

## Supplementary Materials

**Table S1.** Number of sequences, observed diversity richness (OTUs), and diversity estimates of bacteria in Gouda cheese during the ripening period

	Time (wk)		Read counts	OTUs	Chao 1	Shannon	Simpson	Goods coverage
P-GC	6	Center	71,957	14	14	1.32	0.45	1
		Surface	80,396	16	16	1.23	0.41	1
	24	Center	66,843	16	16	1.37	0.50	1
		Surface	74,736	18	18.25	1.22	0.41	0.99
R-GC	6	Center	87,314	16	16	0.76	0.24	0.99
		Surface	110,742	18	18	0.71	0.23	1
	24	Center	66,792	16	16	0.76	0.24	0.99
		Surface	70,172	18	18	0.71	0.23	1

Read counts, the total number of sequence reads; P-GC, Gouda cheese made from pasteurized milk; R-GC, Gouda cheese made from raw milk.

**Table S2.** Taxonomic classification of bacterial 16S rRNA gene sequences at genus level (relative abundance > 0.01%) in Gouda cheese made from pasteurized and raw milk during the ripening period

Phylum	Family	Genus	P-GC				R-GC			
			6 wk		24 wk		6 wk		24 wk	
			Center	Surface	Center	Surface	Center	Surface	Center	Surface
Actinobacteria	Brevibacteriaceae	<i>Brevibacterium</i>		0.02	0.03	0.19			0.09	0.05
Actinobacteria	Dermabacteraceae	<i>Brachybacterium</i>			0.01	0.12			0.11	0.01
Bacteroidetes	Bacteroidaceae	<i>Bacteroides</i>	0.08							
Bacteroidetes	Flavobacteriaceae	<i>Chryseobacterium</i>		0.01	0.09	0.03	0.39	0.59	1.11	0.83
Bacteroidetes	Sphingobacteriaceae	<i>Mucilaginibacter</i>		0.01					0.04	0.04
Cyanobacteria	Symphyonemataceae	<i>Loriellopsis</i>	0.08		0.03					
Firmicutes	Streptococcaceae	<i>Lactococcus</i>	76.03	77.81	67.86	76.15	92.25	92.44	86.88	87.24
Firmicutes	Streptococcaceae	<i>Staphylococcus</i>	0.01	0.18	0.06	0.18	0.09	0.14	0.27	0.13
Firmicutes	Leuconostocaceae	<i>Leuconostoc</i>	19.77	18.19	28.96	20.42	3.18	3.41	11.19	11.47
Firmicutes	Lactobacillaceae	<i>Lactobacillus</i>	0.04	0.01	0.02		0.04			
Firmicutes	Lactobacillaceae	<i>Pediococcus</i>	0.78	0.17	0.10		0.04	0.01		
Proteobacteria	Rhizobiaceae	<i>Agrobacterium</i>	0.06	0.02	0.02	0.01	0.08	0.06		0.05
Proteobacteria	Enterobacteriaceae	<i>Escherichia</i>					0.38	0.30	0.01	
Proteobacteria	Enterobacteriaceae	<i>Leclercia</i>	1.80	1.40	1.64	1.38	1.73	1.93	0.12	0.23
Proteobacteria	Enterobacteriaceae	<i>Raoultella</i>	1.77	1.71	1.25	1.43	1.21	1.60	0.03	0.06
Proteobacteria	Pseudomonadaceae	<i>Pseudomonas</i>	0.03	0.01	0.01		0.02	0.07		0.01
		Unknown					0.03	0.03		0.01

P-GC, Gouda cheese made from pasteurized milk; R-GC, Gouda cheese made from raw milk.

**Table S3.** Taxonomic classification of bacterial 16S rRNA gene sequences at species level (Relative abundance>0.01%) in Gouda cheese made from pasteurized and raw milk during the ripening period

Species	P-GC				R-GC			
	6 wk		24 wk		6 wk		24 wk	
	Center	Surface	Center	Surface	Center	Surface	Center	Surface
<i>Brevibacterium aurantiacum</i>		0.02	0.03	0.19			0.09	0.05
<i>Brachybacterium sacelli</i>			0.01	0.12			0.11	0.01
<i>Bacteroides ovatus</i>	0.08							
<i>Chryseobacterium bernardetii</i>		0.01	0.09	0.03	0.38	0.59	1.07	0.80
<i>Chryseobacterium zeae</i>					0.01		0.04	0.03
<i>Mucilaginibacter koreensis</i>		0.01					0.04	0.04
<i>Loriellopsis cavernicola</i>	0.08		0.03					
<i>Lactococcus lactis</i>	71.87	74.63	65.42	74.05	91.87	92.12	86.53	86.88
<i>Lactococcus laudensis</i>	4.16	3.18	2.44	2.10	0.38	0.31	0.35	0.36
<i>Staphylococcus equorum</i>	0.01	0.18	0.06	0.18	0.09	0.14	0.27	0.13
<i>Leuconostoc pseudomesenteroides</i>	19.77	18.19	28.96	20.42	3.18	3.41	11.19	11.47
<i>Lactobacillus plantarum</i>	0.04	0.01	0.02		0.01			
<i>Pediococcus pentosaceus</i>	0.78	0.17	0.10		0.04	0.01		
<i>Agrobacterium tumefaciens</i>	0.06	0.02	0.02	0.01	0.08	0.06		0.05
<i>Escherichia fergusonii</i>					0.38	0.30	0.01	
<i>Leclercia adecarboxylata</i>	1.40	1.80	1.38	1.64	1.93	1.73	0.23	0.12
<i>Raoultella ornithinolytica</i>	1.71	1.77	1.43	1.25	1.60	1.21	0.06	0.03
<i>Pseudomonas azotoformans</i>	0.03	0.01	0.01		0.02	0.07		0.01
<i>Pseudomonas geniculata</i>					0.03	0.03		0.01

P-GC, Gouda cheese made from pasteurized milk; R-GC, Gouda cheese made from raw milk.