SANTA CRUZ BIOTECHNOLOGY, INC.

TCR α (H-1): sc-515719

The Power to Question

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 α and β or γ and δ chains. The vast majority of circulating T cells (95%) express the α/β heterodimer while roughly 2-5% express the γ/δ 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 immunoglobin-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.

CHROMOSOMAL LOCATION

Genetic locus: TRA (human) mapping to 14p13.

SOURCE

TCR α (H-1) is a mouse monoclonal antibody raised against amino acids 1-142 mapping within the constant region of TCR α of human origin.

PRODUCT

Each vial contains 200 µg IgG_{2a} kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

TCR α (H-1) is available conjugated to agarose (sc-515719 AC), 500 µg/0.25 ml agarose in 1 ml, for IP; to HRP (sc-515719 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-515719 PE), fluorescein (sc-515719 FITC), Alexa Fluor® 488 (sc-515719 AF488), Alexa Fluor® 546 (sc-515719 AF546), Alexa Fluor® 594 (sc-515719 AF594) or Alexa Fluor® 647 (sc-515719 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-515719 AF680) or Alexa Fluor® 790 (sc-515719 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

APPLICATIONS

TCR α (H-1) is recommended for detection of TCR α C region of human origin by Western Blotting (starting dilution 1:100, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg 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 solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

Suitable for use as control antibody for TCR α siRNA (h): sc-36626, TCR α shRNA Plasmid (h): sc-36626-SH and TCR α shRNA (h) Lentiviral Particles: sc-36626-V.

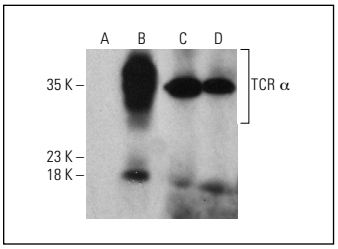
Molecular Weight of TCR α: 34 kDa.

Positive Controls: TCR α (h): 293T Lysate: sc-111693, human thymus extract: sc-516711 or human spleen extract: sc-363779.

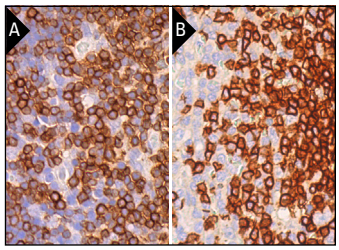
STORAGE

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

DATA



TCR α (H-1) HRP: sc-515719 HRP. Direct western blot analysis of TCR α expression in non-transfected: sc-117752 (**A**) and human TCR α transfected: sc-111693 (**B**) 293T whole cell lysates and human thymus (**C**) and human spleen (**D**) tissue extracts.



TCR α (H-1): sc-515719. Immunoperoxidase staining of formalin fixed, paraffin-embedded human thymus tissue showing membrane and cytoplasmic staining of cortical cells and medullary cells (**A**). Immunoperoxidase staining of formalin fixed, paraffin-embedded human spleen tissue showing membrane and cytoplasmic staining of cells in white pulp and cells in red pulp (**B**).

SELECT PRODUCT CITATIONS

1. Baeuerle, P.A., et al. 2019. Synthetic TRuC receptors engaging the complete T cell receptor for potent anti-tumor response. Nat. Commun. 10: 2087.
2. Yousefi, O.S., et al. 2021. Cross-TCR antagonism revealed by optogenetically tuning the half-life of the TCR ligand binding. Int. J. Mol. Sci. 22: 4920.
3. Mo, L.H., et al. 2021. Epithelial cell-derived CD83 restores immune tolerance in the airway mucosa by inducing regulatory T-cell differentiation. Immunology 163: 310-322.
4. Li, C., et al. 2022. The critical and diverse roles of $CD4^-CD8^-$ double negative T cells in nonalcoholic fatty liver disease. Cell. Mol. Gastroenterol. Hepatol. 13: 1805-1827.
5. Chen, Y., et al. 2022. Cholesterol inhibits TCR signaling by directly restricting TCR-CD3 core tunnel motility. Mol. Cell 82: 1278-1287.e5.
6. Sun, Y., et al. 2022. Chimeric anti-GPC3 sFv-CD3ε receptor-modified T cells with IL7 co-expression for the treatment of solid tumors. Mol. Ther. Oncolytics 25: 160-173.

RESEARCH USE

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

PROTOCOLS

See our web site at www.scbt.com for detailed protocols and support products.

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