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Dr Tanya Nowland



Can early-life establishment of the piglet intestinal microbiota influence production outcomes?

Dr Tanya Nowland is Research Scientist working in pig reproduction and welfare at the South Australian Research and Development Institute. She has a background in animal science and her research interests include sow reproduction and welfare and how that relates to piglet health and survival. Specifically, her research has focussed on the development of non-antimicrobial industry applicable practices to help support healthy intestinal microbiota development and improve pre-weaning piglet performance. This research will enable improvements in animal health and farm productivity. Dr Nowland completed her PhD on 'Development and manipulation of the piglet intestinal microbiota'.

The gastrointestinal tract microbiota is involved in the development and function of many body processes. Studies demonstrate that early life microbial colonisation is the most important time for shaping intestinal and immune development, with perturbations to the microbiota during this time having long lasting negative implications for the host. Piglets face many early life events that shape the acquisition and development of their intestinal microbiota. The pork industry has a unique advantage in that the producer has a degree of control over what piglets are exposed to, providing conditions that allow for optimum piglet growth and development. An influx of publications within this area has occurred in recent times and with this, interest surrounding its application in pork production has increased. However, it can be difficult to distinguish which research is of most relevance to industry in terms of delivering repeatable and reliable production outcomes. In this review we describe the literature surrounding research within pigs, predominantly during the pre-weaning period, that has either provided solutions to industry problems or is generating information targeted at addressing relevant industry issues, with the focus being on studies demonstrating causation where possible. This review will provide a basis for the development of new studies targeted at understanding how to better support initial intestinal microbiota colonisation in order to improve piglet health and survival.