

# TCR $\alpha/\beta$ (R73): sc-19600

## BACKGROUND

The T cell antigen receptor (TCR) recognizes foreign antigens and translates such recognition events into intracellular signals that elicit a change in the cell from a dormant to an activated state. TCR is a heterodimer composed of either  $\alpha$  and  $\beta$  or  $\gamma$  and  $\delta$  chains. The vast majority of circulating T cells (95%) express the  $\alpha/\beta$  heterodimer while roughly 2-5% express the  $\gamma/\delta$  heterodimer. CD3 chains and the CD4 or CD8 co-receptors are also required for efficient signal transduction through the TCR. The TCR is expressed on T helper and T cytotoxic cells that can be distinguished by their expression of CD4 and CD8. T helper cells express CD4 proteins and T cytotoxic cells display CD8. CD4 is also expressed on cortical cells, mature medullary thymocytes, microglial cells and dendritic cells. CD4, also designated T4 and Leu 3, is a membrane glycoprotein that contains four extracellular immunoglobulin-like domains. The TCR, in association with CD4, can bind class II MHC molecules presented by the antigen-presenting cells. The CD4 protein functions by increasing the avidity of the interaction between the TCR and an antigen-class II MHC complex.

## REFERENCES

- Maddon, P.J., et al. 1987. Structure and expression of human and mouse T4 genes. Proc. Natl. Acad. Sci. USA 84: 9155-9159.
- Arthos, J., et al. 1989. Identification of the residues in human CD4 critical for the binding of HIV. Cell 57: 469-481.
- Healey, D., et al. 1990. Novel anti-CD4 monoclonal antibodies separate human immunodeficiency virus infection and fusion of CD4<sup>+</sup> cells from virus binding. J. Exp. Med. 172: 1233-1242.
- Weiss, A., et al. 1991. Signal transduction by the T cell antigen receptor. Semin. Immunol. 3: 313-324.
- Allison, J.P. and Havran, W.L. 1991. The immunobiology of T cells with invariant  $\gamma/\delta$  antigen receptors. Annu. Rev. Immunol. 9: 679-705.

## CHROMOSOMAL LOCATION

Genetic locus: Tcr $\alpha$  (mouse) mapping to 14 C2, Tcr $\beta$  (mouse) mapping to 6 B1.

## SOURCE

TCR  $\alpha/\beta$  (R73) is a mouse monoclonal antibody immunized with rat T blasts and rat erythrocytes.

## PRODUCT

Each vial contains 200  $\mu$ g IgG<sub>1</sub> kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin. Also available azide-free for *in vitro* stimulation of  $\alpha/\beta$  TCR-expressing T cells, *in vivo* depletion and/or suppression of  $\alpha/\beta$  TCR-expressing T cells, sc-19600 L, 200  $\mu$ g/0.1 ml.

TCR  $\alpha/\beta$  (R73) is available conjugated to either phycoerythrin (sc-19600 PE) or fluorescein (sc-19600 FITC), 200  $\mu$ g/ml, for WB (RGB), IF, IHC(P) and FCM.

## STORAGE

Store at 4° C, \*\*DO NOT FREEZE\*\*. Stable for one year from the date of shipment. Non-hazardous. No MSDS required.

## APPLICATIONS

TCR  $\alpha/\beta$  (R73) is recommended for detection of TCR  $\alpha/\beta$  of mouse and rat origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunoprecipitation [1-2  $\mu$ g per 100-500  $\mu$ g of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500), immunohistochemistry (including paraffin-embedded sections) (starting dilution 1:50, dilution range 1:50-1:500) and flow cytometry (1  $\mu$ g per 1 x 10<sup>6</sup> cells).

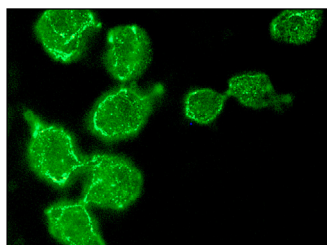
Molecular Weight of TCR  $\alpha/\beta$ : 34/39 kDa.

Positive Controls: 3611-RF whole cell lysate: sc-2215.

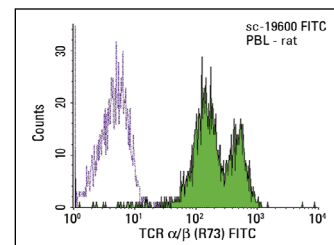
## RECOMMENDED SUPPORT REAGENTS

To ensure optimal results, the following support reagents are recommended: 1) Western Blotting: use m-IgG $\kappa$  BP-HRP: sc-516102 or m-IgG $\kappa$  BP-HRP (Cruz Marker): sc-516102-CM (dilution range: 1:1000-1:10000), Cruz Marker™ Molecular Weight Standards: sc-2035, UltraCruz® Blocking Reagent: sc-516214 and Western Blotting Luminol Reagent: sc-2048. 2) Immunoprecipitation: use Protein A/G PLUS-Agarose: sc-2003 (0.5 ml agarose/2.0 ml). 3) Immunofluorescence: use m-IgG $\kappa$  BP-FITC: sc-516140 or m-IgG $\kappa$  BP-PE: sc-516141 (dilution range: 1:50-1:200) with UltraCruz® Mounting Medium: sc-24941 or UltraCruz® Hard-set Mounting Medium: sc-359850. 4) Immunohistochemistry: use m-IgG $\kappa$  BP-HRP: sc-516102 with DAB, 50X: sc-24982 and Immunohistomount: sc-45086, or Organo/Limonene Mount: sc-45087.

## DATA



TCR  $\alpha/\beta$  (R73): sc-19600. Immunofluorescence staining of methanol-fixed 3611-RF cells showing membrane localization.



TCR  $\alpha/\beta$  (R73) FITC: sc-19600 FITC. FCM analysis of rat peripheral blood leukocytes. Black line histogram represents the isotype control, normal mouse IgG<sub>1</sub>-FITC: sc-2855.

## SELECT PRODUCT CITATIONS

- Chei, S., et al. 2020. Dysfunction of B cell leading to failure of immunoglobulin response is ameliorated by dietary silk peptide in 14-month-old C57BL/6 mice. Front. Nutr. 7: 583186.
- Zhang, Y.Y., et al. 2021. Chimeric antigen-guiding extracellular vesicles eliminate antigen-specific Th2 cells in subjects with food allergy. World Allergy Organ. J. 14: 100522.

## RESEARCH USE

For research use only, not for use in diagnostic procedures.