

**INSTITUT JULES BORDET**  
**Department of NUCLEAR MEDICINE**  
**MOLECULAR IMAGING AND RADIONUCLIDE THERAPY**



The Nuclear Medicine Imaging and Radionuclide Therapy Department is located within the Jules Bordet Institute, a dedicated comprehensive university cancer hospital located in the heart of Brussels, capital of Belgium, and part of the Université Libre de Bruxelles (ULB). The available diagnostic systems include a PET-CT, a SPECT-CT, and a dual-head SPECT camera. Two dedicated hospital rooms are available for isolation of patients receiving radionuclide therapy.

**Research axes & Expertise**

The ongoing research activities mainly focus on the use of PET-CT for molecular imaging in clinical and translational research in oncology. The department is also playing a pioneer role in the development and clinical implementation of new targeted radionuclide treatments in oncology. Particular emphasis is put on the development of “companion” imaging techniques ensuring accurate patient selection and dosing based on predictive dosimetry models using radiopharmaceuticals mimicking the therapeutic agent’s bio-distribution (theranostics). Special focus on medical physics with research projects on (predictive) dosimetry in SIRT and PRRT.

**Application fields**

Current applications

- Internal radioembolization (SIRT) of liver tumours using Yttrium-90 labelled resin microspheres
- Radioimmunotherapy of CD20-positive lymphoma with Y-90 rituximab
- Radium-223 for treatment of osteoblastic bone metastasis in prostate and breast cancer patients
- Lutetium-177 octreotate for systemic treatment of well or moderately differentiated unresectable and/or metastatic neuroendocrine tumours
- Iodine-131 for well differentiated thyroid cancer.
- Gallium-68 and Lutetium-177 labeled PSMA ligands for molecular diagnosis and radionuclide therapy of recurrent prostate cancer (work in progress)

**Major projects/partnerships/collaborations**

Within the ULB environment the department is closely collaborating with a nearby Cyclotron Unit (Hôpital Erasme, Brussels) and a state of the art small animal imaging facility including micro-PET, -SPECT, -CT and bioluminescence imaging (CMMI, Gosselies). The department is involved in multiple academic and industry driven multicentre trials on the development and validation of molecular imaging biomarkers for assessing and predicting cancer treatment efficacy and patient outcome, mainly in lymphoma, breast and colorectal cancer.

Other scientific collaborations exists with the SCK-CEN (dosimetry/radiobiology) and UZ-VUB (Brussels Imaging Pharmacy: a centralized radiopharmacy production site for non-commercial use of innovating radiotracers).

Every two years the Bordet Institute organizes an International Course on Radiotheranostics in collaboration with IAEA (International Atomic Energy Agency) and BELNUC (Belgian scientific association of nuclear medicine), with more than 100 participants. Next course is scheduled on february 2020.

### **Key figures**

In 2017, the department performed more than 3000 SPECT-CT and 6000 PET-CT studies, and about 180 radionuclide treatments. The scientific production is 10 to 15 peer reviewed articles per year.

### **Contact**

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