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Intestinal Health and Jejunal Mucosa-Associate Microbiota: Pig Model

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Immune barrier function of the intestine is critically important for health and growth of young animals especially upon weaning due to challenges from dietary components including allergenic proteins, phytate, soluble non-starch polysaccharides, mycotoxins, and microbial contamination. These often cause inflammation and oxidative stress to intestinal epithelium and affect intestinal microbiota associated with jejunal mucosa. All these in turn affect the health and growth of young animals. Pork takes 40% of global meat consumed and pork production is largely affected by lean growth of pigs. Intestinal health status of young pigs upon weaning determines the overall productivity of pigs. Our results based on jejunal microbiome data from 2,500 nursery pigs provide thorough understanding of the interaction among mucosa-associated microbiota, intestinal health, and growth of young pigs. Microbial composition is largely different between microbiota in the lumen and mucosa associated microbiota. Health and immune status of the small intestine are directly affected by mucosa-associated microbiota. Selected pro-inflammatory cytokines and oxidative damage products in the jejunal mucosa are related to diversity and relative abundance of jejunal mucosa-associated microbiota that in turn influence growth of young pigs.