

## SWINE HEALTH

**Title:** A Field-Deployable Fluorescence-Based Sensor Excited by an Organic Light Emitting Device for PRRSV Detection – **NPB #04-185**

**Investigator :** Louisa B. Tabatabai

**Institution:** National Animal Disease Center, Ames, Iowa

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**Abstract:**

The final report describes the research results for the “proof of concept” approach to the development of a sensitive and specific diagnostic test for detecting PRRSV antigen using a novel technology based on a photoluminescence-based sensor as proposed in the original proposal. Because significant problems developed using a new laser dye with the sensor, only preliminary application data are described for the sensor. We used fluorescence-based and colorimetric-based enzyme-linked immunosorbent assays (ELISAs) to detect PRRSV antibodies in sera, PRRSV antigens in tissues. The PRRSV strain used in this study was the NADC-8 strain cultured in Marc-145 monkey kidney cells and purified by precipitation and ultracentrifugation. PRRSV antigen was characterized by gel electrophoresis and Western blotting using monoclonal antibody 15E (K. Platt). Monoclonal antibody SDOW-17 gave different results depending on the SDS-PAGE buffer system used for Western blotting. Additionally we characterized the PRRSV antigen also by enzyme-linked immunosorbent assay (ELISA) using a fluorescein labeled anti mouse IgG conjugate, by western blotting using a horseradish peroxidase-labeled anti-mouse IgG conjugate and by enzyme immunoassay using a ruthenium-anti mouse IgG conjugate. A ruthenium anti-pig IgG was prepared for detection of PRRSV antibody in pig sera and in matching tonsil tissues. Ru-IgG detection using the OLED device produced significant relative photoluminescence signals using the back-detection mode. In addition to the photoluminescence signal, a strong absorption band at 480 nm was also detected. We will continue to optimize detection of PRRSV protein antigen in serum and tissues spiked with PRRSV protein antigen, and we will examine additional sera and tissues from experimentally infected pigs and samples from field cases using both the OLED and fluorometer detection systems.

*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 This report has not been peer reviewed*

**For more information contact:**

**National Pork Board, P.O. Box 9114, Des Moines, Iowa USA**

800-456-7675, **Fax:** 515-223-2646, **E-Mail:** [porkboard@porkboard.org](mailto:porkboard@porkboard.org), **Web:** <http://www.porkboard.org/>