3D'omics

Galactoglucomannan fibres promote a beneficial porcine gut microbiome

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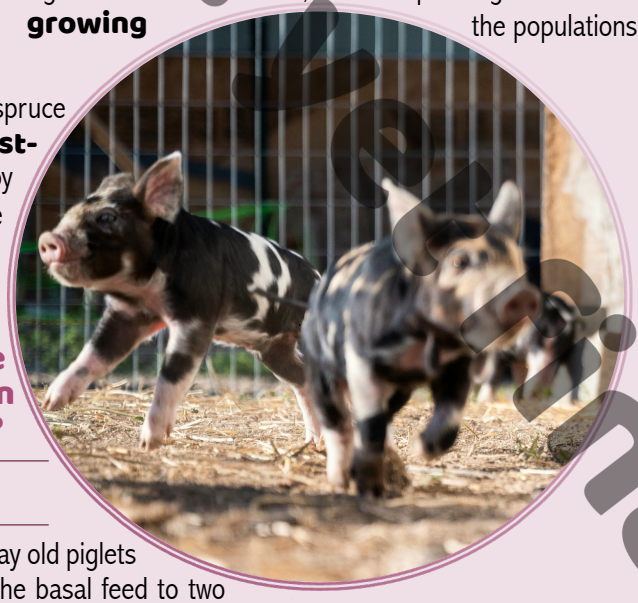
1 MOTIVATION

Most mammals and their microbiomes are codependent, forming a functional unit known as a **holobiont**. Exchanging metabolites, regulating gene expression, and combating pathogens are vital to the **health** and **performance** of the holobiont. By understanding the interactions occurring within this system, we can more effectively improve **animal** and **feed production**, favouring both animal welfare, production efficiency, and the **growing human population**.

Mannan fibres made from spruce can be broken down into **host-accessible compounds** by microbes with carbohydrate-active **enzymes**. These microbes can also ease piglets' **transition** from milk to **solid feed**. Can we

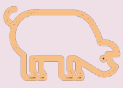
jump-start the porcine microbiome by mannan fibre supplementation?



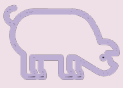
2 THE TRIAL

We used **three groups** of 10-day old piglets and gave **fibres** in addition to the basal feed to two groups; one starting **before** and one **after weaning**.

6 x control
no mannan



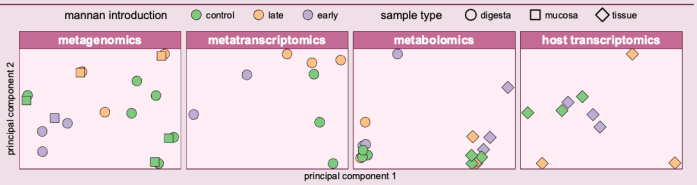
3 x late
two weeks with mannan



3 x early
Four weeks with mannan

After **one month**, we sampled their caeca and generated **four omic data layers**: metagenomics, metatranscriptomics, metabolomics, and host transcriptomics. The resulting data were analysed both as **individual omics** layers and jointly through a **holo-omic** approach.

SELECTIVE PROMOTION



Individual principal component analyses show **gradients** corresponding to **mannan exposure** duration. Among the populations …

REFERENCES

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