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Glycoproteins required for entry are not necessary for fusion of the primary envelope with the outer nuclear membrane during nuclear egress of PrV

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In the herpesvirus replication cycle two separate fusion processes occur during entry and nuclear egress. For penetration glycoproteins gB, gD and gH/gL have been shown to be essential, whereas a possible role of these glycoproteins in nuclear egress remains unclear. Viral envelope glycoproteins have been detected by immunolabeling in the inner nuclear membrane as well as in primary enveloped particles in several herpesviruses indicating that they might be involved in the fusion process. Moreover, a herpes simplex virus 1 (HSV-1) mutant simultaneously lacking gB and gH has been described to be deficient in nuclear egress. To analyze the situation in the related pseudorabies virus (PrV), mutants carrying single and multiple deletions of glycoproteins gB, gD, gH and gL were constructed and characterized. We show here that neither single nor simultaneous deletion of gB and gD, gB and gH, gD and gH, or gH and gL had any detectable effect on viral egress implying that none of the tested glycoprotein combinations is required for nuclear egress and release. In addition, immunolabeling studies using different mono- or polyclonal sera raised against various PrV glycoproteins did not reveal presence of viral glycoproteins in the inner nuclear membrane or in primary virions, which strongly indicates that completely different fusion mechanisms are active during virus entry and egress.

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