RESEARCH ABSTRACT

SWINE HEALTH

Title: Vaccination of pigs with alphavirus replicon particles expressing PRRSV ORF 3, 4, 5 and 6 - **NPB** #08-207

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Scientific Abstract:
Recent work has illuminated the role for the structural glycoproteins of PRRSV during host cell infection, suggesting novel vaccine targets for evaluation. This project utilized alphavirus-derived replicon particle (RP) vaccines to evaluate several PRRSV structural proteins as vaccine antigens. The following PRRSV structural proteins were expressed in swine using the RP vector: GP3, GP4, GP5, and M. Both the humoral and cell-mediated immune responses were measured throughout the study. Following challenge with a virulent strain of PRRSV, viremia and antibody levels were assayed by various methods.

The results indicate that RP vaccines induce specific humoral and cell-mediated responses prior to challenge. Pigs that received RPs expressing GP3, GP4, GP5, and M developed neutralizing antibody titers prior to challenge, and only RP-vaccinated pigs developed neutralizing antibodies post-challenge. Vaccinated groups that received RPs expressing either: 1) GP5 and M; or 2) GP3, GP4, GP5, and M; had significantly higher level of pre-challenge cell-mediated immune response, as measured by an interferon-γ ELISPOT assay. The vaccinated groups all had significantly reduced viremia at nine days post-challenge. The group that received RPs expressing GP3, GP4, GP5, and M also had reduced viremia at six days post-challenge.