

Supplementary data

Table S1. Definitions of the sensory attributes tested.

Sensory attribute	Short name	Scale	Definition
<i>ODOUR</i>			
Frying	O-frying	none much	Odour of fried lamb meat
Sour	O-sour	none much	Sour odour of fresh lamb meat
Fatty	O-fatty	none much	Lamb fat, wool
Liver	O-liver	none much	Odour of lamb liver, blood, iron, game
<i>APPEARANCE</i>			
Colour	A-colour	light dark	Colour of sample's cutted surface
<i>FLAVOUR</i>			
Frying	F-frying	none much	Flavour of fried lamb meat
Sour	F-sour	none much	Sour flavour of fresh lamb meat
Fatty	F-fatty	none much	Flavour of lamb fat, wool
Sweet	F-sweet	none much	Sweet flavour
Liver	F-liver	none much	Flavour of lamb liver, blood, iron, game
<i>TEXTURE</i>			
Soft	T-soft	firm soft	First bite, cut a piece from the middle of the sample and bite transversely on the muscle fibers
Tender	T-tender	tough tender	How tough or tender is the meat when chewing
Juicy	T-juicy	dry juicy	Dry - draws juice from mouth; juicy- releases juice
Mushy	T-mushy	none much	Mushy, lamb paté

Table S2. Fresh meat, with individual data on technological meat quality attributes (colour, cooking loss and WBSF) and sensory attributes (Small = Small-scale slaughter system, Large = Large-scale slaughter system).

Slaughter system	Small	Small	Small	Small	Small	Small	Small	Small	Small	Small
Animal ID	1189	1581	1685	1465	1533	1812	1570	1389	1699	1872
Lamb pair	1	2	3	4	5	6	7	8	9	10
L*	37.0	38.1	36.2	35.2	34.0	36.3	37.2	35.4	39.3	36.7
a*	19.7	18.8	20.8	20.4	18.4	15.1	17.4	20.8	15.6	21.1
b*	5.3	3.9	5.1	3.6	2.8	2.3	3.2	6.2	3.3	5.9
Cooking loss (%)	14.2	17.4	9.3	16.7	11.9	9.3	19.8	14.4	12.0	13.7
WBSF (N) ^a	87.2	39.6	49.7	38.4	54.0	46.9	56.6	43.4	41.8	32.8
Frying odour ^b	25	30	43	35	29	33	30	46	29	30
Sour odour ^b	9	17	17	9	22	13	11	11	12	8
Fatty odour ^b	28	28	23	31	30	29	22	28	27	29
Liver odour ^b	31	29	30	32	33	25	23	29	24	38
Colour apperance ^b	30	30	42	26	35	31	34	32	34	38
Frying flavour ^b	24	25	26	21	27	23	24	38	27	22
Sour flavour ^b	17	23	25	31	25	28	28	16	26	25
Fatty flavour ^b	17	17	16	14	22	13	18	22	23	17
Sweet flavour ^b	8	9	11	9	7	10	8	10	8	9
Liver flavour ^b	42	47	50	45	37	36	34	38	35	42
Soft texture ^b	40	54	66	28	35	45	36	66	34	69
Tender texture ^b	36	51	63	26	29	53	29	69	29	71
Juicy texture ^b	49	37	60	39	34	54	42	67	42	62
Muschy texture ^b	12	14	15	10	13	19	11	16	12	22
Slaughter system	Large	Large	Large	Large	Large	Large	Large	Large	Large	Large
Animal ID	2812	2699	2872	2685	2389	2533	2189	2465	2570	2581
Lamb pair	6	9	10	3	8	5	1	4	7	2

L*	37.0	40.1	.	39.1	36.4	.	37.5	39.9	38.8	39.0
a*	20.9	19.5	.	20.4	21.3	.	20.2	18.1	19.5	20.7
b*	4.1	5.3	.	5.9	5.2	.	3.9	4.6	4.3	5.5
Cooking loss (%)	18.2	18.5	.	11.8	17.4	.	14.7	15.1	13.3	16.1
WBSF (N) ^a	32.6	37.4	.	49.5	48.3	.	50.7	49.5	43.8	25.5
Frying odour ^b	22	55	.	24	35	.	30	40	36	21
Sour odour ^b	15	10	.	9	17	.	9	12	13	11
Fatty odour ^b	28	25	.	28	31	.	20	32	29	26
Liver odour ^b	35	32	.	29	20	.	27	34	33	30
Colour appearance ^b	27	30	.	34	25	.	27	36	29	25
Frying flavour ^b	20	31	.	22	23	.	20	25	24	19
Sour flavour ^b	30	32	.	19	22	.	19	31	27	32
Fatty flavour ^b	15	18	.	11	15	.	11	14	19	17
Sweet flavour ^b	11	13	.	7	9	.	7	9	8	10
Liver flavour ^b	47	47	.	35	40	.	35	46	44	39
Soft texture ^b	64	64	.	38	47	.	46	48	44	72
Tender texture ^b	58	69	.	34	43	.	45	42	43	72
Juicy texture ^b	57	51	.	38	47	.	50	49	46	62
Muschy texture ^b	19	24	.	11	13	.	17	13	16	26
^a Warner-Bratzler	shear			force			measured		in	Newton.

^bSensory attributes was scored on a scale from 0-100, with 100 being the highest score.

Table S3. Frozen meat, individual data on technological meat quality attributes (colour, cooking loss and WBSF) and sensory attributes (Small = Small-scale slaughter system, Large = Large-scale slaughter system).

Slaughter system	Small	Small	Small	Small	Small	Small	Small	Small	Small	Small
Animal ID	1189	1581	1685	1465	1533	1812	1570	1389	1699	1872
Lamb pair	1	2	3	4	5	6	7	8	9	10
L*	36.0	36.0	35.9	37.5	36.9	35.7	38.4	35.6	37.0	36.6
a*	19.7	18.2	22.0	20.2	18.8	16.5	16.5	18.8	18.2	21.5
b*	6.7	7.0	7.0	8.2	6.7	4.7	3.4	4.1	5.9	7.5
Cooking loss (%)	26.7	29.9	22.2	26.2	28.2	23.1	32.7	23.6	18.2	27.7
WBSF (N) ^a	73.6	40.2	38.9	30.9	56.8	73.7	58.3	27.1	46.6	30.2
Frying odour ^b	31	41	33	34	43	27	29	31	29	45
Sour odour ^b	16	13	15	16	10	15	12	20	13	11
Fatty odour ^b	31	27	30	31	26	37	35	39	32	25
Liver odour ^b	32	34	35	26	26	31	37	33	23	34
Colour appearance ^b	37	19	35	30	31	40	31	32	36	38
Frying flavour ^b	25	32	30	21	30	30	26	20	20	34
Sour flavour ^b	15	36	29	27	28	27	3	43	19	25
Fatty flavour ^b	21	17	23	21	18	33	29	19	26	23
Sweet flavour ^b	13	11	10	10	9	6	10	8	14	8
Liver flavour ^b	36	44	44	55	35	48	46	44	45	48
Soft texture ^b	52	62	44	72	36	33	47	64	70	58
Tender texture ^b	45	60	42	70	32	28	46	64	69	55
Juicy texture ^b	26	34	43	48	23	26	30	45	56	36
Muschy texture ^b	17	12	10	11	9	6	14	21	21	15
Slaughter system	Large	Large	Large	Large	Large	Large	Large	Large	Large	Large
Animal ID	2812	2699	2872	2685	2389	2533	2189	2465	2570	2581
Lamb pair	6	9	10	3	8	5	1	4	7	2
L*	37.9	38.2	36.0	36.6	34.7	34.0	37.1	38.2	36.5	39.8
a*	19.0	18.2	19.3	18.9	18.6	19.5	19.1	17.0	17.4	18.3
b*	6.8	7.1	5.9	5.6	5.0	5.0	6.7	6.3	2.9	7.3
Cooking loss (%)	27.7	29.3	30.3	25.2	28.5	29.6	25.6	27.2	26.8	28.6

WBSF (N) ^a	42.6	55.5	57.3	57.3	52.3	65.3	55.6	50.4	54.4	46.3
Frying odour ^b	38	38	44	37	28	37	39	31	33	50
Sour odour ^b	18	17	9	16	13	16	11	14	12	17
Fatty odour ^b	28	36	28	27	46	24	29	23	49	28
Liver odour ^b	28	30	24	36	31	37	37	36	33	33
Colour apperance ^b	24	24	30	36	22	38	24	19	37	23
Frying flavour ^b	33	26	40	35	22	21	31	25	24	45
Sour flavour ^b	36	38	28	27	37	21	41	46	28	36
Fatty flavour ^b	27	19	16	22	19	16	17	17	24	27
Sweet flavour ^b	8	10	9	10	8	9	9	9	8	8
Liver flavour ^b	48	48	42	46	36	37	43	51	49	48
Soft texture ^b	75	45	54	43	32	36	49	47	51	75
Tender texture ^b	72	44	49	40	32	30	41	40	58	72
Juicy texture ^b	52	32	34	29	20	21	25	25	42	52
Muschy texture ^b	16	12	15	13	13	11	13	10	14	16
^a Warner-Bratzler	shear		force		measured		in		Newton.	
^b Sensory attributes was scored on a scale from 0-100, with 100 being the highest score.										

Table S4. Translational relaxation parameters and water population within muscle samples from fresh meat (Small = Small-scale slaughter system, Large = Large-scale slaughter system).

Small scale slaughter system, Large			Large scale slaughter system.							
Slaughter system	Small	Small	Small	Small	Small	Small	Small	Small	Small	Small
Animal ID	1189	1581	1685	1465	1533	1812	1570	1389	1699	1872
Lamb pair	1	2	3	4	5	6	7	8	9	10
T2b ^a	24.1	23.6	8.3	16.9	11.9	13.1	19.7	8.6	8.5	11.0
T21 ^a	52.2	56.0	45.3	50.7	44.2	45.3	51.5	46.4	46.7	51.0
T22 ^a	313.1	379.6	182.3	236.4	169.0	232.7	267.5	166.5	156.8	173.0
A2b ^b	19.0	15.4	4.3	14.6	4.8	6.8	16.9	3.6	4.1	5.1
A21 ^b	73.0	76.4	86.4	73.8	87.4	85.2	72.5	86.5	84.1	82.4
A22 ^b	8.0	8.2	9.3	11.6	7.9	8.0	10.5	10.0	11.7	12.4
Slaughter system	Large	Large	Large	Large	Large	Large	Large	Large	Large	Large
Animal ID	2812	2699	2872	2685	2389	2533	2189	2465	2570	2581
Lamb pair	6	9	10	3	8	5	1	4	7	2
T2b ^a	18.8	5.9	.	28.6	5.1	.	12.6	10.5	14.2	5.0
T21 ^a	53.9	46.7	.	58.4	44.3	.	47.7	44.2	48.4	44.3
T22 ^a	312.2	143.6	.	432.6	127.0	.	221.3	178.4	251.4	97.1
A2b ^b	9.2	3.4	.	30.9	3.2	.	9.1	4.3	7.5	3.0
A21 ^b	85.5	86.0	.	60.8	85.2	.	82.8	88.3	85.0	83.8
A22 ^b	5.3	10.6	.	8.3	11.6	.	8.1	7.4	7.5	13.2
^a Translational				relaxation				parameters		

Table S5. Translational relaxation parameters and water population in muscle samples after freezing (Small = Small-scale slaughter system, Large = Large-scale slaughter system).

Slaughter system	Small	Small	Small	Small	Small	Small	Small	Small	Small	Small
Animal ID	1189	1581	1685	1465	1533	1812	1570	1389	1699	1872
Lamb pair	1	2	3	4	5	6	7	8	9	10
T2b ^a	5.2	7.7	16.1	.	.	22.4	16.5	11.0	6.4	14.4
T21 ^a	37.5	41.5	42.2	.	.	42.2	37.2	37.0	40.1	43.7
T22 ^a	89.1	96.4	130.3	.	.	108.3	81.3	71.2	98.9	131.5
A2b ^b	3.5	3.3	8.9	.	.	16.1	9.2	2.8	3.5	6.8
A21 ^b	82.6	83.0	81.4	.	.	76.8	74.7	74.4	83.5	79.9

A22 ^b	14.0	13.7	9.7	.	.	7.1	16.1	22.7	12.9	13.3
Slaughter system	Large	Large	Large	Large	Large	Large	Large	Large	Large	Large
Animal ID	2812	2699	2872	2685	2389	2533	2189	2465	2570	2581
Lamb pair	6	9	10	3	8	5	1	4	7	2
T2b ^a	5.3	25.1	11.3	6.7	36.6	9.8	2.7	10.9	7.4	2.1
T21 ^a	42.1	44.1	44.1	40.1	54.6	41.7	34.5	39.3	38.7	38.2
T22 ^a	91.9	129.6	132.6	120.3	118.0	127.9	75.5	114.1	100.6	89.8
A2b ^b	2.8	14.6	5.1	4.0	65.1	5.5	3.3	4.6	3.4	3.4
A21 ^b	80.8	77.6	83.5	82.7	26.5	82.0	80.3	85.3	86.3	80.3
A22 ^b	16.4	7.8	11.4	13.3	8.4	12.5	16.4	10.1	10.3	16.3

^aTranslational relaxation parameters.

^bWater population within muscle sample.