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New treatment option for psoriasis discovered

Study improves understanding of chronic inflammatory skin disease

Psoriasis is one of the most common chronic inflammatory skin diseases, affecting around 250,000 people in Austria. While previous treatment approaches have mainly focused on inhibiting pro-inflammatory immune cells, a study led by CeMM Adjunct PI and Professor for Dermatology at the MedUni Vienna Georg Stary shows that it is possible to restore the function of certain anti-inflammatory immune cells in a targeted manner. The results, which have been published in the journal "Immunity", pave the way for the development of a therapy that not only works more precisely but is also associated with fewer side effects.

The research team led by Georg Stary focused its investigations on the role of regulatory T cells (Treg cells) in chronic inflammatory skin diseases such as psoriasis. Treg cells are important components of the body's immune system that specialise in preventing excessive immune responses and thus inflammation. It is already known that these cells lose their regulatory function in chronic skin inflammation, causing the immune response to become uncontrolled and the disease to progress. The researchers have now decoded the exact mechanism behind this for the first time: "We were able to show that the loss of the anti-inflammatory function of regulatory T cells is caused by a malfunction of the cellular metabolism," says study leader Georg Stary, summarising the research work.

As the researchers' analyses revealed, the enzyme SSAT plays a key role in the loss of function of Treg cells. SSAT is involved in the regulation of certain molecules (polyamines) that are important for the balance between anti-inflammatory and pro-inflammatory immune cells. If SSAT is produced in increased amounts in Treg cells, they lose their regulatory function and begin to produce pro-inflammatory messenger substances themselves. This fuels the excessive immune response typical of psoriasis.

Targeted interruption of the inflammatory cycle

With the key role of SSAT in the inflammatory process, the researchers have simultaneously discovered a new starting point for therapy: In a mouse model with psoriasis-like skin inflammation, it was shown that inhibiting SSAT can restore the regulatory function of Treg cells and break the cycle of inflammation. Thus, the development of specific drugs that specifically inhibit SSAT could represent a promising alternative to existing treatment approaches, which are often associated with immunosuppression and increased

susceptibility to infection. "Since other chronic inflammatory diseases of the skin or other organs are also characterised by impaired immune regulation, our approach could be important beyond psoriasis," says Georg Stary, in the prospect of further studies to advance the development of a treatment option with fewer side effects.

Picture attached: The authors of the study Daniel Malzl, Teresa Neuwirth and Georg Stary (f.l.t.r.) © Wolfgang Däuble / CeMM

The Study "The polyamine-regulating enzyme SSAT1 impairs tissue regulatory T cell function in chronic cutaneous inflammation" was published in Immunity on February 28, 2025. DOI: 10.1016/j.immuni.2025.02.11
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The **CeMM Research Center for Molecular Medicine of the Austrian Academy of Sciences** is an international, independent and interdisciplinary research institution for molecular medicine under the scientific direction of Giulio Superti-Furga. CeMM is oriented towards medical needs and integrates basic research and clinical expertise to develop innovative diagnostic and therapeutic approaches for precision medicine. Research focuses on cancer, inflammation, metabolic and immune disorders, rare diseases and aging. The Institute's research building is located on the campus of the Medical University and the Vienna General Hospital.
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