RESEARCH ABSTRACT

SWINE HEALTH

Title - Age related changes in the intestinal microbiome protect neonatal piglets from *Clostridium difficile* infection **NPB# 12-190**

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Scientific abstract

Clostridium difficile has been recognized as a significant cause of morbidity in neonatal pigs, but is not encountered in piglets older than 1 week of age. We hypothesized that this age related resistance is due to the natural microbial succession of the intestinal tract. Piglets were challenged with *C. difficile* at 2- 14 days of age and the microbial diversity of the cecal microbiome was determined. Half of the piglets that were challenged with *C. difficile* at 2 and 4 days of age showed signs of disease. The incidence of disease decreased with piglet age and none of the piglets challenged at ≥10 days of age showed any signs of disease. The cecal microbiomes of piglets also clustered by age with those that were 2-4 days of age more closely related with one another than to those of older piglets. This clustering occurred across litters from 4 different sows and supports our hypothesis that the resistance to *C. difficile* disease in piglets greater than 1 week of age may be directly related to the diversity and complexity of the intestinal microbiome.