

# TCR V $\beta$ 12 (3H3008): sc-73126

## 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. 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) and joining (J) gene segments in the assembly of each TCR chain. The TCR  $\beta$  and  $\gamma$  chain genes lie in distinct loci, while the genes encoding the TCR  $\alpha$  and  $\delta$  chains comprise a single locus. During T cell development, the  $\beta$  chain is synthesized by first joining a D segment with a J segment, then adding a V segment with the D-J gene, and later a C segment. Genetic mutations involving the T cell receptor  $\beta$  locus have been associated with T cell lymphomas.

## REFERENCES

- Okada, C.Y., Holzmann, B., Guidos, C., Palmer, E. and Weissman, I.L. 1990. Characterization of a rat monoclonal antibody specific for a determinant encoded by the V  $\beta$  7 gene segment. Depletion of V  $\beta$  7<sup>+</sup> T cells in mice with Mls-1<sup>a</sup> haplotype. *J. Immunol.* 144: 3473-3477.
- Wucherpennig, K.W., Newcombe, J., Li, H., Keddy, C., Cuzner, M.L. and Hafler, D.A. 1992. T cell receptor V  $\alpha$ -V  $\beta$  repertoire and cytokine gene expression in active multiple sclerosis lesions. *J. Exp. Med.* 175: 993-1002.
- Sugihara, S., Fujiwara, H. and Shearer, G.M. 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., Kappler, J.W., Marrack, P. and Scherer, M.T. 1994. Identification of two V  $\beta$  7-specific viral superantigens. *J. Immunol.* 152: 65-71.
- Gold, D.P. 1995. TCR V gene usage in autoimmunity. *Curr. Opin. Immunol.* 6: 907-912.
- Hafler, D.A., Saadeh, M.G., Kuchroo, V.K., Milford, E. and Steinman, L. 1997. TCR usage in human and experimental demyelinating disease. *Immunol. Today* 17: 152-159.
- Amsen, D. and Kruisbeek, A.M. 1999. Thymocyte selection: not by TCR alone. *Immunol. Rev.* 165: 209-229.
- Hernández, J., Lee, P.P., Davis, M.M. and Sherman, L.A. 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.
- Kane, L.P., Lin, J. and Weiss, A. 2000. Signal transduction by the TCR for antigen. *Curr. Opin. Immunol.* 12: 242-249.

## CHROMOSOMAL LOCATION

Genetic locus: Tcrb (mouse) mapping to 6 B1.

## SOURCE

TCR V  $\beta$  12 (3H3008) is a rat monoclonal antibody raised against T cell clone B1 of mouse origin.

## PRODUCT

Each vial contains 2 ml culture supernatant containing IgG<sub>2a</sub> with < 0.1% sodium azide.

## APPLICATIONS

TCR V  $\beta$  12 (3H3008) is recommended for detection of TCR V  $\beta$  12 of mouse origin by immunofluorescence (starting dilution to be determined by researcher, dilution range 1:10-1:200) and flow cytometry (10-20  $\mu$ l per  $1 \times 10^6$  cells).

Molecular Weight of TCR V  $\beta$  12: 34 kDa.

## STORAGE

For immediate and continuous use, store at 4° C for up to one month. For sporadic use, freeze in working aliquots in order to avoid repeated freeze/thaw cycles. If turbidity is evident upon prolonged storage, clarify solution by centrifugation.

## RESEARCH USE

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

## PROTOCOLS

See our web site at [www.scbt.com](http://www.scbt.com) for detailed protocols and support products.