

## Supplemental Information for:

### The gut microbiota and Bergmann's rule in wild house mice

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# MOLECULAR ECOLOGY

**Table S1.** Sample information of wild-caught individuals (n = 166). (continued)

SampleID	Transect_ID	Country	Population	Latitude	Longitude	Altitude (m)	Sex	Weight (g)	Body length (mm)	BMI	Carbon ( $\delta^{13}\text{C}$ )	Nitrogen ( $\delta^{15}\text{N}$ )	Climate_PC1	Climate_PC2	MVZ ID	Included in analyses?*
MPR.108	East-NA	USA	FL	29.67445	-82.33093333	12.19	F	13.00	77.0	0.00219	-21.8	5.2	3.019120634	1.496293134	MVZ:Mamm:230591	yes
MPR.110	East-NA	USA	FL	29.6233	-82.340333	0.61	F	23.50	90.0	0.00290	-21.8	7.0	3.145907044	1.510618919	MVZ:Mamm:230601	yes
MPR.112	East-NA	USA	FL	29.778929	-82.416971	11.28	M	12.75	77.0	0.00215	-18.8	5.9	3.047376426	1.500056192	MVZ:Mamm:230593	yes
MPR.113	East-NA	USA	FL	29.78685	-82.495877	4.57	F	11.38	84.0	0.00161	-20.0	6.2	3.047376426	1.500056192	MVZ:Mamm:230590	yes
MPR.114	East-NA	USA	FL	29.37283	-82.19892	8.84	F	15.50	84.0	0.00220	-22.2	8.0	3.150769063	1.459955475	MVZ:Mamm:230603	yes
MPR.115	East-NA	USA	FL	29.45224	-82.3403	11.28	F	14.00	84.0	0.00198	-22.6	4.5	3.255973173	1.465003211	MVZ:Mamm:230595	yes
MPR.116	East-NA	USA	FL	29.39018	-82.1299	7.32	M	14.25	82.0	0.00212	-17.9	7.1	3.078611644	1.346975464	MVZ:Mamm:230597	yes
MPR.118	East-NA	USA	FL	29.10066	-82.14192	4.88	M	9.50	68.0	0.00205	-21.8	7.1	3.184344055	1.142433585	MVZ:Mamm:230599	yes
MPR.120	East-NA	USA	FL	29.7828	-82.3755	28.04	M	14.00	82.5	0.00206	-24.2	7.7	3.047376426	1.500056192	MVZ:Mamm:230594	yes
MPR.121	East-NA	USA	FL	29.65652	-82.5872	18.90	F	23.00	92.0	0.00272	-16.8	7.6	3.10109681	1.310381449	MVZ:Mamm:230596	yes
MPR.123	East-NA	USA	GA	34.0989	-83.3454	76.50	M	11.00	75.5	0.00193	-17.9	7.1	0.748388305	2.880295974	MVZ:Mamm:230612	yes
MPR.124	East-NA	USA	GA	34.10006	-83.59695	88.70	F	14.50	78.0	0.00238	-19.9	6.5	0.775114897	2.962729027	MVZ:Mamm:230604	yes
MPR.125	East-NA	USA	GA	34.09889	-83.34537	76.20	M	11.00	69.0	0.00231	-21.4	9.9	0.748388305	2.880295974	MVZ:Mamm:230609	yes
MPR.126	East-NA	USA	GA	34.11877	-83.57092	68.28	M	18.50	80.0	0.00289	-14.8	7.3	0.775114897	2.962729027	MVZ:Mamm:230608	yes
MPR.128	East-NA	USA	GA	33.87025	-83.28893	68.28	M	15.75	81.0	0.00240	-21.3	7.8	0.610314034	2.624280429	MVZ:Mamm:230606	yes
MPR.129	East-NA	USA	GA	33.83757	-83.35049	69.49	M	12.75	77.0	0.00215	-20.4	6.6	0.63966048	2.705703223	MVZ:Mamm:230615	yes
MPR.130	East-NA	USA	GA	33.94638	-83.38383	85.34	F	16.13	80.0	0.00252	-17.3	6.4	0.63966048	2.705703223	MVZ:Mamm:230610	yes
MPR.131	East-NA	USA	GA	33.88584	-83.48023	63.70	F	9.00	65.0	0.00213	-9.5	9.6	0.63966048	2.705703223	MVZ:Mamm:230613	yes
MPR.132	East-NA	USA	GA	33.8437	-83.33744	70.10	F	11.00	75.5	0.00193	-18.1	7.8	0.63966048	2.705703223	MVZ:Mamm:230614	yes
MPR.133	East-NA	USA	GA	33.94639	-83.38384	66.45	F	21.38	89.0	0.00270	-15.1	7.8	0.63966048	2.705703223	MVZ:Mamm:230607	yes
MPR.134	East-NA	USA	NH_VT	44.11202	-72.04543	33.53	F	19.13	83.0	0.00278	-18.0	8.3	-2.899652251	2.101904606	MVZ:Mamm:230616	yes
MPR.135	East-NA	USA	NH_VT	44.11212	-72.04551	19.20	F	21.38	93.0	0.00247	-15.5	7.5	-2.899652251	2.101904606	MVZ:Mamm:230617	yes
MPR.137	East-NA	USA	NH_VT	43.99797	-72.10448	53.95	F	13.38	81.0	0.00204	-17.6	10.8	NA	NA	MVZ:Mamm:230619	no
MPR.138	East-NA	USA	NH_VT	43.97192	-72.08463	53.34	M	14.75	86.0	0.00199	-23.4	5.7	-2.829600487	2.469157357	MVZ:Mamm:230622	yes
MPR.140	East-NA	USA	NH_VT	43.97281	-72.09393	42.98	M	14.00	74.0	0.00256	-17.8	6.3	-2.829600487	2.469157357	MVZ:Mamm:230621	yes
MPR.141	East-NA	USA	NH_VT	43.95075	-72.11753	48.46	M	19.50	86.0	0.00264	-19.5	11.8	-2.829600487	2.469157357	MVZ:Mamm:230648	yes
MPR.142	East-NA	USA	NH_VT	43.9609	-72.11585	47.55	F	23.75	94.0	0.00269	-19.9	7.6	-2.829600487	2.469157357	MVZ:Mamm:230649	yes
MPR.143	East-NA	USA	NH_VT	43.927907	-72.12301	55.47	M	15.50	81.5	0.00233	-14.4	11.3	-2.829600487	2.469157357	MVZ:Mamm:230647	yes
MPR.144	East-NA	USA	NH_VT	44.12806	-72.04328	36.58	M	18.25	87.5	0.00238	-15.5	7.5	-2.899652251	2.101904606	MVZ:Mamm:230651	yes
MPR.145	East-NA	USA	NH_VT	43.95596	-72.11164	47.55	F	21.00	98.0	0.00219	-19.3	6.7	-2.829600487	2.469157357	MVZ:Mamm:230650	yes
MPR.146	East-NA	USA	PA	40.618763	-75.36362	19.51	F	13.13	86.0	0.00177	-19.9	8.0	-1.165371739	3.014369534	MVZ:Mamm:230633	yes
MPR.147	East-NA	USA	PA	40.50319	-75.3174	35.05	M	16.00	87.0	0.00211	-20.5	6.7	-1.172455455	3.113917084	MVZ:Mamm:230627	yes
MPR.148	East-NA	USA	PA	40.45099	-75.40128	51.51	M	13.25	75.0	0.00236	-21.6	6.1	-1.16397802	3.029384435	MVZ:Mamm:230628	yes
MPR.150	East-NA	USA	PA	40.59571	-75.65891	55.47	F	11.88	75.0	0.00211	-23.8	5.9	-1.204821786	2.979585317	MVZ:Mamm:230631	yes
MPR.151	East-NA	USA	PA	40.55189	-75.32455	46.63	M	15.00	78.5	0.00243	-23.2	7.1	-1.172455455	3.113917084	MVZ:Mamm:230634	yes
MPR.152	East-NA	USA	PA	40.53107	-75.34738	98.15	M	15.00	81.0	0.00229	-15.4	6.7	-1.165371739	3.014369534	MVZ:Mamm:230629	yes
MPR.153	East-NA	USA	PA	40.500421	-76.103425	56.08	F	21.25	81.5	0.00320	-10.7	8.4	-1.313819446	3.095557022	MVZ:Mamm:230624	yes
MPR.154	East-NA	USA	PA	40.461968	-76.08789	44.81	F	17.25	82.0	0.00257	-19.9	6.3	-1.230106952	2.91071536	MVZ:Mamm:230623	yes
MPR.155	East-NA	USA	PA	40.70747	-75.66738	51.82	M	14.50	78.0	0.00238	-19.9	7.6	-1.325880152	3.187868743	MVZ:Mamm:230632	yes
MPR.156	East-NA	USA	PA	40.526708	-76.097258	56.39	F	21.00	96.0	0.00228	-17.0	6.8	-1.313819446	3.095557022	MVZ:Mamm:230625	yes
MPR.159	East-NA	USA	VA	37.74117	-77.57546	22.86	F	14.75	77.0	0.00249	-23.5	7.4	-0.495585742	2.688645661	MVZ:Mamm:230641	yes
MPR.161	East-NA	USA	VA	37.65535	-77.72927	28.04	F	15.25	80.0	0.00238	-24.1	8.0	-0.475081391	2.662020351	MVZ:Mamm:230638	yes
MPR.162	East-NA	USA	VA	37.48763	-77.40208	14.33	M	17.25	86.0	0.00233	-19.5	6.5	-0.094880991	2.598648986	MVZ:Mamm:230645	yes
MPR.163	East-NA	USA	VA	37.65501	-77.73977	27.13	M	15.13	78.0	0.00249	-22.8	5.9	-0.475081391	2.662020351	MVZ:Mamm:230637	yes
MPR.164	East-NA	USA	VA	37.67885	-77.5166	15.54	M	18.25	91.0	0.00220	-20.3	6.9	-0.495585742	2.688645661	MVZ:Mamm:230642	yes
MPR.165	East-NA	USA	VA	37.55811	-77.48073	22.25	M	10.75	66.0	0.00247	-19.3	8.2	-0.315642272	2.700222686	MVZ:Mamm:230644	yes
MPR.166	East-NA	USA	VA	37.76063	-77.48351	23.16	M	15.00	80.0	0.00234	-19.0	5.9	-0.417232494	2.672104793	MVZ:Mamm:230639	yes
MPR.167	East-NA	USA	VA	37.52756	-77.6492	33.22	F	13.00	80.0	0.00203	-14.7	9.6	-0.436979296	2.726414248	MVZ:Mamm:230635	yes
MPR.168	East-NA	USA	VA	37.85448	-77.26262	18.90	F	13.50	82.0	0.00201	NA	NA	-0.425198809	2.72319745	MVZ:Mamm:230646	yes
MPR.169	East-NA	USA	VA	37.55537	-77.66149	11.89	F	11.00	69.0	0.00231	-14.1	7.5	-0.436979296	2.726414248	MVZ:Mamm:230636	yes

\* Samples were excluded from all analyses when the samples had < 5500 reads per sample.

# MOLECULAR ECOLOGY

**Table S1.** Sample information of wild-caught individuals (n = 166). (continued)

SampleID	Transect_ID	Country	Population	Latitude	Longitude	Altitude (m)	Sex	Weight (g)	Body length (mm)	BMI	Carbon ( $\delta^{13}\text{C}$ )	Nitrogen ( $\delta^{15}\text{N}$ )	Climate_PC1	Climate_PC2	MVZ ID	Included in analyses?*
MPR.170	West-NA	USA	AZ	32.28746	-110.99596	657.00	F	15.50	89.0	0.00196	-15.1	6.8	0.358472791	-3.31676568	MVZ.Mamm.230794	yes
MPR.171	West-NA	USA	AZ	32.29215	-111.02631	642.00	F	17.30	87.0	0.00229	-20.8	7.6	0.276087927	-3.222969801	MVZ.Mamm.230795	yes
MPR.172	West-NA	USA	AZ	32.2904	-111.02207	649.00	M	21.30	93.0	0.00246	-16.4	7.3	0.276087927	-3.222969801	MVZ.Mamm.230796	yes
MPR.173	West-NA	USA	AZ	32.16881	-110.56997	704.00	M	15.10	79.0	0.00242	-22.1	6.7	-0.025452469	-2.400460413	MVZ.Mamm.230797	yes
DL.007	West-NA	USA	AZ	32.1013	-110.4658	845.00	M	17.30	82.0	0.00257	-22.8	8.4	-0.073075508	-3.133103585	MVZ.Mamm.230441	yes
DL.008	West-NA	USA	AZ	32.6948	-110.4617	835.00	F	22.50	84.0	0.00319	-20.4	8.1	-0.325488968	-2.324299084	MVZ.Mamm.230442	yes
TAS.187	West-NA	USA	AZ	32.16881	-110.56997	699.52	M	18.70	88.0	0.00241	-15.4	5.3	-0.025452469	-2.400460413	MVZ.Mamm.230541	yes
TAS.189	West-NA	USA	AZ	32.10018	-111.05153	719.02	F	21.20	99.5	0.00214	-20.3	6.1	0.312026587	-3.360398786	MVZ.Mamm.230534	yes
TAS.191	West-NA	USA	AZ	32.07955	-111.03692	802.23	F	20.60	94.5	0.00231	-18.2	7.5	0.312026587	-3.360398786	MVZ.Mamm.230531	yes
TAS.192	West-NA	USA	AZ	32.08793	-111.00665	690.98	M	20.90	88.0	0.00270	NA	NA	0.312026587	-3.360398786	MVZ.Mamm.230523	yes
TAS.010	West-NA	USA	IT_SiGeorg	37.02541	-113.37005	760.17	M	16.10	91.5	0.00192	-19.5	8.1	-1.878258652	-2.800155871	MVZ.Mamm.230573	yes
TAS.011	West-NA	USA	IT_SiGeorg	37.05353	-113.31886	698.60	F	19.40	93.5	0.00222	-17.8	6.6	-2.088695676	-2.313327014	MVZ.Mamm.230568	yes
TAS.012	West-NA	USA	IT_SiGeorg	37.06415	-113.30215	795.22	M	16.80	91.0	0.00203	-21.6	7.3	-2.088695676	-2.313327014	MVZ.Mamm.230570	yes
TAS.013	West-NA	USA	IT_SiGeorg	37.04595	-113.31065	834.54	F	25.10	92.5	0.00293	-16.5	7.5	-2.088695676	-2.313327014	MVZ.Mamm.230571	yes
TAS.014	West-NA	USA	IT_SiGeorg	37.05116	-113.29955	807.42	M	13.00	85.0	0.00180	-17.4	5.6	-2.088695676	-2.313327014	MVZ.Mamm.230572	yes
TAS.015	West-NA	USA	IT_SiGeorg	37.03825	-113.3134	806.20	F	17.30	89.0	0.00218	-19.8	7.3	-2.088695676	-2.313327014	MVZ.Mamm.230578	yes
TAS.016	West-NA	USA	IT_SiGeorg	37.0722	-113.33443	893.37	M	8.50	71.0	0.00169	-22.3	5.6	-1.878258652	-2.800155871	MVZ.Mamm.230574	yes
TAS.017	West-NA	USA	IT_SiGeorg	37.0735	-113.36928	830.88	M	18.10	91.0	0.00219	-22.5	10.4	-1.878258652	-2.800155871	MVZ.Mamm.230569	yes
TAS.021	West-NA	USA	IT_SiGeorg	37.07673	-113.36399	860.45	F	16.80	85.5	0.00230	-21.4	4.6	-1.878258652	-2.800155871	MVZ.Mamm.230575	yes
TAS.022	West-NA	USA	IT_SiGeorg	37.12416	-113.3702	1175.61	F	14.40	82.5	0.00212	-16.7	6.9	-1.878258652	-2.800155871	MVZ.Mamm.230582	yes
TAS.027	West-NA	USA	UT_Provo	40.09489	-111.42196	1369.16	F	7.60	65.0	0.00180	-11.9	9.9	-3.590352583	-0.882850933	MVZ.Mamm.230566	yes
TAS.028	West-NA	USA	UT_Provo	40.05553	-111.39567	1418.84	M	9.10	71.5	0.00178	-23.2	6.6	-3.590352583	-0.882850933	MVZ.Mamm.230561	yes
TAS.029	West-NA	USA	UT_Provo	40.05862	-111.40421	1392.33	M	18.40	92.0	0.00217	-17.9	6.4	-3.590352583	-0.882850933	MVZ.Mamm.230564	yes
TAS.030	West-NA	USA	UT_Provo	40.07961	-111.43823	1372.82	M	17.20	89.5	0.00215	-22.5	11.9	-3.590352583	-0.882850933	MVZ.Mamm.230562	yes
TAS.031	West-NA	USA	UT_Provo	40.03512	-111.43952	1389.28	F	15.20	84.5	0.00213	-23.6	8.5	-3.590352583	-0.882850933	MVZ.Mamm.230558	yes
TAS.032	West-NA	USA	UT_Provo	40.06017	-111.39273	1388.36	F	12.50	80.0	0.00195	-15.7	6.7	-3.590352583	-0.882850933	MVZ.Mamm.230563	yes
TAS.038	West-NA	USA	UT_Provo	40.15336	-111.42615	1374.95	M	17.20	90.0	0.00212	-17.9	9.4	-3.590352583	-0.882850933	MVZ.Mamm.230559	yes
TAS.039	West-NA	USA	UT_Provo	40.2214	-111.46032	1388.97	M	20.50	91.0	0.00248	-13.7	20.9	-3.471903896	-0.56844779	MVZ.Mamm.230560	yes
TAS.040	West-NA	USA	UT_Provo	40.22479	-111.52646	1383.18	F	16.60	86.0	0.00224	NA	NA	-3.081811429	-0.508741803	MVZ.Mamm.230556	yes
TAS.047	West-NA	USA	UT_Provo	40.08865	-111.40444	1374.65	F	19.10	91.5	0.00228	-19.4	6.0	-3.590352583	-0.882850933	MVZ.Mamm.230567	yes
TAS.048	West-NA	USA	MT	46.19651	-114.06723	1062.23	F	20.20	90.0	0.00249	-17.2	8.3	-3.377349089	-1.226784111	MVZ.Mamm.230551	yes
TAS.049	West-NA	USA	MT	46.20361	-114.0688	1057.05	M	9.60	74.0	0.00175	-22.4	7.7	-3.377349089	-1.226784111	MVZ.Mamm.230552	yes
TAS.050	West-NA	USA	MT	46.21172	-114.07164	1054.00	F	15.00	83.5	0.00215	-19.7	6.8	-3.377349089	-1.226784111	MVZ.Mamm.230550	yes
TAS.051	West-NA	USA	MT	46.24613	-114.0517	1032.36	F	16.70	91.5	0.00199	-24.9	9.5	-3.377349089	-1.226784111	MVZ.Mamm.230553	yes
TAS.052	West-NA	USA	MT	46.30637	-114.043	1042.42	M	14.60	80.0	0.00228	-23.9	7.8	-3.377349089	-1.226784111	MVZ.Mamm.230554	yes
TAS.055	West-NA	USA	MT	46.51463	-113.59165	985.72	M	18.50	87.5	0.00242	-17.2	6.8	-3.960153809	-0.510943112	MVZ.Mamm.230548	yes
TAS.061	West-NA	USA	MT	46.94733	-114.08744	1019.00	F	17.20	92.5	0.00201	-20.7	5.7	-3.364103279	-0.931874762	MVZ.Mamm.230549	yes
TAS.062	West-NA	USA	MT	47.74106	-114.22883	1000.05	F	25.80	92.5	0.00302	-22.2	8.8	-2.913161999	-0.272844934	MVZ.Mamm.230544	yes
TAS.063	West-NA	USA	MT	47.31796	-114.07094	885.75	F	15.50	86.0	0.00210	-22.9	9.1	-3.226204464	-0.40455511	MVZ.Mamm.230545	yes
TAS.066	West-NA	USA	MT	46.58284	-114.07613	987.25	M	14.00	85.5	0.00192	-16.4	8.9	-3.42046972	-1.191265716	MVZ.Mamm.230546	yes
TAS.082	West-NA	Canada	EDM	53.24522	-113.19141	754.99	F	12.60	75.0	0.00224	-23.7	5.1	-4.096590882	-0.609927899	MVZ.Mamm.230515	yes
TAS.088	West-NA	Canada	EDM	53.47494	-113.19216	669.65	F	23.50	101.0	0.00230	-22.0	6.2	-4.079839844	-0.59760881	MVZ.Mamm.230511	yes
TAS.097	West-NA	Canada	EDM	53.51691	-113.18164	731.00	M	16.50	88.0	0.00213	-18.3	7.3	-4.04377705	-0.619775593	MVZ.Mamm.230509	yes
TAS.099	West-NA	Canada	EDM	53.51691	-113.18164	731.00	M	NA	NA	NA	-20.5	6.9	-4.04377705	-0.619775593	MVZ.Mamm.230510	yes
TAS.100	West-NA	Canada	EDM	53.26386	-113.04173	746.76	F	NA	NA	NA	-24.9	5.3	-4.16452595	-0.57321016	MVZ.Mamm.230503	yes
TAS.103	West-NA	Canada	EDM	53.23738	-113.11374	768.40	M	17.00	83.0	0.00247	-23.1	5.4	-4.16452595	-0.57321016	MVZ.Mamm.230496	yes
TAS.105	West-NA	Canada	EDM	53.30768	-113.52365	730.61	F	15.50	83.0	0.00225	-24.4	5.5	-4.024961628	-0.689256543	MVZ.Mamm.230466	yes
TAS.106	West-NA	Canada	EDM	53.32527	-113.49395	676.66	M	16.50	98.0	0.00172	-21.2	9.1	-4.047290511	-0.640231984	MVZ.Mamm.230495	yes
TAS.108	West-NA	Canada	EDM	53.30768	-113.52365	730.61	F	NA	NA	NA	-24.0	5.1	-4.024961628	-0.689256543	MVZ.Mamm.230467	yes
TAS.113	West-NA	Canada	EDM	53.30768	-113.52365	730.61	M	11.50	71.0	0.00228	-24.1	8.6	-4.024961628	-0.689256543	MVZ.Mamm.230469	yes

\* Samples were excluded from all analyses when the samples had < 5500 reads per sample.

# MOLECULAR ECOLOGY

**Table S1.** Sample information of wild-caught individuals (n = 166). (continued)

SampleID	Transect_ID	Country	Population	Latitude	Longitude	Altitude (m)	Sex	Weight (g)	Body length (mm)	BMI	Carbon ( $\delta^{13}\text{C}$ )	Nitrogen ( $\delta^{15}\text{N}$ )	Climate_PC1	Climate_PC2	MVZ ID	Included in analyses?*
FMM.111	SA	Argentina	Tandil	-37.35775	-59.12195	223.11	F	15.25	92.0	0.00180	-9.7	11.3	NA	NA	MVZ.Mamm:231397	no
FMM.112	SA	Argentina	Tandil	-37.32752	-59.0834	210.01	F	11.50	84.0	0.00163	-19.6	7.3	NA	NA	MVZ.Mamm:231398	no
FMM.113	SA	Argentina	Tandil	-37.35	-59.288075	210.01	F	9.00	79.0	0.00144	-22.5	7.7	-0.009806602	-0.156522121	MVZ.Mamm:231399	yes
FMM.116	SA	Argentina	Tandil	-37.35574	-59.20489444	257.86	M	12.50	84.0	0.00177	-22.3	8.4	-0.009806602	-0.156522121	MVZ.Mamm:231405	yes
FMM.119	SA	Argentina	Tandil	-37.31618	-59.10231667	210.01	M	15.25	91.0	0.00184	-21.2	7.7	0.129743331	-0.021937099	MVZ.Mamm:231403	yes
FMM.121	SA	Argentina	Tandil	-37.3188	-59.10548333	203.91	M	10.50	84.0	0.00149	-22.9	8.3	0.129743331	-0.021937099	MVZ.Mamm:231407	yes
FMM.122	SA	Argentina	Tandil	-37.29083	-59.20061667	200.86	F	14.25	95.0	0.00158	-22.6	7.2	0.155706896	-0.126687425	MVZ.Mamm:231408	yes
FMM.124	SA	Argentina	Tandil	-37.28982	-59.1544	203.00	F	14.00	83.0	0.00203	-22.7	6.7	0.129743331	-0.021937099	MVZ.Mamm:231410	yes
FMM.125	SA	Argentina	Ushuaia	-54.78588	-68.2755667	95.40	F	21.75	90.0	0.00269	-18.5	8.4	-1.988510247	0.083350926	MVZ.Mamm:231425	yes
FMM.126	SA	Argentina	Ushuaia	-54.78588	-68.2755667	95.40	F	12.25	88.0	0.00158	-17.6	8.1	-1.988510247	0.083350926	MVZ.Mamm:231426	yes
FMM.127	SA	Argentina	Ushuaia	-54.78588	-68.2755667	95.40	M	10.00	78.0	0.00164	-15.7	8.4	-1.988510247	0.083350926	MVZ.Mamm:231427	yes
FMM.128	SA	Argentina	Ushuaia	-54.78588	-68.2755667	95.40	M	13.00	85.0	0.00180	-21.8	11.0	-1.988510247	0.083350926	MVZ.Mamm:231428	yes
FMM.129	SA	Argentina	Ushuaia	-54.79723	-68.2292667	25.91	F	13.00	87.0	0.00172	-21.8	7.6	-1.988510247	0.083350926	MVZ.Mamm:231429	yes
FMM.130	SA	Argentina	Ushuaia	-54.79723	-68.2292667	25.91	F	15.00	102.0	0.00144	-21.9	7.2	-1.988510247	0.083350926	MVZ.Mamm:231430	yes
FMM.132	SA	Argentina	Gaiman	-43.34011	-65.52680556	3.05	F	18.00	91.0	0.00217	-21.2	7.4	-1.903374715	-2.40651917	MVZ.Mamm:231412	yes
FMM.133	SA	Argentina	Gaiman	-43.32986	-65.53155556	4.88	M	16.50	91.0	0.00199	-23.2	11.6	-1.660504395	-2.583736438	MVZ.Mamm:231413	yes
FMM.135	SA	Argentina	Gaiman	-43.33275	-65.54722222	3.96	M	5.50	71.0	0.00109	-17.2	11.4	-1.660504395	-2.583736438	MVZ.Mamm:231415	yes
FMM.137	SA	Argentina	Gaiman	-43.31217	-65.47452778	3.96	M	10.75	85.0	0.00149	-14.8	7.2	-1.834905812	-2.388038402	MVZ.Mamm:231417	yes
FMM.138	SA	Argentina	Gaiman	-43.32519	-65.54222222	15.85	F	14.75	94.0	0.00167	-13.8	7.2	-1.660504395	-2.583736438	MVZ.Mamm:231418	yes
FMM.139	SA	Argentina	Gaiman	-43.33089	-65.48286111	3.05	F	14.25	88.0	0.00184	-20.8	9.8	-1.834905812	-2.388038402	MVZ.Mamm:231419	yes
FMM.141	SA	Argentina	Gaiman	-43.31078	-65.40872222	9.14	F	24.00	90.0	0.00296	-14.2	7.7	-1.834905812	-2.388038402	MVZ.Mamm:231421	yes
FMM.142	SA	Argentina	Gaiman	-43.29569	-65.40025	3.05	M	13.00	93.0	0.00150	-19.2	10.6	-1.834905812	-2.388038402	MVZ.Mamm:231422	yes
FMM.143	SA	Argentina	Gaiman	-43.32731	-65.37475	9.14	M	18.00	90.0	0.00222	-20.3	11.1	-1.834905812	-2.388038402	MVZ.Mamm:231423	yes
FMM.144	SA	Argentina	Gaiman	-43.34189	-66.56788889	9.14	F	17.50	93.0	0.00202	-12.7	8.7	-1.75568226	-2.543714464	MVZ.Mamm:231424	yes
FMM.146	SA	Argentina	Tandil	-37.81997	-58.24201667	131.98	M	8.00	75.0	0.00142	-14.7	6.8	0.149955372	0.262889409	MVZ.Mamm:231395	yes
FMM.147	SA	Argentina	Tandil	-37.76057	-59.29883333	111.86	M	19.00	98.0	0.00198	-23.4	9.2	-0.066562831	-0.084031806	MVZ.Mamm:231396	yes
FMM.148	SA	Brazil	Maringa	-23.44993	-51.99877778	554.74	M	11.50	85.0	0.00166	-10.3	6.9	NA	NA	MVZ.Mamm:231351	no
FMM.149	SA	Brazil	Maringa	-23.46181	-52.00411111	554.74	M	13.50	84.0	0.00191	-19.4	4.9	3.183810797	0.835052031	MVZ.Mamm:231352	yes
FMM.150	SA	Brazil	Maringa	-23.45331	-51.99877778	533.10	F	11.50	79.0	0.00184	-12.6	6.8	3.106302703	0.712909087	MVZ.Mamm:231353	yes
FMM.152	SA	Brazil	Maringa	-23.46181	-52.02728056	546.51	M	14.50	84.0	0.00206	-10.4	6.3	3.183810797	0.835052031	MVZ.Mamm:231355	yes
FMM.154	SA	Brazil	Maringa	-23.42272	-51.96297222	573.33	M	18.75	93.0	0.00217	-16.5	9.8	3.106302703	0.712909087	MVZ.Mamm:231356	yes
FMM.155	SA	Brazil	Maringa	-23.43103	-51.97188889	584.61	M	14.75	86.0	0.00199	-15.9	9.8	3.106302703	0.712909087	MVZ.Mamm:231357	yes
FMM.156	SA	Brazil	Maringa	-23.42072	-51.95277778	556.26	M	14.25	89.0	0.00180	-22.7	7.7	3.106302703	0.712909087	MVZ.Mamm:231358	yes
FMM.157	SA	Brazil	Maringa	-23.45356	-51.91233333	538.89	F	13.00	93.0	0.00150	-12.4	10.4	3.106302703	0.712909087	MVZ.Mamm:231359	yes
FMM.159	SA	Brazil	Maringa	-23.39992	-51.92452778	553.82	F	8.00	85.0	0.00111	-19.6	7.3	3.106302703	0.712909087	MVZ.Mamm:231361	yes
FMM.160	SA	Brazil	Maringa	-23.38592	-51.913175	508.41	F	15.00	89.0	0.00189	-16.5	7.0	3.106302703	0.712909087	MVZ.Mamm:231362	yes
FMM.162	SA	Brazil	Uruguaiana	-29.89547	-57.13158333	49.38	F	14.00	95.0	0.00155	-20.9	11.8	2.292591849	0.887842175	MVZ.Mamm:231364	yes
FMM.163	SA	Brazil	Uruguaiana	-29.87089	-57.18852778	39.93	M	13.50	83.0	0.00196	-23.9	7.8	2.473543145	1.242012644	MVZ.Mamm:231365	yes
FMM.165	SA	Brazil	Uruguaiana	-29.89144	-57.23458333	44.20	M	14.00	83.0	0.00203	-25.4	11.0	2.473543145	1.242012644	MVZ.Mamm:231367	yes
FMM.166	SA	Brazil	Uruguaiana	-29.88203	-57.17661111	61.26	F	24.50	98.0	0.00255	-21.8	10.0	2.473543145	1.242012644	MVZ.Mamm:231368	yes
FMM.167	SA	Brazil	Uruguaiana	-29.87442	-57.13488889	66.75	F	16.75	92.0	0.00198	-14.0	15.1	2.292591849	0.887842175	MVZ.Mamm:231369	yes
FMM.168	SA	Brazil	Uruguaiana	-29.89203	-57.20069444	76.50	F	12.00	80.0	0.00188	-24.5	6.1	2.473543145	1.242012644	MVZ.Mamm:231370	yes
FMM.169	SA	Brazil	Uruguaiana	-29.88631	-57.18655556	81.99	F	13.00	83.0	0.00189	-25.5	10.4	2.473543145	1.242012644	MVZ.Mamm:231371	yes
FMM.173	SA	Brazil	Uruguaiana	-29.81714	-57.20108333	57.91	M	11.25	80.0	0.00176	-14.6	11.2	2.655419936	1.556698111	MVZ.Mamm:231375	yes
FMM.176	SA	Brazil	Uruguaiana	-29.82919	-57.19994444	73.76	M	18.00	105.0	0.00163	-17.3	11.5	2.655419936	1.556698111	MVZ.Mamm:231377	yes
FMM.179	SA	Brazil	Uruguaiana	-29.90678	-57.15466667	107.29	F	14.00	99.0	0.00143	-22.2	9.0	2.292591849	0.887842175	MVZ.Mamm:231380	yes
FMM.266	SA	Brazil	orto_Velch	-8.77153	-63.80286111	91.74	F	12.50	89.0	0.00158	-18.4	9.4	6.844630433	-1.214203297	MVZ.Mamm:231392	yes
FMM.267	SA	Brazil	orto_Velch	-8.78411	-63.84161111	93.88	M	10.00	83.0	0.00145	-20.1	9.8	6.88431953	-0.53607707	MVZ.Mamm:231381	yes
FMM.268	SA	Brazil	orto_Velch	-8.77156	-63.79761111	97.23	M	12.25	83.0	0.00178	-20.0	9.5	6.844630433	-1.214203297	MVZ.Mamm:231382	yes
FMM.269	SA	Brazil	orto_Velch	-8.78253	-63.84572222	82.60	F	13.75	91.0	0.00166	-20.0	10.1	6.88431953	-0.53607707	MVZ.Mamm:231383	yes
FMM.270	SA	Brazil	orto_Velch	-8.77792	-63.84147222	71.63	F	15.00	96.0	0.00163	-16.3	8.1	6.88431953	-0.53607707	MVZ.Mamm:231384	yes
FMM.271	SA	Brazil	orto_Velch	-8.7645	-63.83977778	77.11	F	12.25	87.0	0.00162	-24.0	9.9	6.88431953	-0.53607707	MVZ.Mamm:231385	yes
FMM.274	SA	Brazil	orto_Velch	-8.77716	-63.84456389	85.04	F	16.25	100.0	0.00163	-17.2	8.1	NA	NA	MVZ.Mamm:231390	no
FMM.277	SA	Brazil	orto_Velch	-8.78278	-63.85197222	87.78	M	7.00	78.0	0.00115	-16.9	8.4	6.88431953	-0.53607707	MVZ.Mamm:231389	yes
FMM.278	SA	Brazil	orto_Velch	-8.78431	-63.80325	87.78	F	13.00	85.0	0.00180	-16.2	7.7	6.844630433	-1.214203297	MVZ.Mamm:231393	yes
FMM.279	SA	Brazil	orto_Velch	-8.77625	-63.80039167	85.95	F	14.00	94.0	0.00158	-23.6	10.6	6.844630433	-1.214203297	MVZ.Mamm:231394	yes
FMM.280	SA	Brazil	Brasilia	-15.94933	-47.93558611	1081.74	F	14.50	93.0	0.00168	-19.9	7.9	5.072092141	-2.263997717	MVZ.Mamm:231335	yes
FMM.282	SA	Brazil	Brasilia	-15.6433	-47.91583889	1264.01	M	11.25	79.0	0.00180	-9.9	8.0	4.443718995	-3.12540741	MVZ.Mamm:231342	yes
FMM.284	SA	Brazil	Brasilia	-15.63792	-47.91805556	1251.51	F	8.00	70.0	0.00163	-11.3	9.6	4.443718995	-3.12540741	MVZ.Mamm:231344	yes
FMM.285	SA	Brazil	Brasilia	-15.62348	-47.92898333	1249.07	M	8.75	71.0	0.00174	-9.5	12.6	4.443718995	-3.12540741	MVZ.Mamm:231345	yes
FMM.286	SA	Brazil	Brasilia	-15.62107	-47.94668333	1207.92	F	14.25	99.0	0.00145	-12.5	7.7	4.443718995	-3.12540741	MVZ.Mamm:231346	yes
FMM.287	SA	Brazil	Brasilia	-15.94658	-47.94034722	1075.94	M	6.25	62.0	0.00163	-18.6	9.0	5.072092141	-2.263997717	MVZ.Mamm:231336	yes
FMM.288	SA	Brazil	Brasilia	-15.94516	-47.9314	1085.70	F	15.50	93.0	0.00179	-18.1	7.1	5.072092141	-2.263997717	MVZ.Mamm:231337	yes
FMM.291	SA	Brazil	Brasilia	-15.94004	-47.94055833	1058.88	F	12.00	89.0	0.00152	-19.2	5.2	5.072092141	-2.263997717	MVZ.Mamm:231340	yes
FMM.292	SA	Brazil	Brasilia	-15.60442	-47.96889722	1228.95	F	10.50	87.0	0.00139	-14.2	7.3	4.443718995	-3.12540741	MVZ.Mamm:231347	yes
FMM.294	SA	Brazil	Brasilia	-15.58061	-48.01786111	1263.40	M	11.00	76.0	0.00190	-12.3	6.9	4.401702121	-2.997374681	MVZ.Mamm:231349	yes

\* Samples were excluded from all analyses when the samples had < 5500 reads per sample.

**Table S2.** Eigenvalues and eigenvectors for climate PC1 and PC2

		Climate PC1	Climate PC2
		Eigenvalues	4.12
		Percent (%)	21.69
Eigenvectors*	BIO1 = Annual Mean Temperature	<b>0.30244</b>	-0.06015
	BIO2 = Mean Diurnal Range (Mean of monthly (max temp - min temp))	-0.12879	-0.16405
	BIO3 = Isothermality (BIO2/BIO7) ( $\times 100$ )	0.27784	-0.19438
	BIO4 = Temperature Seasonality (standard deviation $\times 100$ )	-0.27382	0.12780
	BIO5 = Max Temperature of Warmest Month	0.12532	-0.04359
	BIO6 = Min Temperature of Coldest Month	<b>0.30884</b>	-0.08821
	BIO7 = Temperature Annual Range (BIO5-BIO6)	-0.26735	0.07215
	BIO8 = Mean Temperature of Wettest Quarter	0.21223	0.09011
	BIO9 = Mean Temperature of Driest Quarter	0.21923	-0.21119
	BIO10 = Mean Temperature of Warmest Quarter	0.20370	0.00978
	BIO11 = Mean Temperature of Coldest Quarter	<b>0.31154</b>	-0.09765
	BIO12 = Annual Precipitation	0.27584	0.21048
	BIO13 = Precipitation of Wettest Month	0.29447	0.06152
	BIO14 = Precipitation of Driest Month	0.01928	<b>0.47595</b>
	BIO15 = Precipitation Seasonality (Coefficient of Variation)	0.13626	-0.30192
	BIO16 = Precipitation of Wettest Quarter	0.29263	0.06653
	BIO17 = Precipitation of Driest Quarter	0.04953	<b>0.47463</b>
	BIO18 = Precipitation of Warmest Quarter	0.20368	0.28908
	BIO19 = Precipitation of Coldest Quarter	0.11932	<b>0.39886</b>

\* The top three climatic variables that have the highest eigenvectors are bolded for PC1 and PC2.

# MOLECULAR ECOLOGY

**Table S3.** Sample information of lab-reared individuals (n=120). (continued)

SampleID	Colony	Sex	Weight (g)	Carbon ( $\delta^{13}\text{C}$ )	Nitrogen ( $\delta^{15}\text{N}$ )	Included in analyses?
NY01F1	New_York_Lab	F	17.8	-19.051485	6.38205111	yes
NY01F2	New_York_Lab	F	17.9	-19.051485	6.38205111	yes
NY01M1	New_York_Lab	M	20.1	-19.051485	6.38205111	yes
NY01M2	New_York_Lab	M	21.5	-19.051485	6.38205111	yes
NY02F1	New_York_Lab	F	13.5	-19.051485	6.38205111	yes
NY02F2	New_York_Lab	F	16.8	-19.051485	6.38205111	yes
NY02M1	New_York_Lab	M	21.0	-19.051485	6.38205111	yes
NY02M2	New_York_Lab	M	24.8	-19.051485	6.38205111	yes
NY03F1	New_York_Lab	F	17.9	-19.051485	6.38205111	yes
NY03F2	New_York_Lab	F	22.1	-19.051485	6.38205111	yes
NY03M1	New_York_Lab	M	20.1	-19.051485	6.38205111	yes
NY03M2	New_York_Lab	M	22.0	-19.051485	6.38205111	yes
NY04F1	New_York_Lab	F	16.4	-19.051485	6.38205111	yes
NY04F2	New_York_Lab	F	17.8	-19.051485	6.38205111	yes
NY04M1	New_York_Lab	M	22.6	-19.051485	6.38205111	yes
NY04M2	New_York_Lab	M	23.9	-19.051485	6.38205111	yes
NY05F1	New_York_Lab	F	17.5	-19.051485	6.38205111	yes
NY05M1	New_York_Lab	M	23.4	-19.051485	6.38205111	yes
NY05M2	New_York_Lab	M	25.1	-19.051485	6.38205111	yes
NY05M3	New_York_Lab	M	21.9	-19.051485	6.38205111	yes
NY06F1	New_York_Lab	F	15.0	-19.051485	6.38205111	yes
NY06F2	New_York_Lab	F	16.5	-19.051485	6.38205111	yes
NY06M1	New_York_Lab	M	24.2	-19.051485	6.38205111	yes
NY06M2	New_York_Lab	M	25.2	-19.051485	6.38205111	yes
NY07F1	New_York_Lab	F	20.1	-19.051485	6.38205111	yes
NY07F2	New_York_Lab	F	20.0	-19.051485	6.38205111	yes
NY07M1	New_York_Lab	M	20.9	-19.051485	6.38205111	yes
NY07M2	New_York_Lab	M	24.8	-19.051485	6.38205111	yes
NY08F1	New_York_Lab	F	13.8	-19.051485	6.38205111	yes
NY08F2	New_York_Lab	F	15.0	-19.051485	6.38205111	yes
NY08M1	New_York_Lab	M	17.0	-19.051485	6.38205111	yes
NY08M2	New_York_Lab	M	16.2	-19.051485	6.38205111	yes
NY09F1	New_York_Lab	F	21.1	-19.051485	6.38205111	yes
NY09F2	New_York_Lab	F	23.2	-19.051485	6.38205111	yes
NY09M1	New_York_Lab	M	24.5	-19.051485	6.38205111	yes
NY09M2	New_York_Lab	M	27.0	-19.051485	6.38205111	yes
NY10F1	New_York_Lab	F	17.0	-19.051485	6.38205111	yes
NY10F2	New_York_Lab	F	20.9	-19.051485	6.38205111	yes
NY10M1	New_York_Lab	M	24.2	-19.051485	6.38205111	yes
NY10M2	New_York_Lab	M	25.5	-19.051485	6.38205111	yes
BR01F1	Brazil_Lab	F	14.7	-18.90751	6.19754486	yes
BR01F2	Brazil_Lab	F	15.2	-18.90751	6.19754486	yes
BR01M1	Brazil_Lab	M	16.5	-18.90751	6.19754486	yes
BR01M2	Brazil_Lab	M	15.5	-18.90751	6.19754486	yes
BR02F1	Brazil_Lab	F	13.5	-18.90751	6.19754486	yes
BR02F2	Brazil_Lab	F	10.1	-18.90751	6.19754486	yes
BR02F3	Brazil_Lab	F	13.2	-18.90751	6.19754486	yes
BR02M1	Brazil_Lab	M	15.8	-18.90751	6.19754486	yes
BR03F1	Brazil_Lab	F	12.6	-18.90751	6.19754486	yes
BR03F2	Brazil_Lab	F	12.4	-18.90751	6.19754486	yes
BR03M1	Brazil_Lab	M	16.1	-18.90751	6.19754486	yes
BR03M2	Brazil_Lab	M	17.9	-18.90751	6.19754486	yes
BR04F1	Brazil_Lab	F	9.5	-18.90751	6.19754486	yes
BR04F2	Brazil_Lab	F	15.2	-18.90751	6.19754486	yes
BR04M1	Brazil_Lab	M	15.5	-18.90751	6.19754486	yes
BR04M2	Brazil_Lab	M	16.0	-18.90751	6.19754486	yes
BR05F1	Brazil_Lab	F	10.0	-18.90751	6.19754486	yes
BR05F2	Brazil_Lab	F	12.9	-18.90751	6.19754486	yes
BR05F3	Brazil_Lab	F	12.2	-18.90751	6.19754486	yes

\* Samples were excluded from all analyses when the samples had < 5500 reads per sample.

# MOLECULAR ECOLOGY

**Table S3.** Sample information of lab-reared individuals (n=120). (continued)

SampleID	Colony	Sex	Weight (g)	Carbon ( $\delta^{13}\text{C}$ )	Nitrogen ( $\delta^{15}\text{N}$ )	Included in analyses?
BR05M1	Brazil_Lab	M	12.5	-18.90751	6.19754486	yes
BR06F1	Brazil_Lab	F	12.0	-18.90751	6.19754486	yes
BR06F2	Brazil_Lab	F	12.9	-18.90751	6.19754486	yes
BR06M1	Brazil_Lab	M	15.5	-18.90751	6.19754486	yes
BR06M2	Brazil_Lab	M	15.1	-18.90751	6.19754486	yes
BR07F1	Brazil_Lab	F	13.1	-18.90751	6.19754486	no
BR07F2	Brazil_Lab	F	10.5	-18.90751	6.19754486	yes
BR07F3	Brazil_Lab	F	10.1	-18.90751	6.19754486	yes
BR07M1	Brazil_Lab	M	14.2	-18.90751	6.19754486	yes
BR08F1	Brazil_Lab	F	12.1	-18.90751	6.19754486	yes
BR08F2	Brazil_Lab	F	13.3	-18.90751	6.19754486	yes
BR08M1	Brazil_Lab	M	17.5	-18.90751	6.19754486	no
BR08M2	Brazil_Lab	M	12.5	-18.90751	6.19754486	yes
BR09F1	Brazil_Lab	F	12.6	-18.90751	6.19754486	yes
BR09F2	Brazil_Lab	F	13.0	-18.90751	6.19754486	yes
BR09F3	Brazil_Lab	F	14.0	-18.90751	6.19754486	yes
BR09M1	Brazil_Lab	M	16.4	-18.90751	6.19754486	yes
BR10F1	Brazil_Lab	F	11.8	-18.90751	6.19754486	yes
BR10F2	Brazil_Lab	F	9.5	-18.90751	6.19754486	yes
BR10M1	Brazil_Lab	M	15.6	-18.90751	6.19754486	yes
BR10M2	Brazil_Lab	M	15.0	-18.90751	6.19754486	yes
FL01F1	Florida_Lab	F	16.6	-18.977084	6.68198582	yes
FL01F2	Florida_Lab	F	19.0	-18.977084	6.68198582	yes
FL01M1	Florida_Lab	M	23.6	-18.977084	6.68198582	yes
FL01M2	Florida_Lab	M	21.0	-18.977084	6.68198582	yes
FL02F1	Florida_Lab	F	15.7	-18.977084	6.68198582	yes
FL02F2	Florida_Lab	F	16.2	-18.977084	6.68198582	yes
FL02M1	Florida_Lab	M	20.2	-18.977084	6.68198582	yes
FL02M2	Florida_Lab	M	23.5	-18.977084	6.68198582	yes
FL03F1	Florida_Lab	F	17.5	-18.977084	6.68198582	yes
FL03F2	Florida_Lab	F	20.5	-18.977084	6.68198582	yes
FL03M1	Florida_Lab	M	25.0	-18.977084	6.68198582	yes
FL03M2	Florida_Lab	M	27.2	-18.977084	6.68198582	yes
FL04F1	Florida_Lab	F	12.9	-18.977084	6.68198582	yes
FL04F2	Florida_Lab	F	15.5	-18.977084	6.68198582	yes
FL04M1	Florida_Lab	M	20.0	-18.977084	6.68198582	yes
FL04M2	Florida_Lab	M	20.9	-18.977084	6.68198582	yes
FL05F1	Florida_Lab	F	11.9	-18.977084	6.68198582	yes
FL05F2	Florida_Lab	F	11.8	-18.977084	6.68198582	yes
FL05M1	Florida_Lab	M	19.5	-18.977084	6.68198582	yes
FL05M2	Florida_Lab	M	15.8	-18.977084	6.68198582	yes
FL06F1	Florida_Lab	F	16.1	-18.977084	6.68198582	yes
FL06F2	Florida_Lab	F	12.5	-18.977084	6.68198582	yes
FL06M1	Florida_Lab	M	19.2	-18.977084	6.68198582	yes
FL06M2	Florida_Lab	M	14.2	-18.977084	6.68198582	yes
FL07F1	Florida_Lab	F	13.5	-18.977084	6.68198582	yes
FL07F2	Florida_Lab	F	15.6	-18.977084	6.68198582	yes
FL07M1	Florida_Lab	M	15.4	-18.977084	6.68198582	yes
FL07M2	Florida_Lab	M	16.9	-18.977084	6.68198582	yes
FL08F1	Florida_Lab	F	18.5	-18.977084	6.68198582	yes
FL08F2	Florida_Lab	F	22.0	-18.977084	6.68198582	yes
FL08M1	Florida_Lab	M	21.1	-18.977084	6.68198582	no
FL08M2	Florida_Lab	M	21.5	-18.977084	6.68198582	no
FL09F1	Florida_Lab	F	15.0	-18.977084	6.68198582	yes
FL09F2	Florida_Lab	F	13.0	-18.977084	6.68198582	yes
FL09M1	Florida_Lab	M	17.5	-18.977084	6.68198582	yes
FL09M2	Florida_Lab	M	20.1	-18.977084	6.68198582	yes
FL10F1	Florida_Lab	F	15.5	-18.977084	6.68198582	yes
FL10F2	Florida_Lab	F	15.0	-18.977084	6.68198582	yes
FL10M1	Florida_Lab	M	18.8	-18.977084	6.68198582	yes
FL10M2	Florida_Lab	M	18.4	-18.977084	6.68198582	yes

\* Samples were excluded from all analyses when the samples had < 5500 reads per sample.

# MOLECULAR ECOLOGY

**Table S4.** Samples selected for characterizing levels of SCFAs (100 - 112 day old animals).

Origin	Source latitude	Line ID	Sex	n	Age (days)	
					Mean	SD
Edmonton, Alberta, Canada	53.546	EDM	M	5	106.6	3.8
Saratoga Springs, New York, USA	43.083	SAR	M	7	106.4	3.9
Tucson, Arizona, USA	32.223	TUC	M	6	105.0	4.3
Gainesville, Florida, USA	29.652	GAI	M	7	106.9	4.1
Manaus, Amazonas, Brazil	-3.119	MAN	M	7	106.6	3.3



# MOLECULAR ECOLOGY

**Table S5.** Associations between Bray-Curtis dissimilarity and variables using 100% and 94% OTUs based on ADONIS.

Variables	100% OTUs (ASVs)				94% OTUs			
	Independent*		Nested*		Independent*		Nested*	
	R <sup>2</sup>	P-value	R <sup>2</sup>	P-value	R <sup>2</sup>	P-value	R <sup>2</sup>	P-value
BMI	0.023	< 0.0001	0.019	< 0.0001	0.032	< 0.0001	0.028	< 0.0001
Weight	0.014	< 0.0001	0.009	0.0019	0.017	0.0002	0.014	0.0003
Carbon	0.011	0.0016	0.011	0.0002	0.011	0.0289	0.011	0.0063
Nitrogen	0.011	0.0014	0.008	0.0093	0.009	0.0714	0.007	0.1044
Climate PC1	0.038	< 0.0001	0.030	< 0.0001	0.025	< 0.0001	0.025	< 0.0001
Climate PC2	0.015	< 0.0001	0.011	0.0004	0.018	0.0003	0.010	0.0081
Locality2	0.222	< 0.0001	0.171	< 0.0001	0.252	< 0.0001	0.198	< 0.0001

\* ADONIS was ran independently for each of the variables (Independent) and including other variables as covariates (Nested)

# MOLECULAR ECOLOGY

**Table S6.** Correlations with absolute latitude and metadata.

Variables	All samples (n = 161)			East-NA (n = 49)			West-NA (n = 50)			SA (n = 62)		
	rho	p-value	FDR-p	rho	p-value	FDR-p	rho	p-value	FDR-p	rho	p-value	FDR-p
Climate PC1	<b>-0.91</b>	<.0001	<.0004	<b>-0.97</b>	<.0001	<.0004	<b>-0.87</b>	<.0001	<.0004	<b>-0.98</b>	<.0001	<.0004
Climate PC2	0.08	0.30	0.360	<b>0.36</b>	0.011	0.029	<b>0.85</b>	<.0001	<.0004	0.12	0.34	0.389
Body weight	<b>0.27</b>	0.0005	0.002	<b>0.34</b>	0.016	0.038	-0.28	0.061	0.113	0.26	0.045	0.090
Body mass index (BMI)	<b>0.31</b>	<.0001	<.0004	0.26	0.073	0.125	-0.17	0.26	0.328	0.18	0.15	0.225
Diet (Carbon)	<b>-0.19</b>	0.018	0.039	0.17	0.24	0.320	<b>-0.37</b>	0.0088	0.026	-0.21	0.11	0.176
Diet (Nitrogen)	-0.10	0.21	0.296	0.09	0.55	0.600	0.00	0.98	0.980	-0.01	0.95	0.980

Raw p-values and FDR corrected p-values are shown. Significant rho values are in bold based on FDR-corrected p-values.

# MOLECULAR ECOLOGY

**Table S7.** Correlations between climate PCs and body size measurements.

Variables	All samples (n = 161)		East-NA (n = 49)		West-NA (n = 50)		SA (n = 62)	
	rho	p-value	rho	p-value	rho	p-value	rho	p-value
Climate PC1 x Weight	<b>-0.34</b>	<b>&lt;.0001</b>	<b>-0.37</b>	<b>0.0087</b>	0.30	0.0439	<b>-0.26</b>	<b>0.0407</b>
Climate PC1 x BMI	<b>-0.36</b>	<b>&lt;.0001</b>	-0.28	0.0506	0.19	0.2035	-0.20	0.1166
Climate PC2 x Weight	-0.04	0.6477	-0.10	0.5157	-0.15	0.3161	0.16	0.2117
Climate PC2 x BMI	<b>0.26</b>	<b>0.0009</b>	0.04	0.7948	-0.04	0.7901	0.17	0.1861

# MOLECULAR ECOLOGY

**Table S8.** Correlations between predictor variables and Bray-Curtis dissimilarity within each transect using Mantel test.

Predictor variables	East-NA (n = 49)			West-NA (n = 50)			SA (n = 62)		
	Mantel r	p-value	FDR-p	Mantel r	p-value	FDR-p	Mantel r	p-value	FDR-p
Geographic distance	0.088	0.033	0.089	<b>0.148</b>	0.005	0.021	<b>0.404</b>	< 0.001	< 0.01
Climate PC1	0.103	0.055	0.128	<b>0.172</b>	0.005	0.021	<b>0.425</b>	< 0.001	< 0.01
Climate PC2	0.079	0.198	0.297	0.105	0.033	0.089	0.029	0.465	0.574
Body weight	0.085	0.151	0.264	0.173	0.034	0.089	0.082	0.254	0.356
BMI	<b>0.197</b>	0.004	0.021	0.138	0.102	0.195	0.065	0.377	0.495
Carbon	0.112	0.074	0.155	0.089	0.167	0.270	-0.025	0.647	0.715
Nitrogen	0.047	0.560	0.653	0.007	0.94	0.940	-0.026	0.697	0.732

Raw p-values and FDR corrected p-values are shown. Significant rho values are in bold based on FDR-corrected p-values.

# MOLECULAR ECOLOGY

**Table S9.** Correlations between predictor variables and Bray-Curtis dissimilarity within each transect using Partial Mantel test controlling for geographic distance.

Predictor variables	East-NA (n = 49)			West-NA (n = 50)			SA (n = 62)		
	Mantel r	p-value	FDR-p	Mantel r	p-value	FDR-p	Mantel r	p-value	FDR-p
Climate PC1	0.057	0.170	0.306	0.105	0.079	0.221	0.146	0.011	0.099
Climate PC2	0.044	0.235	0.353	0.027	0.333	0.428	-0.013	0.605	0.641
Body weight	0.075	0.098	0.221	0.177	0.022	0.132	0.084	0.128	0.256
BMI	<b>0.192</b>	0.002	0.036	0.141	0.068	0.221	0.063	0.201	0.329
Carbon	0.116	0.041	0.185	0.084	0.094	0.221	-0.024	0.682	0.682
Nitrogen	0.042	0.292	0.404	0.021	0.382	0.440	0.012	0.391	0.440

Raw p-values and FDR corrected p-values are shown. Significant rho values are in bold based on FDR-corrected p-values.

# MOLECULAR ECOLOGY

**Table S10.** Repeated associations between microbial measurements and latitude.

Microbial measurements <sup>1</sup>	Spearman rho correlation with latitude								Fisher's combined p-value	
	All (n = 161)		East-NA (n = 49)		West-NA (n = 50)		SA (n = 62)		raw p-value	FDR corrected
	rho	p-value	rho	p-value	rho	p-value	rho	p-value		
<b>1__Firmicutes_2__Clostridia_3__Clostridiales_4__Ruminococaceae_5__Ruminiclostridium_6__uncultured_bacterium</b>	-0.3011	0.0001	-0.1654	0.2562	-0.3210	0.0231	-0.73855	7.31E-12	2.18E-11	3.49E-10
<b>1__Firmicutes_2__Clostridia_3__Clostridiales_4__Ruminococaceae_5__Oscillibacter_6__unidentified</b>	-0.32428	2.71E-05	-0.1249	0.3925	-0.2299	0.1082	-0.68551	7.90E-10	1.06E-08	8.48E-08
<b>1__Firmicutes_2__Clostridia_3__Clostridiales_4__Ruminococaceae_5__Oscillibacter_6__uncultured_bacterium</b>	-0.2828	0.0003	-0.1927	0.1846	-0.0283	0.8451	-0.68556	7.87E-10	3.49E-08	1.86E-07
<b>1__Firmicutes_2__Clostridia_3__Clostridiales_4__Ruminococaceae</b>	-0.3203	3.44E-05	-0.0665	0.6499	-0.1392	0.3349	-0.65412	8.15E-09	3.98E-07	1.59E-06
<b>1__Bacteroidetes_2__Bacteroidia_3__Bacteroidales_4__Bacteroidaceae_5__Bacteroides</b>	-0.1327	0.0934	-0.0507	0.7293	-0.3565	0.0110	-0.4317	0.0005	0.0003	0.0011
<b>1__Firmicutes_2__Clostridia_3__Clostridiales_4__Lachnospiraceae_5__Lachnospiraceae_NK4A136_group_6__uncultured_bacterium</b>	-0.1102	0.1641	-0.0633	0.6656	-0.2882	0.0424	-0.4153	0.0008	0.0015	0.0041
<b>1__Firmicutes_2__Clostridia_3__Clostridiales_4__Lachnospiraceae_5__uncultured_6__Clostridium_sp._Culture.41</b>	-0.0391	0.6223	-0.2703	0.0604	-0.0291	0.8412	-0.4125	0.0009	0.0027	0.0062
<b>1__Bacteroidetes_2__Bacteroidia_3__Bacteroidales_4__Muribaculaceae_5__uncultured_Bacteroidales_bacterium_6__uncultured_Bacteroidales_bacterium</b>	-0.2638	0.0007	-0.3932	0.0052	-0.2193	0.1260	-0.1357	0.2928	0.0089	0.0177
<b>1__Firmicutes_2__Bacilli_3__Lactobacillales_4__Lactobacillaceae_5__Lactobacillus</b>	0.1109	0.1614	0.1898	0.1914	0.2854	0.0445	0.1810	0.1592	0.0399	0.0709
<b>1__Bacteroidetes</b>	-0.1497	0.0581	-0.2732	0.0579	-0.0061	0.9665	-0.2553	0.0452	0.0628	0.0917
<b>1__Cyanobacteria</b>	0.2639	0.0007	0.0367	0.8025	0.3952	0.0045	0.0496	0.7018	0.0631	0.0917
<b>1__Firmicutes_2__Clostridia_3__Clostridiales_4__Lachnospiraceae_5__Lachnospiraceae_UCG.001_6__uncultured_bacterium</b>	-0.2552	0.0011	-0.0056	0.9697	-0.1392	0.3351	-0.2762	0.0298	0.1586	0.2115
<b>1__Proteobacteria_2__Deltaproteobacteria_3__Desulfovibrionales_4__Desulfovibrionaceae_5__Desulfovibrio</b>	-0.0734	0.3547	0.2704	0.0602	0.0287	0.8431	0.0539	0.6773	0.3455	0.4252
<b>1__Deferribacteres_2__Deferribacteres_3__Deferribacterales_4__Deferribacteraceae_5__Mucispirillum_6__uncultured_bacterium</b>	-0.2275	0.0037	-0.0012	0.9935	-0.1049	0.4686	-0.2031	0.1133	0.4363	0.4834
<b>faith_pd (alpha-diversity)</b>	-0.0648	0.4139	0.2053	0.1567	0.0339	0.8154	0.0989	0.4443	0.4531	0.4834
<b>1__Proteobacteria</b>	0.0137	0.8632	0.0737	0.6146	0.1373	0.3417	0.0976	0.4506	0.5808	0.5808

<sup>1</sup> 16 out of 58 microbial measurements are listed that showed consistent slopes across all three latitudinal transects. Microbial measurements in bold indicate significant correlation with latitude based on FDR corrected Fisher's combined p-value.

# MOLECULAR ECOLOGY

**Table S11.** Correlations between the log ratio of Firmicutes/Bacteroidetes (F/B ratio) and metadata in wild-caught and lab-reared individuals.

Variables	Wild								Lab (n = 116)	
	All (n = 161)		East-NA (n = 49)		West-NA (n = 50)		SA (n = 62)		rho	p-value
	rho	p-value	rho	p-value	rho	p-value	rho	p-value		
Body weight	0.108	0.177	0.196	0.177	0.265	0.072	-0.063	0.628	0.066	0.483
Body weight (residual)*	-0.128	0.108	-0.027	0.856	-0.182	0.220	-0.096	0.459	NA	NA
BMI	0.164	0.039	0.261	0.070	0.256	0.082	-0.128	0.320	NA	NA
BMI (residual)*	0.137	0.085	0.233	0.107	0.257	0.081	-0.308	0.015	NA	NA
Latitude	0.154	0.051	0.186	0.201	-0.118	0.413	0.250	0.040	NA	NA

\* Correlation between log(F/B ratio) and residual values between body size measurements and latitude.

# MOLECULAR ECOLOGY

**Table S12.** Repeated associations between microbial measurements and residual body weight accounted for the effects of latitude.

Microbial measurements <sup>1</sup>	Spearman rho correlation with residual body weight								Fisher's combined p-value	
	All (n = 161)		East-NA (n = 49)		West-NA (n = 50)		SA (n = 62)		raw p-value	FDR corrected
	rho	p-value	rho	p-value	rho	p-value	rho	p-value		
1__Bacteroidetes_2__Bacteroidia_3__Bacteroidales_4__Rikenellaceae_5__Rikenellaceae_RC9_gut_group_6__uncultured_organism_faith_pd (alpha-diversity)	0.2008	0.0114	0.2081	0.1514	0.2948	0.0442	0.1636	0.2038	0.0401	0.6009
1__Bacteroidetes_2__Bacteroidia_3__Bacteroidales_4__Rikenellaceae_5__Rikenellaceae_RC9_gut_group_6__uncultured_bacterium	0.2159	0.0065	0.2724	0.0585	0.1015	0.4959	0.0955	0.4595	0.1952	0.7090
1__Firmicutes_2__Clostridia_3__Clostridiales_4__Ruminococcaceae_5__Ruminococcaceae_UCG.014	0.0986	0.2179	0.0625	0.6695	0.2664	0.0703	0.0661	0.6097	0.3116	0.7090
1__Firmicutes_2__Clostridia_3__Clostridiales_4__Lachnospiraceae_5__Lachnospiraceae_NK4A136_group	-0.1386	0.0824	-0.1206	0.4090	-0.2526	0.0868	-0.0177	0.8914	0.3295	0.7090
1__Bacteroidetes_2__Bacteroidia_3__Bacteroidales_4__Tannerellaceae_5__Parabacteroides_6__uncultured_bacterium	0.0789	0.3244	0.0815	0.5778	0.2094	0.1577	0.1050	0.4166	0.3652	0.7090
1__Firmicutes_2__Clostridia_3__Clostridiales_4__Lachnospiraceae_5__Tyzzerella_6__uncultured_bacterium	-0.1714	0.0313	-0.1416	0.3306	-0.1074	0.4711	-0.1138	0.3786	0.4621	0.7090
1__Firmicutes_2__Clostridia_3__Clostridiales_4__Lachnospiraceae_5__Oscillibacter	0.0447	0.5773	0.2186	0.1312	0.0591	0.6933	0.0582	0.6530	0.4639	0.7090
1__Firmicutes_2__Clostridia_3__Clostridiales_4__Ruminococcaceae_5__Ruminiclostridium_6__uncultured_bacterium	0.1026	0.1995	0.0305	0.8350	0.0778	0.6030	0.1898	0.1396	0.5046	0.7090
1__Firmicutes_2__Clostridia_3__Clostridiales_4__Ruminococcaceae_5__Ruminiclostridium_6__uncultured_bacterium	0.0583	0.4667	0.0947	0.5175	0.1060	0.4784	0.1339	0.2994	0.5179	0.7090
1__Bacteroidetes_2__Bacteroidia_3__Bacteroidales_4__Marinifilaceae_5__Odoribacter_6__uncultured_bacterium	0.0991	0.2152	0.2110	0.1455	0.0165	0.9121	0.0749	0.5630	0.5200	0.7090
1__Firmicutes_2__Clostridia_3__Clostridiales_4__Lachnospiraceae_5__Lachnoclostridium	0.0597	0.4562	0.0825	0.5730	0.0757	0.6132	0.0572	0.6588	0.8180	0.9521
1__Firmicutes_2__Clostridia_3__Clostridiales_4__Lachnospiraceae_5__GCA.900066575_6__uncultured_bacterium	0.0097	0.9041	0.0771	0.5986	0.0955	0.5233	0.0394	0.7609	0.8252	0.9521
1__Firmicutes_2__Clostridia_3__Clostridiales_4__Lachnospiraceae_5__uncultured_bacterium	-0.0680	0.3957	-0.0139	0.9243	-0.0976	0.5142	-0.0050	0.9693	0.9561	0.9692
1__Firmicutes_2__Clostridia_3__Clostridiales_4__Ruminococcaceae_5__Ruminiclostridium_9	-0.0421	0.5993	-0.0592	0.6862	-0.0459	0.7593	-0.0031	0.9806	0.9692	0.9692

<sup>1</sup> 15 out of 58 microbial measurements are listed that showed consistent slopes across all three latitudinal transects.



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**Table S13.** Repeated associations between microbial measurements and residual BMI accounted for the effects of latitude.

Microbial measurements <sup>1</sup>	Spearman rho correlation with residual BMI								Fisher's combined p-value	
	All (n = 161)		East-NA (n = 49)		West-NA (n = 50)		SA (n = 62)		raw p-value	FDR corrected
	rho	p-value	rho	p-value	rho	p-value	rho	p-value		
<b>1__Firmicutes_2__Clostridia_3__Clostridiales_4__Ruminococcaceae_5__Ruminiclostridium_6__uncultured_bacterium</b>	0.4284	1.97E-08	0.0565	0.6996	0.4277	0.0027	0.3643	0.0036	0.0006	0.0154
<b>1__Bacteroidetes_2__Bacteroidia_3__Bacteroidales_4__Rikenellaceae_5__Rikenella_6__uncultured_bacterium</b>	0.3226	3.57E-05	0.1200	0.4113	0.3036	0.0380	0.3756	0.0026	0.0026	0.0345
<b>1__Bacteroidetes_2__Bacteroidia_3__Bacteroidales_4__Rikenellaceae_5__Rikenellaceae_RC9_gut_group_6__uncultured_organism</b>	0.1584	0.0469	0.2748	0.0560	0.2521	0.0873	0.2900	0.0222	0.0056	0.0409
<b>1__Firmicutes_2__Clostridia_3__Clostridiales_4__Ruminococcaceae_5__Oscillibacter_6__unidentified</b>	0.2632	0.0008	0.2954	0.0393	0.0788	0.5985	0.3516	0.0051	0.0061	0.0409
<b>shannon (alpha-diversity)</b>	0.4434	7.84E-09	0.0191	0.8963	0.4123	0.0043	0.2586	0.0427	0.0078	0.0419
<b>1__Firmicutes_2__Clostridia_3__Clostridiales_4__Lachnospiraceae_5__Lachnospiraceae_NK4A136_group</b>	0.4183	4.52E-08	0.2959	0.0390	0.1114	0.4561	0.3118	0.0136	0.0107	0.0480
observed_otus (alpha-diversity)	-0.0131	0.8706	0.0459	0.7540	0.3334	0.0220	0.2674	0.0356	0.0213	0.0822
1__Proteobacteria_2__Deltaproteobacteria_3__Desulfovibrionales_4__Desulfovibrionaceae_5__uncultured_6__uncultured_Desulfovibrionales_bacterium	0.2530	0.0013	0.0928	0.5261	0.4477	0.0016	0.0222	0.8642	0.0250	0.0844
1__Tenericutes	0.2468	0.0018	0.2633	0.0676	0.3017	0.0393	0.1230	0.3408	0.0295	0.0850
1__Proteobacteria_2__Deltaproteobacteria_3__Desulfovibrionales_4__Desulfovibrionaceae_5__uncultured_6__uncultured_bacterium	0.1063	0.1839	0.3679	0.0093	0.0189	0.8996	0.2006	0.1180	0.0315	0.0850
faith_pd (alpha-diversity)	-0.0968	0.2259	0.1126	0.4401	0.3921	0.0068	0.0389	0.7635	0.0581	0.1255
1__Firmicutes_2__Clostridia_3__Clostridiales_4__Ruminococcaceae_5__Ruminiclostridium_9	0.2408	0.0023	0.1732	0.2340	0.2463	0.0951	0.2081	0.1045	0.0592	0.1255
1__Firmicutes_2__Clostridia_3__Clostridiales_4__Lachnospiraceae_5__Lachnospiraceae_NK4A136_group_6__uncultured_bacterium	0.4040	1.41E-07	0.0804	0.5831	0.1981	0.1820	0.2864	0.0240	0.0633	0.1255
1__Firmicutes_2__Clostridia_3__Clostridiales_4__Lachnospiraceae_5__uncultured	0.3359	1.6E-05	0.0476	0.7453	0.1155	0.4394	0.3334	0.0081	0.0651	0.1255
1__Bacteroidetes_2__Bacteroidia_3__Bacteroidales_4__Marinifilaceae_5__Odoribacter_6__uncultured_bacterium	0.1676	0.0353	0.1499	0.3040	0.0074	0.9606	0.3197	0.0113	0.0761	0.1369
1__Deferribacteres_2__Deferribacteres_3__Deferribacterales_4__Deferribacteraceae_5__Mucispirillum_6__uncultured_bacterium	-0.0325	0.6849	0.0749	0.6092	0.2015	0.1745	0.2453	0.0546	0.1127	0.1902
1__Bacteroidetes_2__Bacteroidia_3__Bacteroidales_4__Rikenellaceae_5__Alistipes_6__uncultured_bacterium	0.0595	0.4576	0.2377	0.1001	0.0592	0.6928	0.2028	0.1139	0.1387	0.2083
1__Firmicutes_2__Clostridia_3__Clostridiales_4__Ruminococcaceae_5__Ruminiclostridium_9_6__uncultured_bacterium	0.0123	0.8778	0.0581	0.6917	0.2185	0.1400	0.2163	0.0913	0.1494	0.2083
1__Firmicutes_2__Clostridia_3__Clostridiales_4__Ruminococcaceae_5__uncultured	0.1440	0.0711	0.1235	0.3978	0.1821	0.2207	0.2099	0.1016	0.1503	0.2083
1__Epsilonbacteraeota	0.1632	0.0405	0.0148	0.9196	0.0643	0.6668	0.3073	0.0151	0.1543	0.2083
1__Epsilonbacteraeota_2__Campylobacteria_3__Campylobacterales_4__Helicobacteraceae_5__Helicobacter	0.1591	0.0459	0.0090	0.9512	0.0525	0.7253	0.3073	0.0151	0.1667	0.2143
1__Firmicutes_2__Clostridia_3__Clostridiales_4__Lachnospiraceae_5__Lachnoclostridium_6__Dorea_sp_5.2	0.2540	0.0013	0.2015	0.1650	0.0573	0.7021	0.1732	0.1783	0.2562	0.3145
1__Bacteroidetes_2__Bacteroidia_3__Bacteroidales_4__Muribaculaceae_5__uncultured_Bacteroidales_bacterium_6__uncultured_Bacteroidales_bacterium	-0.1226	0.1249	-0.2338	0.1059	-0.0235	0.8752	-0.1411	0.2739	0.2900	0.3404
1__Firmicutes_2__Clostridia_3__Clostridiales_4__Ruminococcaceae_5__uncultured_6__unidentified	0.0400	0.6180	0.1053	0.4716	0.0073	0.9610	0.2232	0.0812	0.3590	0.4039
1__Firmicutes_2__Clostridia_3__Clostridiales_4__Peptococcaceae_5__uncultured_6__uncultured_bacterium	0.4007	1.82E-07	0.1441	0.3231	0.0111	0.9409	0.1933	0.1323	0.3771	0.4073
1__Bacteroidetes_2__Bacteroidia_3__Bacteroidales_4__Bacteroidaceae_5__Bacteroides	0.0714	0.3730	-0.2188	0.1310	-0.0630	0.6730	-0.0616	0.6346	0.4498	0.4671
1__Firmicutes_2__Clostridia_3__Clostridiales_4__Lachnospiraceae_5__uncultured_6__Clostridium_sp_Culture41	0.2515	0.0014	0.1897	0.1918	0.0034	0.9818	0.0307	0.8128	0.7100	0.7100

<sup>1</sup> 27 out of 58 microbial measurements are listed that showed consistent slopes across all three latitudinal transects. Microbial measurements in bold indicate significant correlation with residual values between BMI and latitude based on FDR corrected Fisher's combined p-value.

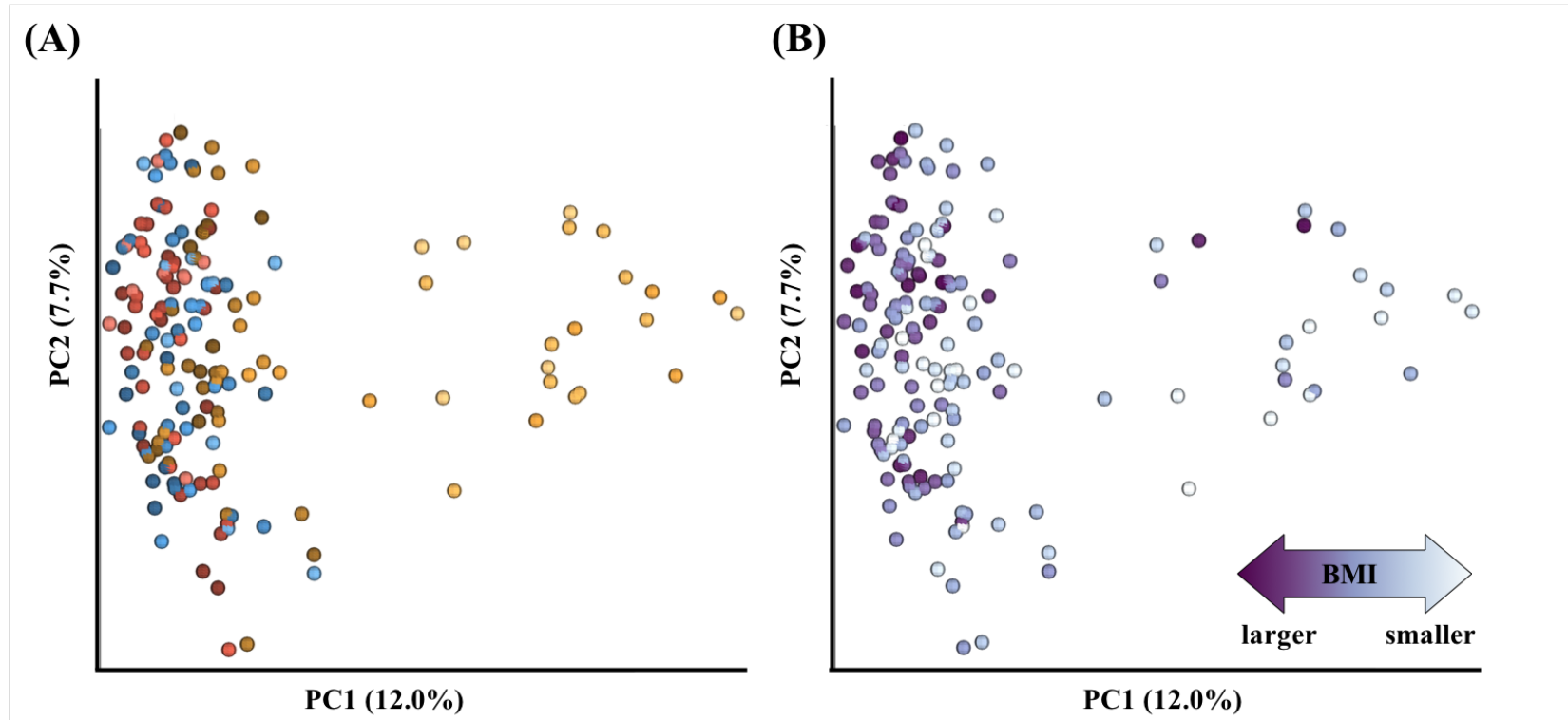
# MOLECULAR ECOLOGY

**Table S14.** Significant associations between microbial measurements and body weight in lab reared individuals.

Microbial measurements <sup>1</sup>	Spearman rho correlation with body weight (g)		
	Lab (n = 116)		
	rho	p-value	FDR corrected p-value
<b>1__Bacteroidetes_2__Bacteroidia_3__Bacteroidales_4__Muribaculaceae_5__Muribaculum_6__uncultured_bacterium</b>	0.618	1.47E-13	5.428E-12
<b>1__Bacteroidetes_2__Bacteroidia_3__Bacteroidales_4__Prevotellaceae_5__Prevotellaceae_UCG.001</b>	0.616	1.84E-13	5.428E-12
<b>1__Bacteroidetes_2__Bacteroidia_3__Bacteroidales_4__Rikenellaceae_5__Rikenellaceae_RC9_gut_group_6__uncultured_bacterium</b>	0.531	8.70E-10	1.711E-08
<b>1__Bacteroidetes_2__Bacteroidia_3__Bacteroidales_4__Muribaculaceae</b>	0.509	5.35E-09	7.89125E-08
shannon (alpha-diversity)	0.502	9.75E-09	9.93167E-08
obs_OTU (alpha-diversity)	0.501	1.01E-08	9.93167E-08
faith_pd (alpha-diversity)	0.392	1.33E-05	0.0001
<b>1__Cyanobacteria</b>	0.389	1.57E-05	0.0001
<b>1__Cyanobacteria_2__Melainabacteria_3__Gastranaerophilales_4__uncultured_bacterium_5__uncultured_bacterium_6__uncultured_bacterium</b>	0.340	0.0002	0.0012
<b>1__Firmicutes_2__Clostridia_3__Clostridiales_4__Lachnospiraceae_5__Marvinbryantia_6__uncultured_bacterium</b>	0.275	0.0028	0.0168
<b>1__Firmicutes_2__Bacilli_3__Lactobacillales_4__Lactobacillaceae_5__Lactobacillus</b>	0.263	0.0043	0.0231
<b>1__Epsilonbacteraeota_2__Campylobacteria_3__Campylobacterales_4__Helicobacteraceae_5__Helicobacter</b>	0.258	0.0051	0.0252
<b>1__Firmicutes_2__Clostridia_3__Clostridiales_4__Lachnospiraceae_5__Lachnospiraceae_UCG.001_6__uncultured_bacterium</b>	0.251	0.0066	0.0297
<b>1__Firmicutes_2__Clostridia_3__Clostridiales_4__Ruminococcaceae_5__Ruminiclostridium_6__uncultured_bacterium</b>	0.240	0.0094	0.0382
<b>1__Bacteroidetes_2__Bacteroidia_3__Bacteroidales_4__Rikenellaceae_5__Alistipes_6__uncultured_bacterium</b>	-0.239	0.0097	0.0382
<b>1__Firmicutes_2__Clostridia_3__Clostridiales_4__Clostridiales_vadinBB60_group</b>	0.232	0.0123	0.0455

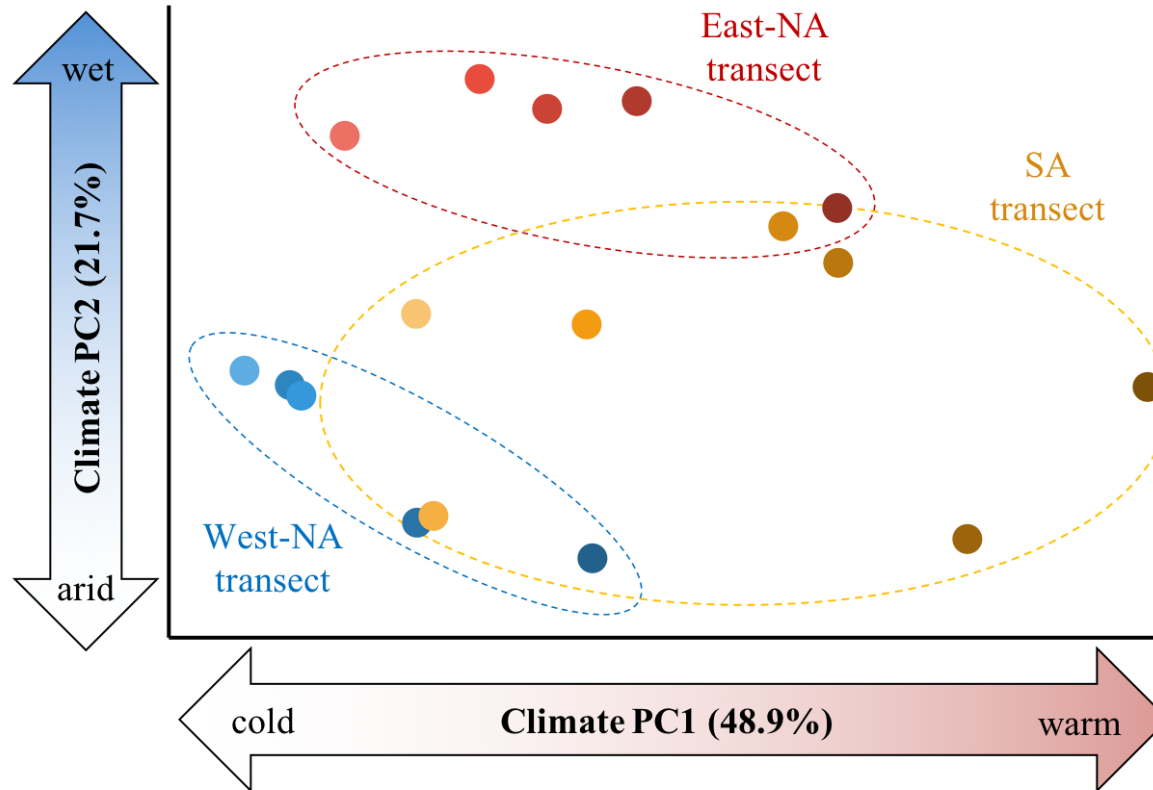
<sup>1</sup> 16 out of 59 microbial measurements are listed that showed significant correlation with body weight in lab reared individuals. Microbial measurements in bold indicate significant Spearman rho p-values corrected for FDR.

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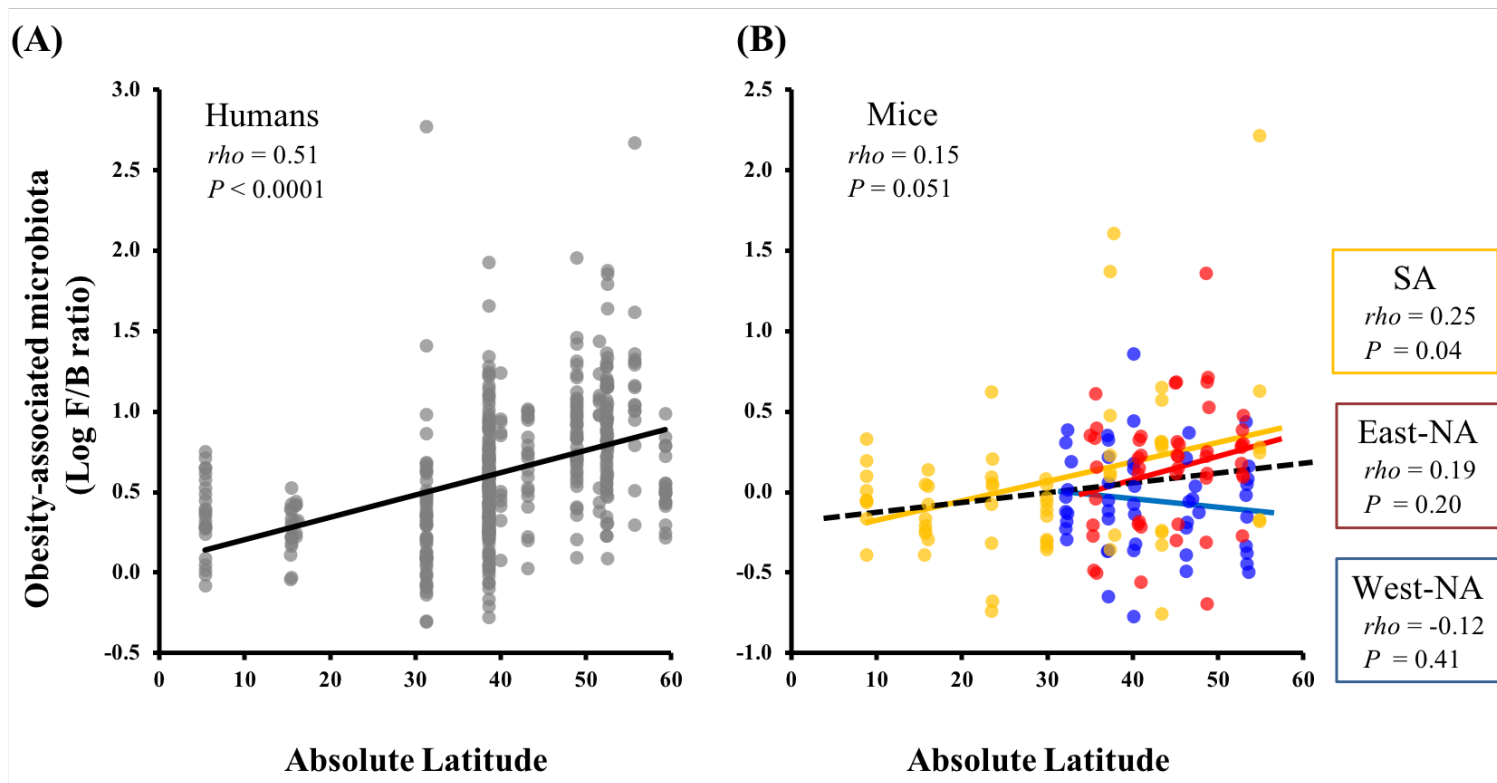


**Figure S1.** PCoA plot of Bray-Curtis dissimilarity clustered by 94% sequence identity. (A) Associations between Bray-Curtis dissimilarity and geography. Colors in correspond to populations in Fig. 1A. (B) Association between Bray-Curtis dissimilarity and BMI. Color darkness reflects greater BMI.

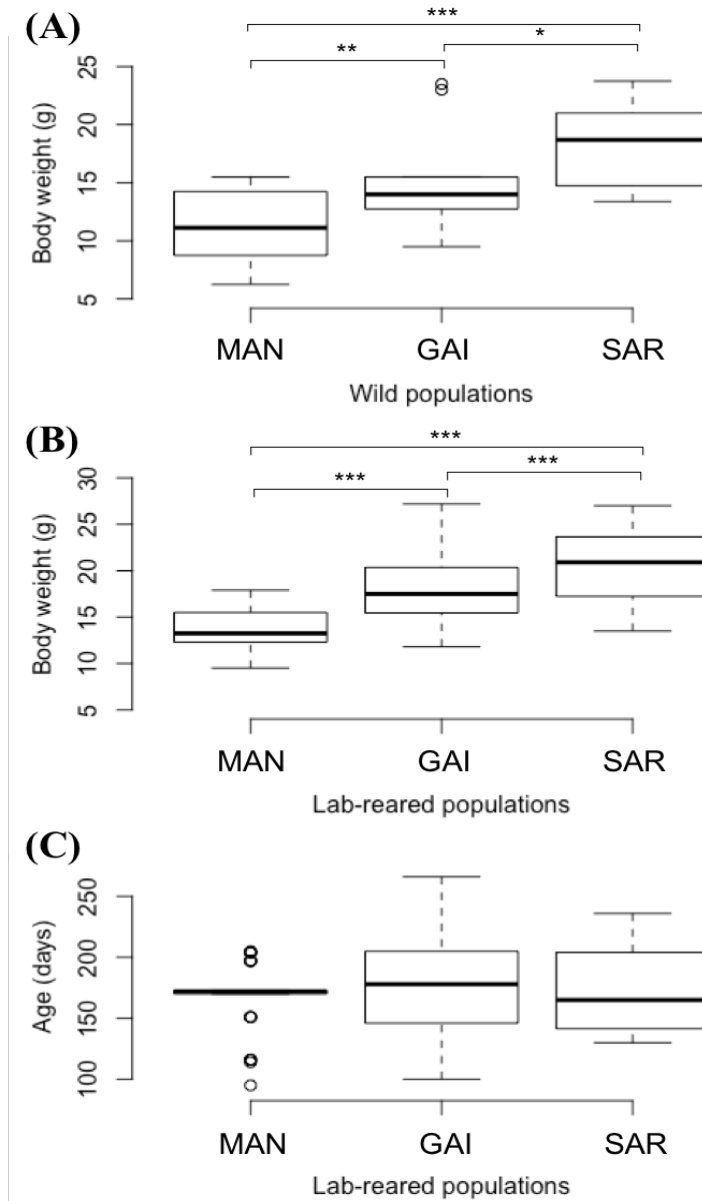
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**Figure S2.** Climate PCA plot. Data points are average climate PCs per population. Colors correspond to Fig.1A. Climate PC1 is mostly explained by temperature-related variables. Climate PC2 is mostly explained by precipitation-related variables. See Table S2 for PC loadings.



**Figure S3.** Correlations between log ratio of relative abundance of Firmicutes and Bacteroidetes (F/B ratio) and absolute latitude in humans and house mice. Greater F/B ratio is associated with obesity in humans and mice (Ley et al. 2006, Turnbaugh et al. 2006). (A) In healthy adult humans, a significant positive correlation between log(F/B ratio) and absolute latitude was observed ( $\rho = 0.51$ ,  $p < 0.0001$ ) (Suzuki and Worobey 2012). (B) In wild house mice, non-significant but positive slopes were observed between log(F/B ratio) and absolute latitude using all samples. Only SA-transect showed a significant positive correlation between latitude and log(F/B ratio) ( $\rho = 0.25$ ,  $p = 0.04$ ).



**Figure S4.** Population difference in body weight persists in a common environment. (A) Body weight differ among the wild populations (ANOVA  $p = 0.0015$ ). (B) Body weight differ among lab-reared populations (ANOVA  $p < 0.0001$ ). (C) Age does not differ among lab-reared populations (ANOVA  $p = 0.33$ ). Pairwise significance is based on Student's t-test: \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.001$ .