



Prof. Dr. Lutz S. Göhring,  
DVM, MS, Ph.D. Dipl. ACVIM,  
ECEIM

Ludwig-Maximilians-  
Universität München,  
Klinik für Pferde, Germany

### TOWARDS A (LITTLE) BETTER UNDERSTANDING OF EHV-1 LATENCY

Equid Herpesvirus -1 (EHV-1) infections cause respiratory disease and additional secondary complications such as myeloencephalopathy (Equid Herpesvirus-associated myeloencephalopathy or EHM) in the adult horse, or late-term abortions in the pregnant mare. All herpesviruses are capable of inducing latency in their hosts, and latency is probably the most powerful and ingenious survival mechanism of herpesviruses showing this virus' extreme level of host adaptation and co-existence. Latency is one part of chronic-persistent infection of herpesviruses. It is a dormant, non-replicative state which enables the virus to retreat in tissues awaiting periodical re-activation to turn into a lytic, replicative-productive state that allows horizontal spread and infection within the herd. Latency, once established, is considered live-long; periods of latency dominate this persistent infection, and different strains and types (e.g. EHV-4) can be found at one latency location. Latency does not elicit a systemic host immune response, and, hence, does not prevent horizontal re-infection with same type or type-different virus.

Early on, during lytic EHV-1 infection, virus progresses simultaneously towards latency. As EHV-1 is a rather common pathogen among horses world-wide and first-time infections occur during adolescence, a large proportion of horses is assumed to be latent-infected. Regional EHV-1 latency prevalence among horses ranges between undetectable up to about 90%. EHV-1 latency has been shown in trigeminal ganglia, lymphoid tissue of the respiratory tract and in PBMC of horses, although additional sites are likely. The fact that EHV-1 becomes dormant in distinctly different tissues at the same time is unusual for herpesvirinae as there is typically a preference of one tissue over the other, neural or lympho-reticular. This could be of importance when it comes to recrudescence of EHV-1. Recrudescence is the reactivation of virus at its latent location with a return to productive, lytic replication in the respiratory tract, and thresholds for reactivation could vary among the various latency locations.

Research in this area is important as we need to understand what determines stages of latency at various locations. With this knowledge we might be maintain a stage of 'deep-stage latency', making recrudescence less likely, and thus reducing the possibility of future EHV-1 outbreaks.