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## Gene expression profiles of the immuno-transcriptome in IAD and RAO affected horses

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Knowledge about IAD and RAO pathogenesis are still limited. The aim of the study was to investigate genes expression in the respiratory tract of IAD and RAO-affected horses through a cDNA-microarray platform and to evaluate their relationships with the clinical signs. Clinical examination and endoscopy were performed in 20 RAO, 26 IAD-affected horses and 8 controls. On the BAL fluid, cytological and microbiological analysis was performed. Total RNA extracted from BAL was used for gene expression profiling by means of an equine custom gene oligo-DNA microarray representing 7238 unique immune-related genes in duplicate. 379 transcripts (55 up-regulated and 324 down-regulated) were significantly differentially expressed (DE) between the IAD group and the controls, while 1.763 genes (903 up-regulated and 860 down-regulated) were DE comparing RAO-affected and healthy horses. Several genes involved in the genesis, length and motility of the respiratory epithelium cilia, were down regulated both in IAD and in RAO horses. In the IAD group, a significant over-expression for genes encoding inflammatory mediators was observed. In the RAO group, in addition to genes controlling the inflammatory response other transcripts involved in broncho constriction, apoptosis and hypoxia pathways were significantly up-regulated. Genes involved in the genesis of the protective muco-protein film were under-expressed. Analyses performed by means of the software Gene Sets Enrichment Analysis (GSEA) showed that gene networks activated during human asthma are also enriched in equine RAO, albeit marginally significant (False Discovery Rate <25%, p value 0.08). The developed equine-immune-related-genes microarray platform provides new insight in the IAD and RAO pathogenesis representing the first step to improve diagnostic and therapeutic approaches for the equine respiratory diseases.

### Biography

E Padoan graduated in 2008 in veterinary medicine at the University of Padova. In 2008-2009 she was enrolled in an Internship Program at the Equine Medical Center, Limena, Padova. At the end of 2009, she was enrolled in an Externship Program at West Coast Equine Hospital, Somis, California, USA. In 2010 she got training with Dr Freeman and Dr Minle in Cytology and Veterinary Clinical Pathology in Perthshire and at the Royal (Dick) School of Veterinary Studies, Edinburgh, Scotland. She has completed her PhD in Veterinary Science in 2013 at the Department of Public Health and Comparative Pathology, University of Padova. Nowadays, she is an equine veterinarian.

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