

## SWINE HEALTH

**Title:** Improving African swine fever diagnostics through the use of Multi Antigen Print Immunoassay (MAPIA) technology – NPB-CEEZAD #16-021

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### Scientific Abstract:

Serological diagnosis of complex viruses that generate a highly heterogeneous antibody repertoire, such as African swine fever (ASF), requires tests based on cocktails of antigens. The general procedure for antibody detection of ASF in affected countries consists of screening of sera by ELISA, followed by confirmation by WB using nitrocellulose strips containing ASFV proteins. Poorly preserved sera can produce false-positive reactions by ELISA or false-negative results due to a loss of antibodies against viral antigens present in the ELISA. In both cases, the WB is a valuable assay to confirm ELISA results. In this project, we tried to improve the current OIE confirmatory WB test by developing a Multi-Antigen Print Immunoassay (MAPIA) test for ASFV serological diagnosis. The ASF MAPIA is based on the application of recombinant ASFV antigens to nitrocellulose membranes by micro-aerosolization (printing), followed by antibody detection using anti-swine peroxidase antibodies and standard chromogenic substrate. The use of well-defined recombinant ASFV proteins printed on a nitrocellulose membrane allows simple interpretation of the test results when compared to the conventional WB test. We concluded that the ASF MAPIA is a sensitive, specific, safe, and rapid test format. Production of MAPIA strips can be done in BSL-2 laboratories and the system can be easily standardized and scaled up. The ASF MAPIA might be an economically viable alternative to the existing confirmatory WB test for ASF serological diagnostic.

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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 This report has not been peer-reviewed.

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