



Mechanics of Spinal Cord Injury

Spinal Research Group, Adelaide Medical School & School of Mechanical Engineering

Project description

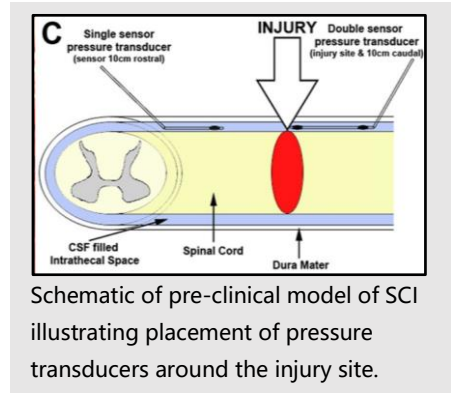
Spinal cord injury (SCI) has significant personal and societal impacts. To date, there are a limited number of treatment options to minimise neurological deficit and improve functional recovery. Furthermore, providing a prognosis is challenging. Understanding the mechanics of the injury event and of the spinal cord, dura and cerebrospinal fluid in the hours following SCI is important, but impossible to achieve in medically unstable patients.

Primary aim

The aim of this project is to better understand the complex interaction between intrathecal pressure, cerebrospinal fluid flow, and spinal cord morphology in the subacute phase following traumatic SCI. This will be done using a pre-clinical model, physical measurements of pressure, and medical imaging. The project will ultimately lead to the ability to understand and model the effect of novel surgical interventions, and contribute to treatment decision making and improved accuracy of prognosis for individuals with a SCI.

Student attributes

This project is suited to students with an Undergraduate or Masters degree in Mechanical, Mechatronic or Biomedical Engineering, and a strong interest in injury biomechanics and neurotrauma. The student should be willing to work with pre-clinical injury models. Experience with medical imaging (MRI/CT), high speed data acquisition (LabView), and sensors such as pressure transducers and load cells, is advantageous but not essential.



Schematic of pre-clinical model of SCI illustrating placement of pressure transducers around the injury site.

The Spinal Research Group

Student(s) will work within a dynamic multidisciplinary team of scientists, engineers and clinicians. Investigators associated with this study include: Dr Claire Jones, Dr Anna Leonard, and Professor Brian Freeman, members of the Spinal Research Group in the Centre for Orthopaedics and Trauma Research. This project will be executed at SAHMRI & the Biomechanics Laboratory at the Adelaide Health and Medical Sciences Building. Students can be enrolled in School of Mechanical Engineering or Adelaide Medical School.

For further enquiries

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