

## SWINE HEALTH

**Title:** Understanding if porcine circovirus type 2 strain differences explain the recent Canadian outbreak – NPB #06-067

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**Date Submitted:** June 25, 2008

### Scientific Abstract

Porcine circovirus type 2 (PCV2) is divided into two genetic clusters designated as PCV2a and PCV2b. The objectives of this study were to determine if isolates from different clusters vary in virulence and to determine if infection with PCV2a isolates induces protective immunity against subsequent infection with a recent PCV2b isolate. One-hundred and thirteen conventional SPF pigs were randomly assigned to treatment groups and rooms: pigs inoculated with PCV2a cluster isolates (ISU-40895 or ISU-4838), pigs inoculated with PCV2b cluster isolates (NC-16845 or Can-17639), and un-inoculated pigs. Necropsies were performed at 16 or 51 days post inoculation (p.i.). There were no significant differences in PCV2-associated lymphoid lesions between PCV2a and PCV2b clusters; however within the same cluster significant differences were found between isolates: ISU-4838 and Can-17639 inoculated pigs had significantly ( $P < 0.05$ ) less severe lesions compared to ISU-40895 and NC-16845 inoculated pigs. To evaluate cross-protection, six pigs within each group were challenged on 35 days p.i. with an isolate from the heterologous cluster and were necropsied 51 days p.i. The severity of PCV2-associated lesions was reduced in pigs with prior exposure to an isolate from the heterologous cluster in comparison to singularly inoculated pigs. Results indicate that the virulence of PCV2a and PCV2b isolates is not different in the conventional SPF pig model; however, the virulence of isolates within the same cluster differs. Increased virulence as reported in the field associated with PCV2b isolates was not observed under the conditions of this study. Moreover, cross-protection between PCV2a and PCV2b exists.

*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 This report has not been peer reviewed*

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