

# Research Project for Masters/PhD Student

## Project Title:

Respiratory disease and biomarkers in the foal

## Project Supervisor:

Dr Gary Muscatello

Telephone: 02-9114 0790

E-mail: g.muscatello@usyd.edu.au

## One Sentence Project Summary: (single sentence for Google-style search results)

This project will investigate the role of oxidative stress in foal health, through the measurement of respiratory and systemic oxidative stress biomarkers and relating these findings to clinical and microbiological data.

## Project Synopsis: (about 250 words max)

This project aims to develop a method to measure oxidative stress biomarkers and evaluate respiratory health in the foal and apply these methodologies in an on-farm case-control study to evaluate the biomarker assays in the diagnosis of *R. equi* pneumonia 'Rattles' in foals.

This project consists of two parts, a developmental phase where respiratory and blood samples will be collected from foals admitted to University of Sydney Veterinary Teaching Hospital Camden (UVTHC). Samples will be quantitatively analysed for reactive oxygen metabolites (d-Roms) and biological antioxidative potential (BAP) using commercial kits and related to respiratory data using spirometry, microbiological data and various clinical and animal measured data. The results will enable the establishment of effective sampling protocols and give a preliminary indication of the relationship between oxidative stress biomarkers and foal health. This will be followed by an on-farm case-control study evaluate the relationship between oxidative stress and *R. equi* pneumonia in foals. This will involve sampling foals on an endemic farm at the time of lung ultrasonographic examination and relating oxidative stress biomarker values, lung pathology and disease status and respiratory *R. equi* burden, to explore the potential of oxidative stress indicators of disease in a diagnostic setting.

The results of the project will for the first time explore the significance of oxidative stress in foal health. Leading to the development of novel diagnostic aids to; enhance screening of 'at risk' foals, diagnose diseased foals and alternative therapeutic and management option such as the prophylactic use of antioxidant therapy to treat and prevent foal diseases, specifically *R. equi* pneumonia 'Rattles'.

## Other Information: (e.g. scholarships/funding available, etc.)

No scholarship available, however suitably qualified candidates will be encouraged to apply for an APA or UPA scholarship. This project has funding support from RIRDC equine and the University of Sydney.

---