Anti-EGFR CAR-transduced IL-12-expressing T-lymphocytes

National Cancer Institute

Source

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A preparation of human T-lymphocytes transduced with a retroviral vector encoding an anti-epidermal growth factor receptor (EGFR) chimeric antigen receptor (CAR) gene coupled to the signaling domains from CD28, 4-1BB (CD137) and CD3 zeta, and modified to express the cytokine interleukin-12 (IL-12), with potential immunostimulatory and antineoplastic activities. Upon administration, the anti-EGFR CAR-transduced IL-12-expressing T-lymphocytes target and bind to the EGFR antigen on tumor cell surfaces; subsequently, EGFR-expressing tumor cells may be lysed. IL-12 expression activates the immune system by promoting the secretion of interferon-gamma (IFNg), activating natural killer cells (NKs), and inducing cytotoxic T-cell responses, which may result in both decreased cell proliferation and increased cell death for the EGFR-overexpressing tumor cells. EGFR, overexpressed by a variety of cancer cell types, plays a key role in tumor cell proliferation, tumor angiogenesis and radio- and chemoresistance.