Identification of cellular proteins involved in the activity of bovine herpesvirus 1- encoded UL49.5 protein

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Herpesviruses have evolved numerous immune evasion mechanisms to establish a lifelong infection in their host. One of the strategies used by alphaherpesviruses exploits glycoprotein N (UL49.5). This protein is responsible for blocking TAP (transporter associated with antigen processing) which downregulates antigen presentation by MHC class I molecules and, as a consequence, leads to inhibition of cytotoxic T lymphocytes during infection. This work aims at identification of cellular proteins, mainly components of ERAD (endoplasmic reticulum-associated protein degradation) system, involved in TAP degradation in the presence of UL49.5. Methods used in this approach will employ design and stable expression of fluorescent variants of TAP proteins in mammalian cell lines, genomic shRNA screening with a lentivirus library, engineering of cell lines with knockouts of indicated cellular factors with the CRISPR/Cas9 system and validation of detected target proteins by gene silencing with RNAi.

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