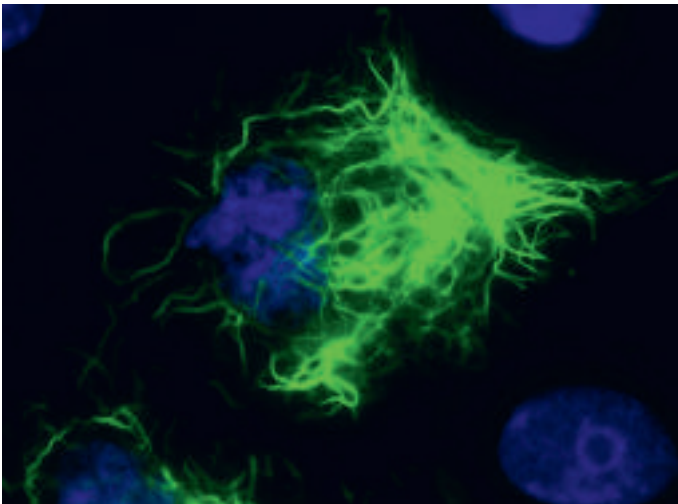


New Insights Into a Signal Pathway of the Immune Response

Institute of Toxicology



Association of Bcl10 with filaments. Bcl10 proteins are integral components of the CBM complex. Green-fluorescent Bcl10 proteins bind to filament-like structures outside the nucleus (blue). The analysis of the functions of Bcl10 represents a central focus of the research team headed by Dr. Daniel Krappmann.

The enzyme IKK β acts as both an activator and an inhibitor of the initiation of immune responses. This surprising discovery was reported by a group from the Institute of Toxicology working together with the Institute of Molecular Immunology of the Technical University, Munich, and the Harvard Medical School in Boston. The CBM complex is a high molecular protein complex which plays a central role in the triggering

of defence reactions, for example in response to pathogenic agents. Formation of this complex lies at the start of the signal cascade that leads to proliferation of defence cells and release of messenger molecules by the immune system. The IKK β protein plays an essential role in the formation of the CBM complex, but over time it also causes a chemical change in one component. Thereby IKK β induces the decay of the complex and thus an attenuation of signal propagation. The scientists suspect that the dual function of IKK β may contribute to balance lymphocyte activation both by boosting and by slowing down immune reactions.

The newly discovered mechanism of action of IKK β could offer a target for the treatment of diseases in which the immune activation is accelerated, for example in autoimmune diseases or distinct lympho-

mas. By activating or enhancing the decay of the CBM complex, it may be possible to prevent overreaction of the immune system, as in autoimmune diseases, or proliferation of cancer cells, as in lymphomas. In a future project it is aimed to specifically interfere with the protein-protein interactions that are involved in the signaling process.

Literature:

■ Wegener, E. et al.: Mol. Cell 23, 13-23 (2006)



Dr. Daniel Krappmann

Institute of Toxicology

**Telephone +49-89/31 87-34 61
daniel.krappmann@gsf.de**