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## Regenerative strategies for different injuries of tendons: Development of a biocompatible re-cellularized scaffold; in vivo treatment with MSCs and PRP in injured tendons

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The major aim of regenerative medicine is to excogitate experimental techniques that take maximal advantage of reparative processes that occur naturally in the animal body. Injection of mesenchymal stromal cells into the core of a damaged tendon represents a form of seeding which aims to cope with the above statement. Here we present two different strategies to be potentially used for i) tendon traumatic lesions and in ii) tendinitis.

(i) In the first study we have developed a recellularized biocompatible scaffold from human tissue and our results show that it is possible to introduce proliferating cells in the core of a decellularized tendon treating the scaffold with a collagen gel. This method resulted efficient for maintaining the scaffold ECM and because of the expression of collagen type I and COMP by injected mesenchymal stromal cells.

(ii) In the second study we examined the use of autologous MSC derived from peripheral blood (PB-MSCs), platelet rich plasma (PRP) and a combination of both for ameliorating experimental lesions on deep digital flexor tendons of sheep. Effectiveness of treatments was evaluated at 30 and 120 days comparing clinical, ultrasonographic and histo- immunohistochemical features. Significant differences were found between treated groups and their corresponding control (placebo) regarding tendon morphology and extracellular matrix (ECM) composition. However, the results indicate that the combined use of PRP and MSCs did not produce an additive or synergistic regenerative response and highlighted the predominant effect of MSCs on tendon healing, enhanced tissue remodeling and improved structural organization.

## Biography

Marco Patruno is an Associate Professor of the Department of Comparative Biomedicine and Food Science, University of Padova, Italy. Prof. Patruno obtained the degree of Animal Science from the University of Milano, Italy in 1995 and his Ph.D. in Developmental Biology from Royal Holloway, University of London, UK, in 2001. He published 40 international papers and several chapters in scientific books. Prof. Patruno teaches Veterinary Histology, Embryology and Anatomy and his interests are related to regenerative processes, muscle development and the potential of adult stem cells isolated from different sources.

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