

Radiotracers - Development

Radiotracer development is focussed on radiolabelling any chemical, biochemical, biological or material vector for the main purpose of radiotracing in biological systems.

This capability includes the development and optimisation of radiolabelling entities from small molecules to cells, the development /discovery of novel radiochemistry labelling strategies, and providing expert advice for modifying pharmaceuticals for radiopharmaceutical applications.

This capability utilises radioisotopes from the OPAL reactor (in conjunction with our radioisotope development capability), from the ANSTO National Research Cyclotron Facility (NRC)*, from interstate cyclotrons and commercial vendors. This allows access to an array of radioisotopes for radiotracer research, development and delivery.

Our areas of expertise in radiotracer research include:

- Novel ^{11}C , ^{18}F and radioiodine radiochemistry methodology development
- Metal ligand conjugation, conjugate evaluation and radiometal labelling development
- Radiolabelling by way of radiolabelled synthons
- Expertise in modifying pharmaceutical structures for enhancing and optimising radiotracer properties including absorption, distribution, metabolism, clearance and toxicity
- Development of automated procedures for the production of radiotracers to evaluate radiotracer performance for preclinical research.

Our capability includes the opportunity to undertake radiolabelling development of the following targets:

- small molecules and peptides
- biomolecules: proteins, antibodies and antibody fragments
- particles: nanoparticles to macroparticles of polymers, inorganics or hybrids
- cells
- materials.

Successfully developed radiotracers can be deployed for basic research, transferred to automation to perform campaigns of pre-clinical research or undergo tech transfer.

The radiotracer development team shares facilities and accesses instrumentation listed in the Radiotracers - Provision capabilities. The radiotracer development team is housed in four synthetic laboratories, with LCMS, GCMS, preparative and analytical HPLC capabilities as well as general laboratory equipment for organic and inorganic synthesis.

We welcome your contact with ideas and/or enquiries that lead to the co-development of novel radiotracers or radiolabelling methods, new radiotracer application areas for project collaborations and partnering, and joint undergraduate and post-graduate student co-supervision.

Capability selections

- Radiotracer development & optimisation
- Radiopharmaceutical translation
- Radiochemistry methods

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