

Oral presentations

12:15 - Altered mitochondrial oxidative phosphorylation capacity in horses suffering from polysaccharide storage myopathy

Tosi I.^{1*}, Art T.¹, Cassart D.², Sertheyn D.³, Votion D.³

¹ Center of Equine Sports Medicine, FVM, ULg.

² Department of pathology and morphology, FVM, ULg.

³ Equine clinic (FMV) & Center of oxygen, research and development, ULg.

*Corresponding author: irene.tosi@ulg.ac.be

Introduction: Polysaccharide storage myopathy (PSSM) is a widely described cause of exertional rhabdomyolysis in many equine breeds. Recent studies identified a dominantly genetic defect in the skeletal muscle glycogen synthase (GYS1) enzyme at the basis of the Type 1 PSSM phenotype. The condition is characterized by increased skeletal muscle glycogen concentration, and abnormal polysaccharide accumulation in myofibers. Gene expression studies indicated down-regulation of some mitochondrial genes and we hypothesized that, in type-1 PSSM-affected horses, the energetic production through the oxidative phosphorylation (OXPHOS) in the mitochondria of myofibres might be impaired. **Material and Methods:** During the year 2012, 8 horses with a history of recurrent exertional rhabdomyolysis with increased serum creatine kinase activity were tested for the GYS1 mutation (test performed on EDTA whole blood). Muscle biopsies were collected on the *gluteus medius* and *triceps brachii* muscles of each horse and used for histological analysis and high resolution respirometry (HRR). **Results:** Four horses were tested positive to type-1 PSSM and were included in the study. Histology revealed accumulation of abnormal glycogen in both muscles. A severe depression of the maximal OXPHOS capacity was observed by HRR (minus 56% in the *gluteus medius* and minus 38% in the *triceps brachii*). **Conclusion/Discussion:** Our study shows for the first time a severe decreased OXPHOS capacity in type-1 PSSM-affected horses. PSSM is considered primarily as a glycogenosis but altered OXPHOS might also play a central role in the pathogenesis of this condition. Our fundamental understanding of the pathophysiology of PSSM will be improved by detailed diagnosis of mitochondrial dysfunction.

14:30 - A gammaherpesvirus uses alternative splicing to regulate its tropism and its sensitivity to neutralization

Machiels B.^{1*}, Stevenson P.G.², Vanderplasschen A.¹, Gillet L.¹

¹ Immunology-vaccinology, Department of infectious and parasitic diseases, FMV, ULg.

² Division of Virology, Department of Pathology, University of Cambridge, Addenbrookes Hospital, Hills Road, Cambridge UK.

*Corresponding author: bmachiels@ulg.ac.be

Human gammaherpesviruses are associated with the development of several lymphomas and epithelial malignancies. The heterogeneity of these tumors reflects the ability of these viruses to route infection to different cell types at various stages of their lifecycle. While the Epstein Barr virus uses gp42 - Human leukocyte antigen class II interaction as a switch of cell tropism, the molecular mechanism that orientates tropism of rhadinoviruses is still poorly defined. Here, we used bovine herpesvirus 4 (BoHV-4) to further elucidate how rhadinoviruses regulate their infectivity. In absence of any gp42 homolog, BoHV-4 exploits the alternative splicing of its Bo10 gene, to produce distinct viral populations in function of the originating cell. While epithelial cells produce virions with high levels of the accessory envelope protein gp180, encoded by a Bo10 spliced product, myeloid cells express reduced levels of gp180. As a consequence, virions grown in epithelial cells are hardly infectious for CD14+ circulating cells, but are relatively resistant to antibody neutralization due to the shielding property of gp180 for vulnerable entry epitopes. In contrast, myeloid virions readily infect CD14+ circulating cells but are easily neutralized. This molecular switch could therefore allow BoHV-4 to either promote its dissemination into the organism or, on the opposite, its transmission between hosts.