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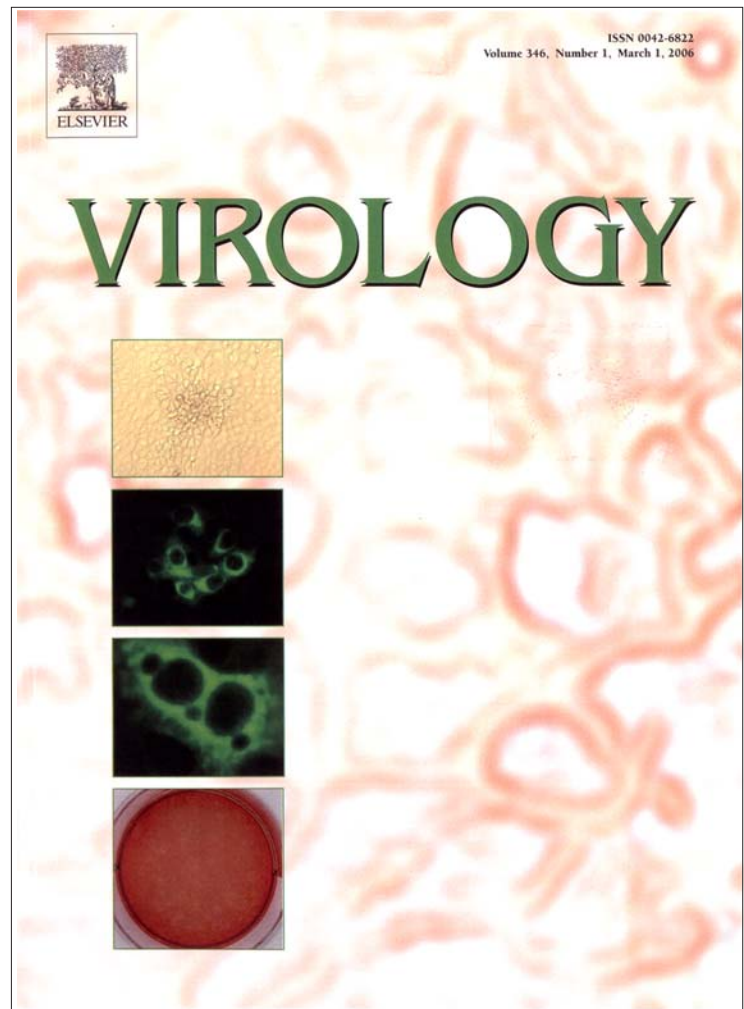
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*C. Lee, D. Hodgins, J. G. Calvert,  
S. W. Welch, R. Jolie, and D. Yoo.  
2006. Mutations Within the  
Nuclear Localization Signal of the  
Porcine Reproductive and  
Respiratory Syndrome Virus  
Nucleocapsid Protein Attenuate  
Virus Replication. **Virology**  
346(1):238-250.*

# Cover Stories:

Major Scientific Publications Featuring  
NRI-funded Research



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**P**orcine reproductive and respiratory syndrome virus (PRRSV) is the most economically important infectious disease pork producers face. Presently, our understanding of the disease development, immunity, and viral persistence is limited. Therefore, efforts to prevent or control infection and disease have been limited in their effectiveness. PRRSV is an RNA virus that replicates in the cytoplasm of the cell. However, the nucleocapsid (N) protein of the virus is specifically transported and localized in the nucleus and nucleolus of the virus-infected cell. The functional nuclear localization signal (NLS) has previously been identified in the N protein. A modified NLS restricted the N protein from entering the cell's cytoplasm. The role of N protein nuclear localization during infection was subsequently investigated in pigs using an NLS-knock out mutant PRRSV generated using a full-length infectious cDNA clone. The NLS-knock out full-length clone was viable and produced the infection. The NLS-knock out virus grew to a concentration 100-fold lower than that of wild-type virus. The NLS-null-infected pigs had a significantly shorter mean duration of the virus presence in the blood stream than wild-type-infected pigs, but developed significantly higher concentrations of neutralizing antibodies. Both wild-type and NLS-null viruses persisted in the tonsils for at least four weeks. The results from this study show that N protein nuclear localization is non-essential for PRRSV multiplication. The localization may play an important role in viral attenuation in disease development in pigs. This finding may lead to the development of a PRRS vaccine that will promote healthier animals and a safer food supply.

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