Enhancing Cellular Therapy for B-Cell Neoplasms

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Immunotherapy with CAR-T cells has shown success in the treatment of malignant B-cell tumors, but cure rates are only 40-60%. A major problem is the downregulation or loss of target antigen expression on tumor cells. Another obstacle is the limited lifespan of CAR-T cells, often due to exhaustion.
Bispecific CAR-T cells also showed antigen loss or downregulation of target antigens. TCR-T cells offer an alternative therapy option. In contrast to CARs, TCRs recognize peptides from proteins, regardless of where they occur in the cell, as long as they are presented by MHC molecules.
We have developed a TCR, T3225, which specifically targets the CD22 antigen on B cells and has shown better efficacy in vitro and in vivo than CD22 CAR T cells, especially in cells with low CD22 expression.
The aim of the project is now to develop a bispecific T cell product based on our T3225 TCR and to test it in vitro and in vivo.