

Maturation instead of cell death: Defective signalling pathways disrupt immune cell development

Researchers at the Faculty of Medicine of the University of Freiburg discover key factor in the development of immune cells. New approaches for the treatment of ALPS.

In the case of an autoimmune disease, the immune system not only attacks pathogens, but also the body's own cells. Researchers at the University of Freiburg - Medical Center have now been able to show that defective signalling pathways in the body play a decisive role in the development of immune cells, a discovery that opens up new therapeutic approaches for autoimmune diseases such as autoimmune lymphoproliferative syndrome (ALPS). The study was published on 12 January 2024 in the international journal *Science Immunology*.

"The findings show how profound the effects that signalling pathway disorders have on the way our immune system functions, which helps us to better understand the mechanisms of immune cell development and function," says Prof. Dr Marta Rizzi, Research Group Leader at the Department of Rheumatology and Clinical Immunology at the University of Freiburg - Medical Center and the Medical University of Vienna.

Important insights into immune cell development

The FAS signalling pathway plays an important role in the regulation of programmed cell death, also known as apoptosis. However, activation of the signalling pathway also influences non-lethal processes such as the maturation of B cells in the human immune system. The study indicates that disruptions in this signalling pathway can lead to problems in the development and function of B cells. "The next step for us will be to look for ways in which these findings can help us treat patients," says Rizzi, who is also a member of the Cluster of Excellence CIBSS - Centre for Integrative Biological Signalling Studies at the University of Freiburg.

Publication:

"Non-apoptotic FAS signaling controls mTOR activation and extrafollicular maturation in human B cells", DOI: 10.1126/sciimmunol.adj5948

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