

**Table S2.** Major bacterial phyla identified in the rumen of the Holstein and the Jersey steers at different seasons.

Bacterial Phyla	Breed	Season				SEM	Mixed <i>p</i> value	
		Winter	Spring	Summer	Overall		Season	Breed
Bacteroidetes	Hol	57.91	68.89	58.98	61.93	2.994	<0.01	0.49
	Jer	50.96	70.08	67.31	62.78	2.416		
	Total	54.43 <sup>b</sup>	69.48 <sup>a</sup>	63.15 <sup>a</sup>	-	2.705		
Firmicutes	Hol	35.81	17.84	28.45	27.37	2.650	<0.01	0.59
	Jer	43.53	21.30	26.14	30.32	2.913		
	Total	39.67 <sup>a</sup>	19.57 <sup>c</sup>	27.30 <sup>b</sup>	-	2.782		
Proteobacteria	Hol	3.19	10.03	8.81	7.34	2.541	0.07	<0.01
	Jer	1.85	3.65	1.48	2.32	0.673		
	Total	2.52	6.84	5.14	-	1.607		
Tenericutes	Hol	1.26	0.82	0.48	0.86	0.206	0.04	0.83
	Jer	1.31	1.06	0.53	0.97	0.298		
	Total	1.29 <sup>a</sup>	0.94 <sup>ab</sup>	0.51 <sup>b</sup>	-	0.252		
Spirochaetes	Hol	0.76	0.79	1.38	0.97	0.270	0.046	0.18
	Jer	0.52	2.83	3.31	2.22	0.798		
	Total	0.64 <sup>b</sup>	1.81 <sup>ab</sup>	2.34 <sup>a</sup>	-	0.534		
Candidatus Melainabacteria	Hol	0.39	0.37	1.07	0.61	0.149	0.04	0.95
	Jer	0.62	0.37	0.48	0.49	0.096		
	Total	0.50 <sup>ab</sup>	0.37 <sup>b</sup>	0.77 <sup>a</sup>	-	0.122		
Fibrobacteres	Hol	0.28	1.09	0.58	0.65	0.232	<0.01	0.07
	Jer	0.07	0.43	0.40	0.30	0.081		
	Total	0.17 <sup>b</sup>	0.76 <sup>a</sup>	0.49 <sup>ab</sup>	-	0.157		

SEM, standard error of the mean; Hol, Holstein steer; Jer, Jersey steer. <sup>a, b, c</sup> in the same row indicate the significant differences ( $p < 0.05$ ) of data among three different seasons regardless of breed.