Autologous Anti-CD7 CAR/28zeta CRISPR-edited T-lymphocytes

National Cancer Institute

Source

National Cancer Institute. Autologous Anti-CD7 CAR/28zeta CRISPR-edited T-lymphocytes. NCI Thesaurus. Code C161832.

A preparation of autologous T-lymphocytes (ATL) that have been gene-edited with the clustered regularly interspaced short palindromic repeats (CRISPR)-caspase 9 (Casp9) to remove the CD7 antigen and genetically engineered to express a chimeric antigen receptor (CAR) composed of a single-chain variable fragment (scFv) directed against the CD7 antigen and linked to the co-stimulatory domains of CD28 and the zeta chain of the TCR/CD3 complex (CD3-zeta) (CD28zeta), with potential immunostimulating and antineoplastic activities. Upon administration, the autologous anti-CD7 CAR/28zeta CRISPR-edited T-lymphocytes specifically recognize and bind to CD7-expressing tumor cells, resulting in specific T-cell-mediated tumor cell lysis. CD7 is a transmembrane glycoprotein expressed by T-cells and natural killer (NK) cells and their precursors. It is expressed in the majority of lymphoblastic T-cell leukemias and lymphomas and in a subset of peripheral T-cell lymphomas. Removal of the endogenous CD7 antigen from the T-cell surface increases expansion and viability of the CAR-T cells and increases T-cell cytotoxic activity.