

Rare disease gives new insight into regulatory T cell function

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An international study led from Karolinska Institutet in Sweden provides new insights into the regulatory T cells' role in protecting against autoimmune disease. By mapping the targets of the immune system in patients with the rare disease IPEX, they were able to show that regulatory T cells control immunotolerance in the gut. The results are published in the *Journal of Allergy and Clinical Immunology*.

Patients with the rare [disease](#) IPEX lack regulatory T cells and develop serious autoimmune diseases in which the immune system attacks the body's own tissue, such as type 1 diabetes, enteritis and dermatitis. In studies of 17 patients with IPEX, a research group at Karolinska Institutet has now been able to define which self-molecules are targeted by the immune system when regulatory T cells are lacking.

"Gut-related proteins were significantly over-represented amongst the target molecules we identified. We interpret this as regulatory T cells having a particularly important function in regulating the immune system in the gut," says corresponding author Daniel Eriksson, researcher at the Department of Medicine, Karolinska Institutet (Solna). "Our findings fit well with clinical presentation of the disease, in which symptoms from the gut dominate."

The researchers took advantage of a method that makes it possible to examine the [immune response](#) against 9,000 proteins in parallel.

"Our study is the first large-scale assay of how the immune system attacks the organs of IPEX patients," says Dr. Eriksson.

Regulatory T cells have been called the "police" of the [immune system](#),

as they can prevent other immune [cells](#) from attacking the body's own tissues, discoveries that were awarded the 2017 Crafoord Prize.

"We hope that our results will make it easier to diagnose patients with IPEX and monitor them during treatment," says Nils Landegren, researcher at the same department and the study's last author. "The next question is how understanding of regulatory T cell function can be used for developing new treatments for autoimmune diseases."

More information: Daniel Eriksson et al. The autoimmune targets in IPEX are dominated by gut epithelial proteins, *Journal of Allergy and Clinical Immunology* (2019). [DOI: 10.1016/j.jaci.2019.02.031](https://doi.org/10.1016/j.jaci.2019.02.031)

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