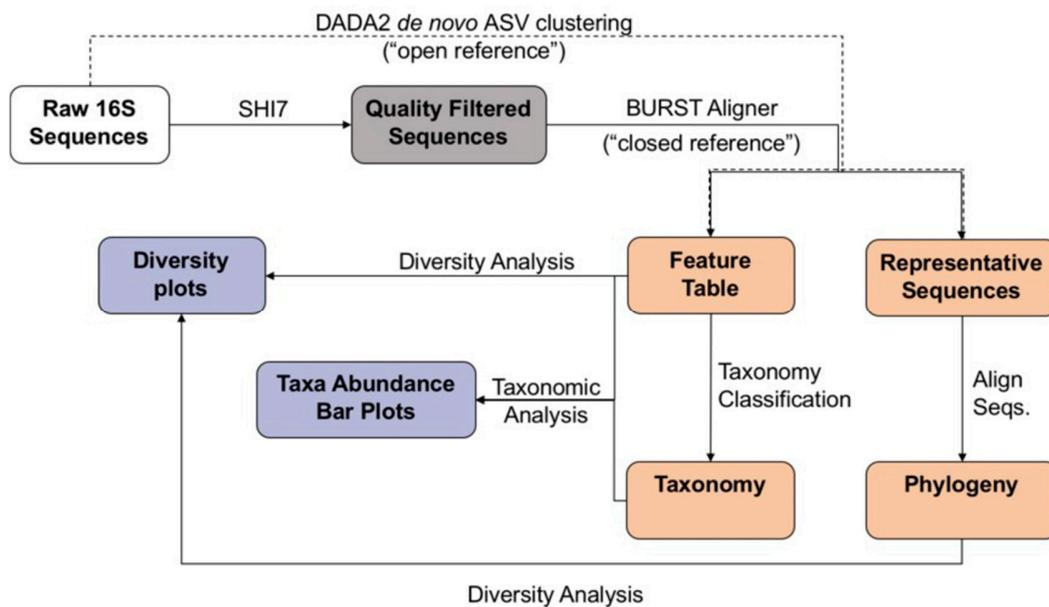
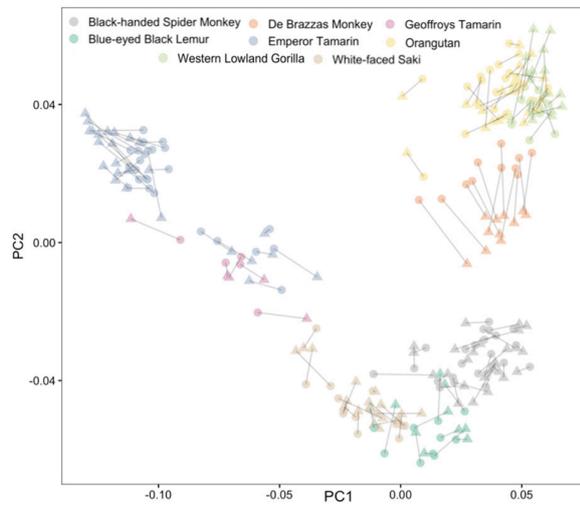


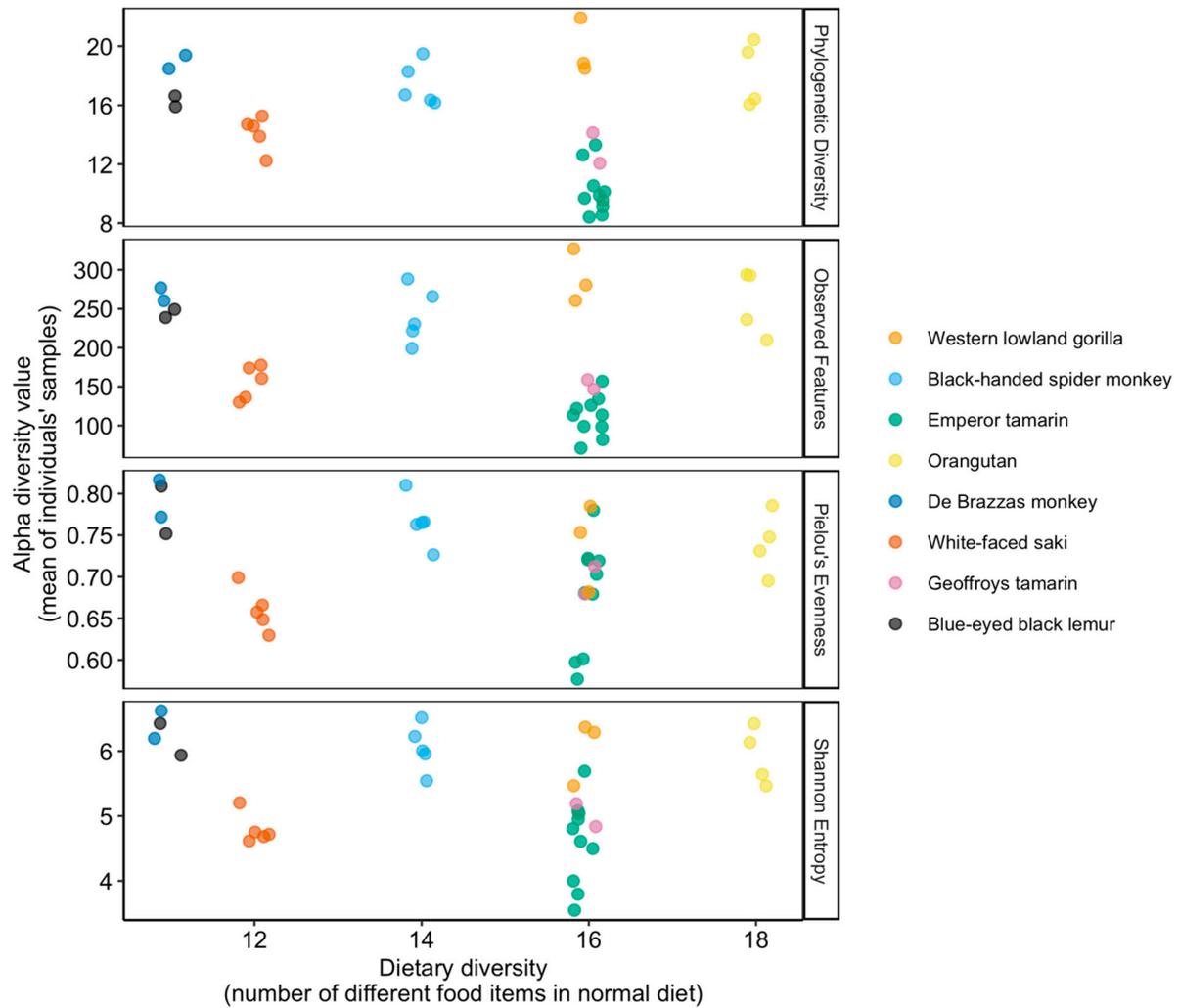
Supplemental Figure S1. Zoo cohort NHP exhibit layout. Approximate map of the NHP building showing the exhibit locations of each species at the time of sample collection. All individuals were housed by species, with the exception of the Geoffrey's tamarins, white-faced saki, and one Hoffmann's two-toed sloth (non-primate and not included in analyses), which were all housed in the same exhibit.



Supplemental Figure S2: Simplified workflow for data analysis in QIIME2, showing both closed and open reference pipelines. All samples were processed according to this flowchart. Reads were aligned against the GreenGenes 16S rDNA v. 13_8 and the SILVA 16S rDNA v. 132 databases at 97% identity.



Supplemental Figure S3: The outputs of both closed and open reference processing were statistically similar. Procrustes plot comparing the unweighted UniFrac distance matrices generated by open reference (▲; DADA2 and QIIME2 with SILVA v. 132 database) and closed reference (●; SHI7 and BURST with GreenGenes v. 13_8 database) processing of the NHP cohort. Procrustes analysis shows that the outputs of both pipelines were statistically similar, a finding that was further supported by a Mantel test ($p < 0.001$).



Supplemental Figure S4: Number of different food sources and microbiome alpha diversity patterns in the zoo-resident NHP cohort. Total number of different food sources in the normal diet for each species are plotted against the four alpha diversity metrics.

Supplemental Table S1: Non-human primate study population characteristics.

Common Name	Scientific Name	Number of Individuals	Number Female	Median Age (y)	Age Range (y) (min, max)
Black-handed spider monkey	<i>Ateles geoffroyi</i>	5	3	18	(13, 19)
Blue-eyed black lemur	<i>Eulemur macaco flavifrons</i>	2	1	13.5	(12,15)
De Brazza's monkey	<i>Cercopithecus neglectus</i>	2	1	11.5	(11, 12)
Emperor tamarin	<i>Saguinus imperator subgriseus</i>	10	3	3	(2, 21)
Geoffroy's tamarin	<i>Saguinus geoffroyi</i>	2	1	10.5	(9, 12)

Orangutan	<i>Pongo abelii</i>	4	2	23	(2, 33)
Western lowland gorilla	<i>Gorilla gorilla gorilla</i>	3	0	23	(21, 24)
White-faced saki	<i>Pithecia pitheci</i>	5	2	4	(1, 11)

Supplemental Table S2: Overview of historic antibiotic usage in the zoo-resident NHPs.

Species	Number of Individuals	Number of Individuals with at Least One Prior Abx Rx	Number of Individuals with Multiple Prior Abx Rx	Average Number of Abx Rx per Year of Records	Number of Individuals with Abx Rx < 9 Months Prior to Sampling
Black Handed Spider Monkey	5	5	3	0.35	3
Blue-eyed Black Lemur	2	1	1	0.24	0
De Brazza's Monkey	2	2	1	0.64	0
Emperor Tamarin	10	3	1	0.26	1
Geoffroy's Tamarin	2	2	0	0.36	0
Orangutan	4	3	3	0.47	1
Western Lowland Gorilla	3	3	3	0.95	1
White-faced Saki	5	4	4	0.52	4
Total	33	23	16	0.47	10