



VVD-006

DIVERSITY OF PRRS STRAINS CIRCULATING IN CANADA

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PRRS sequencing is widely used and considered essential for the control of PRRS in Canada. Through several signed agreements, a structure was put into place and has allowed achievement of near real-time transfer of all sequences to our research team from 3 different laboratories in Quebec. Up to now, a database of 5080 sequences from 1998 to 2017 is available for research and field purposes. Sequences were also obtained from other provinces in Canada: 245 from Ontario (1998-2017) and 75 from Western Provinces (2010-2017). The objective of the study was to describe Canadian strains and position them within worldwide PRRSV ORF5 genotype 2 diversity.

A reference dataset was obtained from Dr. Shi which included 841 sequences with associated genetic lineages according to a previous study on the genetic diversity of North American strains. Sequences were added to our Canadian dataset and a maximum likelihood phylogeny was inferred. The presence of known lineages among Canadian strains was determined by identifying common node grouping of both Shi's reference sequences and Canadian sequences.

Of the 9 lineages described by Shi et al., only 3 were frequently observed in the Canadian pig population. Lineages 5 and 8 which are associated with vaccine strains were very common in Quebec (>25%) and almost exclusive in Western Provinces. Regarding wild-type sequences, lineage 1 was the most prevalent, both in Quebec and Ontario provinces and lineage 2 was rarely observed. Although Canada is connected to the North American swine production, some lineages that are frequently observed in USA were not found in Canada (e.g. lineage 9).

Differences among provinces and USA partly reflect the pig production system by which pigs are generally moved from North to South, but not the opposite and with little movements from east to west.

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