An interview with Prof. Décio L. EIZIRIK

Director of the ULB Center for Diabetes Research

What are the key figures of research at the ULB Center for Diabetes Research?

The ULB Center for Diabetes Research relies on 35 to 40 staff members, currently conducts around 10 research projects and publishes between 10 and 15 publications a year. In addition, it is organized into six research groups. Information on the center can be found at http://lmedex.ulb.ac.be/index.php.



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What are the main lines of research at the ULB Center for Diabetes Research?

Research work is carried out by our different research groups, either independently or as collaborative efforts.

- **Inflammatory and Apoptotic Signaling in Diabetes:** utilizes cell biological, genomic, and proteomic approaches to identify and characterize the mechanisms leading to inflammation-mediated dysfunction and death of pancreatic β-cells in diabetes.
- **Pathogenesis of Type 2 Diabetes and Monogenic Forms of Diabetes:** focuses on mechanisms of disease and translation of the findings for clinical care of diabetic patients.
- **Pathogenesis of Type 1 Diabetes:** studies the role of endoplasmic reticulum (ER) stress and alternative splicing in β-cell dysfunction and death, and the role of candidate genes for diabetes in this process.
- **Signal Transduction and Metabolism:** focuses on the dysfunctional pathways in

metabolism and diabetes given that the molecular mechanisms by which these pathologies occur remain poorly understood.

- **Molecular Mechanisms of Polygenic and Monogenic Diabetes:** dedicated to the study of the molecular mechanisms of β-cell dysfunction and death in type 2 diabetes and monogenic forms of diabetes, with the ultimate goal to identify novel strategies to prevent β-cell demise.
- **Type 1 Diabetes and Viruses:** devoted to the study of the impact of viral infections on the triggering of autoimmunity in type 1 diabetes.

Could you give us some examples of what research projects are under way?

The ULB Center for Diabetes Research leads the European “T2DSystems” project, which targets the development of a systems biomedicine approach for risk identification, prevention, and treatment of type 2 diabetes.

It also leads the DiaType project entitled “Personalized medicine in diabetes: towards an etiology-based diagnosis and better patient care” that is funded by the Brussels Region’s Innoviris Bridge Strategic Platform. This project started in April 2018 for a period of 3 years.

Additionally, the ULB Center for Diabetes Research is part of a project funded by an American foundation and dedicated to β-cell imaging: the goal is to develop new tools for the quantification of the mass of pancreatic β-cells in vivo. In the near future, this type of approach will make it possible to optimize the prevention and diagnosis of diabetes, but also to develop more personalized therapeutic interventions.

Last, the ULB Center for Diabetes Research leads work package 3 (the basic research part) of the IMI-supported project INNODIA, aiming to develop novel therapies for type 1 diabetes.

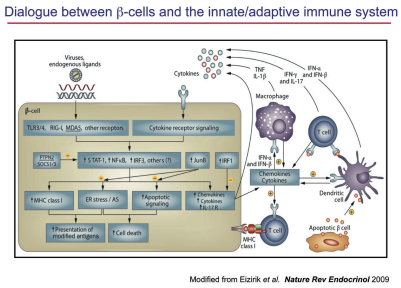
What research partnerships have you developed with the pharmaceutical industry?

The European project INNODIA is a good example of such partnerships. This project is part of the Innovative Medicines Initiative (IMI), whose goal in its second phase (IMI2, 2014-2020) is to develop next-generation vaccines, medicines, and treatments.

In this framework, INNODIA is a global partnership between 26 academic institutions, 4 industrial partners (among which Sanofi and Eli Lilly), a small-sized enterprise, and 2 patient organisations, bringing their knowledge and experience together with one

common goal: “To fight type 1 diabetes.”

Thanks to the INNODIA research, we will be able to better understand the relationship between changes in β-cell function, immune profiles, genetic and environmental factors, and their role in the onset of the disease. A second major goal of INNODIA is to perform clinical intervention studies leading to novel therapies. Here again, pharmaceutical companies being part of INNODIA join forces with leading academic clinical researchers in the development of new therapeutic agents.



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What do you see as the main challenges facing diabetes research in the years to come?

The different forms of diabetes are triggered when β-cells fail to produce enough insulin. It remains to be seen why they stop working and how to protect them from the immune system (in the case of type 1 diabetes) and metabolic stress (in the case of type 2 diabetes).

Our ultimate goal is to develop new therapies to ensure proper functioning and survival of β-cells, and thus prevent or delay the outbreak of diabetes.