

## 2024 Summer Research Project

<b>Project title:</b>	<b>Optimising <math>^{212}\text{Pb}</math> radiolabelling for cancer therapy</b>
<b>Project duration, hours of engagement &amp; delivery mode</b>	Duration of the project, 6-10 weeks during Summer Vacation.  Hours of engagement must be between 20-36hrs per week  COVID-19 considerations: Applicant will be required on site for project.
<b>Description:</b>	$^{212}\text{Pb}$ is an alpha emitting inorganic radioisotope that has potential for use clinically as a therapeutic agent in the treatment of cancer. The high ionisation power of the alpha particles that are emitted have the ability to kill cancer cells, improving patient outcomes.  As the use of $^{212}\text{Pb}$ is still in its early infancy, its use as a therapeutic radioisotope is far from optimised. Being an inorganic radioisotope, $^{212}\text{Pb}$ requires coordination to an organic ligand for use as a therapeutic. This coordination event requires an array of optimised conditions to achieve high radiochemical yields and appreciable purity for injection in rodents/humans. This project will aim to investigate the different factors influencing preparation of $^{212}\text{Pb}$ radiotherapeutics, including optimisation to increase efficiency of preparation and purity of the final compound.
<b>Expected outcomes and deliverables:</b>	Students can expect to gain experience in radiochemistry, including hands-on experience with radiolabelling organic ligands, quality control processes to quantitate the purity of prepared compounds and potential implementation of methodology into routine radiotherapeutic preparations at the CAI.
<b>Suitable for:</b>	This project is open to Honours/Masters students with a background in chemistry.
<b>Primary Supervisor:</b>	James Wood, James Humphries
<b>Further info:</b>	Please contact James Wood ( <a href="mailto:j.wood1@uq.edu.au">j.wood1@uq.edu.au</a> ) or James Humphries ( <a href="mailto:j.humphries@uq.edu.au">j.humphries@uq.edu.au</a> ) prior to application if you wish to discuss the project further.