PRODUCT INFORMATION

CD4 Monoclonal Antibody (Clone RIV7)

Item No. 10004599

Overview and Properties

Contents:	This vial contains 100 µg of protein A-affinity purified monoclonal antibody.
Immunogen:	Human peripheral lymphocytes
Cross Reactivity:	(+) CD4
Species Reactivity:	(+) Human
Uniprot No.:	P01730
Form:	Liquid
Storage:	-20°C (as supplied)
Stability:	≥3 years
Storage Buffer:	PBS, pH 7.2, with 0.02% sodium azide
Clone:	RIV7
Host:	Mouse
Isotype:	IgG2a
Applications:	Flow cytometry (FC), immunohistochemistry (IHC; frozen), and immunofluorescence (IF); the recommended starting dilution for FC and IF is 10 µg/ml and 10 µg/ml (frozen) for IHC. Other applications were not tested, therefore optimal working concentration/ dilution should be determined empirically.

Description

CD4 is a type I transmembrane glycoprotein that functions as a T cell receptor (TCR) co-receptor.[1] It exists as a single polypeptide chain composed of four extracellular immunoglobulin-like (Ig-like) domains that interact with MHC class II molecules, a transmembrane domain, and a cytoplasmic tail that associates with the tyrosine kinase LCK and mediates signal transduction to the TCR, which is essential for T cell activation.[2] It is expressed on the surface of, and used as a marker for, T cells, and its expression is used to characterize the development stage of thymocytes. Upon binding to antigen-displaying MHC class II molecules expressed by antigen-presenting cells (APCs), naïve $CD4^+$ T cells differentiate and proliferate in a cytokine-dependent manner into a variety of T helper (Th) cell subsets, including Th1, Th2, and Th17 cells, which enhance and direct innate and adaptive immune cell responses to numerous pathogens and have additional roles in cancer, asthma and allergy, and autoimmunity.[3,4] CD4 is also the receptor for HIV attachment and entry into cells, resulting in depletion of $CD4^+$ cells in patients infected with HIV.[5,6] Cayman's CD4 Monoclonal Antibody (Clone RVI7) can be used for flow cytometry (FC), immunocytochemistry (ICC), and immunohistochemistry (IHC; frozen) applications.

References

1. Wittlich, M., Koenig, B.W., Hoffmann, S., *et al.* Structural characterization of the transmembrane and cytoplasmic domains of human CD4. *Biochim. Biophys. Acta* **1768(12)**, 2949-2960 (2007).
2. Mak, T.W. and Saunders, M.E. The T cell receptor: Structure of its proteins and genes. *The immune response: Basic and clinical principles.* Picknett, T. and Lebedeva, V., editors, 1st edition, *Elsevier Academic Press* (2006).
3. Nguyen, Q.P., Deng, T.Z., Witherden, D.A., *et al.* Origins of $CD4^+$ circulating and tissue-resident memory T-cells. *Immunology* **157(1)**, 3-12 (2019).
4. Zhu, J. and Paul, W.E. CD4 T cells: Fates, functions, and faults. *Blood* **112(5)**, 1557-1569 (2008).
5. Wilen, C.B., Tilton, J.C., and Doms, R.W. HIV: Cell binding and entry. *Cold Spring Harb. Perspect. Med.* **2(8)**, a006866 (2012).
6. Vijayan, K.K.V., Karthigeyan, K.P., Tripathi, S.P., *et al.* Pathophysiology of CD4+ T-cell depletion in HIV-1 and HIV-2 infections. *Front. Immunol.* **8**, 580 (2017).

WARNING
THIS PRODUCT IS FOR RESEARCH ONLY - NOT FOR HUMAN OR VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.

SAFETY DATA
This material should be considered hazardous until further information becomes available. Do not ingest, inhale, get in eyes, on skin, or on clothing. Wash thoroughly after handling. Before use, the user must review the complete Safety Data Sheet, which has been sent *via* email to your institution.

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