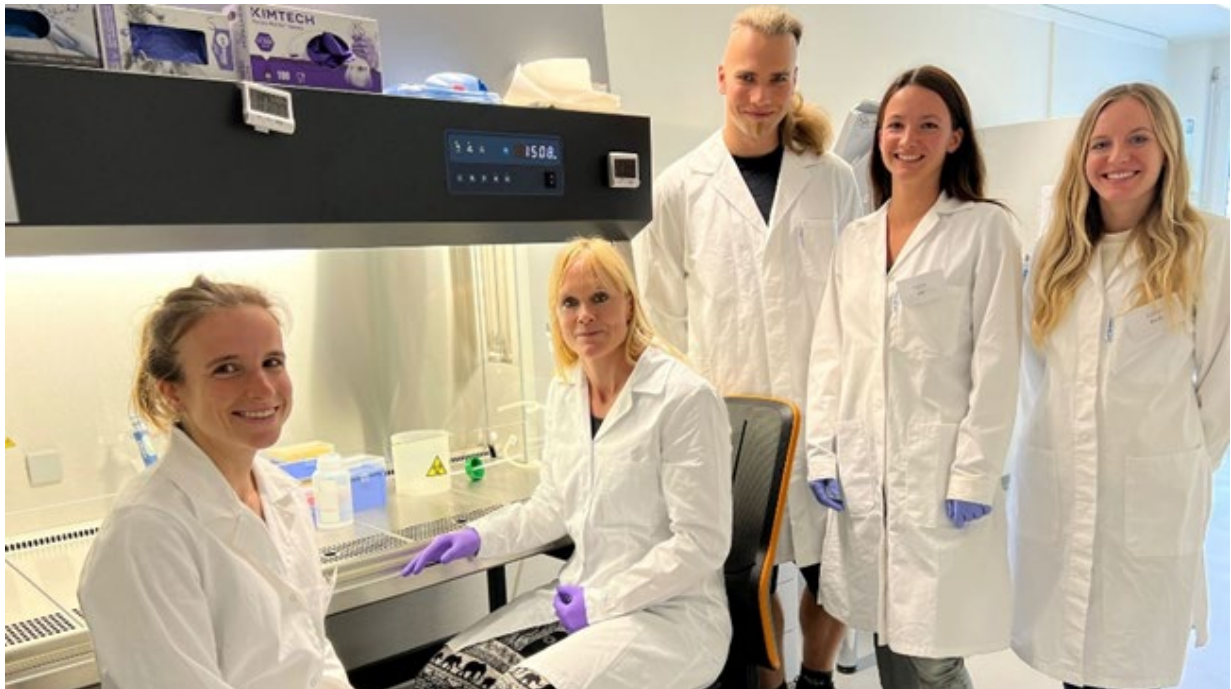


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Research in Graubünden

Research that gets under the skin

New methods reveal molecular causes of atopic dermatitis



The research group of Prof. Schenk. Left to right: A. Wallimann, M. Schenk, E. Kupschke, L. Gross and M. Wart.

Atopic dermatitis, also known as neurodermatitis/atopic eczema, is a chronic inflammatory skin disease that affects up to twenty percent of children and ten percent of adults worldwide. Typical symptoms include redness, itching and dryness. The disease occurs in episodes and can severely affect the daily lives of those affected. Although the exact cause is not yet fully known, it is believed that a combination of genetic, immunological and environmental factors play a role.

The in-house data and biobank in Davos stores patient samples and clinical information from all CK-CARE sites - Davos, Augsburg, Bonn, St. Gallen and Zurich - and analyzes them in detail. The research team, led by Professor Mirjam Schenk, is using modern and innovative methods to investigate the causes of atopic dermatitis. One promising approach is the use of single-cell RNA sequencing. This involves isolating immune cells from blood and skin in order to examine the genetic blueprint (RNA) of each individual cell. This can reveal subtle genetic differences between the cells of healthy people and those affected by atopic dermatitis. These findings help to better understand the causes of skin problems such as itching or redness.

But that's not all. To get a comprehensive picture of how this genetic information is converted into functional changes, the scientists use advanced techniques such as flow cytometry and

mass cytometry (CyTOF). These methods make it possible to measure the actual production of proteins and molecules in the cells. In this way, it is possible to determine how the genetic blueprint of the cell is translated into its effective biological appearance.

By uncovering the secrets of skin cells and the immune system, we can provide better medical treatment for people with skin problems in the future. Our aim is to identify measurable markers (biomarkers) in the medical laboratory. These should be used for the clinical diagnosis of atopic dermatitis and also serve as new starting points for future treatment strategies. We are focusing on a number of promising markers with the aim of significantly improving the management of atopic dermatitis and the quality of life of those affected.

About CK-CARE

Davos is home to the headquarters of CK-CARE (Christine Kühne - Center for Allergy Research and Education), whose teams are dedicated to allergology. The focus is on the research and treatment of atopic dermatitis.

www.ck-care.ch

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