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## Autologous tendon progenitor cells therapy for treatment of tendinopathy: From preclinical to clinical trial

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Tendinopathy due to sport injury or over use is one of the most common clinical disorder in musculoskeletal clinics. The chronic degenerative condition frequently does not respond to treatment. In the current study, we propose that autologous tendon progenitor cell therapy (ATT) is effective in preventing tendon degeneration. We have conducted pre-clinical evaluation using a collagenase induced rabbit Achilles tendinopathy model. On the basis of the evaluation and characterisation of tendon cells, we have conducted a phase I trial in patient with refractory lateral epicondylitis. For pre-clinical study, chronic tendinopathy in rabbit was created in the left Achilles tendon. The result showed that ATT improved tendon remodeling, histological outcomes, collagen content and tensile strength of tendinopathic Achilles tendons. Injected tenocytes were integrated into tendon tissue and could be tracked up to 8 weeks *in vivo*. As the pre-clinical study showed ATT may be a useful treatment of chronic Achilles tendinopathy, we next evaluated the safety and level of efficacy of ATT for treatment of refractory lateral epicondylitis in a pilot study. Cultivated autologous tenocyte from the patellar tendon were injected into the sites of intrasubstance tears and fibrillar discontinuity of the common extensor origin under ultrasound guidance. The interim results demonstrated sixteen patients who reached the 6 month period have shown up to 60% improvement in all scores when compared to pre-treatment. MRI results showed infill of tendon tear in the majority of patients but there was some variation in the quality of regenerated tendon. In conclusions, our study indicates that the feasibility of ATT for the treatment of tendinopathy.

### Biography

Professor Ming H Zheng has completed his Bachelor of Medicine from Shantou University in 1983, Ph.D in 1993 and MD in 2000 from the University of Western Australia. He has published more than 120 papers, 8 patents and is serving as an editorial board member of numbers of journals including Stem cell Research and Therapy. He is currently the Director of the Centre for Orthopaedic Research, School of Surgery and Associate Dean of the Faculty of Medicine, Dentistry and Health Sciences at the University of Western Australia. He is also member of Therapeutic Good Committee (human cell and tissue products) at the Therapeutics Goods Administration (TGA) of Australia.