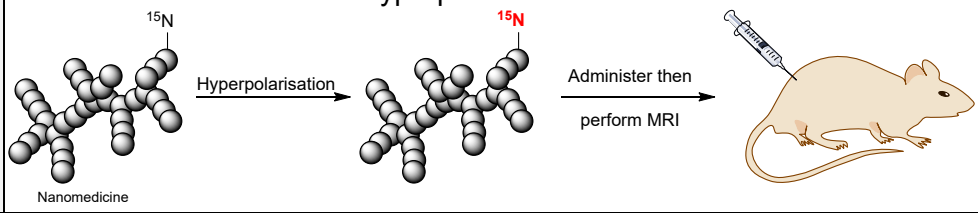
2023 Winter Research Project Description

Project title:	**Hyperpolarisation of 15N-tagged nanomedicines for MRI**
Project duration, hours of engagement & delivery mode	Duration of the project, 4 weeks during Winter Vacation. Hours of engagement must be between 20-36hrs per week
Description:	Magnetic resonance imaging (MRI) is a non-invasive imaging technique that can be used to detect and monitor molecules within the body by utilising nuclear magnetic resonance (NMR). This method has the potential to track (nano)medicines through the body and assess disease progression. One limitation of MRI is small number of ground-state nuclei have suitable magnetic properties for MRI (e.g. Gd3+, used in medical contrast agents). One technique to overcome this problem is hyperpolarisation, which can improve the signal of nuclei like 15N several orders of magnitude. In this project, we are synthesising 15N labelled nanomedicines that can be hyperpolarised and studied in vivo with MRI. 
Expected outcomes and deliverables:	Students will gain skills in synthetic chemistry, purification, and analytical techniques. Students may be asked to present results as a written report or oral presentation. Students will also have the opportunity to be exposed to and be involved in preclinical studies of nanomedicines.
Suitable for:	Best suited to a 2nd or 3rd year student with a background in chemistry.
Primary Supervisor:	Dr Rhia Stone
Further info:	Dr Rhia Stone rhia.stone@uq.edu.au; Dr Idriss Blakey i.blakey@uq.edu.au; Prof Kristoffer Thurecht k.thurecht@uq.edu.au