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A combined engineering and molecular approach to study the initiation and progression of equine tendinopathy

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Project in progress: Due in 2013

Prj: 752

On-going project: an overview

Tendon injuries continue to be one of the most important causes of injury and failure to race in the Thoroughbred. This project builds a new, multi-disciplinary collaborative partnership to investigate the specific mechanisms leading to equine tendon injury, and provide data to inform veterinary practice on treatment and prevention.

It investigates the hypothesis that overuse will initiate fatigue damage within the tendon matrix, altering the local strain environment and

initiating matrix degradation through the up-regulation of catabolic pathways.

This hypothesis will be tested by relating local strains within tendon to the nature and magnitude of cell deformation and then correlating these data with enzyme activities in that area. We will assess how changes in matrix metabolism spread throughout the tissue, and determine if they precede or follow fatigue induced damage. These data will improve our understanding of the mechanical changes occurring with overuse, and the subsequent potential for initiating degradative pathways, providing important insights for new clinical approaches.