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## Heparanase regulates inflammatory mediators in rheumatoid arthritis

**Statement of the Problem:** Heparanase is the only known mammalian endoglycosidase capable of degrading the heparan sulfate (HS) glycosaminoglycan, both in extracellular space and within the cell. HS is reported to control inflammatory responses at multiple levels, including the sequestration of cytokines/chemokines in the extracellular space, the modulation of the leukocyte interaction with the endothelium and ECM, and the initiation of innate immune responses. We have reported heparanase expression in synovium of rheumatoid arthritis (RA) patients and this new finding may offer a new insight of the potential regulatory role of heparanase in the disease activity of RA. However, the precise mode of action by heparanase in inflammatory reactions of RA remains largely unknown.

**Aim:** The purpose of this study is examine the heparanase activity, its expression and correlation with the inflammatory mediatory and angiogenic gene expression in plasma and synovium of RA patients with an ultimate goal of developing heparanase as a potential predictor of RA progression and a new therapeutic target.

**Methodology & Theoretical Orientation:** HPSE activity was detected using ELISA. HPSE mRNA expression and osteogenic gene expression were measured by RT-qPCR Array assay.

**Findings:** Heparanase activity and its expression in synovial fluid and synovial tissue of RA patients were significantly increased and an increase of the heparanase activity positively correlated with the inflammatory and angiogenic gene expression.

**Conclusion & Significance:** We also have some evidence to support a postulation that the involvement of heparanase in gene regulation in the development of pannus in RA may be reflected in a patient's blood, thus heparanase can be a potential predictor of RA progression and a novel therapeutic target.

### Biography

Rachel W Li has completed her PhD in Australia and gained her Postdoctoral experiences in Molecular Pharmacology focusing on immune regulation of metabolic diseases at the University of Hawaii, USA. She returned to Australia joining the Trauma and Orthopaedic Research Unit (TORU) at the Australian National University Medical School and has established TORU Laboratory. She is currently leading her team with a focus on osteoimmunology, biomaterials and 3D printing for orthopedic implants.

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