

SWINE HEALTH

Title: Development of a rapid, swine-specific test to simultaneously detect multiple immune proteins (cytokines) affected by PRRSV infection - **NPB#08-189**

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Scientific Abstract: A Luminex (Luminex Corp., Austin, TX) multiplex swine cytokine assay was developed to measure 8 cytokines simultaneously in pig serum for use in assessment of vaccine candidates. The fluorescent microsphere immunoassay (FMIA) was tested on archived sera in a porcine reproductive and respiratory syndrome virus (PRRSV) vaccine/challenge study. This FMIA simultaneously detects innate (IL-1 β , IL-8, IFN- α , TNF- α , IL-12), regulatory (IL-10), Th1 (IFN- γ) and Th2 (IL-4) cytokines. These proteins were measured to evaluate serum cytokine levels associated with vaccination strategies that provided for different levels of protective immunity against PRRSV. Pigs were vaccinated with a modified-live virus (MLV) vaccine and subsequently challenged with a

non-identical PRRSV isolate (93% identity in the glycoprotein (GP) 5 gene). Protection (as defined by no serum viremia) was observed in the MLV vaccinated pigs after PRRSV challenge but not those vaccinated with killed virus vaccine with adjuvant (KV/ADJ) (99% identity in the GP5 gene to the challenge strain) or non-vaccinates. Significantly elevated levels of IL-12 were observed in the KV/ADJ group compared to MLV vaccinated and control groups. However, this significant increase in serum IL-12 did not correlate with protection against PRRSV viremia. Additional studies using this assay to measure the local cytokine tissue responses may help in defining a protective cytokine response and would be useful for the targeted design of efficacious vaccines, not only for PRRSV, but also for other swine pathogens.

These research results were submitted in fulfillment of checkoff-funded research projects. This report is published directly as submitted by the project's principal investigator. This report has not been peer-reviewed.

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