RESEARCH ABSTRACT

SWINE HEALTH

Title: Development of stable cell lines permissive for PRRSV replication and production
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SCIENTIFIC ABSTRACT:
Virus infection is initiated by interaction of the viral ligand with the viral-specific cellular receptor on the cell surface. For PRRSV, at least four putative receptor molecules have been described; sialoadhesin, vimentin, CD151, and CD163. We cloned the CD163 gene from porcine macrophages and introduced into cells that are PRRSV non-permissive. The stable expression of pCD163 was confirmed by RT-PCR, immunofluorescence, and Western blot assays. When these cells were infected with PRRSV, they became fully permissive for PRRSV infection and produced infectious virus. Crandall feline kidney (CRFK) cells however remained non-permissive despite the CD163 expression was evident. Transfection of CRFK cells with an infectious clone of PRRSV produced infectious progeny in these cells, suggesting the interruption of infection in CRFK cells was associated with the virus entry. When CRFK cells were co-expressed with pCD163 and vimentin followed by infection with PRRSV, the cells became permissive for PRRSV and infectious virus was produced. Our study suggests that CD163 is a major determinant for PRRSV infection but requires a co-factor for permissiveness of cells.