

Transplantation of faeces-fractions in newborn piglets to improve gut health under practical conditions

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Early life gut colonization influences susceptibility to post-weaning diarrhoea
[Dou *et al.* 2017]



Piglets are coprophagic by nature [Sansom and Gleed, 1981]



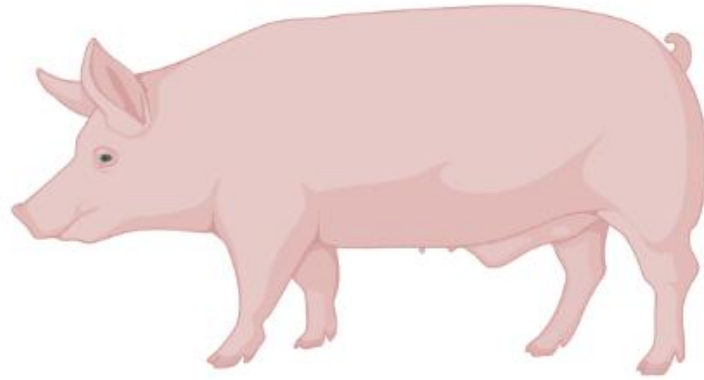
Faeces deprivation may affect post-weaning
performance [Aviles-Rosa *et al.* 2019]



Transplantation of faeces or bacteria-free
filtrates of faeces show gut protective
effects in neonatal pigs [Brunse *et al.* 2022]

Hypothesis: Transplantation of a filtrate of faeces (FFT) from adult sows to neonatal piglets prevents diarrhoea and enhances survival and growth.

Intervention material



Faecal
microbiota
transplantation

Bacteria, viruses,
metabolites,
proteins...

 FMT

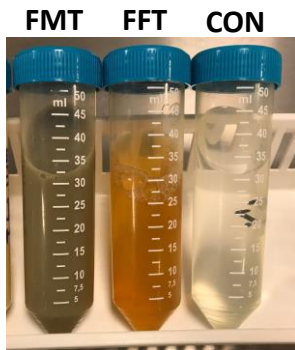


0.45 µm filtration

Bacteria, viruses,
metabolites,
proteins...

Faecal filtrate
transplantation

 FFT



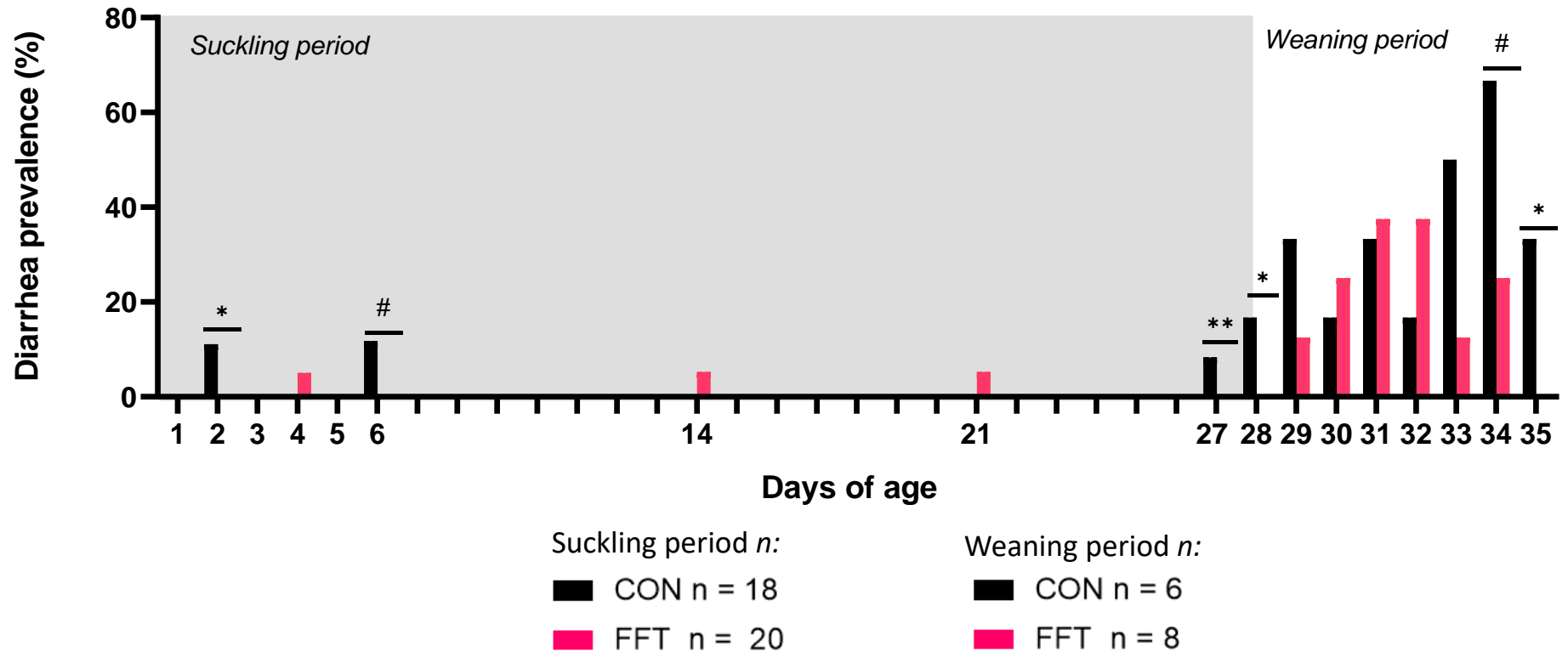
SM-buffer

 CON

FFT farm trial - pilot

Results - diarrhoea prevalence

Diarrhoea prevalence



Large scale farm trial

Created in BioRender.com 

Suckling period
day 1-27

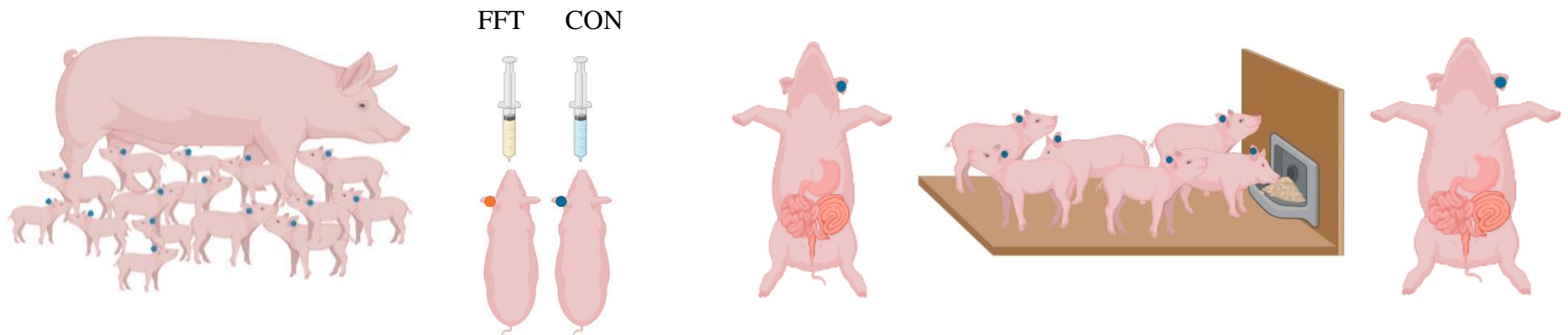
- CON $n = 150$ (10 litters)
- FFT $n = 150$ (10 litters)

Pre-weaning tissue
collection
day 27

- CON $n = 20$
- FFT $n = 20$

Post-weaning tissue
collection
day 41

- CON $n = 81$
- FFT $n = 107$



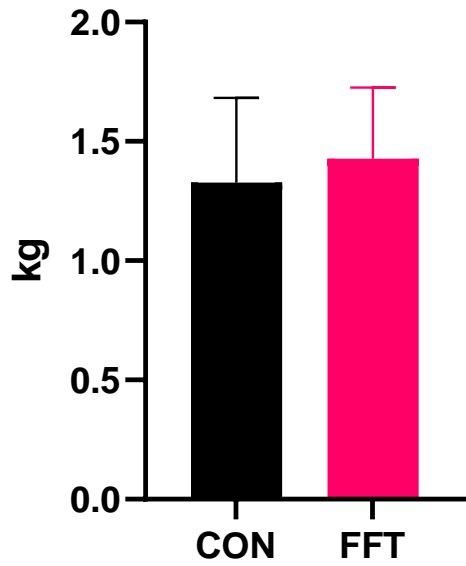
No pharmaceutical zinc
No antibiotics

Daily inoculations
with 6 ml per pig
for the first 6 days

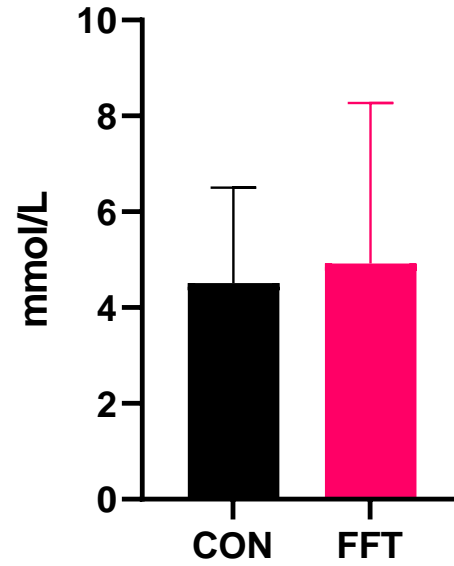
Blood gas
at birth

Blood sample
Day 3-5

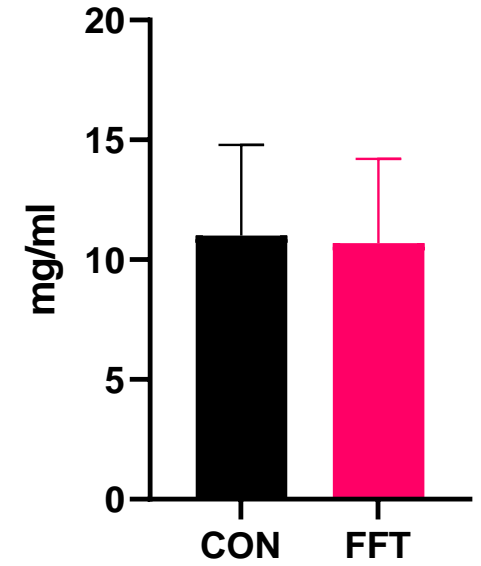
Birth weight



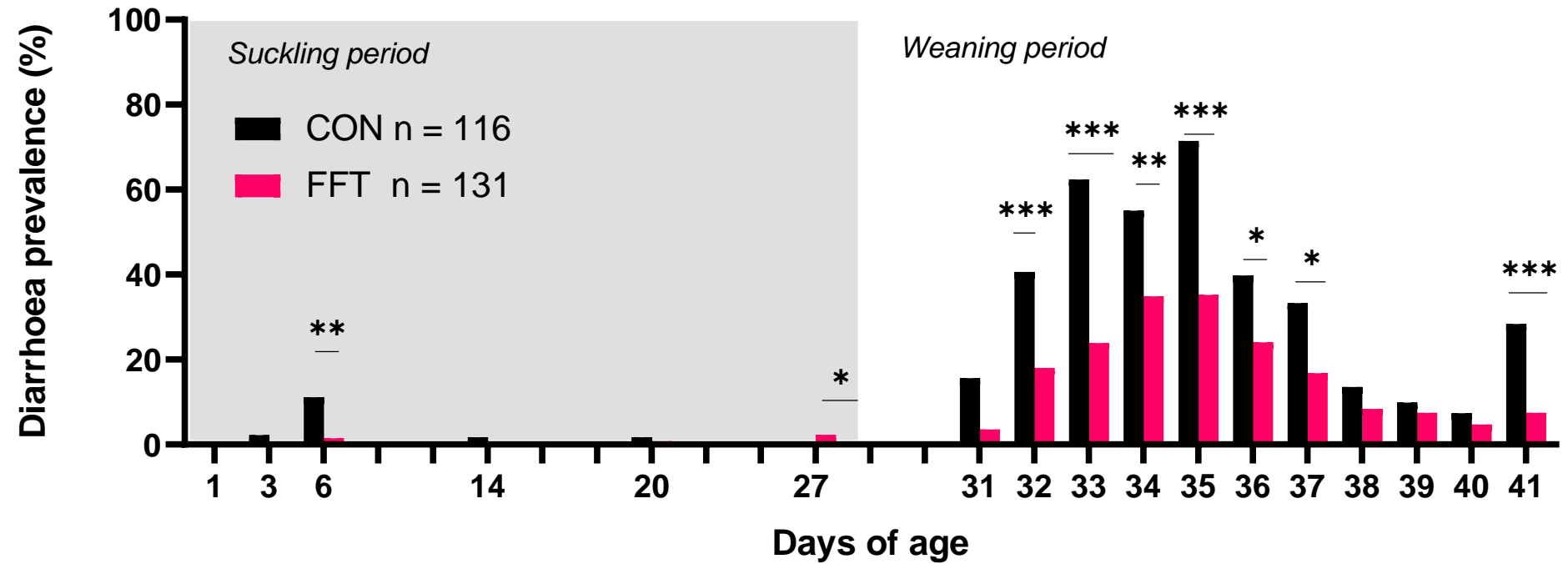
Blood lactate



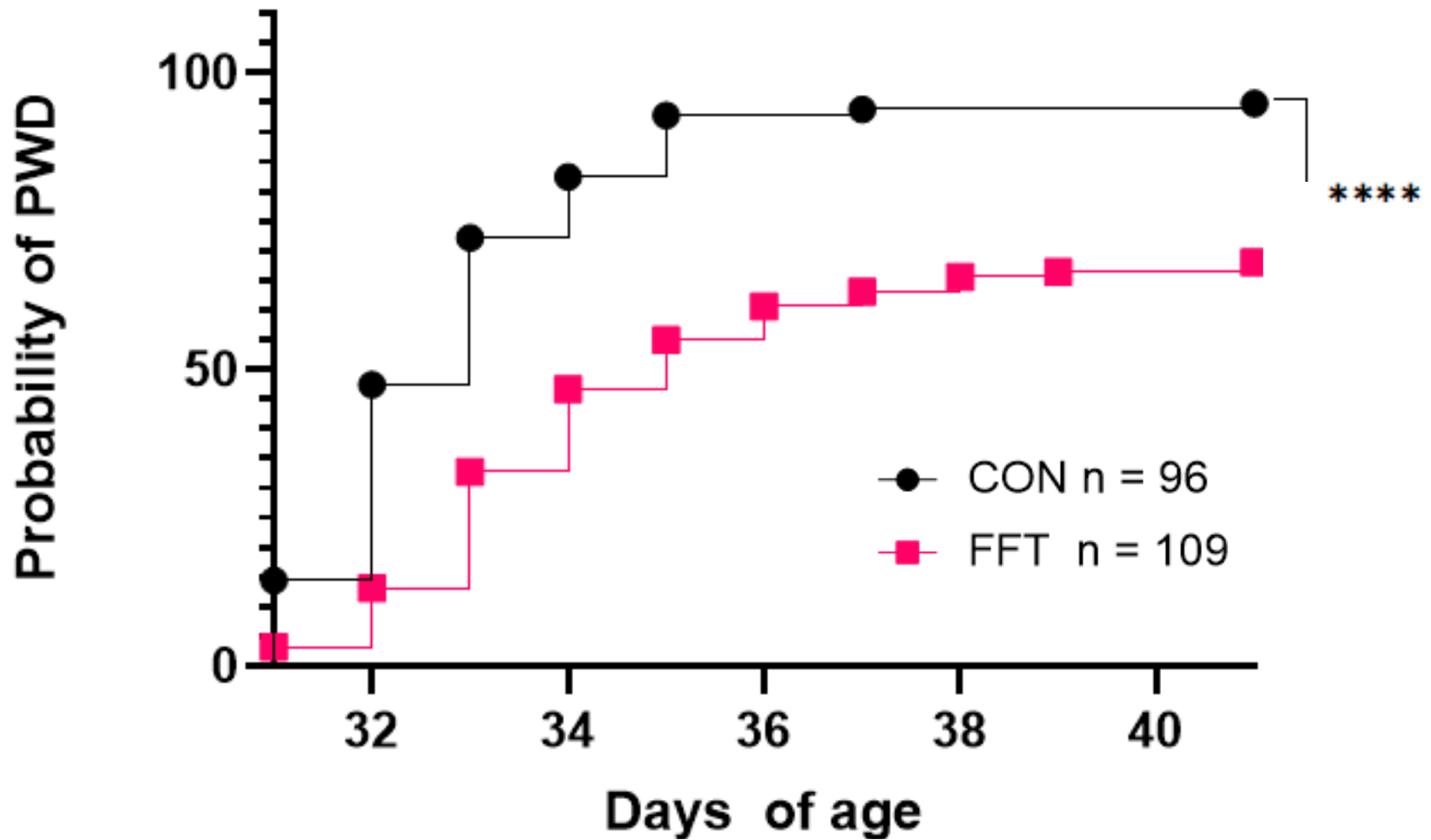
Plasma IgG conc. days 3-5



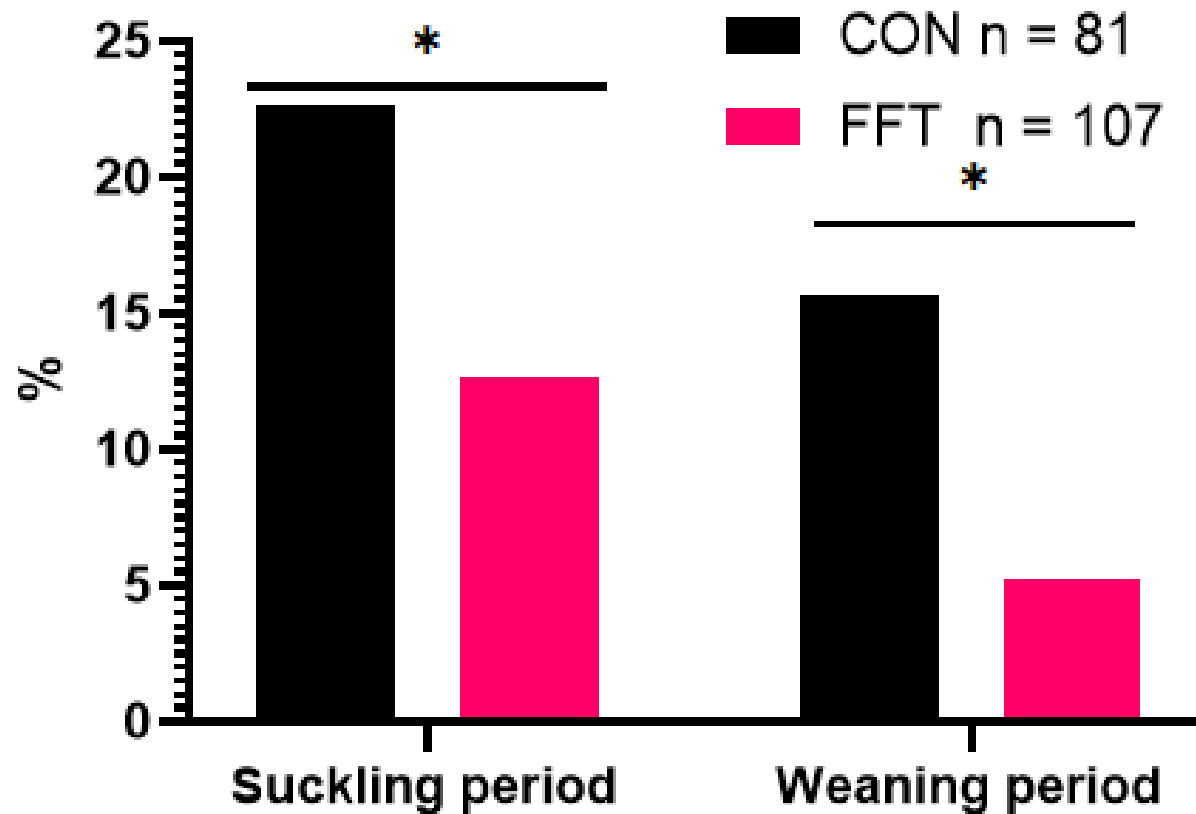
Diarrhoea prevalence



Probability of post-weaning diarrhoea



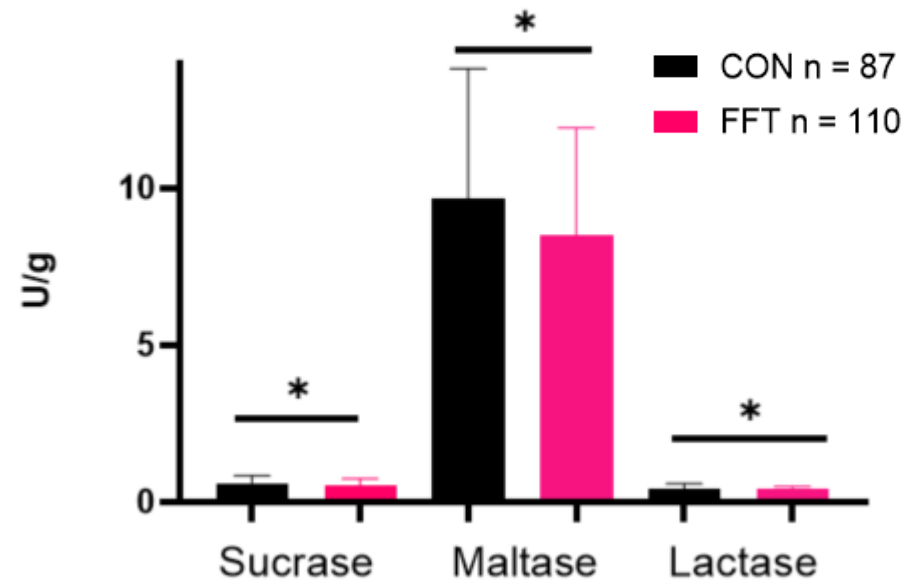
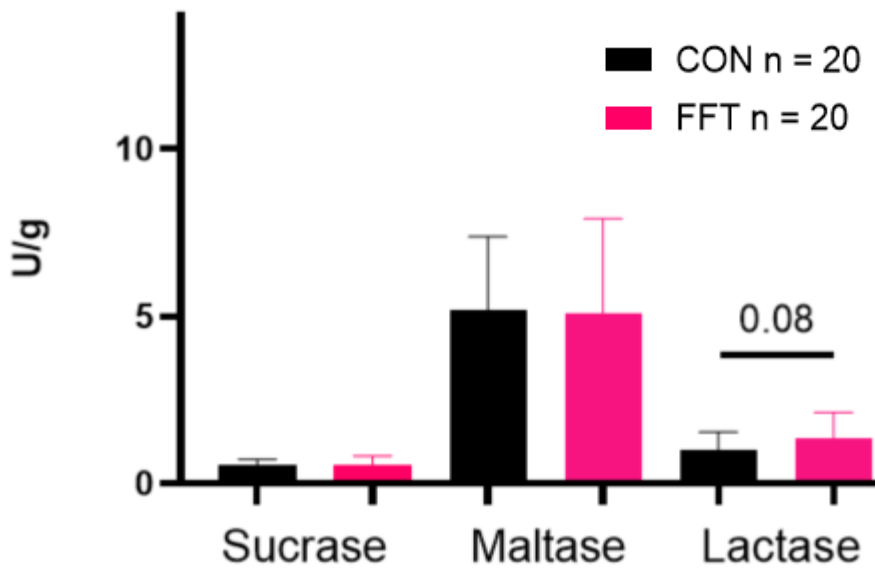
Incidence of combined euthanasia and mortality



Disaccharidases

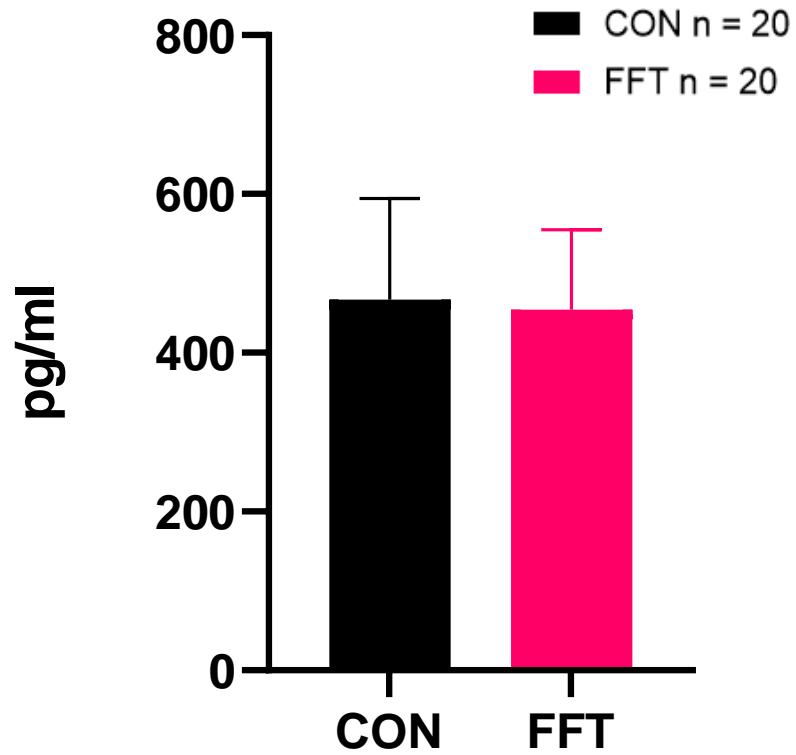
Pre-weaning

Post-weaning

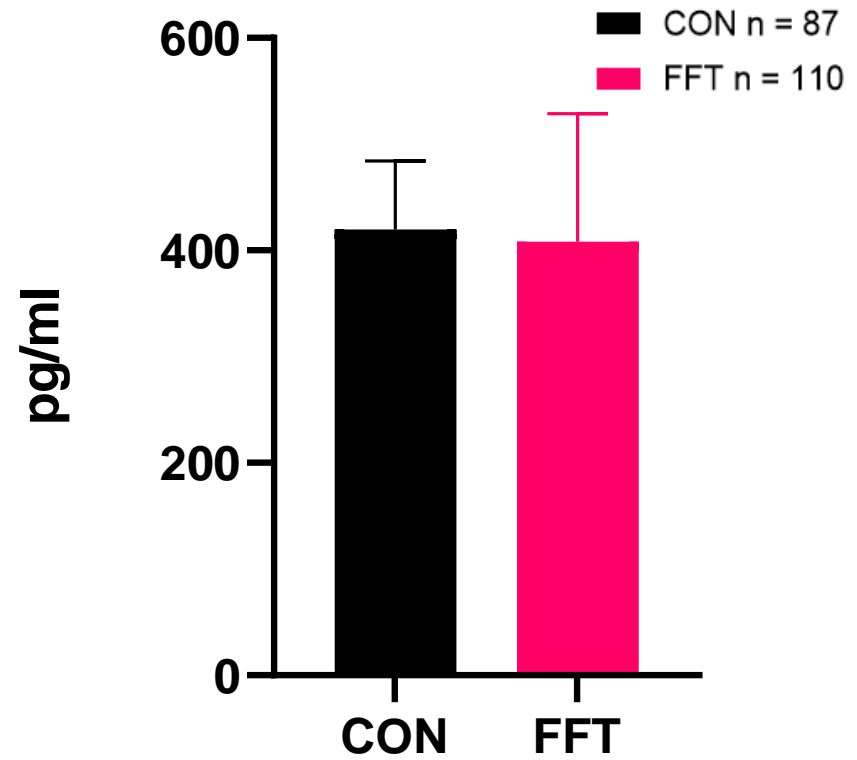


I-FABP

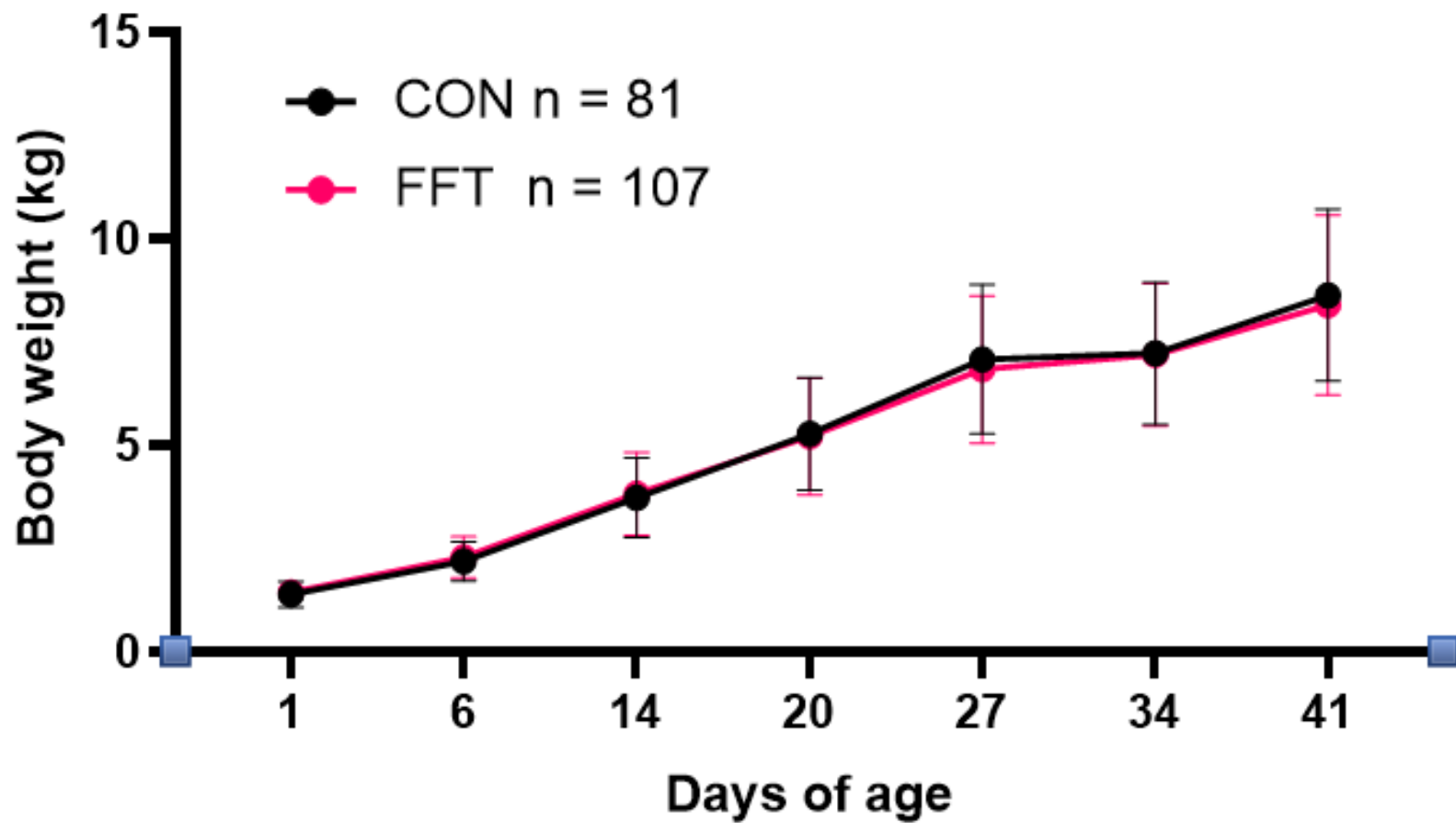
Pre-weaning

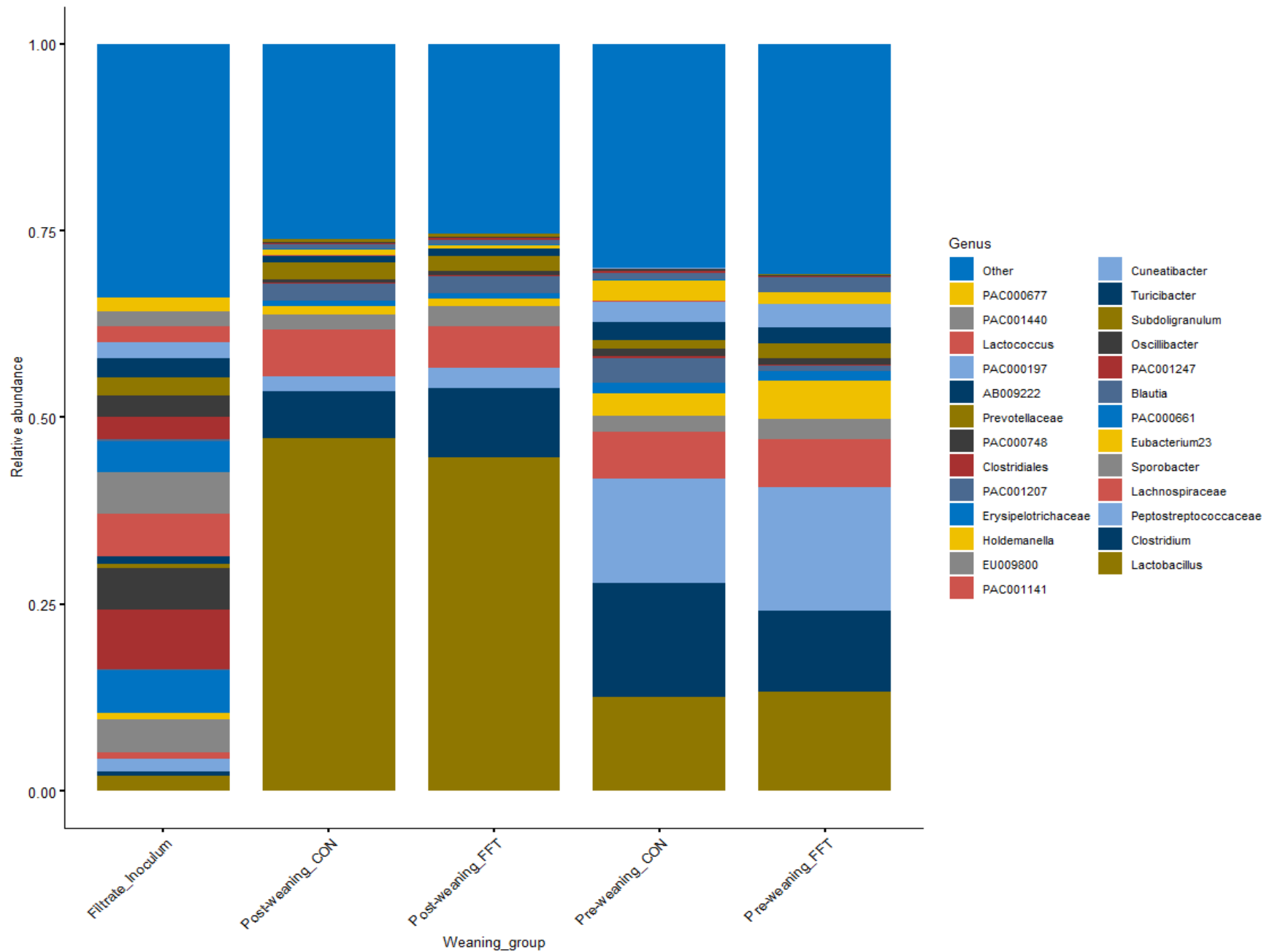


Post-weaning



Body weights day 1 - 41





Conclusion

- **FFT reduces post-weaning diarrhoea**
- **FFT reduces mortality**
- **Similar gut luminal microbiome**
- **Similar mucosal**
- **Similar growth**



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