

# Radioisotope development

The radioisotope research and development capability is focused on the exploration of new, non-established 'boutique' radioisotopes, with a particular emphasis on positron, gamma and beta/gamma emitters.

The applications of these radioisotopes are aimed at medically-relevant materials for the next generation of diagnostic and therapeutic radiopharmaceuticals and medical devices.

Aside from the medically-oriented radioisotopes, a secondary focus is on the production of tracers for environmental research and for industrial processes, using ANSTO's OPAL reactor for custom neutron irradiations. For further information on reactor irradiations please go to the [Neutron irradiation fact sheet](#).

The team has had success in providing research quantities of the therapeutic radionuclide scandium-47 and is now working to leverage ANSTO's experience in irradiation, handling, characterisation and formulation of radioisotopes to make available terbium-161 and mercury-203.

The processing of irradiated targets is paramount to radioisotope research and development and the available facilities for this are significant. Eight PET-rated hot cells (four with manipulators) as well as numerous shielded fume-cupboards provide ample and safe work areas in connected radiation-rated laboratories for staff and visiting scientists.

As well as a suite of chemistry and radiochemistry analytical equipment, the team has knowledge and experience in the creation of custom fluidic and target processing modules. These modules can be tailored for the various targets and the separations/purifications required for isolating the product radioisotopes.

## Capability selections

- Radioisotope handling and separations
- Radioisotope analysis
- Reactor target processing



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