

The radiopharmaceutical chemistry unit is part of the Nuclear Medicine department of the UZ Brussel and aims at the synthesis and production of both routine and newly developed PET and SPECT radiolabelled molecules for the diagnosis of various disease. The radiopharmacy is directly linked with the cyclotron unit giving access to daily productions of cyclotron-based radioisotopes.

Research axes & Expertise

The facility is divided into a conventional ^{99m}Tc -radiopharmacy area, a ^{68}Ga -synthesis area and a ^{18}F -PET radiopharmacy. A GMP PET radiopharmacy is under construction.

The 18 MeV Cyclone® KIUBE cyclotron can produce large amounts of ^{18}F . ^{18}F -labeled tracers such as ^{18}F -FDG and ^{18}F -FET are routinely produced on dedicated automated synthesis modules.

The ^{68}Ga -peptides ^{68}Ga -DOTANOC and ^{68}Ga -PSMA are also routinely prepared for clinical use.

Research is mainly focused on the development of ^{68}Ga - and ^{18}F - labeled nanobodies for molecular imaging and nanobodies labeled with alpha- or beta- emitting isotopes for radionuclide therapy. Alternatively, peptide mimetics are being developed.

Application fields

The availability of a wide range of radiopharmaceuticals allows for more accurate and specific diagnosis and follow-up of patients. The development of targeted tracers for radionuclide therapy will offer more individualized patient treatment.

Radiolabelled nanobodies targeting specific in-vivo targets can provide a generic platform for the development of a broad range of new molecular imaging tracers. ^{68}Ga -antiHER2 nanobody has passed a Phase I clinical trial for the diagnosis of patients with HER2-positive breast cancer.

Major projects/partnerships/collaborations

Ongoing projects include:

- ^{68}Ga -HER2 nanobodies for clinical breast cancer imaging
- clinical translation of ^{68}Ga -MMR nanobodies
- development of ^{18}F -labeled nanobodies
- set-up of a GMP compliant PET radiopharmacy in close collaboration with Hôpital Erasme and Institute Jules Bordet

The nuclear medicine department and radiopharmacy lab have a number of national and international collaborations with renowned academic research groups and several industrial collaborations. The department is also involved in multiple sponsored multicentre clinical trials.

Key figures

- 1 Radiopharmacist, PhD
- 1 QP industrial pharmacist
- 1 QA

- 1 Radiochemist, PhD
- 3 technicians nuclear chemistry

Contact

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