

# Radiotracer production

Radiotracer production focuses on the production and delivery of radiotracers and radiolabelled compounds for campaigns of preclinical and clinical research. The production of radiotracers is supported by 17 hot cells and 12 lead lined fume hoods and a suite of automated radiotracer modules and equipment and analytical hardware (see [Radioanalytical measurement](#)).

The radiochemistry facilities at the ANSTO 18 MeV Cyclotron Facility, in Camperdown, NSW, allow the routine production of  $^{11}\text{C}$  and  $^{18}\text{F}$  radiotracers employing standard methods with  $[^{18}\text{F}]\text{Fluoride}$  or  $[^{11}\text{C}]\text{Methyl iodide}$  where the appropriate precursors are available.

The Camperdown facility also has dedicated GMP facilities that enable the production of radiotracers for phase 0 or phase I clinical research using GMP principles and infrastructure. Anticipated TGA certification in 2019 will allow radiotracer production under approved GMP conditions for clinical research. Our expertise in this area allows provision for tech transfers of radiotracer production to other labs (see [Radiotracer development](#)).

The radiochemistry facility at Lucas Heights allows for the production of radiohalogens and radiometals radiotracers utilising radioisotopes provided by the OPAL research reactor and the Camperdown cyclotron.

Examples of the radiotracers that have been produced for preclinical research are shown in the table below:

Clinical and preclinical delivery engagement modes are via the following pathways:

- Preclinical production from Lucas Heights radiochemistry facility
- Clinical production from the [Camperdown cyclotron facility](#)
- Tech transfer of radiotracer protocols to host organisation and
- Tech transfer to host organisation with assistance from the ANSTO team for in-house clinical radiotracer deployment.

## Capability selections

- Radiotracer production for preclinical research
- Radiotracer production for clinical research.

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| Radiotracers for preclinical research                   |   |
|---|---|
| $^{11}\text{C}$ -Choline (cancer research)              | $^{18}\text{F}$ -PBR 111 (neuroscience research)        |
| $^{11}\text{C}$ -Raclopride (neuroscience research)     | $^{18}\text{F}$ -FHGB (reporter gene)                   |
| $^{11}\text{C}$ -Acetate (metabolism research)          | $^{18}\text{F}$ -MEL50 (cancer research)                |
| $^{11}\text{C}$ -Methionine (cancer research)           | $^{18}\text{F}$ -Fallypride (Neuroscience research)     |
| $^{67,68}\text{Ga}$ and $^{64}\text{Cu}$ -nanoparticle  | $^{67,68}\text{Ga}$ $^{123,124,125}\text{I}$ - antibody |
| $^{123,124,125}\text{I}$ and $^{68}\text{Ga}$ -peptides | $^{67}\text{Ga}$ particle                               |