

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

- 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 Mls-1a haplotype. *J. Immunol.* 144: 3473-3477.
- 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.
- Ignatowicz, L., et al. 1994. Identification of two V β 7-specific viral superantigens. *J. Immunol.* 152: 65-71.
- Haffer, D.A., et al. 1997. TCR usage in human and experimental demyelinating disease. *Immunol. Today* 17: 152-159.
- Bowness, P., et al. 1998. Importance of a conserved TCR J α -encoded tyrosine for T cell recognition of an HLA B27/peptide complex. *Eur. J. Immunol.* 28: 2704-2713.
- Amsen, D. and Kruisbeek, A.M. 1999. Thymocyte selection: not by TCR alone. *Immunol. Rev.* 165: 209-229.
- Hernández, J., et al. 2000. The use of HLA A2.1/p53 peptide tetramers to visualize the impact of self tolerance on the TCR repertoire. *J. Immunol.* 164: 596-602.

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.

RESEARCH USE

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

PRODUCT

Each vial contains 200 μ g IgG_{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 μ g/0.25 ml agarose in 1 ml, for IP; to HRP (sc-53196 HRP), 200 μ g/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 μ g/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 μ g/ml, for Near-Infrared (NIR) WB, IF and FCM.

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APPLICATIONS

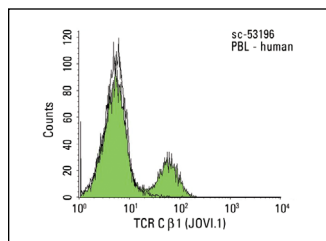
TCR C β 1 (JOVI.1) is recommended for detection of TCR C β 1 of human origin by immunoprecipitation [1-2 μ g per 100-500 μ g of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500) and flow cytometry (1 μ g per 1 x 10⁶ cells).

Molecular Weight of TCR C β 1: 20 kDa.

RECOMMENDED SUPPORT REAGENTS

To ensure optimal results, the following support reagents are recommended: 1) Immunoprecipitation: use Protein A/G PLUS-Agarose: sc-2003 (0.5 ml agarose/2.0 ml). 2) Immunofluorescence: use m-IgG κ BP-FITC: sc-516140 or m-IgG κ 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) 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 IgG_{2a}: sc-3878.

SELECT PRODUCT CITATIONS

- 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.