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ANP32B is a nuclear target of Hendra Virus Matrix Protein

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Membrane envelopment and budding of negative Strand RNA viruses is mainly driven by the viral matrix (M) proteins. In addition, M proteins are involved in host cell manipulation and virus RNA synthesis regulation. In spite of the importance of these functions for viral replication, knowledge about the molecular mechanisms, however, is poor so far for many viruses. Notably, for Nipah Virus (NiV), a member of the henipavirus family, nuclear shuttling of M has been described to be essential for virus budding. Potential nuclear targets of NiV M, however, have not been identified so far.

To identify cellular interactors of henipavirus M proteins, N- and C-terminally tagged Hendra Virus (HeV) M proteins were expressed in transfected cell cultures, M-containing protein complexes were isolated by affinity purification and their composition was analyzed by nano-LC/MS. Under different experimental conditions, cellular ANP32B (acidic leucine-rich nuclear phosphoprotein 32 family, member B) was identified as a component of the complex, suggesting that ANP32B either directly or indirectly interacts with HeV M protein. ANP32B is a multifunctional protein involved in cell cycle progression and cell survival. As ANP32B is involved in certain Crm1-dependent nuclear export processes, we analyzed whether nuclear shuttling of HeV M protein was affected by ANP32B expression. Indeed, overexpression of ANP32B led to nuclear accumulation of HeV M protein, whereas ANP32B-independent Crm1 export pathways were not inhibited. From these data we conclude that ANP32B is a nuclear target of HeV M protein and may participate in HeV M protein nuclear shuttling and/or in host cell manipulation by affecting cell survival or specific mRNA transport processes.

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