Autologous Anti-CD123 CAR TCR/4-1BB-expressing T-lymphocytes

National Cancer Institute

Source

National Cancer Institute. Autologous Anti-CD123 CAR TCR/4-1BB-expressing T-lymphocytes. NCI Thesaurus. Code C125101.

Autologous, genetically engineered T-lymphocytes that have been electroporated with a messenger RNA (mRNA) encoding a chimeric antigen receptor (CAR) consisting of an anti-human interleukin-3 receptor alpha chain (IL3RA; CD123) single chain variable fragment (scFv) coupled to the co-stimulatory signaling domains of 4-1BB (CD137) and the zeta chain of the T-cell receptor (TCR) CD3 complex (CD3-zeta), with potential immunomodulating and antineoplastic activities. Upon transfusion, the mRNA-electroporated autologous anti-CD123 CAR TCR/4-1BB expressing T-lymphocytes attach to cancer cells expressing CD123. This induces selective toxicity in and causes lysis of CD123-expressing tumor cells. The 4-1BB co-stimulatory molecule signaling domain enhances T-cell activation and signaling after recognition of CD123. CD123 is normally expressed on committed blood progenitor cells in the bone marrow; its overexpression is associated with both increased leukemic cell proliferation and aggressiveness.