. **A.** Principal coordinate analysis showing weighted UniFrac distance by time. Ellipses denote significant (kmeans, $p < 0.05$) clusters. Points colored by time. **B.** Principal coordinate analysis showing Bray-Curtis distance by time. Ellipses denote significant (kmeans, $p < 0.05$) clusters. Points colored by time.

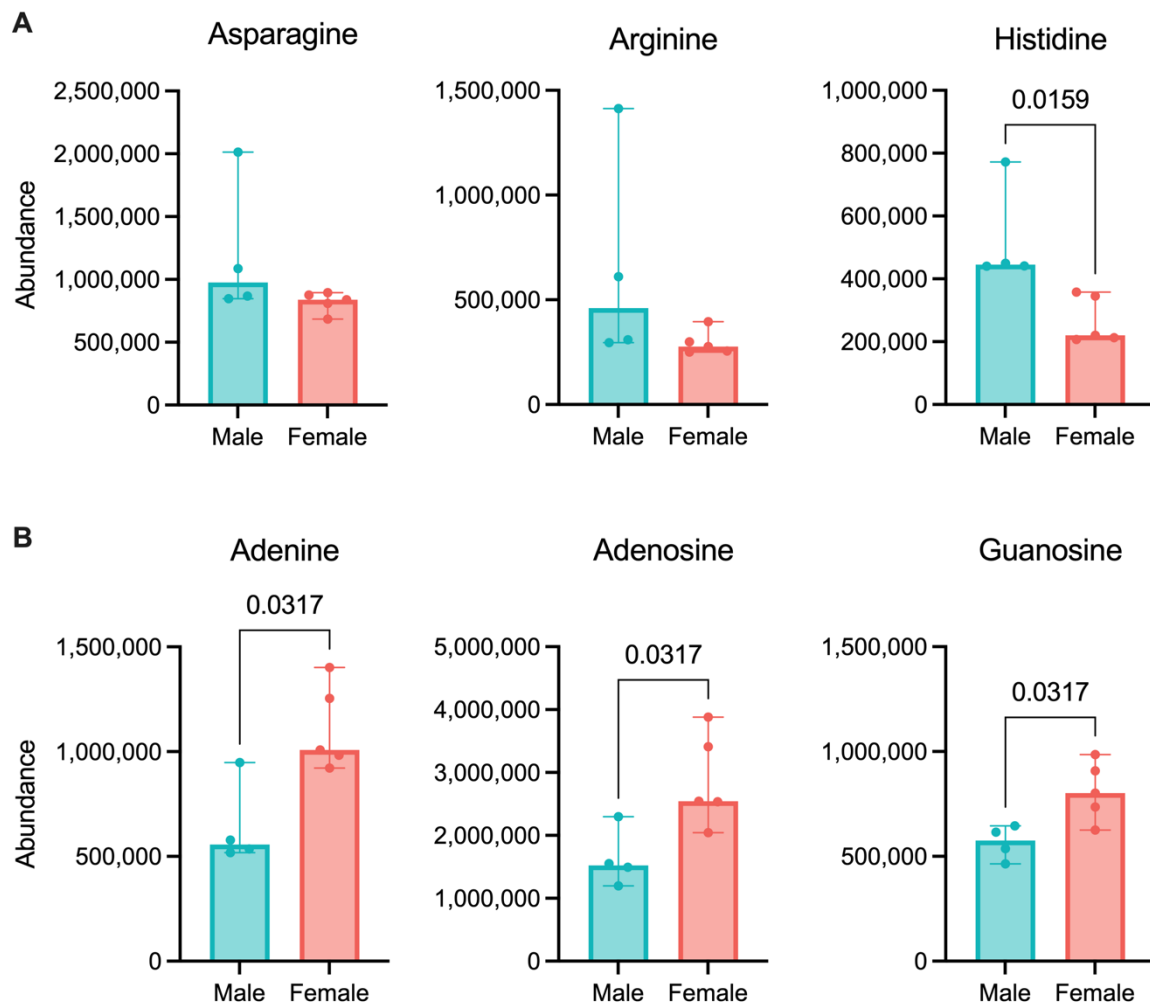


Supplemental Figure 6. No difference in endpoint microbial community composition by cage. Principal coordinate analysis of Bray-Curtis distance at D28 (N = 9). Points colored by cage. Ellipses denote significant (kmeans, $p < 0.05$) clusters.



Supplemental Figure 7. Longitudinal changes in significantly different families over time in the May cohort. **A.** Changes in percent abundance of families that were differentially enriched at

baseline across bats euthanized at study endpoint (N = 9). Percent abundance in individual bats, with mean percent abundance superimposed in bold. **B.** Changes in percent abundance of families that were differentially enriched in bats euthanized at study endpoint (N = 9). Percent abundance in individual bats, with mean percent abundance superimposed in bold.



Supplemental Figure 8. Analysis of individual intestinal metabolites, as identified in sPLSDA analysis, in the Jamaican fruit bat May cohort by sex. **A.** Metabolites that were relatively more abundant in male bats than in female bats. Median and 95% confidence intervals with individual points overlaid. Significant p-values indicated. Mann-Whitney test of bats euthanized at D28 (N = 9). **B.** Metabolites that were relatively more abundant in female bats than in male bats. Median and 95% confidence intervals with individual points overlaid. Significant p-values indicated. Mann-Whitney test of bats euthanized at D28 (N = 9).

Animal ID	Cohort	Sex	Pregnant	Sampled after acclimation	Sampled longitudinally
1	October	Female	No	Yes	No
2	October	Female	No	Yes	No
3	October	Female	No	Yes	No
4	October	Female	No	Yes	No
5	October	Female	No	Yes	No
6	October	Female	No	Yes	No
7	October	Female	No	Yes	No
8	October	Female	Yes	Yes	No
9	October	Female	Yes	Yes	No
10	October	Female	No	Yes	No
11	October	Male	N/A	Yes	No
12	October	Male	N/A	Yes	No
13	October	Male	N/A	Yes	No
14	October	Male	N/A	Yes	No
15	October	Male	N/A	Yes	No
16	October	Male	N/A	Yes	No
17	October	Male	N/A	Yes	No
18	October	Male	N/A	Yes	No
19	October	Male	N/A	Yes	No
20	October	Male	N/A	Yes	No
21	May	Female	No	Yes	No
22	May	Female	No	Yes	No
23	May	Female	No	Yes	No
24	May	Female	No	Yes	No
25	May	Female	Yes	Yes	No
26	May	Female	No	Yes	No
27	May	Female	Yes	Yes	No
28	May	Female	No	Yes	No
29	May	Female	Yes	Yes	No
30	May	Female	Yes	Yes	No
31	May	Female	No	Yes	No
32	May	Female	No	Yes	Yes
33	May	Female	Yes	Yes	Yes
34	May	Female	Yes	Yes	Yes
35	May	Female	Yes	Yes	Yes
36	May	Female	No	Yes	No
37	May	Male	N/A	Yes	No
38	May	Female	No	Yes	No
39	May	Female	No	Yes	No
40	May	Male	N/A	Yes	No
41	May	Female	Yes	Yes	No
42	May	Male	N/A	Yes	No
43	May	Female	Yes	Yes	Yes
44	May	Female	Yes	Yes	No
45	May	Male	N/A	Yes	No
46	May	Male	N/A	Yes	No
47	May	Male	N/A	Yes	Yes
48	May	Male	N/A	Yes	Yes
49	May	Male	N/A	Yes	Yes
50	May	Male	N/A	Yes	Yes

Supplemental Table S1. Animals included intestinal microbiome and metabolome analysis. Cohort, sex, pregnancy status, and sampling information are provided.