

By Prof. Zéna WIMANA, Radiopharmacy Manager of the Institut Jules Bordet

The Institut Jules Bordet (IJB), an oncological center part of the Brussels University Hospitals (HUB), covers all the (para-)medical disciplines related to the treatment of various cancer. Its aim is “to offer a patient effective treatment in an agreeable environment with a human dimension” realised through its three core missions: clinical care, research, and teaching.



Prof. Zéna Wimana - © Institut Jules Bordet

Personalized medicine has become the core paradigm in modern oncology and nuclear medicine offers the unique opportunity of personalized targeted molecular radiotherapy based on the radiotheranostic approach. In this unique and somewhat peculiar approach, the same/similar molecule targeting cancer cells is labelled with a pair of different radioisotopes for either diagnostic or therapeutic purposes. The molecules act like a Trojan horse and bring radioactivity inside the multiple tumour sites. It offers a unique opportunity, where “you see what you treat and treat what you see” in a specific patient, totally fitting in the personalised medicine line of attack.

In Belgium, IJB has been a major protagonist in the development and clinical introduction of radiotheranostics such as Peptide Receptor Radionuclide Therapy (PRRT) for neuroendocrine tumors, molecular radiotherapy in lymphoma or Radioligand Therapy (RLT) in prostate cancer. However, further expansion was previously hampered by dated infrastructure as well as manufacturing requirements (i.e. pharmaceutical regulation).



Radiotheranostic - © Institut Jules Bordet

The twist of fate of the building of the New Institut Jules Bordet, as well as the generous donation of AVN (Association Vinçotte Nuclear) and Association Jules Bordet was a wonderful opportunity to develop this very promising new domain of activity, which required the acquisition, and installation of a series of dedicated « nuclear » infrastructures such as the radiopharmacy. In the new hospital, it has a surface of approximately 240 m² and is equipped with state-of-the-art apparatus meeting the strictest standards of Good Manufacturing Practices (GMP). This enables IJB to produce these new radioactive molecules, for themselves or others, with a level of safety and quality equivalent to that of the pharmaceutical companies.

In addition, the imaging suite has been totally renewed with digital PET/CT cameras (4 and 6 rings) as well as new SPECT technologies such as the Starguide camera, overall supporting better pre- and post-treatment evaluation of those radiotheranostics. Although highly technical and performant, attention to the wellbeing of the patients has not been overlooked with a coherent healing environment in all rooms. Likewise, in order to increase IJB treatment capacity for this type of therapies, five metabolic hospitalisation rooms are present in the hospital.

Although the radiotheranostic molecules are still in their infancy, they should develop exponentially over the next few years with new molecules, new targets and new radioisotopes (α -emitters). As these have first to be tested preclinically, IJB opted to invest in a dedicated research platform, the PIRaTh platform (for 'Preclinical Imaging and Radiation Therapy'), giving IJB the opportunity to move quickly into early clinical phase or to go back to investigate biologic phenomena seen in patients (from bench to bedside and back).

With all its facilities, the New Institut Jules Bordet is in a unique position in Belgium and worldwide, as a radiotheranostic center of excellence. All in all, IJB aims to bring the field of radiotheranostics to the forefront of oncology research and make radiotheranostics available to cancer patients employing the highest standards of quality & care.



The New Institut Jules Bordet: a radiotheranostic center of excellence

<https://www.bordet.be/>