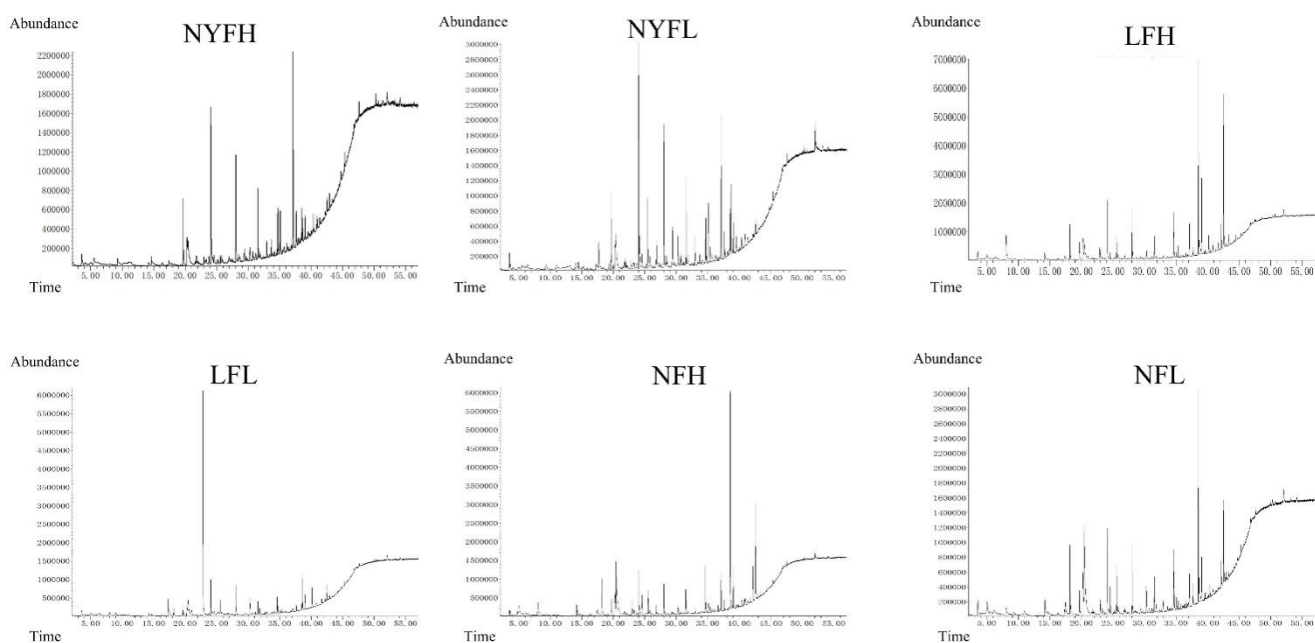


Supplementary Material S1. Flavor Substance Peak Diagram. (Figure S1)

Supplementary Material S2. Types of sensitive substances for sensors (Table S1).

Supplementary Material S3. VOCs contents of yak jerky (Table S2).

Supplementary Material S1.



Supplementary Material S2.

Sequence	Transducers	Responsive substances	Category substances
T1	Sn_1	Alkanes, Fumes	Propane, Natural gas, Fumes
T2	Sn_2	Alcohols, Aldehydes, Chain-breaking alkanes	Alcohol, Fumes, Isobutane, Formaldehyde
T3	Sn_3	Ozone (O3)	/
T4	Sn_4	Sulfide	Hydrogen sulfide
T5	Sn_5	Organic amine	Ammonia, Methylamine, Ethanolamine
T6	Sn_6	Organic gases, Phenyl ketones, Alcohols and aldehydes, Aromatic compounds	Toluene, Acetone, Ethanol, Hydrogen, Other organic vapours
T7	Sn_7	Short-chain alkanes	Methane, Natural gas, Biogas
T8	Sn_8	Aromatic compounds, Alcohols and aldehydes	Toluene, Formaldehyde, Benzene, Alcohol, Acetone
T9	Sn_9	Hydrogen-containing gas	Hydrogen (gas)
T10	Sn_10	Flammable gases	Methane CH4

Note: "/" indicates that the corresponding value was not found or could not be calculated.

Supplementary Material S3.

Form	Sequence	Compound name	CAS	Retention time/min	Relative content /µg/100g					
					NYXL (54)	NYXH (54)	NFL (52)	NFH (53)	LFL (56)	LFH (61)
Aldehydes	A1	Acetaldeyde	000075-07-0	4.10	3.71±0.02 ^a	/	/	/	/	2.61±0.03 ^b
	A2	Isovaleraldehyde	000590-86-3	6.44	7.09±0.03 ^c	/	/	9.71±0.04 ^b	/	19.59±0.15 ^a
	A3	Hexanal	000066-25-1	10.96	6.39±0.04 ^c	5.54±0.04 ^d	11.05±0.03 ^a	/	8.13±0.03 ^b	/
	A4	n-Heptanal	000111-71-7	14.02	13.38±0.03 ^a	/	/	/	/	/
	A5	n-Octanal	000124-13-0	17.25	14.30±0.03 ^c	/	34.23±0.19 ^b	29.07±0.06 ^c	35.68±0.06 ^a	16.70±0.11 ^d
	A6	n-Nonanal	000124-19-6	20.28	20.19±0.03 ^f	173.62±0.05 ^d	250.31±0.09 ^b	271.36±0.06 ^a	195.68±0.23 ^c	117.50±0.19 ^c
	A7	trans-2-Nonenal	018829-56-6	24.23	29.11±0.05 ^b	26.43±0.04 ^c	10.37±0.12 ^d	9.74±0.16 ^c	29.85±0.24 ^a	/
	A8	trans-2-decenal	003913-81-3	26.88	26.59±0.06 ^a	/	/	/	/	/
	A9	4-Ethylbenzaldehyde	004748-78-1	28.50	12.34±0.06 ^b	17.21±0.04 ^a	6.39±0.14 ^c	3.92±0.08 ^d	/	/
	A10	Undecenoic aldehyde	001337-83-3	29.41	32.13±0.08 ^a	26.69±0.05 ^b	8.79±0.07 ^d	/	11.36±0.06 ^c	/
	A11	Tridecanal	010486-19-8	30.73	19.69±0.05 ^b	25.70±0.02 ^a	8.72±0.05 ^d	12.28±0.03 ^c	/	/
	A12	Myristaldehyde	000124-25-4	32.96	29.85±0.07 ^b	42.82±0.03 ^a	18.01±0.04 ^d	19.09±0.04 ^c	15.73±0.08 ^c	9.43±0.08 ^f
	A13	Benzaldehyde, pentyl-	006853-57-2	34.80	6.37±0.04 ^b	11.84±0.07 ^a	/	/	/	/
	A14	Pentadecanal	002765-11-9	35.08	57.71±0.07 ^b	95.63±0.06 ^a	20.77±0.10 ^d	29.33±0.10 ^c	18.54±0.38 ^c	16.95±0.10 ^f
	A15	Hexadecanal	000629-80-1	37.12	121.32±0.02 ^b	374.30±0.04 ^a	45.75±0.06 ^c	104.72±0.03 ^c	16.47±0.39 ^f	84.66±0.05 ^d
	A16	ctadecanal	000638-66-4	40.93	13.15±0.02 ^c	32.16±0.05 ^a	/	15.53±0.21 ^b	/	9.52±0.05 ^d
	A17	9-Octadecenal, (Z)-	002423-10-1	41.36	7.23±0.05 ^b	25.68±0.11 ^a	/	/	/	/
	A18	[1,1'-Biphenyl]-4- carboxaldehyde	003218-36-8	46.81	7.41±0.04 ^d	22.13±0.03 ^a	8.12±0.04 ^c	6.48±0.02 ^f	10.41±0.22 ^b	6.8±0.07 ^c
Subtotal					427.95±0.10 ^c	879.73±0.10 ^a	422.55±0.38 ^d	511.24±0.42 ^b	341.87±0.15 ^c	283.76±0.52 ^f
Esters	B1	Methyl caproate	000106-70-7	14.02	5.13±0.04 ^f	12.28±0.04 ^c	50.28±0.03 ^b	58.59±0.04 ^a	28.31±0.10 ^d	34.61±0.09 ^c
	B2	Methyl octanoate	000111-11-5	20.06	8.59±0.04 ^a	/	/	/	/	/
	B3	Methyl nonanoate	001731-84-6	22.85	10.20±0.07 ^c	19.42±0.14 ^c	18.04±0.09 ^d	39.29±0.11 ^a	/	25.69±0.07 ^b

B4	Methyl decanoate	000110-42-9	25.47	55.86±0.10 ^d	20.14±0.10 ^e	56.51±0.31 ^c	61.17±0.22 ^b	65.83±0.07 ^a	56.38±0.05 ^c
B5	gamma- Butyrolactone	000096-48-0	26.76	7.93±0.04 ^b	6.78±0.07 ^c	4.58±0.04 ^f	6.33±0.11 ^d	9.18±0.05 ^a	5.49±0.02 ^c
B6	Methyl dodecanoate	000111-82-0	30.31	7.55±0.06 ^c	/	24.33±0.05 ^d	35.34±0.07 ^a	29.55±0.42 ^b	27.18±0.07 ^c
B7	Methyl myristate	000124-10-7	34.62	16.28±0.04 ^c	9.75±0.10 ^f	58.70±0.03 ^c	90.90±0.07 ^a	57.77±0.08 ^d	84.96±0.08 ^b
B8	Methyl myristoleate	056219-06-8	35.37	10.33±0.05 ^c	/	9.28±0.03 ^d	10.41±0.03 ^c	18.12±0.09 ^b	23.07±0.06 ^a
B9	Methyl 12- methyltetradecanoate	062691-05-8	35.70	13.77±0.08 ^a	/	8.82±0.08 ^d	9.32±0.10 ^c	11.09±0.05 ^b	8.09±0.05 ^c
B10	Methyl palmitate	000112-39-0	38.56	30.39±0.16 ^f	52.69±0.04 ^c	211.66±0.29 ^c	427.64±0.09 ^a	127.08±0.04 ^d	383.08±0.06 ^b
B11	Hexamethylene diacrylate	013048-33-4	38.67	47.09±0.07 ^a	24.69±0.03 ^d	24.76±0.10 ^d	22.24±0.06 ^c	35.30±0.20 ^b	33.09±0.02 ^c
B12	7-Hexadecenoic acid, methyl ester, (Z)-	056875-67-3	38.94	4.18±0.07 ^f	12.76±0.05 ^b	4.79±0.15 ^c	9.61±0.03 ^c	7.30±0.11 ^d	15.13±0.07 ^a
B13	methyl palmitoleate	001120-25-8	39.06	32.17±0.05 ^f	47.81±0.11 ^d	46.58±0.03 ^c	88.0±0.05 ^b	56.38±0.29 ^c	150.56±0.07 ^a
B14	Diethyleneglycol dimethacrylate	002358-84-1	39.59	9.73±0.08 ^c	9.84±0.09 ^c	11.06±0.16 ^a	/	8.69±0.05 ^d	10.85±0.03 ^b
B15	Methyl stearate	000112-61-8	42.19	3.04±0.08 ^f	10.70±0.03 ^c	32.53±0.06 ^c	72.60±0.03 ^a	18.02±0.10 ^d	60.86±0.09 ^b
B16	Methyl elaidate C18:1T,trans-9	001937-62-8	42.55	12.02±0.04 ^f	35.80±0.13 ^c	84.84±0.18 ^c	189.25±0.10 ^b	58.18±0.04 ^d	300.09±0.71 ^a
B17	Methyl linoleate	000112-63-0	43.35	4.38±0.07 ^f	10.62±0.10 ^c	6.81±0.07 ^d	13.32±0.11 ^b	5.48±0.13 ^c	23.03±0.12 ^a
B18	Butyl phthalate	000084-74-2	44.22	2.28±0.03 ^c	16.35±0.07 ^a	3.80±0.02 ^d	/	7.47±0.06 ^b	4.44±0.07 ^c
B19	Methyl acetate	000079-20-9	5.00	/	17.80±0.19 ^c	40.42±0.09 ^b	65.09±0.02 ^a	33.16±0.04 ^c	32.35±0.17 ^d
B20	Methyl heptanoate	000106-73-0	17.29	/	5.67±0.05 ^c	9.08±0.03 ^b	11.64±0.07 ^a	/	/
B21	Methyl hydrocinnamate	000103-25-3	31.35	/	2.74±0.06 ^a	1.7±0.05 ^b	/	/	/
B22	gamma-decalactone	000706-14-9	35.37	/	5.97±0.17 ^a	/	/	/	/
B23	Methyl pentadecanoate	007132-64-1	36.64	/	3.69±0.03 ^c	7.46±0.06 ^c	12.75±0.07 ^a	5.83±0.05 ^d	10.31±0.04 ^b

	B24	Methyl butyrate	000623-42-7	8.06	/	/	22.83±0.083 ^c	/	47.69±0.27 ^b	134.58±0.06 ^a
	B25	Methyl isobutyrate	000547-63-7	6.51	/	/	/	/	21.06±0.07 ^a	/
	B26	Methyl 2-methylbutyrate	000868-57-5	8.65	/	/	/	/	8.17±0.04 ^a	1.58±0.04 ^b
	B27	Propanoic acid, 2-hydroxy-, methyl ester	000547-64-8	18.18	/	/	95.73±0.09 ^c	103.63±0.04 ^a	45.38±0.03 ^d	101.41±0.04 ^b
	B28	Methyl cis-10-heptadecenoate C17:1,cis-10	075190-82-8	40.83	/	/	10.36±0.05 ^b	/	/	22.91±0.28 ^a
	B29	Methyl oleate	000112-62-9	42.65	/	/	13.11±0.09 ^c	26.01±0.62 ^b	/	29.68±0.65 ^a
	B30	ETHYL STEARATE	000111-61-5	42.79	/	/	5.14±0.05 ^a	/	1.56±0.10 ^b	/
	B31	Methyl 13-methyltetradecanoate	1000424-50-7	36.00	/	/	/	10.37±0.06 ^a	/	5.25±0.06 ^b
	B32	Methyl heptadecanoate	001731-92-6	39.81	/	/	/	6.86±0.04 ^b	/	14.36±0.06 ^a
	B33	ETHYL LINOLEOLATE	000544-35-4	44.43	/	/	/	6.44±0.05 ^b	/	10.41±0.05 ^a
	B34	Benzyl benzoate	000120-51-4	45.71	/	/	/	2.87±0.13 ^a	/	/
	B35	Methyl isovalerate	000556-24-1	8.96	/	/	/	/	22.11±0.11 ^a	/
	B36	Methyl phthalate	000131-11-3	40.16	/	/	/	/	64.21±0.31 ^a	/
	B37	Methyl valerate	000624-24-8	10.98	10.70±24.62 ^a	/	/	/	/	/
	Subtotal				280.91±0.43 ^f	325.49±0.49 ^c	863.22±0.75 ^c	1379.74±0.81 ^b	792.91±1.31 ^d	1617.02±0.96 ^a
Alcohols	C1	Isopentanol	000123-51-3	15.25	3.39±0.10 ^a	/	/	/	/	/
	C2	n-Hexanol	000111-27-3	19.25	8.32±0.06 ^a	/	3.89±0.03 ^c	4.70±0.06 ^b	/	/
	C3	1-Octen-3-ol	003391-86-4	21.77	10.15±0.23 ^c	18.58±0.03 ^a	6.9±0.16 ^c	10.77±0.05 ^b	/	8.06±0.08 ^d
	C4	N-OCTANOL	000111-87-5	24.55	17.48±0.03 ^c	28.88±0.11 ^d	37.65±0.06 ^c	51.07±0.06 ^a	38.51±0.1 ^b	15.44±0.07 ^f
	C5	n-Dodecanol	000112-53-8	33.69	6.27±0.05 ^c	28.64±0.24 ^a	5.55±0.14 ^c	5.86±0.07 ^d	12.30±0.08 ^b	5.63±0.04 ^c

Sample	Compound	CAS	Conc. (g/L)	GC-MS			GC-ECD		
				Peak Area	Peak ID	Peak Name	Peak Area	Peak ID	Peak Name
Ketones	C6	[1,1'-Biphenyl]-4-methanol	003597-91-9	53.25	6.9±0.07 ^b	14.84±0.09 ^a	3.13±0.04 ^c	/	/
	C7	Phenethyl alcohol	000060-12-8	32.70	/	2.51±0.04 ^a	/	/	/
	C8	Benzyl alcohol	000100-51-6	31.93	/	/	/	/	5.19±0.07 ^a
	Subtotal				52.53±0.31 ^d	93.45±0.17 ^a	57.11±0.34 ^c	72.39±0.02 ^b	50.81±0.17 ^c
	D1	3-Hydroxy-2-butanone	000513-86-0	17.71	36.6±0.30 ^b	29.30±0.03 ^c	/	/	104.85±0.07 ^a
	D2	cis-Geranylacetone	003879-26-3	31.50	1.83±0.09 ^c	6.09±0.04 ^d	14.54±0.24 ^b	45.28±0.09 ^a	6.19±0.04 ^d
	D3	5-Hepten-2-one, 6-methyl-	000110-93-0	18.86	/	/	/	4.22±0.01 ^b	13.09±0.30 ^a
	Subtotal				38.43±0.39 ^c	35.38±0.05 ^d	14.54±0.24 ^f	49.50±0.10 ^b	124.13±0.33 ^a
	E1	Pentadecane	000629-62-9	23.29	7.91±0.10 ^f	21.33±0.04 ^c	15.50±0.02 ^d	24.51±0.03 ^a	22.92±0.10 ^b
	E2	Hexadecane	000544-76-3	25.79	14.70±0.03 ^c	23.02±0.03 ^b	13.90±0.04 ^f	19.24±0.05 ^c	25.24±0.03 ^a
Hydrocarbons	E3	Dodecane, 4,6-dimethyl-	061141-72-8	16.37	/	13.14±0.16 ^a	/	/	5.53±0.05 ^b
	E4	Oxirane, tetradecyl-	007320-37-8	36.18	/	21.56±0.07 ^a	/	/	/
	E5	N-OCTANE n-Tetradecane	000111-65-9	4.83	/	/	4.89±0.10 ^c	22.24±0.08 ^a	/
	E6	n-Tetradecane	000629-59-4	20.70	/	/	68.65±0.06 ^a	53.62±0.08 ^b	/
	E7	(-)-ARISTOLENE	006831-16-9	28.63	4.76±0.06 ^b	10.20±0.06 ^a	/	/	2.28±0.03 ^c
	E8	α-curcumene	000644-30-4	29.67	5.61±0.03 ^b	14.81±0.02 ^a	/	4.95±0.06 ^c	/
	E9	2-Hexadecene, 2,6,10,14-tetramethyl-	056554-34-8	30.27	22.53±0.07 ^d	39.03±0.54 ^b	24.85±0.08 ^c	/	58.96±0.57 ^a
	E10	3,7,11,15-Tetramethylhexadec-2-ene	002437-93-6	31.86	10.98±0.034 ^d	26.19±0.06 ^b	14.71±0.04 ^c	10.69±0.03 ^c	29.69±0.33 ^a
	E11	Cuparene	016982-00-6	30.87	/	7.81±0.04 ^a	/	/	5.91±0.04 ^b
	E12	(+)-DELTA-	000483-76-1	29.43	/	/	/	6.33±0.09 ^a	/

CADINENE										
Subtotal				66.48±0.05 ^c	177.09±0.47 ^a	142.49±0.20 ^b	141.58±0.16 ^c	142.72±0.21 ^b	95.27±0.16 ^d	
Other categories	Carbamodithioic									
	F1	acid, diethyl-, methyl ester	000686-07-7	34.99	/	19.24±0.06 ^a	/	/	/	/
	F2	Naphthalene	000091-20-3	29.32	3.75±0.21 ^c	20.20±0.76 ^a	5.82±0.04 ^c	9.67±0.05 ^b	5.55±0.11 ^c	9.25±0.06 ^b
	F3	2-Acetylpyrrole	001072-83-9	34.11	1.24±0.09 ^c	/	/	11.66±0.26 ^a	/	6.37±0.10 ^b
	F4	4-Methylbiphenyl	000644-08-6	36.84	3.07±0.03 ^d	/	5.14±0.08 ^c	/	6.47±0.04 ^a	5.67±0.05 ^b
	F5	Benzene, 1,2,3,5-tetramethyl-	000527-53-7	21.64	/	11.06±0.07 ^a	/	6.68±0.07 ^c	/	7.33±0.11 ^b
	F6	Phenol	000108-95-2	34.51	/	4.68±0.05 ^a	/	/	3.20±0.03 ^c	3.38±0.04 ^b
	F7	2,4-Di-tert-butylphenol	000096-76-4	40.00	/	9.42±0.05 ^a	/	/	/	/
	F8	Tetramethylpyrazine	001124-11-4	22.85	/	/	/	6.09±0.05 ^c	937.85±0.05 ^a	30.22±0.53 ^b
	F9	2,3-Dimethylpyrazine	005910-89-4	19.46	/	/	/	/	19.54±0.10 ^a	/
	F10	2,3,5-Trimethylpyrazine	014667-55-1	21.04	/	/	/	/	51.46±0.09 ^a	19.44±0.06 ^b
	F11	2-Ethyl-3,5-dimethylpyrazine	013925-07-0	22.43	/	/	/	/	6.05±0.09 ^a	/
	F12	2,3,5-Trimethyl-6-ethylpyrazine	017398-16-2	23.76	/	/	/	/	17.85±0.11 ^a	8.68±0.18 ^b
	F13	p-Cresol	000106-44-5	36.02	/	6.85±0.13 ^b	/	/	11.16±0.05 ^a	/
	F14	Thiophene, 2,5-dihydro-	001708-32-3	41.69	/	/	3.59±0.06 ^d	12.52±0.05 ^c	19.62±0.07 ^a	14.53±0.16 ^b
	F15	Thiophene, 2,3-dihydro-	001120-59-8	40.81	/	/	/	/	21.22±0.04 ^a	/
	F16	Dimethyl sulfone	000067-71-0	32.69	/	/	/	/	8.50±0.05 ^a	2.69±0.03 ^b
Subtotal				8.06±0.15 ^f	71.45±0.75 ^c	14.55±0.09 ^c	46.64±0.40 ^d	1108.47±0.30 ^a	102.67±7.87 ^b	

Total	874.36±0.66 ^f	1582.59±0.84 ^d	1514.46±0.83 ^e	2201.09±1.41 ^b	2560.90±2.13 ^a	2159.70±7.18 ^c
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Note: "/" indicates that the corresponding value was not found or could not be calculated.