

DESCRIPTION

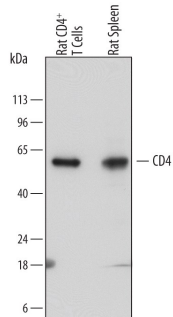
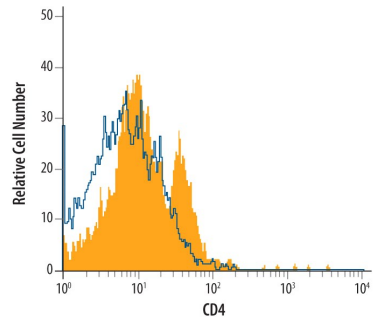
Species Reactivity	Rat
Specificity	Detects rat CD4 in direct ELISAs and Western blots. In direct ELISAs, approximately 3% cross-reactivity with recombinant feline CD4 is observed, and less than 1% cross-reactivity with recombinant human CD4 and recombinant canine CD4 is observed.
Source	Polyclonal Sheep IgG
Purification	Antigen Affinity-purified
Immunogen	Mouse myeloma cell line NS0-derived recombinant rat CD4 Lys28-Thr394 Accession # P05540
Formulation	Lyophilized from a 0.2 µm filtered solution in PBS with Trehalose. See Certificate of Analysis for details. *Small pack size (-SP) is supplied as a 0.2 µm filtered solution in PBS.

APPLICATIONS

Please Note: Optimal dilutions should be determined by each laboratory for each application. *General Protocols* are available in the *Technical Information* section on our website.

	Recommended Concentration	Sample
Western Blot	1 µg/mL	See Below
Flow Cytometry	2.5 µg/10 ⁶ cells	See Below

DATA

<p>Western Blot</p>  <p>Detection of Rat CD4 by Western Blot. Western blot shows lysates of rat CD4⁺ T cells and rat spleen tissue. PVDF membrane was probed with 1 µg/mL of Sheep Anti-Rat CD4 Antigen Affinity-purified Polyclonal Antibody (Catalog # AF6439) followed by HRP-conjugated Anti-Sheep IgG Secondary Antibody (Catalog # HAF016). A specific band was detected for CD4 at approximately 55 kDa (as indicated). This experiment was conducted under reducing conditions and using Immunoblot Buffer Group 1.</p>	<p>Flow Cytometry</p>  <p>Detection of rat CD4 in Rat Splenocytes by Flow Cytometry. Rat splenocytes were stained with Sheep Anti-Rat CD4 Antigen Affinity-purified Polyclonal Antibody (Catalog # AF6439, filled histogram) or control antibody (Catalog # 5-001-A, open histogram), followed by Allophycocyanin-conjugated Anti-Sheep IgG Secondary Antibody (Catalog # F0127).</p>
--	--

PREPARATION AND STORAGE

Reconstitution	Sterile PBS to a final concentration of 0.2 mg/mL.
Shipping	The product is shipped at ambient temperature. Upon receipt, store it immediately at the temperature recommended below. *Small pack size (-SP) is shipped with polar packs. Upon receipt, store it immediately at -20 to -70 °C
Stability & Storage	Use a manual defrost freezer and avoid repeated freeze-thaw cycles. <ul style="list-style-type: none"> ● 12 months from date of receipt, -20 to -70 °C as supplied. ● 1 month, 2 to 8 °C under sterile conditions after reconstitution. ● 6 months, -20 to -70 °C under sterile conditions after reconstitution.

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 rat CD4 consists of a 367 amino acid (aa) extracellular region containing four immunoglobulin-like domains, a 23 aa transmembrane segment, and a 40 aa cytoplasmic domain (2). Within the ECD, rat CD4 shares 52% and 73% aa sequence identity with human and mouse CD4, respectively. 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 re-expressed on circulating CD8⁺ T cells upon activation and contributes to their cytotoxic effector activity (5). In the rat, CD4 is additionally expressed on macrophages and selected subsets of dendritic cells (6, 7). 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 (8). This interaction contributes to the formation of the immunological synapse which is focused around the TCR-MHC class II-antigenic peptide interaction (1, 9). 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 (10). 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 (11-14). CD4 associates with CD44 on the cell surface to potentiate CD44-mediated cell adhesion (15).

References:

1. Vignali, D.A.A. (2010) *J. Immunol.* **184**:5933.
2. Clark, S.J. *et al.* (1987) *Proc. Natl. Acad. Sci.* **84**:1649.
3. Alarcon, B. and H.M. van Santen (2010) *Sci. Signal.* **3**:pe11.
4. Wan, Y.Y. and R.A. Flavell (2009) *Mol. Cell Biol.* **1**:20.
5. Kitchen, S.G. *et al.* (2005) *Proc. Natl. Acad. Sci.* **102**:3794.
6. Crocker, P.R. *et al.* (1987) *J. Exp. Med.* **166**:613.
7. Liu, L. *et al.* (1998) *J. Immunol.* **161**:1146.
8. Doyle, C. and J.L. Strominger (1987) *Nature* **330**:256.
9. Huppa, J.B. *et al.* (2010) *Nature* **463**:963.
10. Fragoso, R. *et al.* (2003) *J. Immunol.* **170**:913.
11. Cruikshank, W.W. *et al.* (1994) *Proc. Natl. Acad. Sci.* **91**:5109.
12. Klatzmann, D. *et al.* (1984) *Nature* **312**:767.
13. Dagleish, A.G. *et al.* (1984) *Nature* **312**:763.
14. Biswas, P. *et al.* (2003) *Blood* **101**:4452.
15. Umberto D. *et al.* (1999) *International Immunology* **11**:1085.