

Type 1 diabetes research sheds light on biomarkers in partial remission phase

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Researchers from the Germans Trias i Pujol Research Institute (IGTP) have led a comprehensive review study on biomarkers for the often-overlooked partial remission phase of type 1 diabetes in collaboration

with experts in β -cell biology and regeneration from the Diabetes Research Institute in Miami. The study has been published in *Trends in Endocrinology and Metabolism*.

Type 1 diabetes is a chronic disease triggered by an autoimmune attack on insulin-producing β -cells. Although [insulin therapy](#), introduced over a century ago, turned a once-fatal condition into a manageable one, it still cannot be prevented or cured and significantly impacts the lives of patients and their families due to potentially severe complications. Additionally, the disease's incidence rates continue to increase each year.

The course of the disease unfolds in an unpredictable pattern, marked by varying episodes of immune response. This complexity becomes particularly evident during the partial remission [phase](#), also called the 'honeymoon phase'. At this time, the disease's progression seems to pause, and the residual β -cells recover insulin production and secretion, which can lead to a reduced dependence on [insulin injections](#) for a short time.

Despite considerable progress in understanding the mechanisms leading to type 1 diabetes, the disease's evolution after diagnosis hasn't been equally explored. The partial remission phase represents a new window for therapeutic action after the prediabetes stage, which is difficult to detect due to the necessity of comprehensive screening.

The phenomenon of partial remission in type 1 diabetes is accompanied by a variety of metabolic, immunological, and epigenetic changes that manifest in the periphery of the body. These biomarkers include alterations in specific immune cell populations and molecular changes, which impact the disease's temporary regression. Significantly, research into the immunometabolic markers of this phase is sparse, underscoring the importance and potential impact of the present work.

In the study, researchers delve into how peripheral biomarkers mirror efforts to halt β -cell autoimmunity and their potential application in clinical practice. They explore emerging biomarkers that will contribute to understanding the different progression patterns and improving clinical management and interventions.

The study's first author, Laia Gómez, predoctoral researcher of the Immunology of Diabetes group at IGTP, states, "Grasping the natural mechanisms that lead to β -cell protection by the [immune system](#) will give us clues as to how we can tackle the autoimmune attack or at least minimize it".

The [review](#) covers recent studies pointing to new immunoregulatory pathways that can be explored as direct targets to elongate or induce the 'honeymoon phase', which has been shown to be beneficial for the long-term control of the disease.

Apart from reviewing current research, the study offers guidance on new directions in the field and raises important questions for the future. According to Marta Vives-Pi, leader of IGTP's research group, "future [research](#) needs to uncover if the partial remission phase is followed by subtle signs of [remission](#) we currently miss and whether the brief recovery seen in patients is due to the remaining β -cells healing themselves or actually being recreated anew. Understanding these aspects could significantly help improve the management of type 1 [diabetes](#) during this phase".

More information: Laia Gomez-Muñoz et al, Immunometabolic biomarkers for partial remission in type 1 diabetes mellitus, *Trends in Endocrinology & Metabolism* (2023). [DOI: 10.1016/j.tem.2023.10.005](https://doi.org/10.1016/j.tem.2023.10.005)

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