

Immunology

Is an agent used to treat psoriasis aimed at the wrong target?

The antibody ustekinumab is in use for treatment of psoriasis since 2009. It inhibits the underlying inflammation by neutralizing certain messengers of the immune system. Researchers at the Helmholtz Zentrum München, the Technical University of Munich and the University of Zurich have now shown in *'Nature Communications'* that one of these messengers could actually be helpful in battling the illness.

Common psoriasis, also called psoriasis vulgaris, is an inflammatory skin disease that is characterized by severely scaling skin in areas ranging from small to palm-sized. The disease is estimated to affect between two and three percent of all Europeans.

The cause is said to be immune system malfunctions. The treatment therefore aims to 'pick off' the inflammation messengers. For example, the antibody ustekinumab should bind the two interleukins (IL) 12 and 23 and consequently inhibit their supposedly proinflammatory effects. The substance is especially used to fight plaque psoriasis in patients who fail to respond to superficial therapies.

"The findings of the last ten years have shown that IL-23 is the dominant driving force behind psoriasis," explains Dr. Stefan Haak, one of the study leaders and research group leader at the Center of Allergy and Environment (ZAUM), a joint undertaking of the Helmholtz Zentrum München and the Technical University of Munich (TUM). "However, according to our study, IL-12 has a positive effect on the skin affected by psoriasis."

In their study, the researchers first used experimental models to examine the influence of the individual messengers IL-12 and IL-23 on skin cells. These tests showed that IL-12 activates a protective program in the skin cells themselves and prevents the infiltration of certain pathogenic immune cells (IL-17-producing T cells), which inhibits the inflammatory reaction.

Prof. Dr. Burkhard Becher from the University of Zurich, who is also playing a leading role in the study, assesses the results: "Our experiments indicate that IL-12, unlike IL-23, has a quite positive effect in the skin affected by psoriasis. Because the active substance ustekinumab, which is routinely used in treating psoriasis, neutralizes both IL-23 and IL-12, however, there should be a thorough examination of whether or not the effect on IL-12 is counterproductive."

The scientists plan further research in the future to see if IL-12 could also have a positive effect on other symptoms. They criticize that its role and mode of action have not been sufficiently investigated so far. Study leader Haak: "New data from clinical studies support our hypothesis and the specific inhibition of the IL-23/IL-17 axis alone would probably be a better-targeted alternative."

Further Information

Original Publication:

Kulig, P. et al. (2016): [IL-12 protects from psoriasiform skin inflammation](#). Nature Communications, doi: 10.1038/ncomms13466
<http://rdcu.be/m3b3>

Related articles:

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The [Helmholtz Zentrum München](#), the German Research Center for Environmental Health, pursues the goal of developing personalized medical approaches for the prevention and therapy of major common diseases such as diabetes and lung diseases. To achieve this, it investigates the interaction of genetics, environmental factors and lifestyle. The Helmholtz Zentrum München is headquartered in Neuherberg in the north of Munich and has about 2,300 staff members. It is a member of the Helmholtz Association, a community of 18 scientific-technical and medical-biological research centers with a total of about 37,000 staff members. www.helmholtz-muenchen.de/en

The [Institute of Allergy Research](#) (IAF) investigates the molecular mechanisms behind the development of allergies, which are on the rise around the world. Through intensive cooperation among scientists and clinicians on individual approaches to prevention, the IAF is working to halt this epidemiological spread. In the therapeutic area, the institute's scientists want to develop new approaches specifically targeted at the patients. The IAF works with the Technische Universität München in the joint Center of Allergy & Environment (ZAUM) facility. The IAF is also a member of the Cluster Allergy and Immunity (CAI, www.cai-allergy.de) and the German Center for Lung Research (DZL). www.helmholtz-muenchen.de/en/iaf

The [Center of Allergy & Environment](#) (ZAUM) in Munich is a joint undertaking by the Helmholtz Zentrum München and the Technical University of Munich (TUM). This cooperation, which is the only one of its kind in the German research landscape, is dedicated to interdisciplinary basic research and forms a link between clinicians at the hospital and clinical research staff at the university. Thanks to this approach, findings about the mechanisms that lie behind allergies are translated into preventive and therapeutic measures. The development of effective, individually tailored treatments enables better care to be provided for allergy-sufferers. www.zaum-online.de

[Technical University of Munich](#) (TUM) is one of Europe's leading research universities, with more than 500 professors, around 10,000 academic and non-academic staff, and 40,000 students. Its focus areas are the engineering sciences, natural sciences, life sciences and medicine, combined with economic and social sciences. TUM acts as an entrepreneurial university that promotes talents and creates value for society. In that it profits from having strong partners in science and industry. It is represented worldwide with a campus in Singapore as well as offices in Beijing, Brussels, Cairo, Mumbai, San Francisco, and São Paulo. Nobel Prize winners and inventors such as Rudolf Diesel, Carl von Linde, and Rudolf Mößbauer have done research at TUM. In 2006 and 2012 it won recognition as a German "Excellence University." In international rankings, TUM regularly places among the best universities in Germany. www.tum.de/en/homepage

Die [Universität Zürich](#) (UZH) gehört als Mitglied der League of European Research Universities zum Kreis der führenden Forschungsuniversitäten Europas. Die internationale Bedeutung der UZH belegen höchste wissenschaftliche Auszeichnungen, darunter zwölf Nobelpreise. Die UZH ist mit über 25'000 Studierenden die grösste Universität der Schweiz und verfügt mit rund hundert Fächern über das landesweit umfangreichste Studienangebot. An rund 150 Instituten forschen und lehren gegen 5'000 Personen, darunter über 600 Professorinnen und Professoren. Die UZH ist die erste Universität in Europa, die 1833 von einem demokratischen Staatswesen gegründet worden ist. www.uzh.ch/de.html

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