# RESEARCH ABSTRACT

## SWINE HEALTH

**Title:** Assessment of heteroclite-vectored cytokines as a means to increase efficiency of modified live PRRSV DIVA vaccine preparations - **NPB #12-157**

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**Scientific Abstract:**

Many significant hurdles have complicated vaccine development for porcine reproductive and respiratory syndrome virus (PRRSV). In an attempt to enhance the immune response to existing modified live virus (MLV) vaccines, this work utilized a naturally occurring form of subgenomic RNA produced by PRRSV during replication called heteroclite RNA. This heteroclite RNA was previously shown to be packaged with infectious virus, and demonstrated to be translation competent. cDNA clones of two distinct heteroclite RNAs were generated and modified to allow production of authentic heteroclite RNAs upon *in vitro* transcription. The porcine cytokines IL$\alpha$7, IL$\alpha$15, IL$\alpha$18 and CD40L were cloned from porcine thymus/lymph node, and inserted into these modified heteroclite cDNA clones. Using a combination of infection and transfection approaches, attempts were made to co-rescue MLV preparations that contained significant levels of modified heteroclite that expressed one of the aforementioned cytokines. These attempts were unsuccessful, largely due to the unexpected efficiency with which the viral RNA generates its own endogenous heteroclite RNAs and the apparent preference shown by the virus for these endogenous heteroclites over exogenous modified heteroclite RNAs. Continued efforts are currently underway to develop a selection process to force uptake of modified heteroclite RNAs. Should these current efforts succeed, this approach still has the potential to enhance and potentially broaden the immune response to PRRSV MLV vaccines.