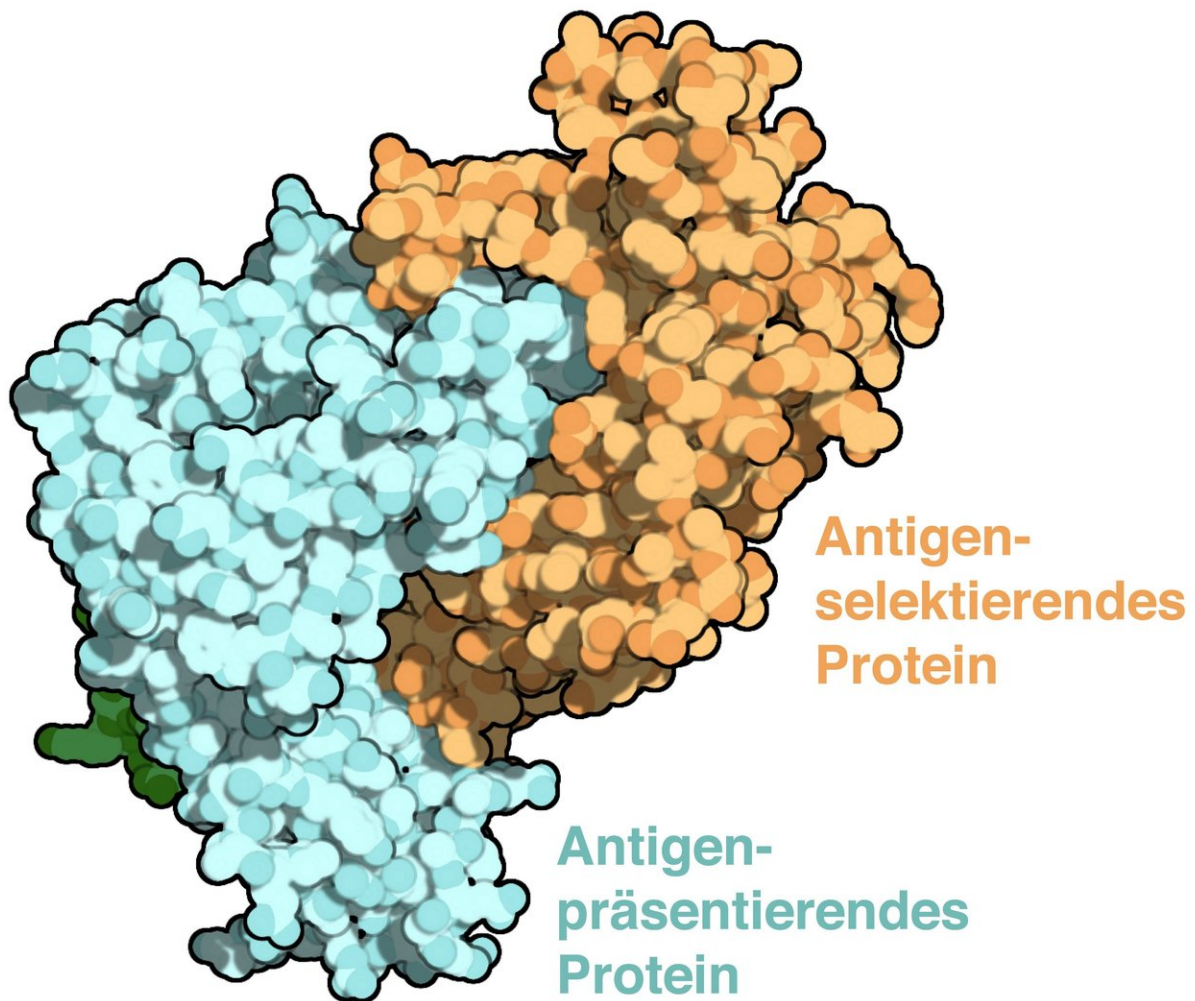


# Researchers find mechanism for precise targeting of the immune response

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A space-filling model of the solved protein complex responsible for the selection of antigens. Credit: AG Tampé

The immune system checks the health of cells by examining a kind of molecular passport. Sometimes, cells present the wrong passport, which can lead to autoimmune diseases, chronic inflammations or cancer. Scientists of the Goethe University Frankfurt explain the process how this happens in the new issue of the journal *Science*.

Most [cells](#) provide the T cells of the adaptive immune system with information about their condition by presenting selected components of their interior (called antigens) on their surface. If these components include fragments of viruses or altered cell components, the affected cell is eliminated. The selection of the antigens is essential in this process. Presenting the wrong antigens leads either to healthy cells being attacked by the immune system, causing [autoimmune diseases](#) or chronic inflammation, or diseased cells are not recognized, enabling cancer cells or virus-infected cells to escape immune surveillance.

Dr. Christoph Thomas and Prof. Robert Tampé from the Institute of Biochemistry at Goethe University have now solved on a molecular level how antigens are selected in the cell for presentation on the cell surface. Their structural biology study shows for the first time the kind of quality control antigens undergo to enable a precise and effective [immune response](#).

"Our work solves a 30-year-old problem of cellular immunity, in particular how antigens associated with tumors or pathogens are selected through processes of editing and quality control in order to generate a [specific immune response](#)," explains Prof. Robert Tampé the significance of the publication.

**More information:** "Structure of the TAPBPR–MHC I complex defines the mechanism of peptide loading and editing" *Science* (2017). [science.sciencemag.org/lookup/.../1126/science.aao6001](https://www.science.org/lookup/.../1126/science.aao6001)

"Crystal structure of a TAPBPR–MHC-I complex reveals the mechanism of peptide editing in antigen presentation" *Science* (2017). [science.sciencemag.org/lookup/ ... 1126/science.aao5154](https://science.sciencemag.org/lookup/.../1126/science.aao5154)

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