

**Title:** Mechanisms of Failed Protection Against PRRS in Sow Herds - **NPB #06-171**

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### Scientific Abstract

For many swine producers the critical point in control of endemic PRRS is prevention of virus transmission from pregnant sows to piglets, i.e. weaning negative pigs. However, common-sense practices involving whole herd exposure to on-farm isolates that is expected to provide complete, homologous immunity are not completely successful and rebreake with significant reproductive disease and transmission of PRRSV to the nursery still occur. Initial studies showed that outbreak viruses were genetically similar to the immunizing virus, suggesting that serum inoculation was not completely effective. Controlled experiments replicating field conditions of gilt exposure to virulent virus, followed by late gestation challenge with the identical virus (homologous challenge) or genetically related virus (heterologous virus >98% similar) were performed to evaluate the level of protection. In both situations, sows were protected against acute, reproductive PRRS compared to non-immune, challenged controls. However, acute abortions were not prevented and occurred in about 15% of challenged sows. Fifty-five percent of conceived pigs were weaned in each test group. Viremic pigs were weaned at a rate of 27% in heterologous challenge and 10% in homologous challenge, with a least 1 viremic pig in every litter (n=14, homologous; n=15, heterologous). We conclude that live virus inoculation provides immunological protection against reproductive PRRS, but protection is not complete, even in the case of homologous challenge.

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