

M2Target is a valorization initiative of the Vrije Universiteit Brussel that offers a camelidae-derived single-domain antibody fragments (sdAbs)-based platform for macrophage-targeted cancer theranostics in preclinical development and clinical practice.

**Research axes & Expertise**

M2Target is based on joint efforts of the Cellular and Molecular Immunology lab (CMIM) with scientific expertise and know-how on cellular immunology, tumor immunobiology, immunoparasitology, antibody engineering and pioneers in the technology of camelidae-derived single-domain antibody fragments (sdAbs) and the In vivo Cellular and Molecular Imaging lab (ICMI) with a main research focus on the development, preclinical validation and clinical translation of sdAbs as molecular imaging probes with applications in oncology, cardiovascular medicine and diabetes, up to a recently concluded first-in-human Phase I clinical trial of sdAbs targeting the Her2 cancer antigen. The M2Target platform takes in vivo applications of sdAbs a step beyond molecular imaging to theranostics, whereby related compounds are employed both for diagnosis and therapy. As a cutting-edge innovative approach for cancer theranostics, the program thereby targets tumor stroma cells such as tumor-supporting and therapy resistance-promoting subtypes of tumor-associated macrophages.

**Application fields**

Our pre-clinical research is aimed at assessment of therapeutic approaches (targeted radionuclide therapy, antibody-drug conjugates), optimization/automatization of coupling and optimization of pharmacokinetics (selective targeting). On the other hand, our clinical translation is aimed at validating macrophages as theranostic targets and exploiting sdAbs as theranostic probes in a clinical setting, potentially leading to patient stratification, monitoring and personalized medicine. Our valorization efforts are mainly focused on licensing, contracting and strategic partnerships.

**Major projects/partnerships/collaborations**

Contract research for Biotech and Pharmaceutical industry. Flanders government agency for Innovation by Science and Technology (IWT)-funded Strategic Basic Research projects and fellowships aimed at validation of macrophage markers as theranostic targets and industrial valorization of molecular imaging services. Belgian Foundation Against Cancer (Stichting Tegen Kanker), Flemish League against Cancer (Vlaamse Liga Tegen Kanker) and Belgian Cancer Plan (Nationaal Kankerplan)-funded projects on selection of lead tracers, optimization of radiolabeling procedure and clinical translation, up to a first-in-human Phase I clinical trial in preparation.

**Key figures**

- ICMI: 7 Primary Investigators, 7 Postdoctoral fellows, 9 PhD students
- CMIM-Myeloid Cell Immunology: 4 Primary Investigators, 3 Postdoctoral fellows, 7 PhD students

## Contact

- ICMI Promotor: Prof. Dr. Tony Lahoutte, [tony.lahoutte@vub.ac.be](mailto:tony.lahoutte@vub.ac.be)
- ICMI Scientific contact: Prof. Dr. Nick Devoogdt, [ndevoogd@vub.ac.be](mailto:ndevoogd@vub.ac.be)
- CMIM Promotor: Prof. Dr. Ir. Jo Van Ginderachter, [jvangind@vub.ac.be](mailto:jvangind@vub.ac.be)
- CMIM Scientific contact: Prof. Dr. Ir. Geert Raes, [Geert.Raes@vib-vub.be](mailto:Geert.Raes@vib-vub.be)