

SUPPLEMENTARY MATERIALS

Table S1. Body weights of piglets during the study

ID	Sex	Uc	B-O	MS	FS	Wean-age	BW-class	Body-weight (kg) / day of age										
								0 d	7 d	11 d	14 d	21 d	27 d	35 d	42 d	49 d	55 d	63 d
R1	M	33	5	A	D	20	HBW	2.1	4.4	5.0	5.6	6.6	7.6	11.4	14.1	16.4	20.5	24.5
R2	F	27	6	A	D	20	HBW	1.8	2.9	3.5	4.3	5.1	5.9	9.1	12.6	15.4	18.4	22.5
R3	F		9	A	E	27	LBW	1.0	2.0	2.8	3.5	5.1	6.3	6.8	9.4	11.9	14.7	17.0
R4	F	25	12	A	E	27	LBW	0.9	2.4	3.3	4.2	5.9	7.3	8.4	10.6	13.2	16.0	19.0
B1	M	26	1	B	F	26	HBW	1.7	3.4	4.7	5.8	7.9	9.8	11.0	13.7	15.2	17.2	20.5
B2	M	40	5	B	F	26	HBW	1.7	3.2	4.4	5.5	7.0	8.4	8.9	11.4	12.7	14.6	17.6
B3	F	37	6	B	B	26	LBW	1.0	2.0	2.7	3.4	4.5	5.6	8.1	11.2	13.3	16.7	20.5
B6	F	27	12	B	B	26	LBW	1.0	2.2	3.2	4.0	5.0	6.2	8.5	11.6	14.7	17.8	22.7

ID, piglet's identification; Uc, umbilical cord circumference (mm); B-O, birth order; MS, maternal sow (A and B); FS, foster sow (D, E, and F); Wean-age, age at weaning (days); BW-Class, birthweight class category; HBW, high birthweight; LBW, low birthweight.

In this study, we classified a pig as heavy (H) or light (L) at the point of sampling basing on the following criteria;

	Weight range	Bodyweight class
At day 11	≤ 3.4	L
	≥ 3.5	H
At day 27	≤ 6.9	L
	≥ 7.0	H
At day 63	≤ 19.9	L
	≥ 20.0	H

Table S2. Average daily gains of piglets during the study

ID	Sex	Uc	B-O	MS	FS	Wean-age	Average daily gain (ADG) / day of age										
							7 d	11 d	14 d	21 d	27 d	35 d	42d	49 d	55 d	63 d	
R1	M	33	5	A	D	20	0.331	0.250	0.174	0.143	0.167	0.475	0.386	0.329	0.683	0.500	
R2	F	27	6	A	D	20	0.146	0.180	0.206	0.114	0.133	0.400	0.500	0.400	0.500	0.513	
R3	F	-	9	A	E	27	0.141	0.170	0.217	0.229	0.200	0.063	0.371	0.357	0.467	0.288	
R4	F	25	12	A	E	27	0.214	0.240	0.257	0.243	0.233	0.138	0.314	0.371	0.467	0.375	
B1	M	26	1	B	F	26	0.287	0.320	0.346	0.300	0.317	0.150	0.386	0.214	0.333	0.413	
B2	M	40	5	B	F	26	0.248	0.290	0.330	0.214	0.233	0.063	0.357	0.186	0.317	0.375	
B3	F	37	6	B	B	26	0.158	0.180	0.207	0.157	0.183	0.313	0.443	0.300	0.567	0.475	
B6	F	27	12	B	B	26	0.207	0.230	0.251	0.143	0.200	0.288	0.443	0.443	0.517	0.613	

ID, piglet's identification; Uc, umbilical cord circumference (mm); B-O, birth order; MS, maternal sow (A and B); FS, foster sow (D, E, and F); Wean-age, age at weaning (days).

In this study, ADG values were categorised as either low ADG (ldg) or high ADG (hdg) as indicated below.

	ADG range	ADG class
At day 11	≤ 0.19	ldg
	≥ 0.20	hdg
At day 27	≤ 0.22	ldg
	≥ 0.23	hdg
At day 63	≤ 0.49	ldg
	≥ 0.50	hdg

Table S3. Dietary composition of creep, starter and milk replacer

Creep feed ingredients	Amount
D100	1 kg
Probiotic 1	10 g
Probiotic 2	2.5 g
Vitamin mix 1	5 g
Colistin ¹⁾	2.5 g
Minerals	5 g
Starter feed ingredients	
D100	1 kg
Probiotic 2	1.25 g
Minerals	1.25 g
Probiotic 1	3.75 g
Vitamin mix 1	1.25 g
Colistin ¹⁾	1.25 g
D100 Milk replacer (MR) approximate composition	
Crude protein	16.50%
Crude fat	13.00%
Crude fibre	1.00%
Crude ash	4.00%
Ca	0.30%
P	0.50%
Lysine	1.50%
Digestible energy	4,750 kcal/kg
Digestible crude protein	14.00%

¹⁾The Colistin formulation contained colistin sulphate at a concentration of 20 g/kg.

Table S4. Weaner feeding schedule

Approx. age (d)	Days post-weaning	Ingredients
28–29	1–2	Starter feed
30–32	3–5	D100 + D200 (1:1) Probiotic 1 (5 g/kg of feed)
33–39	6–12	D 200 Colistin ¹ (2.5 g/kg of feed) Probiotic 1 (5 g/kg of feed)
40–42	13–15	D200 + D300 (1:1) Probiotic 1 (2 g/kg of feed) Organic acids (2 g/kg of feed)
43–48	16–21	D300 Ivermectin ² (0.333 g/kg of feed) Probiotic 1 (2 g/kg of feed)
48–51	21–24	D300 + 3H (1:1) Enrofloxacin (1 g/kg of feed) Ivermectin ² (0.333 g/kg of feed) Probiotic 1 (2 g/kg of feed)
52–70	25	3H Probiotic 1 (2 g/kg of feed)

Throughout the study the animals had *ad libitum* access to the feed rations.

¹The Colistin formulation contained colistin sulphate at a concentration of 20 g/kg.

²The Ivermectin formulation contained active Ivermectin at a concentration of 6.12 g/kg.

Table S5. Additives and their compositions

Vitamin mix 1		Probiotic 1	
Ingredients	(per kg)	<i>Bacillus</i> spp.	1.0×10^9 cfu/kg
Vitamin A	6,000,000 IU	<i>Lactobacillus</i> spp.	1.0×10^9 cfu/kg
Vitamin D ₃	600,000 IU	<i>Saccharomyces</i> spp.	1.0×10^9 cfu/kg
Vitamin E	1,000 IU	Probiotic 2	
Vitamin K ₃	500 mg	<i>Clostridium butyricum</i>	1.0×10^{10} cfu/kg
Vitamin B ₁	97 mg	Lactose hydrate	
Vitamin B ₂	600 mg	Glucose	
Vitamin B ₆	400 mg	Organic acids	Per kg
Vitamin B ₁₂	400 ug	Formic acid	300,000 mg
Nicotinic acid	2,400 mg	Citric acid	100,000 mg
Biotin	40 mg	Propionic acid	50,000 mg
Choline chloride	25,000 mg	Malic acid	50,000 mg
Folic acid	200 mg	Complex amino acids	> 25%
MgSO ₄	4,000 mg	Minerals	
Ca-pantothenate	1,000 mg	Zn	2.70%
FeSO ₄	8,000 mg	Cu	1.70%
ZnSO ₄	230,000 mg	Mn	1.30%
CuSO ₄	1,000 mg	Fe	1.30%
MnSO ₄	12,000 mg	Cr	160 ppm
CaCO ₃	800 mg		
Ca-iodine	500 mg		

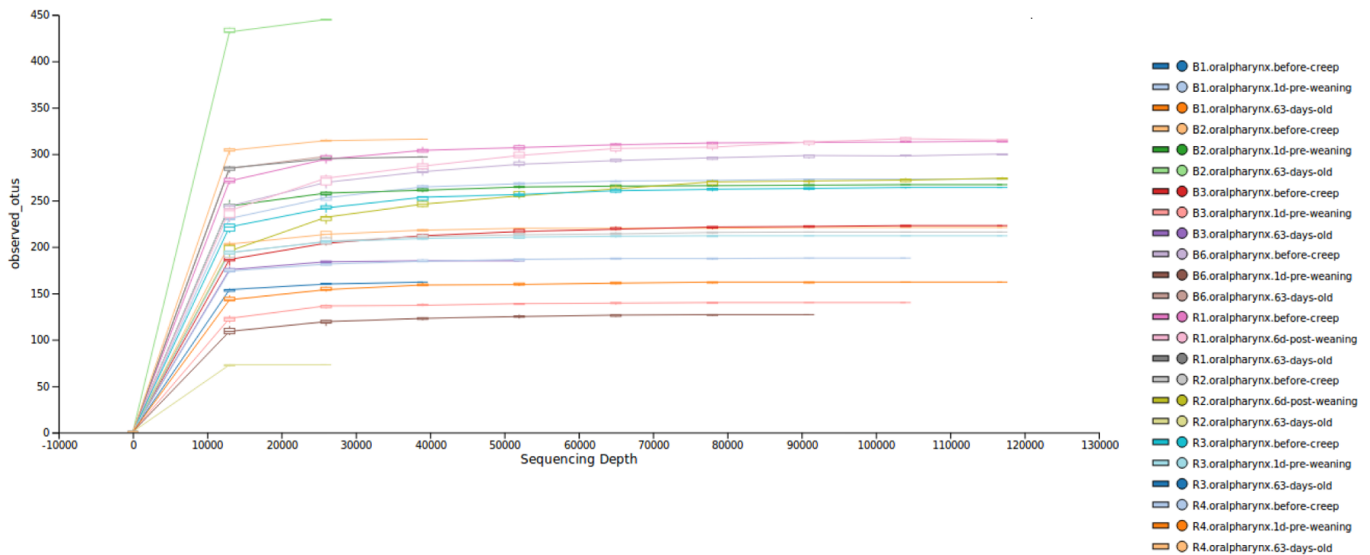


Fig. S1. Alpha rarefaction plot based on observed OTU's showing efficiency of sampling. OTU, operational taxonomic unit.

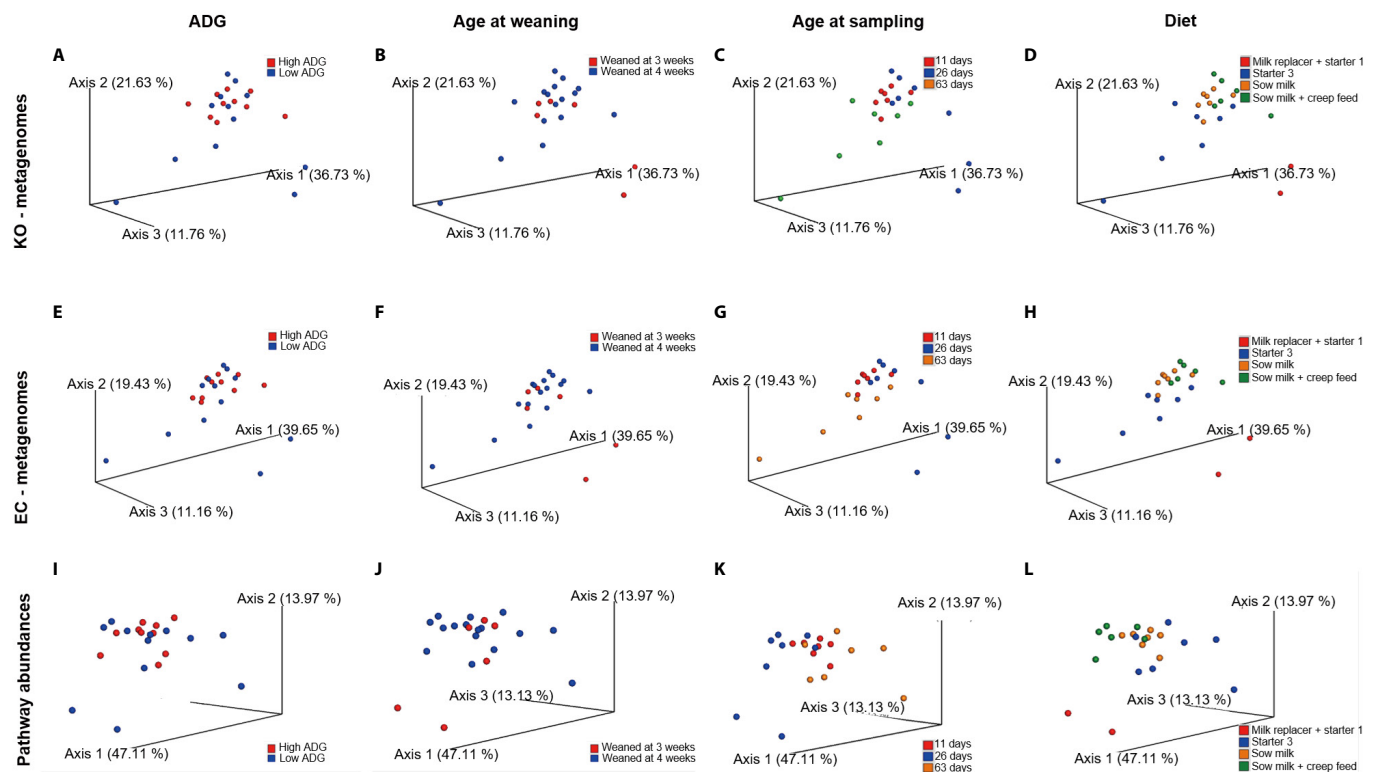


Fig. S2. Principle Coordinate Analysis (PCoA) plots using Bray Curtis distances to show the distribution of oropharyngeal microbiomes in samples collected at 11, 26 and 63 days of age. In (A–D) is the distribution based on the predicted KEGG Orthology (KO) metagenomes; in (E–H), the distribution based on predicted enzymes; and in (I–L) the distribution based on the predicted pathway abundances. The symbols represent data from individual piglets, color-coded by the indicated categories of metadata.