Recombinant Human CD4

Catalog Number: 10327-CD

DESCRIPTION

Source	Chinese Hamster Ovary cell line, CHO-derived human CD4 protein Lys26-Trp390 Accession # P01730.1
N-terminal Sequence Analysis	Lys26
Structure / Form	Monomer
Predicted Molecular Mass	41 kDa

SPECIFICATIONS

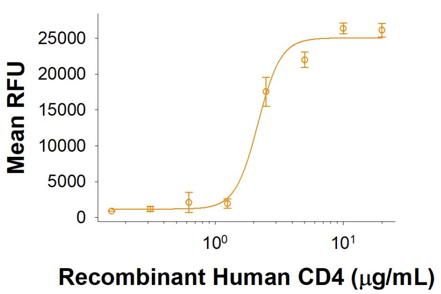
SDS-PAGE	48-52 kDa, under reducing conditions
Activity	Measured by the ability of the immobilized protein to support the adhesion of HeLa human cervical epithelial carcinoma cells. The ED_{50} for this effect is 0.75-4.5 µg/mL.
Endotoxin Level	<0.10 EU per 1 µg of the protein by the LAL method.
Purity	>95%, by SDS-PAGE visualized with Silver Staining and quantitative densitometry by Coomassie® Blue Staining.
Formulation	Lyophilized from a 0.2 µm filtered solution in PBS. See Certificate of Analysis for details.

PREPARATION AND STORAGE

Reconstitution	Reconstitute at 200 µg/mL in PBS.
Shipping	The product is shipped at ambient temperature. Upon receipt, store it immediately at the temperature recommended below.
Stability & Storage	**Use a manual defrost freezer and avoid repeated freeze-thaw cycles.** • 12 months from date of receipt, -20 to -70 °C as supplied. • 1 month, 2 to 8 °C under sterile conditions after reconstitution. • 3 months, -20 to -70 °C under sterile conditions after reconstitution.

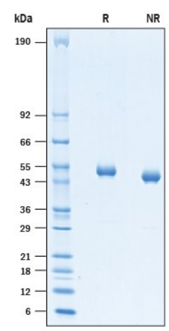
DATA

Bioactivity



Immobilized Recombinant Human CD4 Protein (Catalog # 10327-CD) supports the adhesion of HeLa human cervical epithelial carcinoma cells. The ED_{50} for this effect is 0.75-4.5 µg/mL.

SDS-PAGE



2 µg/lane of Recombinant Human CD4 (Catalog # 10327-CD) was resolved with SDS-PAGE under reducing (R) and non-reducing (NR) conditions and visualized by Coomassie® Blue staining, showing bands at 48-52 kDa.

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BACKGROUND

CD4, also known as L3T4, T4, and W3/25, is an approximately 55 kDa type I transmembrane glycoprotein that is expressed predominantly on thymocytes and a subset of mature T lymphocytes. It is a standard phenotype marker for the identification of T cell populations (1). Mature human CD4 consists of a 371 amino acid (aa) extracellular region containing four immunoglobulin-like domains, a 22 aa transmembrane segment, and a 40 aa cytoplasmic domain (2). Within the ECD, human CD4 shares approximately 52% aa sequence identity with mouse and rat CD4. CD4 is expressed along with CD8 on double positive T cells during their development in the thymus. Either CD4 or CD8 expression is then lost, giving rise to single positive (SP) $CD4^+$ or $CD8^+$ mature T cells (3). $CD4^+$ SP cells, also known as T helper cells, further differentiate into multiple subsets of $CD4^+$ cells including Th1, Th2, Th17, Tfh, and Treg cells which regulate humoral and cellular immunity (4). CD4 is reexpressed on circulating $CD8^+$ T cells upon activation and contributes to their cytotoxic effector activity (5). In human, CD4 is additionally expressed on macrophages, neutrophils, monocytes, NK cells, and neurons and glial cells in the brain (6-9). Similar CD4 distribution between species cannot be assumed as demonstrated by its presence on macrophages in human and rat but not in mouse (6). CD4 binds directly to MHC class II molecules on antigen presenting cells (10). This interaction contributes to the formation of the immunological synapse which is focused around the TCR-MHC class II-antigenic peptide interaction (1, 11). Palmitoylation of two cysteine residues in the cytoplasmic tail of CD4 promotes the localization of CD4 in lipid rafts and its ability to augment TCR signaling *via* activation of the tyrosine kinase Lck (12). CD4 also functions as a chemotactic receptor for IL-16 and, in human, as a co-receptor for the gp120 surface glycoprotein of HIV-1 (7, 13-15).

References:

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