# Autologous Anti-CD19CAR-CD3zeta-4-1BB-IL-15-PD1-expressing Tri-functional T-lymphocytes

National Cancer Institute

## Source

*National Cancer Institute. Autologous Anti-CD19CAR-CD3zeta-4-1BB-IL-15-PD1-expressing Tri-functional T-lymphocytes. NCI Thesaurus. Code C156169.*

A preparation of autologous T-lymphocytes engineered to express a tri-functional chimeric antigen receptor (CAR) specific for the tumor-associated antigen (TAA) cluster of differentiation 19 (CD19), and an extracellular domain consisting of interleukin 15 (IL-15) and programmed cell death 1 (PD1; PDCD1; CD279; programmed death-1), linked to the intracellular signaling domains of 4-1BB (CD137) and the zeta chain of the TCR/CD3 complex (TCRzeta; CD247; CD3zeta), with potential antineoplastic activity. Upon intravenous administration, autologous anti-CD19CAR-CD3zeta-4-1BB-IL-15-PD1-expressing tri-functional T-lymphocytes target, bind to, and induce selective toxicity in CD19-expressing tumor cells. IL-15 is a pro-survival cytokine that promotes T-cell persistence and potentiates the immune response against tumor cells. The PD1 moiety binds to programmed cell death-1 ligand 1 (PD-L1; cluster of differentiation 274; CD274) on tumor cells, reversing T-cell inactivation caused by endogenous PD1/PD-L1 signaling and enhancing the cytotoxic T-lymphocyte (CTL)-mediated anti-tumor immune response against PD-L1-expressing tumor cells. CD19 is a B-cell-specific cell surface antigen overexpressed in B-cell lineage tumors. Incorporation of the costimulatory signaling domains increases human T-cell function, expansion, and survival.