

**Supplementary Table ST.7. Association between the microbiota composition profiled as metagenomic OTUs (mOTUs) and urine hippurate levels.**

Metabolite	EggNOG	Spearman $\rho$	P	FDR
hippurate	[Ruminococcus] gnavus	-0.3775	1.31E-10	7.24E-08
hippurate	Clostridium bolteae	-0.366	5.14E-10	1.42E-07
hippurate	motu_linkage_group_327	0.3497	3.24E-09	5.97E-07
hippurate	motu_linkage_group_307	0.3289	2.95E-08	4.08E-06
hippurate	Lachnospiraceae bacterium 1_4_56FA	-0.3119	1.59E-07	1.76E-05
hippurate	motu_linkage_group_644	0.3064	2.67E-07	2.46E-05
hippurate	motu_linkage_group_383	0.3005	4.64E-07	3.66E-05
hippurate	motu_linkage_group_611	0.2978	5.91E-07	4.09E-05
hippurate	Coprococcus eutactus	0.2911	1.08E-06	6.16E-05
hippurate	motu_linkage_group_308	0.2898	1.21E-06	6.16E-05
hippurate	motu_linkage_group_517	0.2897	1.23E-06	6.16E-05
hippurate	motu_linkage_group_456	-0.2798	2.89E-06	0.000128
hippurate	motu_linkage_group_346	0.2794	0.000003	0.000128
hippurate	motu_linkage_group_277	0.272	5.54E-06	0.000208
hippurate	Clostridium symbiosum	-0.2718	5.64E-06	0.000208
hippurate	motu_linkage_group_306	0.27	6.54E-06	0.000226
hippurate	motu_linkage_group_672	0.2674	8.09E-06	0.000263
hippurate	motu_linkage_group_460	0.2588	0.000016	0.000492
hippurate	motu_linkage_group_451	-0.2566	0.000019	0.000553
hippurate	motu_linkage_group_496	0.2546	2.21E-05	0.000611
hippurate	motu_linkage_group_334	0.2513	2.85E-05	0.000703
hippurate	motu_linkage_group_113	0.2511	0.000029	0.000703
hippurate	unclassified Lachnospiraceae	-0.2503	3.07E-05	0.000703
hippurate	motu_linkage_group_434	0.2502	0.000031	0.000703
hippurate	motu_linkage_group_652	0.2499	3.18E-05	0.000703
hippurate	Holdemania filiformis	-0.2469	3.96E-05	0.000829
hippurate	motu_linkage_group_691	0.2466	4.05E-05	0.000829
hippurate	motu_linkage_group_252	0.2453	4.47E-05	0.000863
hippurate	Clostridium ramosum	-0.2449	0.000046	0.000863
hippurate	Methanobrevibacter smithii	0.2447	4.68E-05	0.000863
hippurate	motu_linkage_group_470	0.2435	5.08E-05	0.000906
hippurate	motu_linkage_group_207	0.2409	6.15E-05	0.001061
hippurate	motu_linkage_group_87	0.2405	6.33E-05	0.001061
hippurate	motu_linkage_group_686	0.2393	0.000069	0.001122
hippurate	Clostridiales bacterium 1_7_47FAA	-0.2368	8.27E-05	0.001307
hippurate	motu_linkage_group_241	0.2341	0.0001	0.001536
hippurate	motu_linkage_group_212	0.2334	0.000105	0.001569
hippurate	motu_linkage_group_244	0.2328	0.00011	0.001601
hippurate	motu_linkage_group_504	0.2311	0.000124	0.001758
hippurate	motu_linkage_group_238	0.2302	0.000132	0.001825
hippurate	motu_linkage_group_463	0.2269	0.000165	0.002225
hippurate	motu_linkage_group_525	0.2261	0.000175	0.00225
hippurate	motu_linkage_group_771	0.2258	0.000178	0.00225
hippurate	Eubacterium siraeum	0.2257	0.000179	0.00225
hippurate	motu_linkage_group_651	0.2251	0.000186	0.002286
hippurate	motu_linkage_group_57	0.2233	0.00021	0.002525
hippurate	motu_linkage_group_317	0.2228	0.000218	0.002565
hippurate	motu_linkage_group_604	0.222	0.00023	0.00265
hippurate	Ruminococcus sp. 5_1_39BFAA	-0.2215	0.000238	0.002677

hippurate	Bacteroides dorei/vulgatus	-0.2212	0.000242	0.002677
hippurate	motu_linkage_group_407	0.2199	0.000264	0.002863
hippurate	[Ruminococcus] torques	-0.2185	0.000289	0.003031
hippurate	motu_linkage_group_638	0.2183	0.000293	0.003031
hippurate	[Bacteroides] pectinophilus	0.2182	0.000296	0.003031
hippurate	Anaerotruncus colihominis	-0.2173	0.000313	0.003147
hippurate	motu_linkage_group_734	0.2151	0.000362	0.003541
hippurate	motu_linkage_group_551	-0.215	0.000365	0.003541
hippurate	motu_linkage_group_103	0.2125	0.000428	0.00402
hippurate	Eggerthella lenta	-0.2125	0.000429	0.004021
hippurate	motu_linkage_group_531	0.2115	0.000457	0.004212
hippurate	motu_linkage_group_260	0.2101	0.0005	0.004533
hippurate	motu_linkage_group_376	0.2082	0.000562	0.005013
hippurate	motu_linkage_group_142	0.2065	0.000624	0.005477
hippurate	motu_linkage_group_625	0.2052	0.000677	0.00585
hippurate	motu_linkage_group_72	0.2048	0.000694	0.005904
hippurate	motu_linkage_group_430	0.2037	0.000744	0.006157
hippurate	motu_linkage_group_145	0.2036	0.000746	0.006157
hippurate	motu_linkage_group_124	0.2022	0.000813	0.006612
hippurate	motu_linkage_group_678	0.2011	0.000872	0.006952
hippurate	motu_linkage_group_122	0.2009	0.00088	0.006952
hippurate	Erysipelotrichaceae bacterium 3_1_55	-0.2006	0.000899	0.006957
hippurate	motu_linkage_group_565	0.2004	0.000906	0.006957
hippurate	motu_linkage_group_567	-0.2001	0.000926	0.006957
hippurate	Butyrivibrio crossotus	0.2	0.000931	0.006957
hippurate	motu_linkage_group_508	0.1995	0.000958	0.007064
hippurate	motu_linkage_group_190	0.1988	0.001	0.007276
hippurate	Collinsella stercoris	-0.197	0.001111	0.007969
hippurate	motu_linkage_group_121	0.1968	0.001124	0.007969
hippurate	motu_linkage_group_636	0.1955	0.001214	0.008498
hippurate	motu_linkage_group_219	0.195	0.001258	0.008696
hippurate	Blautia hydrogenotrophica	-0.1939	0.001335	0.009114
hippurate	Clostridium scindens	-0.1912	0.001564	0.010547
hippurate	motu_linkage_group_529	0.1905	0.001634	0.01079
hippurate	motu_linkage_group_136	0.1904	0.001639	0.01079
hippurate	motu_linkage_group_600	0.1886	0.001823	0.01186
hippurate	Bacteroides xylanisolvens	-0.1876	0.001925	0.012378
hippurate	motu_linkage_group_258	0.1872	0.001971	0.012528
hippurate	motu_linkage_group_243	0.1868	0.002015	0.012662
hippurate	motu_linkage_group_586	0.186	0.002105	0.013045
hippurate	motu_linkage_group_68	0.1859	0.002123	0.013045
hippurate	motu_linkage_group_349	-0.1856	0.002161	0.013132
hippurate	Dialister invisus	-0.1839	0.002365	0.014207
hippurate	motu_linkage_group_226	0.1836	0.002408	0.014207
hippurate	motu_linkage_group_85	0.1836	0.002415	0.014207
hippurate	butyrate-producing bacterium	-0.1825	0.002566	0.014931
hippurate	motu_linkage_group_490	-0.1823	0.002592	0.014931
hippurate	Eubacterium eligens	0.1809	0.002797	0.015595
hippurate	motu_linkage_group_404	0.1808	0.002814	0.015595
hippurate	motu_linkage_group_566	0.1808	0.002817	0.015595
hippurate	motu_linkage_group_415	0.1808	0.00282	0.015595
hippurate	motu_linkage_group_375	0.1802	0.002904	0.0159

hippurate	Pseudoflavonifractor capillosus	-0.1797	0.002995	0.016238
hippurate	motu_linkage_group_217	0.1785	0.003193	0.017085
hippurate	Anaerostipes caccae	-0.1784	0.003213	0.017085
hippurate	motu_linkage_group_120	0.176	0.003655	0.01925
hippurate	motu_linkage_group_218	0.1756	0.003723	0.019423
hippurate	Erysipelotrichaceae bacterium 5_2_54	-0.1743	0.00399	0.020621
hippurate	motu_linkage_group_362	0.1738	0.0041	0.020994
hippurate	motu_linkage_group_20	0.1729	0.004314	0.021788
hippurate	motu_linkage_group_281	-0.1728	0.004334	0.021788
hippurate	motu_linkage_group_324	0.1715	0.004648	0.022994
hippurate	motu_linkage_group_485	0.1714	0.004657	0.022994
hippurate	motu_linkage_group_509	0.1704	0.004909	0.024024
hippurate	Turicibacter sanguinis	0.1699	0.005029	0.024395
hippurate	Campylobacter hominis	0.1687	0.005371	0.025828
hippurate	Victivallis vadensis	0.1684	0.005436	0.025915
hippurate	motu_linkage_group_622	0.1676	0.005673	0.026675
hippurate	motu_linkage_group_54	0.1675	0.005692	0.026675
hippurate	motu_linkage_group_548	0.1666	0.005985	0.027813
hippurate	motu_linkage_group_320	0.163	0.007179	0.033083
hippurate	Eubacterium dolichum	-0.162	0.007533	0.034428
hippurate	Bacteroides thetaiotaomicron	-0.1606	0.008076	0.036607
hippurate	motu_linkage_group_386	0.1598	0.008396	0.037748
hippurate	Clostridium sp. HGF2	-0.1592	0.008668	0.038592
hippurate	Eubacterium cylindroides	0.159	0.008732	0.038592
hippurate	motu_linkage_group_624	-0.1588	0.008835	0.038592
hippurate	motu_linkage_group_288	0.1587	0.008863	0.038592
hippurate	motu_linkage_group_411	0.1571	0.009584	0.041406
hippurate	motu_linkage_group_224	0.1551	0.010571	0.045316
hippurate	motu_linkage_group_450	-0.1542	0.011024	0.046894
hippurate	motu_linkage_group_102	0.154	0.011133	0.046997
hippurate	motu_linkage_group_164	0.1529	0.011721	0.049104
hippurate	motu_linkage_group_257	0.1526	0.011905	0.0495
hippurate	motu_linkage_group_282	0.1513	0.012657	0.052234
hippurate	motu_linkage_group_385	0.1499	0.013474	0.054975
hippurate	motu_linkage_group_486	0.1499	0.01352	0.054975
hippurate	motu_linkage_group_176	-0.1486	0.014367	0.057992
hippurate	motu_linkage_group_248	0.1483	0.014547	0.058293
hippurate	motu_linkage_group_342	0.1478	0.014864	0.059135
hippurate	Ruminococcaceae bacterium D16	-0.1465	0.01581	0.062026
hippurate	motu_linkage_group_325	0.1465	0.015815	0.062026
hippurate	Tropheryma whipplei	-0.1458	0.016319	0.063552
hippurate	motu_linkage_group_151	0.1454	0.016613	0.064245
hippurate	motu_linkage_group_45	0.1451	0.016864	0.064762
hippurate	Granulicatella adiacens	-0.1448	0.017066	0.064784
hippurate	motu_linkage_group_621	0.1448	0.017104	0.064784
hippurate	motu_linkage_group_712	0.1445	0.017295	0.065062
hippurate	motu_linkage_group_74	0.1442	0.017523	0.065474
hippurate	motu_linkage_group_127	0.1431	0.018387	0.067982
hippurate	motu_linkage_group_51	0.1431	0.01844	0.067982
hippurate	Acidaminococcus fermentans	0.1413	0.019949	0.073058
hippurate	motu_linkage_group_25	0.1408	0.020419	0.074275
hippurate	motu_linkage_group_431	0.1406	0.02055	0.074275

hippurate	motu_linkage_group_457	0.1369	0.024197	0.086889
hippurate	motu_linkage_group_341	0.1356	0.025565	0.091209
hippurate	<i>Streptococcus parasanguinis</i>	0.1349	0.026325	0.093319
hippurate	butyrate-producing bacterium SS3/4	-0.134	0.027417	0.096571
hippurate	<i>Eubacterium bifforme</i>	0.1331	0.028491	0.099719
hippurate	motu_linkage_group_177	0.1328	0.028793	0.100142
hippurate	<i>Streptococcus</i> sp. C150	0.1324	0.02927	0.101164
hippurate	<i>Roseburia hominis</i>	0.1309	0.031271	0.107409
hippurate	<i>Methanosphaera stadtmanae</i>	0.1299	0.032593	0.111259
hippurate	motu_linkage_group_270	0.129	0.033763	0.114546
hippurate	<i>Bifidobacterium angulatum</i>	0.1287	0.034175	0.115236
hippurate	motu_linkage_group_192	-0.1284	0.034555	0.115812
hippurate	motu_linkage_group_765	-0.1275	0.035996	0.119637
hippurate	<i>Streptococcus salivarius</i>	0.1274	0.036129	0.119637
hippurate	<i>Oribacterium sinus</i>	0.1258	0.038563	0.126937
hippurate	motu_linkage_group_389	0.1239	0.041503	0.135391
hippurate	<i>Clostridium spiroforme</i>	-0.1237	0.041857	0.135391
hippurate	motu_linkage_group_559	0.1237	0.041866	0.135391
hippurate	motu_linkage_group_10	0.123	0.043074	0.138488
hippurate	motu_linkage_group_480	0.1223	0.044236	0.141402
hippurate	<i>Rothia mucilaginosa</i>	0.122	0.044789	0.142347
hippurate	<i>Staphylococcus aureus</i>	-0.1216	0.045493	0.143758
hippurate	<i>Clostridium</i> sp. L2-50	0.1215	0.045758	0.143774
hippurate	<i>Clostridium saccharolyticum</i>	-0.1212	0.046215	0.144389
hippurate	motu_linkage_group_634	0.121	0.04657	0.144681
hippurate	<i>Ruminococcus bromii</i>	0.1205	0.047446	0.146158
hippurate	motu_linkage_group_703	0.1205	0.047574	0.146158
hippurate	motu_linkage_group_286	-0.12	0.048387	0.147834
hippurate	<i>Aggregatibacter segnis</i>	-0.1193	0.049776	0.150489
hippurate	<i>Blautia hansenii</i>	-0.1193	0.0498	0.150489
hippurate	motu_linkage_group_179	0.1189	0.050602	0.152081
hippurate	motu_linkage_group_592	0.1186	0.051133	0.152081
hippurate	motu_linkage_group_52	0.1186	0.051205	0.152081
hippurate	motu_linkage_group_209	0.1185	0.05144	0.152081
hippurate	<i>Prevotella copri</i>	0.1183	0.051702	0.152081
hippurate	motu_linkage_group_499	0.1145	0.059758	0.174847
hippurate	<i>Lactobacillus salivarius</i>	0.1143	0.060164	0.175109
hippurate	<i>Gemella morbillorum</i>	-0.114	0.060992	0.176589
hippurate	<i>Lactobacillus casei</i>	0.1136	0.061902	0.178291
hippurate	motu_linkage_group_14	0.1128	0.063784	0.182759
hippurate	<i>Subdoligranulum variabile</i>	0.1125	0.064375	0.183502
hippurate	<i>Parvimonas micra</i>	-0.1119	0.065899	0.186883
hippurate	motu_linkage_group_301	0.1102	0.070104	0.197793
hippurate	motu_linkage_group_42	-0.1097	0.071446	0.200557
hippurate	motu_linkage_group_161	0.1094	0.07221	0.201677
hippurate	[ <i>Ruminococcus</i> ] <i>obeum</i>	0.1091	0.07293	0.202665
hippurate	<i>Salmonella enterica</i>	-0.1084	0.074721	0.205763
hippurate	<i>Streptococcus mutans</i>	0.1084	0.074789	0.205763
hippurate	motu_linkage_group_111	0.1081	0.075565	0.206869
hippurate	motu_linkage_group_18	0.1076	0.077055	0.209908
hippurate	motu_linkage_group_348	0.1072	0.078115	0.211753
hippurate	<i>Streptococcus</i> sp. oral taxon 071	-0.1066	0.079871	0.215055

hippurate	<i>Clostridium methylpentosum</i>	-0.1065	0.080111	0.215055
hippurate	motu_linkage_group_38	0.1063	0.080611	0.215352
hippurate	<i>Streptococcus constellatus</i>	-0.1058	0.082149	0.218406
hippurate	motu_linkage_group_448	0.1051	0.084155	0.222668
hippurate	motu_linkage_group_471	0.1049	0.08474	0.223149
hippurate	<i>Mitsuokella multacida</i>	0.1046	0.085695	0.224594
hippurate	<i>Bulleidia extructa</i>	-0.1043	0.08655	0.225765
hippurate	<i>Clostridium hylemonae</i>	-0.1035	0.089142	0.23096
hippurate	<i>Bacteroides uniformis</i>	-0.1034	0.089377	0.23096
hippurate	motu_linkage_group_373	-0.1029	0.090973	0.233991
hippurate	<i>Catonella morbi</i>	-0.1019	0.094082	0.240867
hippurate	<i>Parabacteroides distasonis</i>	-0.1018	0.094564	0.240986
hippurate	<i>Enterobacter asburiae</i>	0.1011	0.096633	0.245129
hippurate	motu_linkage_group_33	0.1008	0.097881	0.247161
hippurate	motu_linkage_group_510	0.1	0.10053	0.250773
hippurate	motu_linkage_group_445	0.1	0.100591	0.250773
hippurate	motu_linkage_group_574	0.0999	0.100672	0.250773
hippurate	motu_linkage_group_443	-0.0994	0.102604	0.25444
hippurate	<i>Lachnospiraceae bacterium 3_1_57FA</i>	-0.0992	0.103149	0.254649
hippurate	<i>Haemophilus parainfluenzae</i>	0.0988	0.104504	0.25599
hippurate	<i>Fusobacterium nucleatum</i>	-0.0988	0.104618	0.25599
hippurate	motu_linkage_group_837	0.0985	0.105678	0.257445
hippurate	<i>Enterobacter hormaechei/cloacae</i>	0.0977	0.108469	0.262732
hippurate	motu_linkage_group_613	0.0973	0.109987	0.262732
hippurate	<i>Neisseria subflava</i>	-0.0972	0.110224	0.262732
hippurate	<i>Prevotella tannerae</i>	-0.0972	0.110224	0.262732
hippurate	<i>Selenomonas noxia</i>	-0.0972	0.110224	0.262732
hippurate	<i>Olsenella uli</i>	0.097	0.111137	0.263772
hippurate	motu_linkage_group_366	0.0968	0.111936	0.263993
hippurate	<i>Escherichia coli</i>	-0.0967	0.112185	0.263993
hippurate	<i>Streptococcus australis</i>	0.0963	0.113628	0.266255
hippurate	<i>Roseburia inulinivorans</i>	-0.0957	0.115849	0.270314
hippurate	motu_linkage_group_71	0.0953	0.11771	0.272751
hippurate	motu_linkage_group_378	-0.0951	0.118298	0.272751
hippurate	motu_linkage_group_528	0.0951	0.118373	0.272751
hippurate	<i>Prevotella multisaccharivorax</i>	0.0949	0.119072	0.273223
hippurate	<i>Ruminococcus lactaris</i>	0.0943	0.121576	0.277003
hippurate	motu_linkage_group_205	0.0942	0.121721	0.277003
hippurate	<i>[Clostridium] bartlettii</i>	0.0927	0.127773	0.289584
hippurate	motu_linkage_group_534	0.092	0.131027	0.295747
hippurate	<i>Acidaminococcus intestini</i>	-0.0909	0.135643	0.303722
hippurate	motu_linkage_group_617	0.0908	0.13613	0.303722
hippurate	<i>Bacteroides fragilis</i>	-0.0907	0.136208	0.303722
hippurate	<i>Lactobacillus crispatus</i>	-0.0902	0.13842	0.306185
hippurate	<i>Prevotella melaninogenica</i>	-0.0902	0.13842	0.306185
hippurate	motu_linkage_group_360	0.0897	0.140679	0.309942
hippurate	motu_linkage_group_26	0.0893	0.142374	0.312126
hippurate	motu_linkage_group_185	0.0893	0.142799	0.312126
hippurate	motu_linkage_group_168	0.0884	0.146719	0.31796
hippurate	<i>Streptococcus mitis</i>	0.0883	0.147265	0.31796
hippurate	<i>Bilophila wadsworthia</i>	-0.0883	0.14729	0.31796
hippurate	motu_linkage_group_3	0.088	0.148556	0.31796



hippurate	motu_linkage_group_280	0.088	0.148641	0.31796
hippurate	<i>Fusobacterium ulcerans</i>	-0.0879	0.148956	0.31796
hippurate	<i>Ruminococcus champanellensis</i>	0.0878	0.149493	0.31796
hippurate	<i>Streptococcus pneumoniae</i>	0.0876	0.150207	0.318255
hippurate	<i>Lactobacillus sakei</i>	-0.0874	0.151426	0.318757
hippurate	<i>Prevotella buccae</i>	-0.0873	0.151597	0.318757
hippurate	motu_linkage_group_194	-0.0871	0.152953	0.32039
hippurate	<i>Peptostreptococcus anaerobius</i>	0.0865	0.155481	0.324457
hippurate	motu_linkage_group_562	0.0859	0.158319	0.329137
hippurate	motu_linkage_group_211	0.0852	0.161812	0.335139
hippurate	<i>Bacteroides ovatus</i>	-0.0848	0.164097	0.338337
hippurate	<i>Clostridium</i> sp. 7_2_43FAA	0.0847	0.16458	0.338337
hippurate	motu_linkage_group_398	0.0841	0.167405	0.34287
hippurate	motu_linkage_group_314	0.0837	0.169652	0.34619
hippurate	<i>Streptococcus thermophilus</i>	0.0831	0.172455	0.350393
hippurate	<i>Campylobacter concisus</i>	-0.083	0.172979	0.350393
hippurate	<i>Prevotella dentalis</i>	0.082	0.178524	0.360306
hippurate	<i>Weissella cibaria</i>	-0.0812	0.18259	0.366249
hippurate	<i>Coprococcus catus</i>	0.0811	0.183047	0.366249
hippurate	<i>Slackia exigua</i>	-0.081	0.183633	0.366249
hippurate	<i>Prevotella oralis</i>	-0.0809	0.184215	0.366249
hippurate	motu_linkage_group_295	0.0808	0.18478	0.366249
hippurate	<i>Proteus mirabilis</i>	-0.0806	0.186011	0.367372
hippurate	<i>Paraprevotella xylaniphila</i>	-0.0804	0.186771	0.36756
hippurate	<i>Lactobacillus ruminis</i>	0.0796	0.191252	0.375044
hippurate	<i>Fusobacterium mortiferum</i>	-0.0793	0.192824	0.376359
hippurate	<i>Bacteroides coprocola</i>	0.0793	0.193284	0.376359
hippurate	motu_linkage_group_333	0.0791	0.194059	0.376543
hippurate	<i>Enterococcus casseliflavus</i>	0.0778	0.201724	0.388504
hippurate	<i>Streptococcus anginosus</i>	0.0777	0.201976	0.388504
hippurate	motu_linkage_group_65	0.0777	0.202331	0.388504
hippurate	<i>Prevotella bivia</i>	-0.0774	0.204013	0.390378
hippurate	<i>Oxalobacter formigenes</i>	0.0773	0.20487	0.390666
hippurate	motu_linkage_group_532	0.077	0.2064	0.392231
hippurate	<i>Porphyromonas asaccharolytica</i>	0.0768	0.207798	0.393535
hippurate	<i>Enterococcus faecium</i>	0.0763	0.210301	0.396916
hippurate	motu_linkage_group_240	0.0762	0.211182	0.397223
hippurate	<i>Marvinbryantia formatexigens</i>	-0.076	0.212525	0.398394
hippurate	<i>Bifidobacterium dentium</i>	0.0757	0.213938	0.399688
hippurate	<i>Streptococcus sanguinis</i>	0.0752	0.217494	0.404964
hippurate	motu_linkage_group_786	-0.0748	0.219659	0.406742
hippurate	<i>Aggregatibacter aphrophilus</i>	-0.0748	0.21992	0.406742
hippurate	motu_linkage_group_131	-0.0745	0.221561	0.408411
hippurate	<i>Lactobacillus delbrueckii</i>	0.0742	0.223446	0.410517
hippurate	<i>Bacteroides coprophilus</i>	0.074	0.224928	0.411144
hippurate	motu_linkage_group_474	0.0739	0.225274	0.411144
hippurate	motu_linkage_group_182	0.0733	0.229159	0.414703
hippurate	<i>Gemella sanguinis</i>	0.0733	0.229259	0.414703
hippurate	motu_linkage_group_488	0.0732	0.229474	0.414703
hippurate	<i>Lactococcus garvieae</i>	-0.0723	0.235209	0.423683
hippurate	<i>Bacteroides eggerthii</i>	0.0721	0.236729	0.425036
hippurate	<i>Veillonella atypica</i>	0.0717	0.239459	0.428546

hippurate	<i>Enterobacter cancerogenus</i>	0.0715	0.240998	0.429409
hippurate	motu_linkage_group_573	0.0714	0.241494	0.429409
hippurate	<i>Faecalibacterium prausnitzii</i>	-0.0712	0.242635	0.430055
hippurate	motu_linkage_group_662	0.0709	0.244561	0.432084
hippurate	<i>Eubacterium ventriosum</i>	0.0707	0.246398	0.433943
hippurate	motu_linkage_group_297	0.0701	0.250361	0.439523
hippurate	motu_linkage_group_414	-0.0698	0.252377	0.441554
hippurate	motu_linkage_group_117	0.0697	0.253115	0.441554
hippurate	<i>Arcobacter butzleri</i>	-0.0692	0.256013	0.442492
hippurate	<i>Desulfovibrio vulgaris</i>	-0.0692	0.256013	0.442492
hippurate	motu_linkage_group_289	0.0692	0.256053	0.442492
hippurate	<i>Prevotella buccalis</i>	0.0689	0.258069	0.44335
hippurate	<i>Ruminococcus</i> sp. SR1/5	-0.0689	0.258153	0.44335
hippurate	<i>Dorea formicigenerans</i>	-0.0687	0.259818	0.444828
hippurate	<i>Bifidobacterium breve</i>	-0.0685	0.260785	0.445105
hippurate	motu_linkage_group_519	0.0681	0.264258	0.449645
hippurate	<i>Parasutterella excrementihominis</i>	0.0677	0.266682	0.452173
hippurate	<i>Enterococcus faecalis</i>	0.0676	0.267379	0.452173
hippurate	<i>Atopobium parvulum</i>	0.0673	0.269238	0.453929
hippurate	<i>Veillonella dispar</i>	0.0661	0.278497	0.468112
hippurate	<i>Fusobacterium gonidiaformans</i>	-0.0659	0.280006	0.469222
hippurate	motu_linkage_group_273	0.0657	0.280925	0.46934
hippurate	motu_linkage_group_4	0.0656	0.282015	0.469742
hippurate	<i>Shuttleworthia satellites</i>	-0.0645	0.290213	0.481945
hippurate	motu_linkage_group_552	-0.0639	0.294264	0.48721
hippurate	motu_linkage_group_797	0.0636	0.297132	0.488921
hippurate	motu_linkage_group_228	-0.0635	0.297661	0.488921
hippurate	motu_linkage_group_135	-0.0635	0.29795	0.488921
hippurate	motu_linkage_group_63	0.062	0.309103	0.505722
hippurate	<i>Haemophilus influenzae</i>	-0.0616	0.312346	0.508646
hippurate	motu_linkage_group_394	0.0615	0.31273	0.508646
hippurate	motu_linkage_group_171	0.0611	0.31657	0.512411
hippurate	motu_linkage_group_666	0.061	0.316898	0.512411
hippurate	motu_linkage_group_118	-0.0607	0.319405	0.513695
hippurate	<i>Prevotella disiens</i>	0.0607	0.31955	0.513695
hippurate	<i>Citrobacter youngae</i>	-0.0604	0.32189	0.515957
hippurate	motu_linkage_group_502	0.0598	0.32681	0.522191
hippurate	motu_linkage_group_267	0.0597	0.327668	0.522191
hippurate	<i>Anaerococcus lactolyticus</i>	-0.0591	0.332228	0.523425
hippurate	<i>Brevibacterium linens</i>	-0.0591	0.332228	0.523425
hippurate	<i>Parvimonas</i> sp. oral taxon 393	-0.0591	0.332228	0.523425
hippurate	motu_linkage_group_731	-0.0591	0.332228	0.523425
hippurate	motu_linkage_group_195	0.0588	0.334573	0.525622
hippurate	motu_linkage_group_230	0.0584	0.337974	0.527185
hippurate	<i>Pyramidobacter piscolens</i>	0.0583	0.33864	0.527185
hippurate	<i>Bacteroides clarus</i>	0.0583	0.338866	0.527185
hippurate	motu_linkage_group_49	0.0582	0.33945	0.527185
hippurate	<i>Leuconostoc mesenteroides</i>	-0.0581	0.340696	0.527185
hippurate	motu_linkage_group_495	0.058	0.341408	0.527185
hippurate	<i>Desulfovibrio desulfuricans</i>	-0.0579	0.342241	0.527185
hippurate	<i>Acinetobacter baumannii</i>	0.0576	0.345131	0.53016
hippurate	<i>Oscillibacter valericigenes</i>	0.0572	0.347821	0.532812

hippurate	Leuconostoc citreum	-0.0568	0.3517	0.537265
hippurate	motu_linkage_group_458	0.0562	0.356798	0.540189
hippurate	Collinsella aerofaciens	0.0562	0.356831	0.540189
hippurate	motu_linkage_group_234	0.0561	0.357509	0.540189
hippurate	Fingoldia magna	0.0561	0.357521	0.540189
hippurate	Alistipes shahii	0.0559	0.359361	0.541489
hippurate	motu_linkage_group_47	0.0552	0.364944	0.547113
hippurate	Streptococcus sp. M143	-0.0552	0.365072	0.547113
hippurate	motu_linkage_group_28	-0.0546	0.370505	0.553755
hippurate	motu_linkage_group_585	0.0545	0.371889	0.554325
hippurate	Streptococcus infantis	-0.0535	0.380369	0.564444
hippurate	Thermus scotoductus	-0.0535	0.380719	0.564444
hippurate	motu_linkage_group_646	-0.0518	0.395243	0.58441
hippurate	Anaerococcus vaginalis	0.0513	0.39986	0.589083
hippurate	unclassified Fusobacterium	-0.0512	0.401425	0.589083
hippurate	Enterobacteriaceae bacterium 9_2_54	0.0512	0.401599	0.589083
hippurate	Slackia heliotrinireducens	-0.0506	0.407049	0.594491
hippurate	Klebsiella oxytoca	0.0505	0.407436	0.594491
hippurate	motu_linkage_group_357	-0.0499	0.412826	0.598212
hippurate	Escherichia albertii	0.0499	0.41307	0.598212
hippurate	Bifidobacterium longum	0.0498	0.41407	0.598212
hippurate	Lactobacillus rhamnosus	0.0498	0.414313	0.598212
hippurate	Streptococcus peroris	-0.0495	0.416835	0.599952
hippurate	motu_linkage_group_254	0.0494	0.417688	0.599952
hippurate	Enterobacter aerogenes	-0.0491	0.420433	0.60233
hippurate	Clostridium leptum	-0.0481	0.429862	0.614247
hippurate	motu_linkage_group_521	0.0476	0.435002	0.617994
hippurate	Streptococcus gordonii	0.0475	0.435893	0.617994
hippurate	Streptococcus downei	0.0475	0.436558	0.617994
hippurate	Atopobium rimae	0.0473	0.437772	0.617994
hippurate	Solobacterium moorei	-0.0473	0.438072	0.617994
hippurate	Bacteroides finegoldii	0.0471	0.439608	0.618583
hippurate	Odoribacter splanchnicus	-0.0468	0.443356	0.622274
hippurate	motu_linkage_group_391	-0.0464	0.447022	0.62307
hippurate	motu_linkage_group_225	0.0462	0.448676	0.62307
hippurate	motu_linkage_group_491	-0.0462	0.449028	0.62307
hippurate	motu_linkage_group_24	0.0461	0.450138	0.62307
hippurate	motu_linkage_group_154	0.046	0.450291	0.62307
hippurate	Pseudoalteromonas haloplanktis	0.0459	0.451761	0.62307
hippurate	Bifidobacterium catenulatum-Bifidob	-0.0459	0.45181	0.62307
hippurate	Leuconostoc gelidum	0.0451	0.459473	0.632061
hippurate	motu_linkage_group_265	0.0446	0.464479	0.637362
hippurate	motu_linkage_group_344	0.0443	0.467763	0.64028
hippurate	motu_linkage_group_69	0.0438	0.472562	0.645251
hippurate	Delftia acidovorans	-0.0436	0.475114	0.646884
hippurate	motu_linkage_group_345	0.0435	0.476097	0.646884
hippurate	motu_linkage_group_204	0.0433	0.477636	0.647384
hippurate	motu_linkage_group_696	0.0427	0.483652	0.653935
hippurate	Gardnerella vaginalis	-0.0426	0.485083	0.654207
hippurate	motu_linkage_group_439	-0.0424	0.48664	0.654207
hippurate	Anaerofustis stercorihominis	-0.0424	0.487402	0.654207
hippurate	motu_linkage_group_484	0.0418	0.492866	0.659939



hippurate	motu_linkage_group_210	0.0415	0.496206	0.662807
hippurate	motu_linkage_group_115	-0.0414	0.497667	0.663156
hippurate	Granulicatella elegans	0.0412	0.499111	0.663482
hippurate	motu_linkage_group_29	0.0408	0.503698	0.667005
hippurate	motu_linkage_group_284	0.0407	0.504174	0.667005
hippurate	Collinsella intestinalis	-0.0404	0.50762	0.669961
hippurate	motu_linkage_group_101	0.0399	0.51267	0.675016
hippurate	Actinomyces sp. oral taxon 170	0.0397	0.515457	0.677073
hippurate	motu_linkage_group_588	-0.0395	0.51709	0.677608
hippurate	Haemophilus haemolyticus	-0.0387	0.526205	0.687923
hippurate	motu_linkage_group_481	0.0383	0.529978	0.691221
hippurate	Bacteroides plebeius	0.0379	0.534366	0.691847
hippurate	Peptoniphilus harei	-0.0379	0.534776	0.691847
hippurate	motu_linkage_group_363	0.0378	0.535966	0.691847
hippurate	Streptococcus oralis	0.0376	0.537232	0.691847
hippurate	motu_linkage_group_206	-0.0376	0.537475	0.691847
hippurate	Lactobacillus gasseri	0.0376	0.537964	0.691847
hippurate	Prevotella denticola	-0.0373	0.540485	0.692488
hippurate	motu_linkage_group_159	0.0373	0.540967	0.692488
hippurate	motu_linkage_group_293	-0.0368	0.546095	0.697438
hippurate	Desulfovibrio piger	0.0364	0.550716	0.701719
hippurate	Clostridium butyricum	-0.0362	0.55298	0.702122
hippurate	Fusobacterium periodonticum	-0.0361	0.553572	0.702122
hippurate	Treponema succinifaciens	-0.0358	0.5575	0.705486
hippurate	Capnocytophaga sp. oral taxon 329	0.0356	0.559946	0.706964
hippurate	Phascolarctobacterium succinatutens	0.0353	0.562883	0.709053
hippurate	Rothia dentocariosa	0.035	0.566103	0.711489
hippurate	motu_linkage_group_246	-0.0345	0.571317	0.716413
hippurate	Dorea longicatena	0.0334	0.584131	0.730815
hippurate	Succinatimonas hippei	-0.0333	0.585445	0.730815
hippurate	motu_linkage_group_437	0.033	0.588397	0.732846
hippurate	motu_linkage_group_191	0.0328	0.590566	0.733894
hippurate	Citrobacter koseri	-0.0324	0.595954	0.738776
hippurate	motu_linkage_group_379	0.0322	0.597206	0.738776
hippurate	motu_linkage_group_174	0.0321	0.598502	0.738776
hippurate	Leuconostoc kimchii	0.0319	0.601135	0.740373
hippurate	motu_linkage_group_13	0.0315	0.605284	0.742186
hippurate	Coprobacillus sp. 29_1	-0.0315	0.605291	0.742186
hippurate	Alistipes sp. HGB5	-0.0313	0.607708	0.742307
hippurate	Megasphaera micronuciformis	-0.0313	0.608074	0.742307
hippurate	motu_linkage_group_9	0.0309	0.612333	0.745859
hippurate	Streptococcus gallolyticus	0.0306	0.615515	0.746936
hippurate	motu_linkage_group_507	0.0306	0.615918	0.746936
hippurate	Leuconostoc gasicomitatum	0.0296	0.628031	0.759959
hippurate	Propionibacterium freudenreichii	-0.0293	0.631476	0.760572
hippurate	motu_linkage_group_274	-0.0292	0.63243	0.760572
hippurate	Lactobacillus plantarum	-0.0291	0.633499	0.760572
hippurate	motu_linkage_group_7	0.029	0.634039	0.760572
hippurate	Enterobacter cloacae	0.0289	0.636245	0.761417
hippurate	motu_linkage_group_17	0.0288	0.637497	0.761417
hippurate	Desulfovibrio sp. 3_1_syn3	0.0281	0.644912	0.767412
hippurate	motu_linkage_group_302	0.0281	0.645292	0.767412

hippurate	<i>Streptococcus vestibularis</i>	0.0277	0.649915	0.769893
hippurate	<i>Streptococcus agalactiae</i>	-0.0277	0.650163	0.769893
hippurate	<i>Pseudomonas aeruginosa</i>	0.027	0.658078	0.77649
hippurate	<i>Bifidobacterium bifidum</i>	0.027	0.658542	0.77649
hippurate	motu_linkage_group_290	0.0264	0.664917	0.782339
hippurate	<i>Peptoniphilus lacrimalis</i>	0.0258	0.673009	0.790178
hippurate	motu_linkage_group_32	0.0253	0.678568	0.794863
hippurate	motu_linkage_group_30	-0.0251	0.681103	0.794863
hippurate	motu_linkage_group_701	0.0251	0.681311	0.794863
hippurate	<i>Akkermansia muciniphila</i>	0.0249	0.683768	0.79605
hippurate	<i>Klebsiella variicola/pneumoniae</i>	-0.0243	0.689943	0.801364
hippurate	<i>Prevotella timonensis</i>	0.0242	0.691481	0.801364
hippurate	<i>Eggerthella</i> sp. YY7918	-0.0241	0.69268	0.801364
hippurate	<i>Gemella haemolysans</i>	-0.0237	0.697749	0.803403
hippurate	<i>Alistipes putredinis</i>	-0.0236	0.698621	0.803403
hippurate	<i>Bacteroides caccae</i>	0.0236	0.698801	0.803403
hippurate	motu_linkage_group_575	-0.0234	0.701721	0.804093
hippurate	motu_linkage_group_104	-0.0233	0.702309	0.804093
hippurate	motu_linkage_group_90	0.0228	0.708685	0.809717
hippurate	<i>Acinetobacter lwoffii</i>	-0.0226	0.711594	0.811364
hippurate	<i>Peptostreptococcus stomatis</i>	0.0217	0.72191	0.821433
hippurate	<i>Eubacterium hallii</i>	-0.0215	0.724092	0.822224
hippurate	<i>Lactobacillus fermentum</i>	-0.0208	0.733157	0.828712
hippurate	<i>Atopobium vaginae</i>	0.0204	0.73826	0.828712
hippurate	<i>Helicobacter pylori</i>	0.0204	0.73826	0.828712
hippurate	<i>Actinomyces viscosus</i>	-0.0202	0.740296	0.828712
hippurate	<i>Lactobacillus reuteri</i>	-0.0202	0.740296	0.828712
hippurate	<i>Lautropia mirabilis</i>	-0.0202	0.740296	0.828712
hippurate	<i>Streptococcus pseudopneumoniae</i>	-0.0202	0.740296	0.828712
hippurate	motu_linkage_group_536	-0.0198	0.745798	0.833184
hippurate	motu_linkage_group_316	0.0195	0.749652	0.835802
hippurate	motu_linkage_group_253	0.0189	0.756557	0.841803
hippurate	<i>Proteus penneri</i>	0.0186	0.760139	0.84409
hippurate	motu_linkage_group_279	0.0181	0.766877	0.849866
hippurate	<i>Eubacterium limosum</i>	0.0178	0.770718	0.850826
hippurate	<i>Lactobacillus sanfranciscensis</i>	0.0178	0.770821	0.850826
hippurate	motu_linkage_group_694	0.0175	0.773993	0.852626
hippurate	motu_linkage_group_70	0.0173	0.776556	0.853748
hippurate	motu_linkage_group_568	-0.0171	0.778993	0.854666
hippurate	<i>Megasphaera elsdenii</i>	-0.0169	0.781603	0.854666
hippurate	<i>Coprococcus comes</i>	0.0169	0.782027	0.854666
hippurate	<i>Lactococcus lactis</i>	-0.0164	0.787794	0.85927
hippurate	<i>Bacteroides stercoris</i>	0.0151	0.804267	0.875511
hippurate	motu_linkage_group_165	0.0149	0.807315	0.876066
hippurate	<i>Citrobacter</i> sp. 30_2	-0.0148	0.807945	0.876066
hippurate	<i>Veillonella parvula</i>	0.0147	0.81011	0.876694
hippurate	<i>Lactobacillus acidophilus</i>	0.0132	0.829048	0.895437
hippurate	motu_linkage_group_37	-0.0128	0.833476	0.898464
hippurate	<i>Veillonella</i> sp. oral taxon 158	0.0117	0.848521	0.910097
hippurate	motu_linkage_group_43	0.0116	0.849574	0.910097
hippurate	motu_linkage_group_520	-0.0115	0.850389	0.910097
hippurate	motu_linkage_group_140	-0.0115	0.85085	0.910097

hippurate	motu_linkage_group_633	0.0109	0.85767	0.915621
hippurate	motu_linkage_group_158	0.0108	0.859475	0.91578
hippurate	Actinomyces odontolyticus	0.0105	0.863208	0.916995
hippurate	Pediococcus pentosaceus	0.0104	0.865301	0.916995
hippurate	Bifidobacterium animalis	-0.0103	0.86559	0.916995
hippurate	Clostridium perfringens	0.0099	0.870553	0.920489
hippurate	Eubacterium rectale	0.0092	0.879655	0.92778
hippurate	motu_linkage_group_80	0.0092	0.880804	0.92778
hippurate	Haemophilus pittmaniae	0.0089	0.883454	0.928802
hippurate	Eubacterium saphenum	-0.0086	0.888485	0.932319
hippurate	motu_linkage_group_6	-0.008	0.895083	0.937464
hippurate	Bifidobacterium adolescentis	0.0079	0.897289	0.937998
hippurate	motu_linkage_group_550	-0.0072	0.906114	0.94394
hippurate	motu_linkage_group_251	0.0072	0.906387	0.94394
hippurate	motu_linkage_group_34	0.007	0.908811	0.944339
hippurate	Porphyromonas uenonis	-0.0069	0.910186	0.944339
hippurate	Bacteroides intestinalis	-0.0063	0.918197	0.950867
hippurate	Roseburia intestinalis	0.0061	0.920238	0.951199
hippurate	Sutterella wadsworthensis	0.005	0.935147	0.964267
hippurate	motu_linkage_group_497	0.0049	0.936368	0.964267
hippurate	Streptococcus cristatus	-0.0046	0.940125	0.965123
hippurate	motu_linkage_group_310	0.0042	0.944512	0.965123
hippurate	motu_linkage_group_727	0.0042	0.945724	0.965123
hippurate	motu_linkage_group_134	-0.0039	0.949431	0.965123
hippurate	Parabacteroides merdae	0.0038	0.950574	0.965123
hippurate	motu_linkage_group_498	0.0038	0.950637	0.965123
hippurate	motu_linkage_group_365	0.0038	0.950854	0.965123
hippurate	Bacteroides fluxus	-0.0037	0.951161	0.965123
hippurate	motu_linkage_group_268	-0.0036	0.953356	0.965579
hippurate	Peptoniphilus duerdenii	-0.0032	0.95876	0.968028
hippurate	motu_linkage_group_233	-0.0031	0.959275	0.968028
hippurate	Bacteroides salanitronis	0.0028	0.963306	0.970325
hippurate	motu_linkage_group_452	-0.002	0.973525	0.978835
hippurate	Clostridium sp. D5	-0.0012	0.984563	0.988137
hippurate	Leuconostoc lactis	-0.0008	0.989829	0.991622
hippurate	motu_linkage_group_126	-0.0006	0.992307	0.992307