Recognized expertise in clinical immunology

Located at the Brugmann University Hospital, the Clinical Immunology laboratory carries out more than 400,000 analyzes per year, on behalf of 5 public and university hospitals in Brussels. The laboratory also carries out analyzes for hospitals and external laboratories located throughout Belgium as well as for certain French institutions.

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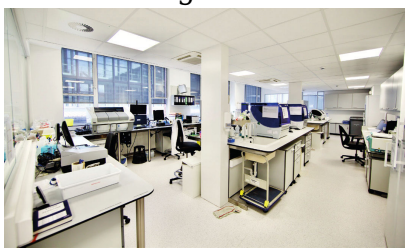

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With a competent team specialized in the different fields of immunology, the laboratory carries out tests for the diagnosis and monitoring of autoimmune and systemic diseases, allergic diseases and deficiencies of immunity and the complement system. This is a cascade of proteins (enzymes) which can activate or play a regulatory role, occupying an essential place in the development of inflammation and defense against certain micro-organisms.

Since its discovery at the beginning of the 20th century, the complement system has been studied at the molecular and genetic levels in order to better understand its mechanisms and roles. The pathologies in which this system is involved arise either from a deficient action of this cascade by innate or acquired deficiency, or by an excess of its activation due to lack of certain regulatory proteins. The consequences can be severe, with potentially fatal infections or with kidney and blood pathologies.

With its expertise in this field, the immunobiology laboratory is a national reference center for diseases linked to complement system deficiency. As such, the lab was allocated funding from the RIZIV/INAMI program dedicated to rare diseases. Through its collaboration and synergies with the translational research laboratory on one hand, and the Clinical Research Unit and the Immunoallergology Clinic of the Brugmann University Hospital on the other hand, the immunobiology laboratory has participated in the carrying out of numerous studies on

inflammatory diseases, particularly in severe forms of Covid as well as on long Covid syndrome.

Other recent studies have focused on the evaluation of the effectiveness of vaccines in immunocompromised patients (in collaboration with the Infectious Diseases Department of CHU Saint-Pierre and with the Hematology-Oncology Department of HUDERF) and on the immunological side effects of cancer immunotherapy.

Furthermore, the Immunobiology Laboratory is participating in a translational study with an experimental pediatrics laboratory to understand the differences in inflammatory reactions between girls and boys when faced with acute or chronic infections. Molecular systems and certain genes present on the X chromosome are studied to provide clues.

Thanks to its infrastructure and the large number of patient samples analyzed each year, the Immunobiology Laboratory is ideally placed to conduct clinical and exploratory studies. Its main challenge is to identify which of the recently discovered biomarkers can help diagnose an immune deficiency or predict the onset of an autoimmune disease. For example, a personalized medicine in immunology could use autoantibodies as markers to define subgroups of patients to whom appropriate treatments would be administered.

Another development to take into account is the renewal of first-line characterization of immune deficiencies. Until now this has involved biological, functional, lymphocyte and even genetic testing, but with the advent of molecular biology it now increasingly involves broad screening and sequencing of patients' genomes. Functional tests on cells will become secondary to confirm whether a genetic abnormality really explains a patient's immune deficiency or whether it is a simple polymorphism. Whether it is a first-line analysis or confirmation of a diagnosis, the Immunology Laboratory still has a bright future ahead!

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