SANTA CRUZ BIOTECHNOLOGY, INC.

TCR C β 1 (JOVI.1): sc-53196



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. Recognizing such a variety of antigens requires diverse specificities in the TCR repertoire. This is obtained by the somatic recombination of variable (V), diversity (D), joining (J), and constant (C) gene segments in the assembly of each TCR chain. The TCR β and γ chain genes lie in distinct loci, while the genes encoding the TCR α and δ chains comprise a single locus. During T cell development, the β chain is synthesized by first joining a D segment with a J segment, then adding a V segment with the D-J gene. The C segment is later joined by splicing at the RNA level. Genetic mutations involving the T cell receptor β locus have been associated with T cell lymphomas.

REFERENCES

- 1. Okada, C.Y., et al. 1990. Characterization of a rat monoclonal antibody specific for a determinant encoded by the V β 7 gene segment. Depletion of V β 7⁺ T cells in mice with MIs-1a haplotype. J. Immunol. 144: 3473-3477.
- 2. Viney, J.L., et al. 1992. Generation of monoclonal antibodies against a human T cell receptor β chain expressed in transgenic mice. Hybridoma 11: 701-713.
- Sugihara, S., et al. 1993. Autoimmune thyroiditis induced in mice depleted of particular T cell subsets. Characterization of thyroiditis-inducing T cell lines and clones derived from thyroid lesions. J. Immunol. 150: 683-694.
- 4. Ignatowicz, L., et al. 1994. Identification of two V β 7-specific viral superantigens. J. Immunol. 152: 65-71.

CHROMOSOMAL LOCATION

Genetic locus: TRBC1 (human) mapping to 7q22.3.

SOURCE

TCR C β 1 (JOVI.1) is a mouse monoclonal antibody raised against thymus, spleen and mesenteric lymph nodes isolated from a mouse transgenic for V β 3, TCR C β 1 of human origin.

PRODUCT

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

TCR C β 1 (JOVI.1) is available conjugated to agarose (sc-53196 AC), 500 µg/0.25 ml agarose in 1 ml, for IP; to HRP (sc-53196 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either fluorescein (sc-53196 FITC), Alexa Fluor* 488 (sc-53196 AF488), Alexa Fluor* 546 (sc-53196 AF546), Alexa Fluor* 594 (sc-53196 AF594) or Alexa Fluor* 647 (sc-53196 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor* 680 (sc-53196 AF680) or Alexa Fluor* 790 (sc-53196 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

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APPLICATIONS

TCR C β 1 (JOVI.1) is recommended for detection of TCR C β 1 of human origin by Western Blotting (starting dilution 1:200, 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) and flow cytometry (1 µg per 1 x 10⁶ cells).

Molecular Weight of TCR C β 1: 20 kDa.

Positive Controls: human thymus extract: sc-516711.

RECOMMENDED SUPPORT REAGENTS

To ensure optimal results, the following support reagents are recommended: 1) Western Blotting: use m-IgGκ BP-HRP: sc-516102 or m-IgGκ 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-IgGκ BP-FITC: sc-516140 or m-IgGκ BP-PE: sc-516141 (dilution range: 1:50-1:200) with UltraCruz[®] Mounting Medium: sc-24941 or UltraCruz[®] Hard-set Mounting Medium: sc-359850.

DATA





TCR C β 1 (JOVI.1) Alexa Fluor[®] 488: sc-53196 AF488. Direct fluorescent western blot analysis of TCR C β 1 expression in human PBL whole cell lysate (**A**) and human thymus tissue extract (**B**). Blocked with UltraCruz[®] Blocking Reagent: sc-516214. TCR C β 1 (JOVI.1) FITC: sc-53196 FITC. Direct FCM analysis of human peripheral blood leukocytes stained with TCR C β 1 (JOVI.1) FITC. Black line histogram represents the isotype control, normal mouse lgG_{2a} : sc-3878.

SELECT PRODUCT CITATIONS

- Kamarádová, K., et al. 2020. T-cell receptor antibodies expression in benign and malignant cutaneous lymphoid infiltrates in comparison with T-cell receptor gene rearrangement and its diagnostic utility in borderline cases. Pathol. Res. Pract. 216: 153279.
- 2. Garcillán, B., et al. 2021. CD3G or CD3D knockdown in mature, but not immature, T lymphocytes similarly cripples the human TCR $\alpha\beta$ complex. Front. Cell Dev. Biol. 9: 608490.

STORAGE

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

RESEARCH USE

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