Medical Xpress

B lymphocytes associated with psoriasis for the first time

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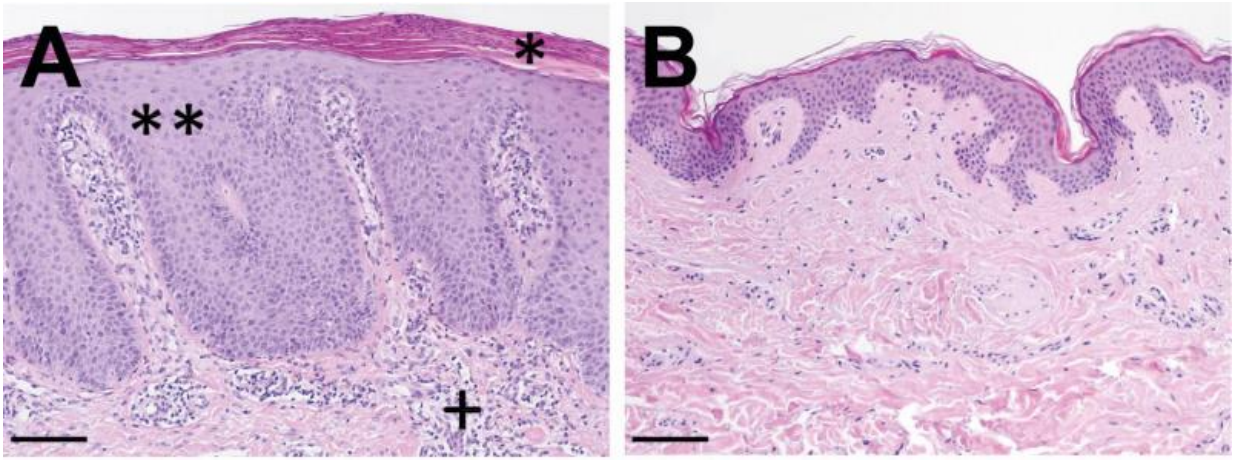

Histological skin examination: Increased scaling is found in psoriasis (A) compared to healthy skin (B) and a visible extension of the topmost skin layer. Below a cluster of inflammation cells (+). The line marks a length of one tenth of a millimetre. Credit: University Dermatology Clinic

"A pathological and very complex autoimmune reaction of the skin": This is the definition doctors and scientists use to describe psoriasis, a disease that affects 1 percent to 3 percent of the population. It is characterised by accelerated cell division in the upper dermal layers with proliferated skin cells and an inflammation of the skin beneath. Many different cells are involved in the complex processes: skin cells (keratinocytes) and cells of the immune system, among others T

lymphocytes, macrophages, mast cells and others.

Influence on an anti-inflammatory cytokine

Scientists from the Würzburg University Hospital have now focused on a cell type that has received little attention so far in connection with psoriasis: the so-called B lymphocytes. They were able to show that these cells are capable of influencing the skin disease by regulating the anti-inflammatory cytokine interleukin-10 (IL-10). So they are a potential target for new therapies for the disease which is incurable according to the present state of research. The scientists have now published their findings in the current issue of the journal *Nature Communications*.

Key contributors to the study included Professor Matthias Goebeler, Director of the University Hospital and Outpatient Clinic for Dermatology, Venerology and Allergology Würzburg, and Edgar Serfling, active Senior Professor in the Department of Molecular Pathology at the Pathological Institute of the University of Würzburg, who had initiated the study. "It was crucial to find out that synthesis of the anti-inflammatory cytokine IL-10 by the B lymphocytes through the interaction with the protein "nuclear factor of activated T cells" (NFATc1), a transcription factor, was reduced," Matthias Goebeler puts the study's central result in a nutshell. NFATc1 inhibits reading of the IL-10 gene in B cells, ultimately resulting in poorer control of the inflammatory processes in the skin. "By uncovering more details about the interaction, we could develop drugs that suppress the inflammatory processes in psoriasis even more specifically in the future," the scientists further.

About psoriasis

Psoriasis is a chronic inflammatory skin disease that affects one to three

percent of the population. Psoriasis comes in various levels of severity from single inflamed and scaly spots, so-called plaques, at the elbows or knees to a very severe disease pattern affecting the entire skin. Around 20 percent of psoriasis patients additionally suffer from painful arthritis.

Typically, psoriasis patients experience recurrent flares of varying severity during their life. Depending on the extent and the course of the disease, different therapies are possible, from topical agents and/or phototherapy to medication or injections.

More information: Hani Alrefai et al. NFATc1 supports imiquimod-induced skin inflammation by suppressing IL-10 synthesis in B cells, *Nature Communications* (2016). DOI: 10.1038/ncomms11724

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