Table S1. The relationship involving the number of the first 30 bacteria species found in the yak rumen and rumen fermentation parameters.

	Items	NH_3-N	MCP	Acetic acid	Propionic acid	Isobutyric acid	Butyric acid	Isovaleric acid	Valeric acid	T-VFA
Correlation Coefficient *r*	*g__Prevotella*	-0.0835	0.2796	0.3791	0.4332	-0.0598	0.3971	-0.0916	0.4075	0.3986
	g__unclassified_*d__Bacteria*	-0.0838	0.3731	0.1233	0.1230	-0.0612	0.0684	0.0799	0.0322	0.1173
	g__unclassified_*o__Bacteroidales*	-0.3273	-0.3589	0.2927	0.3403	-0.0745	0.3612	0.0644	0.3908	0.3189
	g__unclassified_*o__Clostridiales*	-0.0011	-0.3141	-0.1744	-0.2907	0.1028	-0.2871	-0.0441	-0.2996	-0.2190
	g__Bacteroides	-0.3413	0.2032	0.6545	0.6406	0.0639	0.5724	0.1356	0.5395	0.6526
	g__unclassified_*f__Lachnospiraceae*	0.0430	-0.1950	-0.1126	-0.2111	0.0110	-0.1188	-0.0639	-0.1546	-0.1376
	g__unclassified_*f__Rikenellaceae*	0.0560	-0.0517	-0.1312	-0.2009	0.0941	-0.1171	0.0139	-0.1106	-0.1453
	g__unclassified_*f__Ruminococcaceae*	0.1551	-0.1180	-0.1177	-0.2057	0.0807	-0.2629	0.0764	-0.2483	-0.1585
	g__Methanobrevibacter	0.0461	-0.0727	-0.1333	-0.1730	0.0372	-0.1080	0.0158	-0.1382	-0.1403
	g__unclassified_*p__Firmicutes*	0.0346	-0.1573	0.0292	-0.0956	0.2718	-0.1702	0.1736	-0.1605	-0.0224
	g__unclassified_*f__Prevotellaceae*	-0.2246	0.3315	0.4929	0.5036	-0.1053	0.4314	-0.1652	0.4168	0.4918
	g__unclassified_*p__Lentisphaerae*	-0.0181	-0.2372	0.0896	0.1360	-0.1513	0.0070	0.0054	0.1083	0.0890
	g__unclassified_*p__Bacteroidetes*	-0.3005	-0.0914	0.5227	0.5683	-0.1220	0.4948	0.1535	0.5108	0.5387
	g__Ruminococcus	-0.1240	-0.2166	-0.0117	-0.1410	0.0477	-0.1276	-0.0420	-0.1789	-0.0575
	g__Clostridium	0.1953	0.0521	-0.0056	-0.1295	0.4915	-0.2398	0.3404	-0.2446	-0.0595
	g__Butyrivibrio	0.2706	-0.2512	-0.4017	-0.4385	0.0759	-0.5361	0.0856	-0.4774	-0.4344
	g__Alistipes	-0.0666	-0.0184	0.1427	0.0847	0.2142	0.0706	0.2012	0.0749	0.1261
	g__Succiniclasticum	0.6184	0.1570	-0.1194	-0.1686	0.4407	-0.3216	0.4757	-0.2193	-0.1521
	g__unclassified_*c__Clostridia*	-0.0328	-0.2436	-0.0460	-0.1683	0.2406	-0.1869	0.0884	-0.1998	-0.0912
	g__unclassified_*f__Porphyromonadaceae*	-0.0996	-0.0062	0.1554	0.2673	0.1308	0.1108	0.3392	0.1682	0.1810
	g__Eubacterium	-0.0214	-0.3122	-0.0287	-0.1583	0.0063	0.0525	-0.1259	-0.0054	-0.0468
	g__Selenomonas	0.1318	0.5457	0.2365	0.1229	0.4991	-0.0174	0.3845	-0.0692	0.1861

	g__Sarcina	-0.1196	-0.2175	-0.0540	-0.0713	-0.0726	0.0141	-0.0846	-0.0162	-0.0504
	g__unclassified_*f__Erysipelotrichaceae*	0.1309	0.1556	0.2708	0.1532	0.0120	0.0546	0.1091	0.0532	0.2197
	g__unclassified_*p__Verrucomicrobia*	-0.0155	-0.3325	-0.2599	-0.1487	-0.2087	-0.2697	-0.1088	-0.1672	-0.2438
	g__Stylonychia	0.2558	-0.1739	-0.5217	-0.4822	-0.0667	-0.3812	-0.0590	-0.3690	-0.5027
	g__Oscillibacter	-0.0435	-0.1127	-0.0010	-0.0837	0.2497	-0.1293	0.0495	-0.1453	-0.0356
	g__Parabacteroides	-0.3280	0.0755	0.6848	0.7006	0.0614	0.6139	0.2057	0.6126	0.6926
	g__Fibrobacter	-0.2031	-0.1856	0.5521	0.7402	-0.0730	0.6717	0.1714	0.7834	0.6227
	g__Stentor	0.2550	-0.1674	-0.5136	-0.4733	-0.0618	-0.3718	-0.0523	-0.3602	-0.4939
p-Value	*g__Prevotella*	0.6980	0.1858	0.0677	0.0345	0.7813	0.0547	0.6705	0.0481	0.0537
	g__unclassified_*d__Bacteria*	0.6971	0.0726	0.5660	0.5668	0.7765	0.7508	0.7105	0.8814	0.5852
	g__unclassified_*o__Bacteroidales*	0.1184	0.0850	0.1651	0.1037	0.7295	0.0829	0.7650	0.0590	0.1288
	g__unclassified_*o__Clostridiales*	0.9959	0.1350	0.4150	0.1681	0.6325	0.1737	0.8380	0.1550	0.3038
	g__Bacteroides	0.1027	0.3410	0.0005	0.0007	0.7668	0.0035	0.5274	0.0065	0.0005
	g__unclassified_*f__Lachnospiraceae*	0.8420	0.3611	0.6005	0.3221	0.9591	0.5805	0.7666	0.4709	0.5215
	g__unclassified_*f__Rikenellaceae*	0.7950	0.8104	0.5411	0.3466	0.6620	0.5857	0.9486	0.6070	0.4980
	g__unclassified_*f__Ruminococcaceae*	0.4693	0.5830	0.5838	0.3350	0.7079	0.2146	0.7229	0.2420	0.4594
	g__Methanobrevibacter	0.8305	0.7357	0.5345	0.4188	0.8631	0.6154	0.9415	0.5196	0.5132
	g__unclassified_*p__Firmicutes*	0.8725	0.4629	0.8923	0.6569	0.1988	0.4267	0.4172	0.4539	0.9171
	g__unclassified_*f__Prevotellaceae*	0.2913	0.1136	0.0144	0.0121	0.6243	0.0353	0.4404	0.0427	0.0146
	g__unclassified_*p__Lentisphaerae*	0.9331	0.2645	0.6773	0.5264	0.4803	0.9743	0.9801	0.6143	0.6793
	g__unclassified_*p__Bacteroidetes*	0.1537	0.6712	0.0088	0.0038	0.5700	0.0140	0.4740	0.0108	0.0066
	g__Ruminococcus	0.5639	0.3093	0.9569	0.5111	0.8248	0.5525	0.8455	0.4030	0.7897
	g__Clostridium	0.3603	0.8090	0.9792	0.5464	0.0147	0.2590	0.1036	0.2494	0.7823
	g__Butyrivibrio	0.2010	0.2364	0.0517	0.0321	0.7246	0.0069	0.6908	0.0183	0.0339
	g__Alistipes	0.7572	0.9319	0.5061	0.6939	0.3149	0.7430	0.3458	0.7280	0.5571
	g__Succiniclasticum	0.0013	0.4637	0.5783	0.4310	0.0311	0.1254	0.0188	0.3032	0.4781

*g__*unclassified*_c__Clostridia*	0.8791	0.2514	0.8310	0.4319	0.2574	0.3818	0.6814	0.3492	0.6716
*g__*unclassified*_f__Porphyromonadaceae*	0.6434	0.9769	0.4684	0.2067	0.5423	0.6062	0.1049	0.4319	0.3973
g__Eubacterium	0.9210	0.1375	0.8942	0.4600	0.9767	0.8077	0.5577	0.9801	0.8281
g__Selenomonas	0.5392	0.0058	0.2658	0.5672	0.0130	0.9358	0.0636	0.7480	0.3838
g__Sarcina	0.5779	0.3073	0.8020	0.7405	0.7360	0.9479	0.6944	0.9402	0.8151
*g__*unclassified*_f__Erysipelotrichaceae*	0.5420	0.4679	0.2005	0.4748	0.9555	0.7999	0.6118	0.8050	0.3022
*g__*unclassified*_p__Verrucomicrobia*	0.9427	0.1124	0.2200	0.4881	0.3277	0.2024	0.6127	0.4348	0.2509
g__Stylonychia	0.2277	0.4165	0.0089	0.0170	0.7569	0.0661	0.7843	0.0760	0.0123
g__Oscillibacter	0.8401	0.6000	0.9963	0.6975	0.2392	0.5470	0.8184	0.4980	0.8689
g__Parabacteroides	0.1176	0.7259	0.0002	0.0001	0.7757	0.0014	0.3349	0.0015	0.0002
g__Fibrobacter	0.3411	0.3851	0.0052	0.0000	0.7346	0.0003	0.4231	0.0000	0.0012
g__Stentor	0.2291	0.4342	0.0103	0.0195	0.7742	0.0736	0.8082	0.0838	0.0142