Supplements

Figure S1: 16S rRNA amplicon clustering to genera for the emulsion and sausage microbiome. The samples originating from the same raw materials are clustered together.

Figure S2: Phylogenetic tree of the OTUs classified as Yersinia and selected reference sequence. OTU denovo2230, similar to Yersinia pseudotuberculosis, contained a total of 3,438 sequences.

Figure S3: HindIII ribopatterns of LAB from cultured surface, air and product samples. The numerical analysis of pattern similarities is presented as a dendrogram and converted to percentages for convenience. Bands on the left have high molecular masses of 23 kbp; those on the right have low molecular masses of 1,000 bp.

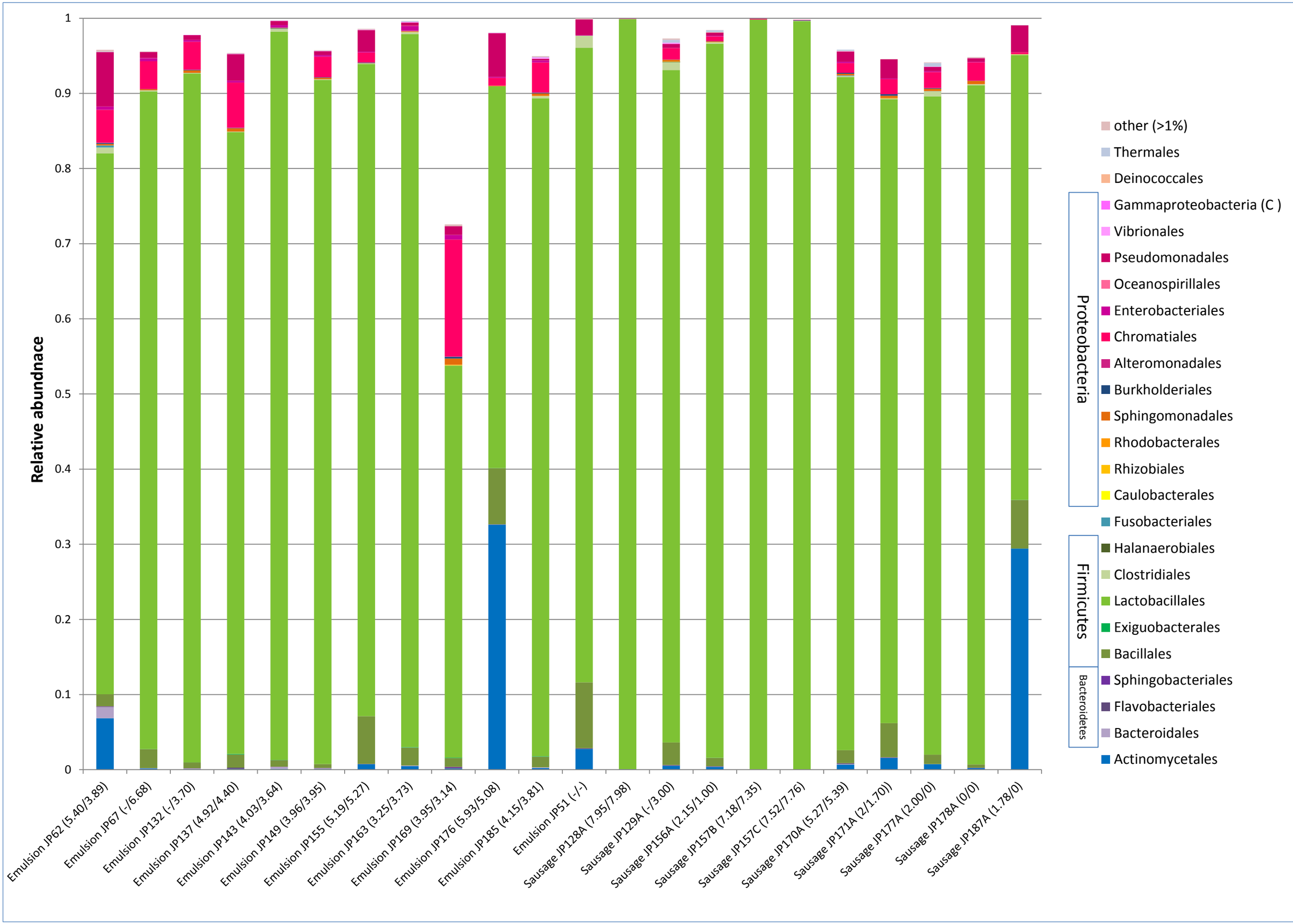
Table S1. Number of OTUs and alpha diversity indices for each sample.

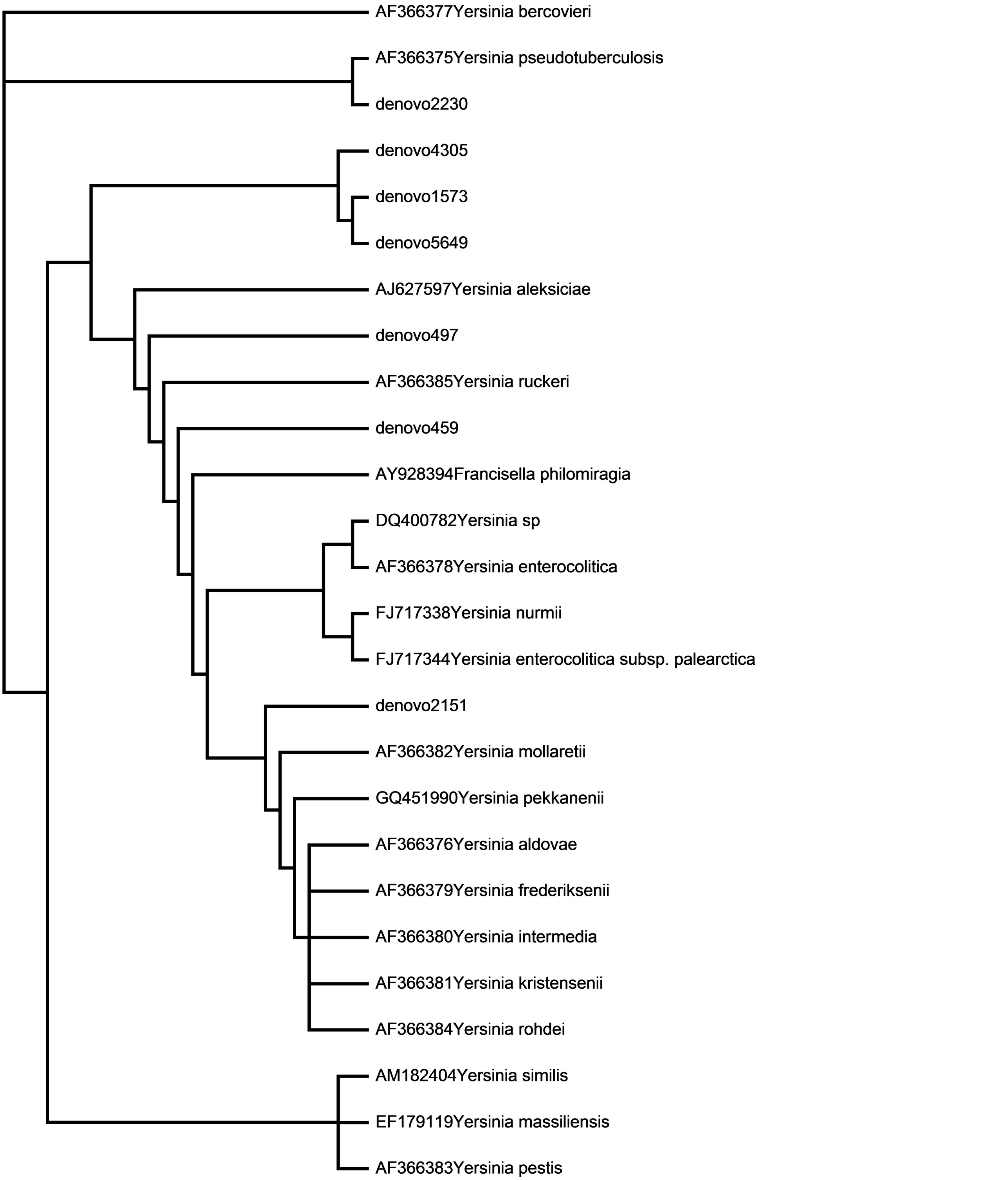
Table S2. Detailed results for OTU relative abundance in all samples

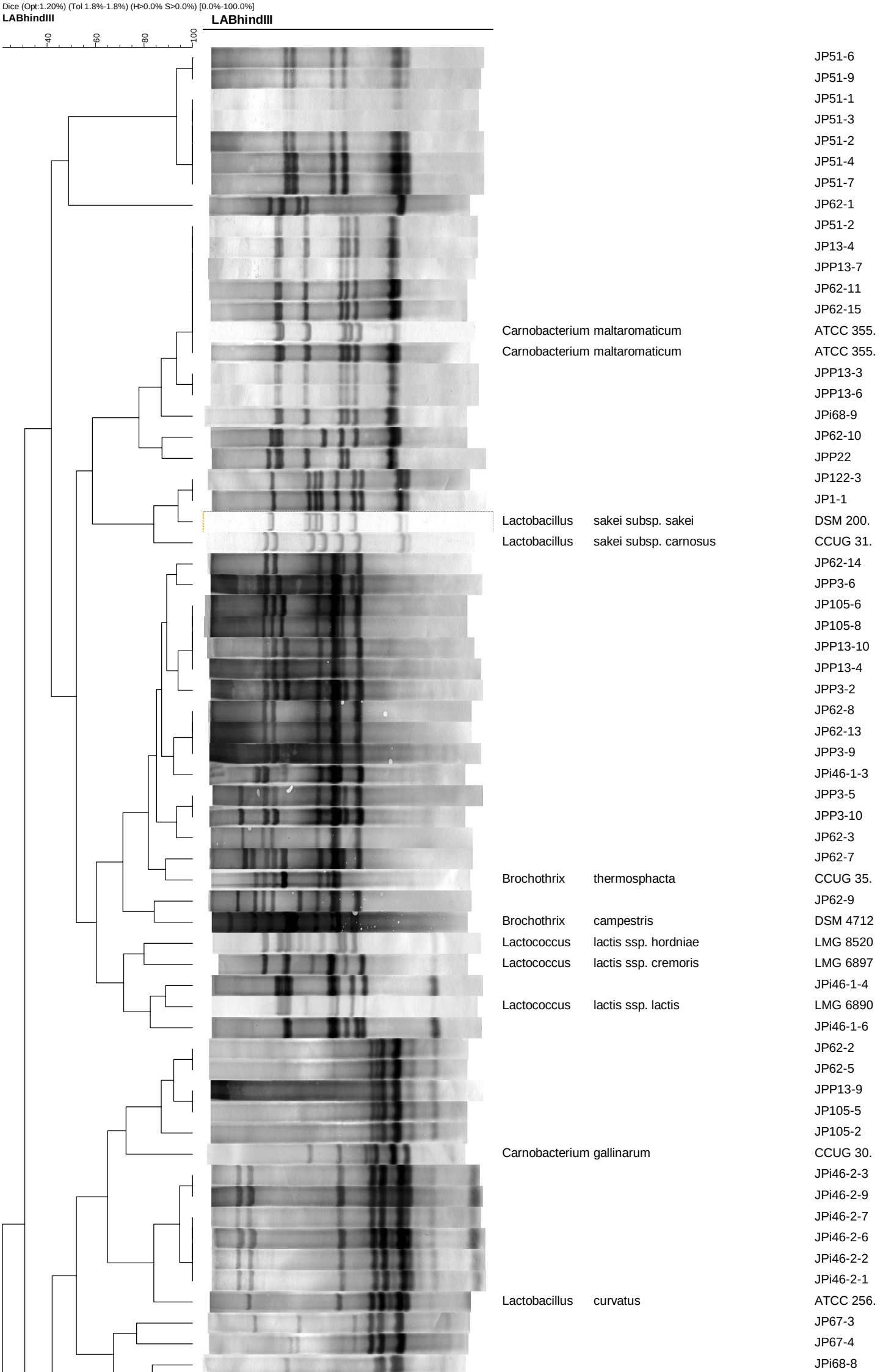
Table S3. Bacterial levels in raw material, sausage emulsion and sausages on both MRS (LAB) and PCA (total bacteria) agar.

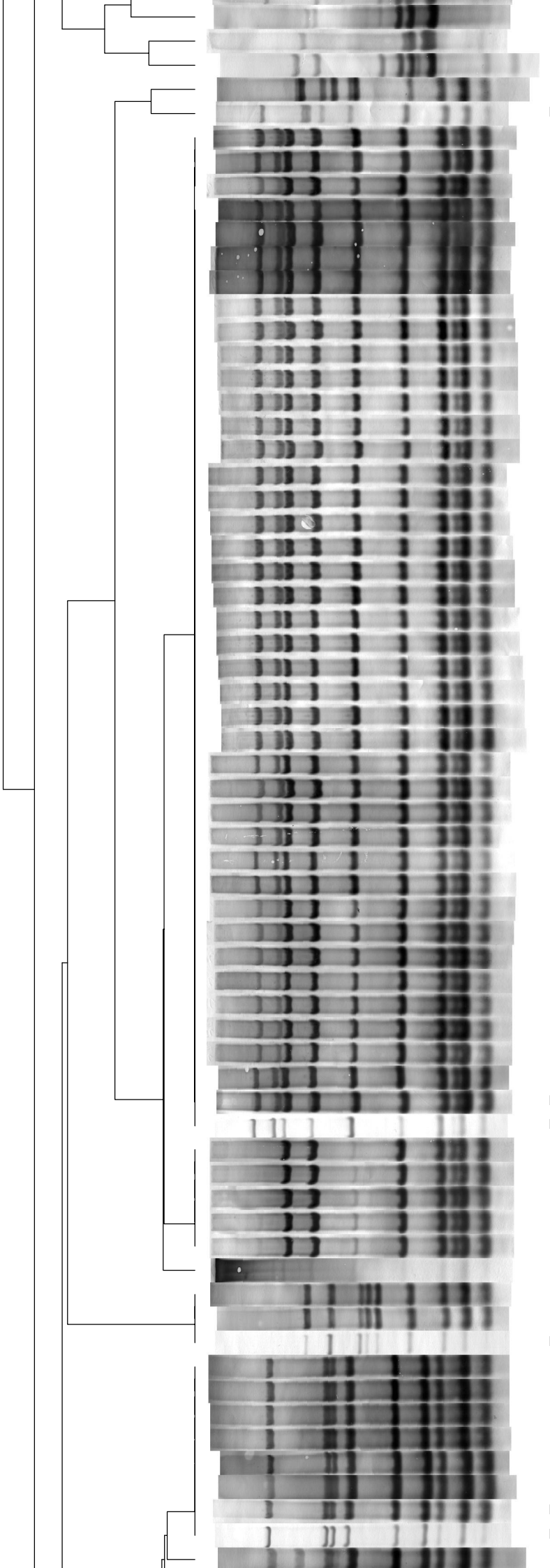
Table S4. Sensory evaluation results and LAB levels in sausages analyzed on last day of shelf life

Table S5. Results from numerical analysis of HindIII ribopatterns based on the origin of sample.

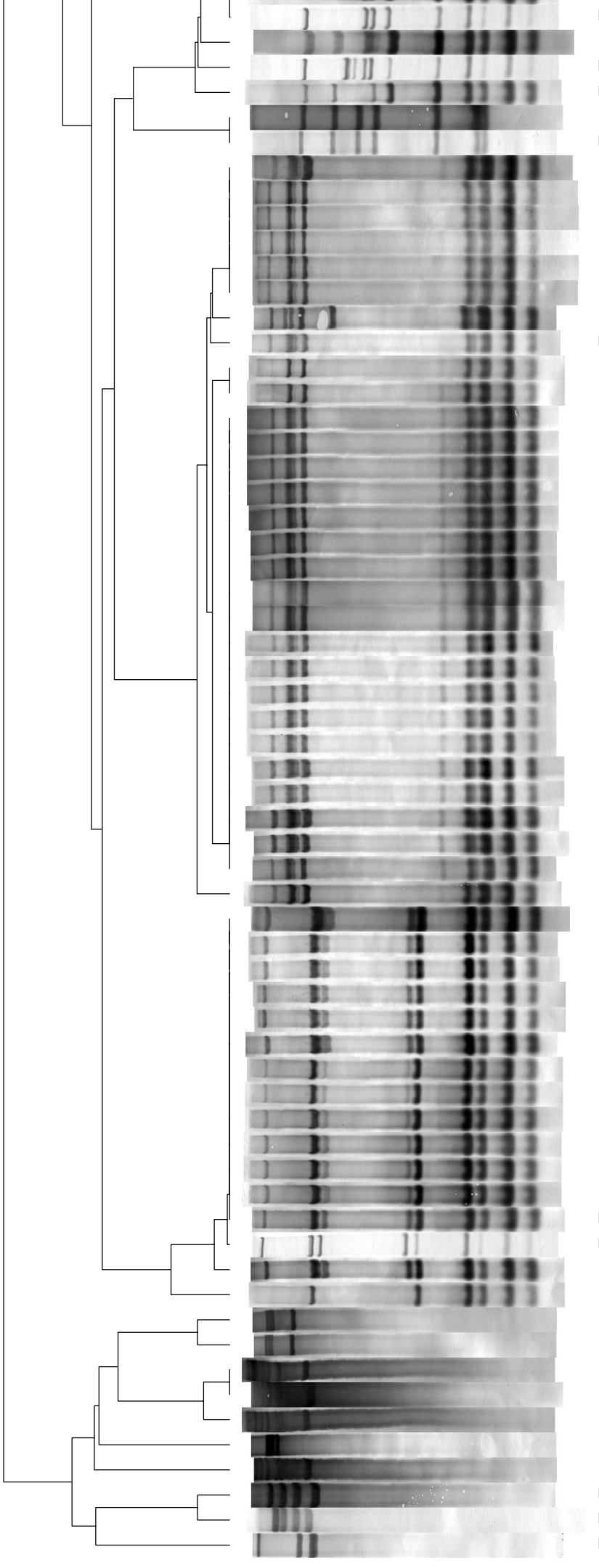

Relative abundnace
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
Emulsion JP62 (5.40/3.89)
Emulsion JP67 (-/6.68)
Emulsion JP132 (-/3.70)
Emulsion JP137 (4.92/4.40)
Emulsion JP143 (4.03/3.64)
Emulsion JP149 (3.96/3.95)
Emulsion JP155 (5.19/5.27)
Emulsion JP163 (3.25/3.73)
Emulsion JP169 (3.95/3.14)
Emulsion JP176 (5.93/5.08)
Emulsion JP185 (4.15/3.81)
Emulsion JP51 (-/-)
Sausage JP128A (7.95/7.98)
Sausage JP129A (-/3.00)
Sausage JP156A (2.15/1.00)
Sausage JP157B (7.18/7.35)
Sausage JP157C (7.52/7.76)
Sausage JP170A (5.27/5.39)
Sausage JP171A (2/1.70))
Sausage JP177A (2.00/0)
Sausage JP178A (0/0)
Sausage JP187A (1.78/0)
Proteobacteria
Firmicutes
Bacteroidetes
other (>1%)
Thermales
Deinococcales
Gammaproteobacteria (C)
Vibrionales
Pseudomonadales
Oceanospirillales
Enterobacteriales
Chromatiales
Alteromonadales
Burkholderiales
Sphingomonadales
Rhodobacterales
Rhizobiales
Caulobacterales
Fusobacteriales
Halanaerobiales
Clostridiales
Lactobacillales
Exiguobacterales
Bacillales
Sphingobacteriales
Flavobacteriales
Bacteroidales
Actinomycetales


AF366377Yersinia bercovieri
AF366375Yersinia pseudotuberculosis
denovo2230
denovo4305
denovo1573
denovo5649
AJ627597Yersinia aleksiciae
denovo497
AF366385Yersinia ruckeri
denovo459
AY928394Francisella philomiragia
DQ400782Yersinia sp
AF366378Yersinia enterocolitica
FJ717338Yersinia nurmii
FJ717344Yersinia enterocolitica subsp. palearctica
denovo2151
AF366382Yersinia mollaretii
GQ451990Yersinia pekkanenii
AF366376Yersinia aldovae
AF366379Yersinia frederiksenii
AF366380Yersinia intermedia
AF366381Yersinia kristensenii
AF366384Yersinia rohdei
AM182404Yersinia similis
EF179119Yersinia massiliensis
AF366383Yersinia pestis


Dice (Opt:1.20%) (Tol 1.8%-1.8%) (H>0.0% S>0.0%) [0.0%-100.0%]
LABhindIII
LABhindIII
40
60
80
100
JP51-6
JP51-9
JP51-1
JP51-3
JP51-2
JP51-4
JP51-7
JP62-1
JP51-2
JP13-4
JPP13-7
JP62-11
JP62-15
Carnobacterium maltaromaticum ATCC 355.
Carnobacterium maltaromaticum ATCC 355.
JPP13-3
JPP13-6
JPi68-9
JP62-10
JPP22
JP122-3
JP1-1
Lactobacillus sakei subsp. sakei DSM 200.
Lactobacillus sakei subsp. carnosus CCUG 31.
JP62-14
JPP3-6
JP105-6
JP105-8
JPP13-10
JPP13-4
JPP3-2
JP62-8
JP62-13
JPP3-9
JPi46-1-3
JPP3-5
JPP3-10
JP62-3
JP62-7
Brochothrix thermosphacta CCUG 35.
JP62-9
Brochothrix campestris DSM 4712
Lactococcus lactis ssp. hordniae LMG 8520
Lactococcus lactis ssp. cremoris LMG 6897
JPi46-1-4
Lactococcus lactis ssp. lactis LMG 6890
JPi46-1-6
JP62-2
JP62-5
JPP13-9
JP105-5
JP105-2
Carnobacterium gallinarum CCUG 30.
JPi46-2-3
JPi46-2-9
JPi46-2-7
JPi46-2-6
JPi46-2-2
JPi46-2-1
Lactobacillus curvatus ATCC 256.
JP67-3
JP67-4
JPi68-8



		JP67-4
		JPi68-8
Lactobacillus	fuchuensis	DSM 143.
		JPi46-1-5
Leuconostoc	pseudomesenteroides	DSM 201.
		JP55-6
		JP67-1
		JP53-7
		JP67-6
		JP122-7
		JP67-8
		JP67-9
		JP55-12
		JP55-13
		JP56-13
		JP54-1
		JP54-2
		JP54-4
		JP54-6
		JP54-9
		JP54-11
		JP54-13
		JP55-3
		JP55-4
		JP55-5
		JP55-10
		JP55-11
		JP53-6
		JP53-1
		JP56-9
		JP56-15
		JPi68-1
		JPi68-3
		JPi68-4
		JPi68-5
		JPi68-7
		JPi68-10
		JP53-12
		JP53-3
		JP53-8
		JP56-1
		JP56-2
		JP56-3
		JP56-5
		JP67-7
Leuconostoc	carnosum	DSM 5576
Leuconostoc	carnosum	NCFB 2776
		JP53-9
		JP53-10
		JP56-8
		JP56-11
		JP56-14
		JP67-5
		JP122-10
		JP122-5
Leuconostoc	citreum (amelibiosum)	LMG 9824
		JP122-1
		JP122-2
		JP122-4
		JP122-6
		JP122-8
		JP122-9
Leuconostoc	mesenteroides subsp mesenteroides	DSM 203.
Leuconostoc	mesenteroides subsp dextranicum	DSM 204.
		JPi7-1-1



Leuconostoc	mesenteroides subsp dextranicum	DSM 204.
		JPi7-1-1
Leuconostoc	mesenteroides subsp. cremoris	CCUG 21.
Leuconostoc	mesenteroides subsp. suionicum	DSM 202.
		JP62-6
Lactobacillus	algidus	DSM 156.
		JP13-1
		JPi46-2-4
		JPi46-2-10
		JP13-3
		JPi46-2-5
		JPi46-2-8
		JP67-10
Leuconostoc	gasicomitatum	LMG 1881.
		JP56-12
		JP56-4
		JP128A-1
		JP128A-4
		JP128A-5
		JP128A-6
		JP128A-7
		JP128A-9
		JP128A-10
		JP128A-2
		JP128A-3
		JP54-3
		JP55-7
		JP54-7
		JP54-10
		JP55-8
		JP55-14
		JP53-13
		JP55-2
		JP55-15
		JP128A-8
		JP53-14
		JPBL22
		JP54-12
		JP55-1
		JP54-5
		JP54-8
		JP54-14
		JP56-7
		JP56-10
		JP53-5
		JP53-4
		JP53-3
		JP53-11
Leuconostoc	gelidum	DSM 5578
Leuconostoc	gelidum	NCFB 2775
		JP55-9
		JP56-6
		JP62-4
		JP62-12
		JP105-7
		JP105-10
		JP105-4
		JP67-2
		JP105-9
Lactococcus	chungangensis	DSM 223.
Lactococcus	plantarum	LMG 8517
Lactococcus	piscium	CCUG 32.