Chronic pain is a major global health burden, affecting nearly 20% of the Australian population. This condition results in hypersensitivity to sensory input so non-painful stimuli can become painful. Analgesics that are currently in use provide relief in a small proportion of chronic pain patients and there is a great need for more effective therapeutics.

Our lab investigates changes in neuron signalling that happen in pain circuits during the development of chronic pain. Some of these changes can be targeted therapeutically, so the aim of our work is to identify pathological changes and find ways to modify them for the treatment of pain. To understand pain circuitry and to characterize potential analgesics, we use patch-clamp electrophysiology, optogenetics and calcium imagining in brain and spinal cord tissue from animal models. We also use immunohistochemistry and confocal imaging, behavioural assays and genetic profiling.

Research Projects
1. Decoding dysfunctional spinal cord circuitry in chronic pain.
2. Identifying Novel Molecular Targets for Treating Chronic Pain.

Selected significant publications: