“Development of a nasal epithelial brush model to study equine respiratory disease in the racehorse”

We are excited to be involved in a study for Equine Asthma with the University of Surrey. Please find more details about the study below:

Equine asthma, formerly inflammatory airway disease (IAD), is amongst the most common causes of training interruption and poor performance in young athletic horses, particularly the racing thoroughbred and endurance horse. The prevalence is high in racehorses (13–22%) and sports horses (31%) and may be described as a chronic respiratory syndrome affecting horses of any age, gender or breed. Research on asthma is hindered by the invasiveness of the techniques required to isolate tracheal or bronchial epithelial cells. Meaningful quantities of upper airway epithelial cells can currently only be achieved post-slaughter, whilst bronchial brushing or biopsy require local anaesthesia in addition to sedation and require a 48 h recovery period.

The current project, funded by the Horserace Betting and Levy Board (HBLB Grant reference 793), aims to develop a model of the equine upper airway, using a nasal brush sampling technique, as an alternative to the more invasive tracheo-bronchial biopsy or bronchial brushing. Nasal epithelial cells have been validated as a surrogate for bronchial epithelial cells in human cystic fibrosis studies.

Nasal epithelial cells from healthy horses will be characterised, validated by comparison with cells isolated from the equine bronchi and used to study mechanisms of mild and severe equine asthma. We will also investigate modulation of the notch signalling pathway by gamma-secretase inhibitors. Notch signalling is responsible for the differentiation of basal and ciliated cells into goblet cells, which leads to excess mucus and poor performance in asthma. Ultimately, the information gathered should help researchers to develop novel therapies for equine asthma and may also be used in the future to study infectious diseases, such as equine influenza or strangles.