Supplementary Table 1: Composition and nutrient levels of diets (as-fed basis).

Item	Gestation	Lactation	Piglet diets
Ingredient, %			
Corn	66.00	62.80	53.50
Soybean meal	15.00	24.00	25.56
Wheat bran	16.00	4.00	—
Fish meal	—	3.00	5.00
Soybean oil	—	3.00	5.00
Full-fat soyabean	—	—	7.00
Dicalcium phosphate	1.00	1.30	1.70
Limestone	1.10	0.80	0.80
L-Lysine-HCL ,78%	—	0.20	0.30
Salt	0.40	0.40	0.40
DL-Methionine	—	—	0.14
L-Threonine	—	—	0.10
Premix	0.50[1]	0.50[1]	0.50[2]
Nutritional composition[3], %			
Net energy (MJ/kg)	9.46	10.38	11.55
Crude protein (CP)	14.03	18.28	21.32
Calcium	0.71	0.82	0.97
Total phosphorus	0.60	0.68	0.75
Available phosphorus	0.31	0.43	0.55
Lysine	0.54	0.99	1.45

[1] The premix provides following for per kg diet: vitamin A, 8 000 IU; vitamin D_3, 2 000 IU; vitamin E, 50 IU; vitamin K_3, 1.5 mg; vitamin B_1, 1.6 mg; vitamin B_6, 1.5 mg; vitamin B_{12},15 μg; niacin, 20 mg; d-pantothenic acid,15 mg; Zn (ZnO), 100 mg; Fe (FeSO4·7H2O), 80 mg; Cu (CuSO4·5H2O), 20 mg; Mn (MnSO4·H2O), 25 mg; I (KI), 0.3 mg; Se (NaSeO3·5H2O), 0.2 mg.

[2] The premix provides following for per kg diet: vitamin A, 11000 IU; vitamin D_3,

2700 IU; vitamin E, 66 IU; vitamin K_3, 4.4 mg; vitamin B_1, 1.6 mg; vitamin B_6, 2.2 mg; vitamin B_{12}, 20 μg; niacin, 55 mg; d-pantothenic acid, 20 mg; Zn (ZnO), 110 mg; Fe (FeSO4·7H2O), 105 mg; Cu (CuSO4·5H2O), 20 mg; Mn (MnSO4·H2O), 25 mg; I (KI), 0.3 mg; Se (NaSeO3·5H2O), 0.3 mg.

[3] Nutrient levels were calculated values

Supplementary Table 2: Primers used for qRT-PCR.

Genes	Sequence (5'to3')	Product Size (bp)
CCL5	F: CTGCCCTTGCTGTCATCCTC R: CCTGGCGGTTCTTTCTGGTG	198
RHOH	F: CGTCTTCATGGACGGCATC R: CCACGGAGTAGCACATCAGC	125
IL-10	F: CCACGGAGTAGCACATCAGC R: GGCACTCTTCACCTCCTCCA	163
THBS1	F: GAAGCAGCAGGTGGTGTCAG R: TCTCCATCTTCTCGCAGTCG	119
DHX58	F: CGAGTACCAGGCCAAGATCC R: CACAGGAGCTGCACTTGCTC	120
LTF	F: GCTGTGGTCTCTCGGAAGGA R: TCTCAGACCGGAACAAGCAA	121
PGLYRP2	F: GTGGCTGTGGAGCCTCTTCT R: CCTTGTGTGCTGAGGAGGTG	145
F2	F: CACCTTCAGCGACTACATCCA R: CCAGGTCTCCTTCAGGTTGC	118
CCR7	F: GACGACTACATCGGCGACAA R: CCACGAAGCAGATGATGGAG	127
IL10RA	F: GGAACATCTGGCTGGAGCTT R: GTGCAGGCTGGAGATCAGTG	123
NOS2	F: CGTTATGCCACCAACAATGG R: GTGCCATCAGGCATCTGGTA	134
GZMA	F: TTGACCAGGACACACATGAGG R: TCCTGCAACTCGACACACATT	140
CYBRD1	F: CGGCTTCGTCTTCATCCAG R: GCAAGAATGGCAGCAACAGT	123

RDH5	F: TTATCACCGGCTGCGACTC R: CCACACGCTGTAGGTCTTCG	120
EMP2	F: GCAGAAGTGCCAGTGAGTGC R: TCTCTGCGACCAGGCTGTTA	119
OLFML3	F: ACTGAGGCTGACACCATTGC R: CCTCCGGTCACCTTCTCATC	116

Supplementary Table 3: Summary of sequencing analysis in 16s rDNA.

Item	Raw Data		Valid Data		Valid %	Q20 %	Q30 %	GC %
	Tag	Base	Tag	Base				
W-Con1	41872	19.85M	41071	16.90M	98.09	97.11	89.89	50.85
W-Con2	50736	24.05M	47217	19.28M	93.06	97.19	90.01	53.02
W-Con3	30498	14.46M	29798	12.03M	97.70	97.54	91.03	50.49
W-Con4	37218	17.64M	36307	14.74M	97.55	96.99	89.56	52.87
W-Con5	42037	19.93M	34013	13.77M	80.91	97.07	89.86	52.09
W-Res1	45041	21.35M	43981	17.76M	97.65	97.12	89.93	53.06
W-Res2	131303	62.24M	46679	18.95M	35.55	97.04	89.96	52.57
W-Res3	39345	18.65M	38598	15.77M	98.10	97.11	90.08	51.59
W-Res4	46696	22.13M	41614	16.86M	89.12	97.19	90.26	51.07
W-Res5	36192	17.16M	34961	14.32M	96.60	95.14	84.58	52.52
PW-Con1	40434	19.17M	35252	14.42M	87.18	97.20	90.12	52.31
PW-Con2	30711	14.56M	29595	12.07M	96.37	96.98	89.51	53.24
PW-Con3	33669	15.96M	30949	12.54M	91.92	97.06	89.67	52.76
PW-Con4	43816	20.77M	33159	13.57M	75.68	96.97	89.52	52.23
PW-Con5	40433	19.17M	34201	13.88M	84.59	97.22	90.26	52.01
PW-Con6	50234	23.81M	46294	18.83M	92.16	97.07	89.78	52.68
PW-Res1	44756	21.21M	42225	17.28M	94.34	96.91	89.25	52.79
PW-Res2	44614	21.15M	42461	17.44M	95.17	96.92	89.49	51.99
PW-Res3	47706	22.61M	39265	16.14M	82.31	96.74	88.93	52.46
PW-Res4	35267	16.72M	34597	14.12M	98.10	97.00	89.53	52.99
PW-Res5	41827	19.83M	38614	15.77M	92.32	96.97	89.57	53.00
PW-Res6	47106	22.33M	32554	13.48M	69.11	96.83	89.22	52.64

W-Con: weaning piglets from Control treatment; W-Res: weaning piglets from Resveratrol treatment; PW-Con: post-weaning piglets from Control treatment; PW-Con: post-weaning piglets from resveratrol treatment.

Supplementary Table 4: Effects of Maternal dietary resveratrol on the alpha diversity of the fecal microbiota in weaning and post-weaning piglets.[1, 2]

Item	Weaning		Post-weaning		SEM	*P*-value		
	Con	Res	Con	Res		Res	Weaning	Res∗Weaning
Shannon	6.79	7.06	7.21	7.53	0.19	0.463	0.270	0.950
Simpson	0.95	0.96	0.97	0.97	0.01	0.338	0.221	0.612
Chao1	7581	8544	8094	8937	424	0.323	0.616	0.946

[1] All of the values are expressed as the means and pooled SEM, n = 5−6.

[2] Con, control treatment; Res, resveratrol treatment; Res∗Weaning, interaction between resveratrol and weaning

Supplementary Table 5: Summary of sequencing analysis in RNA-seq.

Item	Raw Data	Valid Data	Valid Ratio (%)	Q20 (%)	Q30 (%)	GC content (%)
W-Con1	40418456	39763038	98.38	98.44	86.01	53.00
W-Con2	41946130	41257126	98.36	98.96	88.32	53.00
W-Con3	50070676	49301698	98.46	99.23	89.92	53.50
W-Res1	57295274	56510198	98.63	99.00	88.89	54.50
W-Res2	57271264	56445498	98.56	98.36	84.87	55.00
W-Res3	45369898	44717192	98.56	99.14	90.47	54.50
PW-Con1	40736316	40224050	98.74	98.92	87.70	54.50
PW-Con2	57292800	56591170	98.78	99.03	88.34	55.50
PW-Con3	47328436	46618492	98.50	99.03	89.07	54.50
PW-Res1	50883302	50181010	98.62	98.83	87.52	55.50
PW-Res2	49734006	49103632	98.73	98.92	87.62	55.50
PW-Res3	54671922	54071930	98.90	99.16	88.91	55.50

W-Con: weaning piglets from Control treatment; W-Res: Weaning piglets from Resveratrol treatment; PW-Con: post-weaned piglets from Control treatment; PW-Con: post-weaned piglets from resveratrol treatment. Q20: the percentage of bases with a Phred value > 20; and Q30: the percentage of bases with a Phred value > 30

Supplementary Table 6: The data for the sequencing reads that mapped to the reference genome in RNA-seq.

Sample	Valid reads	Mapped reads	Unique Mapped reads	Multi Mapped reads	PE Mapped reads	Reads map to sense strand	Reads map to antisense strand
W-Con1	39763038	30826998(77.53%)	20486031(51.52%)	10340967(26.01%)	27497000(69.15%)	14378466(36.16%)	14483587(36.42%)
W-Con2	41257126	32619837(79.06%)	22301313(54.05%)	10318524(25.01%)	29372956(71.19%)	15243066(36.95%)	15317608(37.13%)
W-Con3	49301698	39481643(80.08%)	26643827(54.04%)	12837816(26.04%)	36338478(73.71%)	18351520(37.22%)	18395691(37.31%)
W-Res1	56510198	44223457(78.26%)	27127824(48.01%)	17095633(30.25%)	39208912(69.38%)	20657259(36.55%)	20823213(36.85%)
W-Res2	56445498	43100913(76.36%)	24338854(43.12%)	18762059(33.24%)	37863704(67.08%)	20145244(35.69%)	20305159(35.97%)
W-Res3	44717192	35498407(79.38%)	22155030(49.54%)	13343377(29.84%)	32267764(72.16%)	16538226(36.98%)	16640645(37.21%)
PW-Con1	40224050	30628190(76.14%)	18096060(44.99%)	12532130(31.16%)	27005628(67.14%)	14280422(35.50%)	14398367(35.80%)
PW-Con2	56591170	43889785(77.56%)	26029805(46.00%)	17859980(31.56%)	38983310(68.89%)	20454502(36.14%)	20564962(36.34%)
PW-Con3	46618492	35880287(76.97%)	22553568(48.38%)	13326719(28.59%)	32413472(69.53%)	16741557(35.91%)	16883575(36.22%)
PW-Res1	50181010	38605525(76.93%)	25411324(50.64%)	13194201(26.29%)	33989354(67.73%)	17988105(35.85%)	18038964(35.95%)
PW-Res2	49103632	37967629(77.32%)	24956146(50.82%)	13011483(26.50%)	34296892(69.85%)	17706495(36.06%)	17718809(36.08%)
PW-Res3	54071930	41965593(77.61%)	24766412(45.80%)	17199181(31.81%)	37855862(70.01%)	19503319(36.07%)	19597528(36.24%)

W-Con: weaning piglets from Control treatment; W-Res: Weaning piglets from Resveratrol treatment; PW-Con: post-weaned piglets from Control treatment; PW-Con: post-weaned piglets from resveratrol treatment.

Supplementary Table 7: DEGs in weaning piglets between Con and Res treatment.

As shown in Supplementary File 1

Supplementary Table 8: DEGs in post-weaning piglets between Con and Res treatment.

As shown in Supplementary File 2

Supplementary Table 9: GO enrichment analysis of DEGs in weaning piglets.

As shown in Supplementary File 3

Supplementary Table 10: GO enrichment analysis of DEGs in post-weaning piglets.

As shown in Supplementary File 4

Supplementary Table 11: Effects of maternal dietary resveratrol supplementation the intestinal pro-inflammatory cytokines in newborn piglets.[1, 2]

Item	Con	SEM	Res	SEM	*P*-value
IL-1β (pg/mg prot)	2.00	0.09	1.73	0.06	0.040
IL-6 (pg/mg prot)	9.94	1.37	10.62	0.56	0.638
IL-8 (pg/mg prot)	2.16	0.09	2.24	0.05	0.428
TNFα(pg/mg prot)	4.52	0.20	4.48	0.11	0.837

[1] All of the values are expressed as the means and pooled SEM, n = 6.

[2] Con, control treatment; Res, resveratrol treatment; IL-1β, interleukin 1β; IL-6, interleukin 6; IL-8, interleukin 8; TNF-α, tumor necrosis factor α.