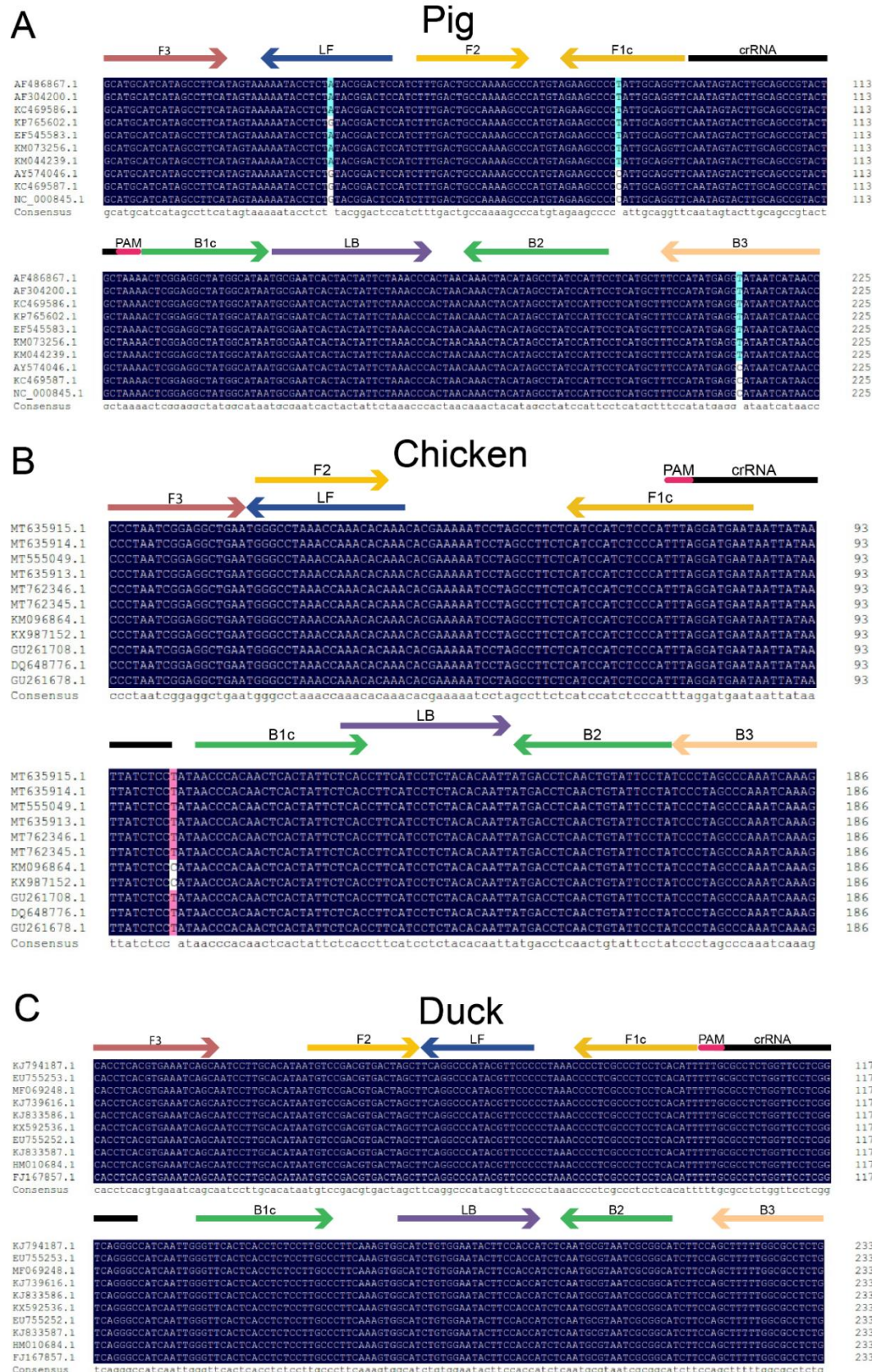
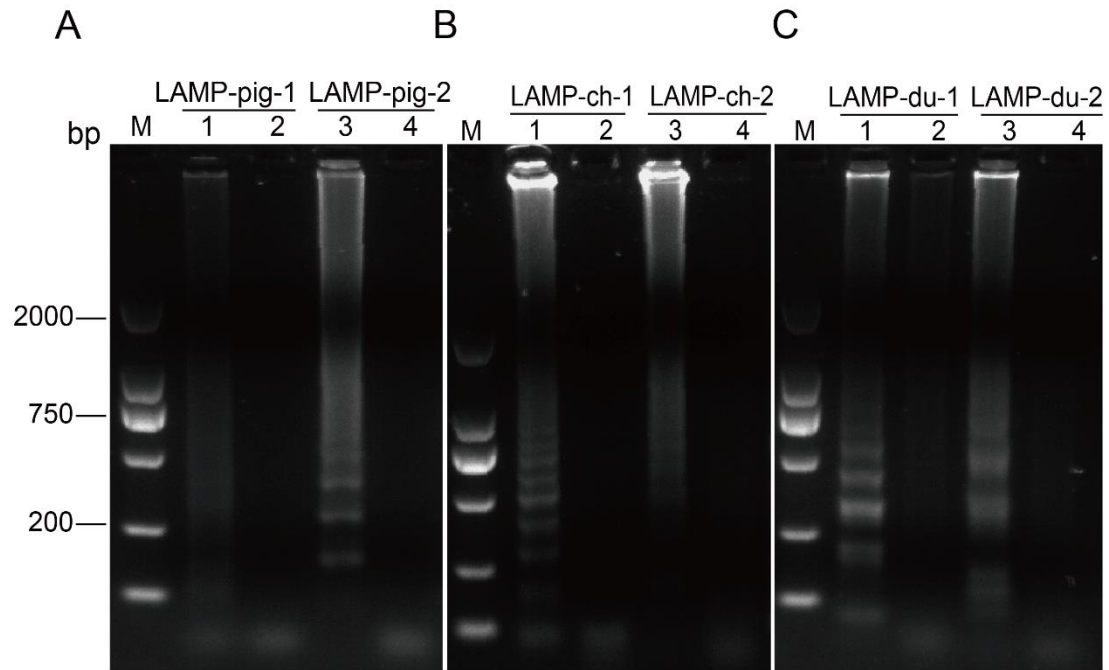


## Supplementary Information

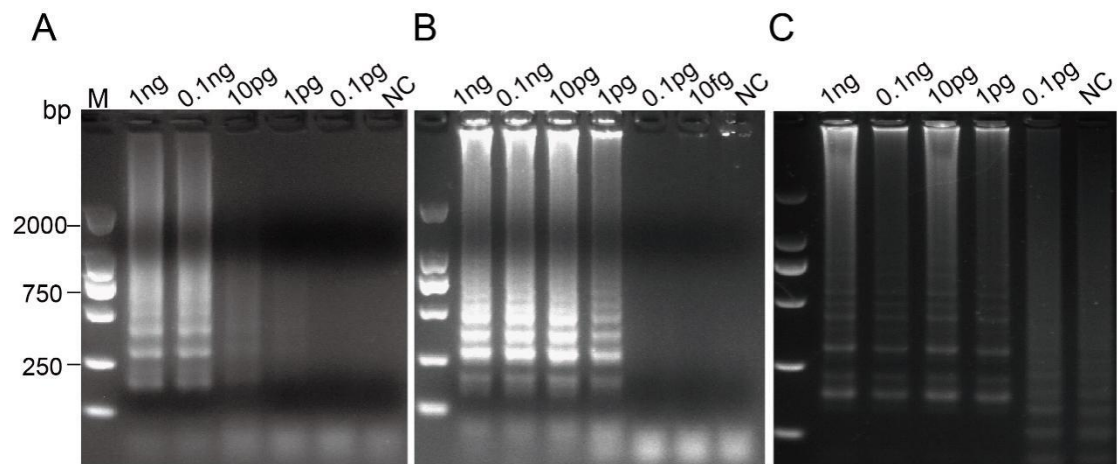


**Figure S1. Sequence alignment of partial sequences of NADH4, DN2 and D-loop genes among different pig, chicken and duck breeds, respectively. (A) pig breeds: Chinese Wuzhishan (AF486867.1), Chinese Meishan (AF304200.1), Chinese Jinhua (KC469586.1), Berkshire (KP765602.1), Bamei (EF545583.1), Tibetan (KM073256.1), Rongchang (KM044239.1), Hampshire (AY574046.1), pietrain**

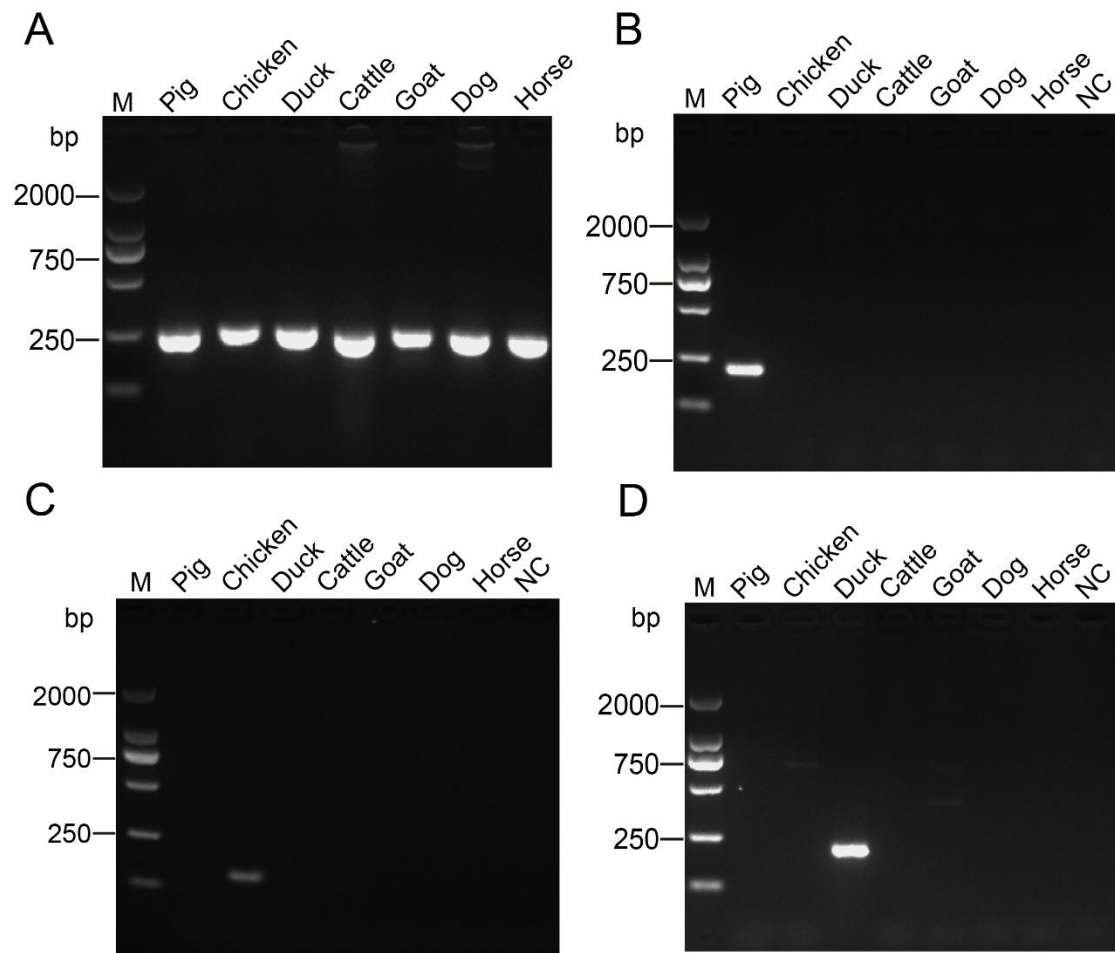
(KC469587.1) and the Landrace (NC\_000845.1). **(B)** Chicken breeds: Niya (MT635915.1), Longsheng (MT635914.1), Luhua (MT555049.1), Qingyuan (MT635913.1), Wanbei game (MT762345.1), Huangshan black (MT762346.1), Wuhua three-yellow (KM096864.1), Zhengyang Yellow (KX987152.1), Red jungle fowl (GU261708.1), Tibetan (DQ648776.1), and Gushi (GU261678.1). **(C)** Duck breeds: Lin Wu (KJ794187.1), Mallard (EU755253.1), Jinding (MF069248.1), Longsheng (KJ739616.1), Xilin (KJ833586.1), Sichuan (KX592536.1), Pekin (EU755252.1), Rongshui (KJ833587.1), Shaoxing (HM010684.1) and Jianchang (FJ167857.1).



**Figure S2. Screening of LAMP primers targeting porcine, chicken and duck mitochondrial genes.** Screening of LAMP primers targeting the porcine *NADH4*, the chicken *ND2* gene and the duck *D-Loop* gene (A, B, C).



**Figure S3. Agarose gel electrophoresis determination of the limit of detection for LAMP amplification.** Agarose gel electrophoresis determination of the limit of detection for LAMP amplification of the porcine *NADH4*, the chicken *ND2* and the duck *D-Loop* genes. NC stands for negative control (A, B, C).



**Figure S4. Agarose gel electrophoresis of species-specific PCR.** (A) Electrophoresis of PCR-amplified products with porcine-specific primers. (B) Electrophoresis of chicken-specific primer PCR amplification products. (C) Electrophoresis of PCR-amplified products of duck-specific primers. (D) Amplification of animal genome by 18s *rRNA* universal primers. NC stands for negative control.

**Table S1: PCR amplification primers used in this study**

<b>Name</b>	<b>Sequences (5'-3')</b>
Pig-1-F	ATCCTGACGCATACACAGCA
Pig-1-R	ATGGGTGAAGTGGCGTCTTG
Pig-2-F	CGATATGGCCTTTCCACGTA
Pig-2-R	TGTGGGAGATTATTCCGAACCC
Pig-3-F	GCCTAAATCTCCCCTCAATGCTA
Pig-3-R	ATGAAAGAGGGCAAATAGATTTTCG
Pig-4-F	CCTACATGCAAACGGAGCAT
Pig-4-R	AGGGTTGTTGGATCCGGTTT
pig-5-F	ACTGATCCCACCCATTATCCAAC
pig-5-R	ATGGTTCGGCTGTGTACTCG
Chicken-1-F	TGCCCTACTACTCTCCACCC
Chicken-1-R	GGTGGGGGTGTTTAGGGTTT
Chicken-2-F	TAGCTGGAATACCCCGACGA
Chicken-2-R	CTAGTGCGACTATCAGGGCG
Chicken-3-F	ACCTACTATACCTGCGGGCAA
Chicken-3-R	ATCCCAGTTTGGGTCCTAGC
Chicken-4-F	TAGAATATGCCGCCGGACCA
Chicken-4-R	GGTATGGGCCCAGATAGCTTAG
Chicken-5-F	CCTGAATGCAAATCAGACGCT
Chicken-5-R	GCATGGGCTGTGACGATTAC
Duck-Dloop-F	TCCTCTCCACCCACCCATTA
Duck-Dloop-R	CCCATATACGCCAACCGTCT
18s-F	AGCCTGAGAAACGGCTACC
18s-R	TGCTGGCACCAGACTTGC
pig-PCR-F	GCCTAAATCTCCCCTCAATGCTA
pig-PCR-R	ATGAAAGAGGGCAAATAGATTTTCG
chicken-PCR-F	CTATAATCGATAATCCACGATTCA
chicken-PCR-R	CTTGACCTGTCTTATTAGCGAGG
duck-PCR-F	CATCTATCCTGCTAGCCGCC
duck-PCR-R	GGCTTGAGTGGAAGAATGCC

**Table S2: LAMP amplification primers used in this study**

Name	Sequences (5'-3')	
LAMP-pig-1	F3	GCATGCATCATAGCCTTCA
	B3	CTCATATGGAAAGCATGAGG
	FIP	AACCTGCAATAGGGGCTTCTGTAAAAATACCTCTATAC GGACTC
	BIP	GGAGGCTATGGCATAATGCGAATAATGGATAGGCTATGT AGTTTG
	LF	GGGCTTTTGGCAGTCAAAGATG
	LB	ACTATTCTAAACCCACTAA
	F3	GCATGCATCATAGCCTTCA
LAMP-pig-2	B3	GGTTATGATTATACCTCATATGGAA
	FIP	AACCTGCAATAGGGGCTTCTGTAAAAATACCTCTATAC GGACTC
	BIP	ACTCGGAGGCTATGGCATAAGAATGGATAGGCTATGTA GTTTG
	LF	ACATGGGCTTTTGGCAGTCAAAG
	LB	TGCGAATCACTACTATTCTAAACCC
	F3	CCCTAATCGGAGGCTGAA
	B3	CTTTGATTTGGGCTAGGGA
LAMP-ch-1	FIP	ATTCATCCTAAATGGGAGATGGATGGGGCCTAAACCAA ACACA
	BIP	AACCCACAACCTCACTATTCTCACTAGGAATACAGTTGA GGTCAT
	LF	TTTGTGTTTGGTTTAGGCCCA
	LB	TCTCACCTTCATCCTCTACACAATT
	F3	ACTCACCTCCTAGCAAT
	B3	TTAGGACTTTGATTTGGGCTA
	FIP	AGATGGATGAGAAGGCTAGGATTTTCTCCTCCACCCTA ATCGG
LAMP-ch-2	BIP	AACCCACAACCTCACTATTCTCACGGATAGGAATACAGT TGAGGTC
	LF	TCGTGTTTGTGTTTGGTTTAGGC
	LB	TTCATCCTCTACACAAT
	F3	CACCTCACGTGAAATCAGCA
	B3	CAGAGGCGCCAAAAAGCT
	FIP	AATGTGAGGAGGGCGAGGGGTGTCCGACGTGACTAGC T
	BIP	GGTTCACCTCACCTCTCCTTGCCTGCCGCGATTACGCAT TG
LAMP-du-1	LF	GGGAACGTATGGGCCTGA
	LB	GCATCTGTGGAATACTTCCACCA
	F3	CACCTCACGTGAAATCAGCA
	B3	TGGAGGATGCCGCGATT
	FIP	CGCAAAAATGTGAGGAGGGCGATCCGACGTGACTAGC
LAMP-du-2		

	TTCAG
BIP	GGTTCACCTCACCTCTCCTTGCCCCGATTGAGATGGTGG AAGT
LF	GGGGTTTAGGGGGAACGT
LB	TTCAAAGTGGCATCTGTGGAAT

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**Table S3. ssDNA-reporters and crRNAs used in this study**

<b>Name</b>	<b>Sequences (5'-3')</b>
T7-crRNA-F	TAATACGACTCACTATAGG
Pig-crRNA-1R	TTGAAGAACCAACATATATCAACCATCTACAACAGTAG AAAT
Pig-crRNA-2R	GAGAATATATACTTCTGGGTGTCCATCTACAACAGTAG AAAT
Pig-crRNA-3R	CTATGAAGGCTGTTGCTATAACGGATCTACAACAGTAG AAAT
Pig-crRNA-4R	CTATGAAGGCTGTTGCTATAACGGATCTACAACAGTAG AAAT
Pig-crRNA-5R	CAATAGTACTTGCAGCCGTACTGCATCTACAACAGTAG AAAT
Chicken-crRNA-1R	GGAGATAATTATAATTATTCATCCATCTACAACAGTAGA AAT
Chicken-crRNA-2R	TAAGTGGTTTGATGCGGTTGGCTTATCTACAACAGTAG AAAT
Chicken-crRNA-3R	GGATACTTG CATGTATATGTCTAGATCTACAACAGTAG AAAT
Chicken-crRNA-4R	GTGGATATGAGGCCCGGATTCATAATCTACAACAGTAG AAAT
Chicken-crRNA-5R	TGTAGTGAAGTTCATAATGAGTTGATCTACAACAGTAG AAAT
Duck-crRNA-1R	GCCCTGACCGAGGAACCAGAGGCGATCTACAACAGT AGAAAT
Duck-crRNA-2R	AAATAAAAGGAACCAGAGGCGCCAATCTACAACAGT AGAAAT
Duck-crRNA-3R	AAAATAAAAGGAACCAGAGGCGCCATCTACAACAGT AGAAAT
Duck-crRNA-4R	AAAAATAAAAGGAACCAGAGGCGCATCTACAACAGT AGAAAT
Duck-crRNA-5R	CCCTGACCGAGGAACCAGAGGCGCATCTACAACAGT AGAAAT
FAM-N12-Biotin	/5'-FAM/GTATCCAGTGCG/3' Biotin /
JOE-dye	/5'-JOE/GTATCCAGTGCG/3'BHQ1/
Texas Red-dye	/5'-Texas Red /GTATCCAGTGCG/3'BHQ2/



**Table S4. Species Information**

<b>Species</b>	<b>Breeds</b>	<b>GeneBank Accession No.</b>
Pig	Chinese Wuzhishan	AF486867.1
	Chinese Meishan	AF304200.1
	Chinese Jinhua	KC469586.1
	Berkshire	KP765602.1
	Bamei	EF545583.1
	Tibetan	KM073256.1
	Rongchang	KM044239.1
	Hampshire	AY574046.1
	pietrain	KC469587.1
	Landrace	NC_000845.1
	Niya	MT635915.1
	Longsheng	MT635914.1
	Luhua	MT555049.1
	Qingyuan	MT635913.1
	Wanbei game	MT762345.1
Chicken	Huangshan black	MT762346.1
	Wuhua three-yellow	KM096864.1
	Zhengyang Yellow	KX987152.1
	Red jungle fowl	GU261708.1
	Tibetan	DQ648776.1
	Gushi	GU261678.1
	Lin Wu	KJ794187.1
	Mallard	EU755253.1
	Jinding	MF069248.1
	Longsheng	KJ739616.1
Duck	Xilin	KJ833586.1
	Sichuan	KX592536.1
	Pekin	EU755252.1
	Rongshui	KJ833587.1
	Shaoxing	HM010684.1
	Jianchang	FJ167857.1

**Table S5. Simulate mixed meat products ingredients**

<b>Sample Number</b>	<b>Pig (mg)</b>	<b>Chicken (mg)</b>	<b>Duck (mg)</b>	<b>Cattle (mg)</b>	<b>Buffalo (mg)</b>	<b>Goat (mg)</b>	<b>Sheep (mg)</b>
1	13.1	0	0	0	0	40.1	45
2	14.1	24.8	0	0	0	27.6	30
3	13.6	20	0	0	22	16.2	15.7
4	0	0	0	0	0	50	50
5	0	50	0	0	50	0	0
6	0	18	0	0	0	37.8	41.5
7	0	18	0	31.1	0	29.6	29.6
8	0	17	0	17.2	16.8	17.3	15.7
9	0	0	0	0	0	50	50
10	0	0	0	50	50	0	0
11	40.4	0	13	41.5	16.1	0	0
12	25.9	0	13.5	27.3	14.8	21.7	0
13	11	0	19.5	14.3	6.6	12.1	10
14	0	0	0	50	50	0	0
15	50	0	0	0	0	50	50