BD Pharmingen™

Mouse Vβ TCR Screening Panel

Monoclonal Antibodies Which Recognize Mouse Vβ 2, 3, 4, 5.1 and 5.2, 6, 7, 8.1 and 8.2, 8.3, 9, 10[b], 11, 12, 13, 14, and 17[a] T-cell Receptors

Cat. No. 557004

BD

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Mouse Vβ TCR Screening Panel

The Mouse Vβ TCR Screening Panel contains 15 pre-diluted FITC-conjugated monoclonal antibodies which recognize mouse Vβ 2, 3, 4, 5.1 and 5.2, 6, 7, 8.1 and 8.2, 8.3, 9, 10^{b}, 11, 12, 13, 14, and 17^{a} T-cell receptors. The Panel contains one 1-ml vial of each antibody, sufficient reagents for 50 tests.

Descriptions of the individual antibodies are on the following pages in order by their Vβ numbers.

Preparation and Storage

Each antibody was purified from tissue culture supernatant by affinity chromatography and conjugated with FITC under optimum conditions. The antibody conjugates are pre-diluted in aqueous buffered solution containing BSA* and 0.09% Sodium Azide. The solutions are free of unconjugated FITC. The conjugates should be stored at 4°C and protected from prolonged exposure to light. Do not freeze. No further preparation is required before use.

** Source of all serum proteins is from USDA inspected abattoirs located in the United States.*

Usage

Each FITC-conjugated antibody should be used at 20 microliters per 10^{6} cells for immunofluorescent staining with flow cytometric analysis, using a standard protocol. For suggested protocols, please see Section 5.3 of Current Protocols in Immunology or **http://www.bdbiosciences.com/pharmingen/protocols/**. For flow cytometry of cell suspensions from peripheral lymphoid tissues, it is recommended that multicolor staining be performed to distinguish T lymphocytes from non-T cells.

Conditions

BD Biosciences Pharmingen will not be responsible for violations or patent infringements which may occur with the use of our products.

Warnings and Precautions

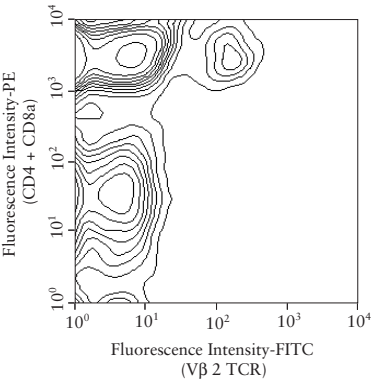
Hazardous Ingredient: Contains less than 0.1% Sodium Azide. Avoid exposure to skin and eyes, ingestion, and contact with heat, acids, and metals. Wash exposed skin with soap and water. Flush eyes with water. Dilute with running water before discharge into plumbing.

FITC anti-mouse Vβ 2 T-cell Receptor

Clone:	B20.6
Immunogen:	Soluble αβ TCR from mouse cytotoxic T-cell clone CW3/1.1[1]
Isotype:	Rat (LOU/W1) IgG_{2a}, κ
Component No.:	51-01634L

Specificity

The B20.6 antibody reacts with the Vβ 2 T-cell Receptor (TCR) of all strains tested.[1,2] Vβ 2 TCR-bearing T lymphocytes are clonally eliminated in mice expressing I-E and exposed neonatally to milk-borne BALB/cV virus, a highly tumorigenic strain of MMTV. Exposure of adult mice to BALB/cV virus results in expansion of Vβ 2 TCR-bearing T cells, which is partially dependent upon presentation by I-E.[3]



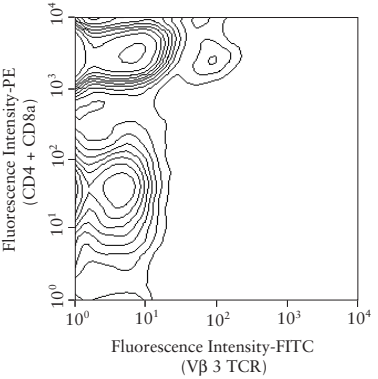
Two-color analysis of the expression of Vβ 2 TCR on peripheral lymphocytes. C57BL/6 lymph node cells were incubated simultaneously with FITC-conjugated B20.6, PE-conjugated RM4-5 (anti-CD4, Cat. no. 553048/553049), and PE-conjugated 53-6.7 (anti-CD8a, Cat. no. 553032/553033) monoclonal antibodies. Flow cytometry was performed on a BD FACScan™ (BDBiosciences, San Jose, CA).

References

1. Necker, A., N. Rebaï, M. Matthes, E. Jouvin-Marche, P.-A. Cazenave, P. Swarnworawong, E. Palmer, H.R. MacDonald, and B. Malissen. 1991. Monoclonal antibodies raised against engineered soluble mouse T cell receptors and specific for $V_{\alpha}8$-, $V_{\beta}2$-, or $V_{\beta}10$-bearing T cells. *Eur. J. Immunol.* 21: 3035 - 3040.
2. Grégoire, C., N. Rebaï, F. Schweisguth, A. Necker, G. Mazza, N. Auphan, A. Millward, A.-M. Schmitt-Verhulst, and B. Malissen. 1991. Engineered secreted T-cell receptor αβ heterodimers. *Proc. Natl. Acad. Sci. USA* 88: 8077 - 8081.
3. Hodes, R.J., M.B. Novick, L.D. Palmer, and J.E. Knepper. 1993. Association of a Vβ2-specific superantigen with a tumorigenic milk-borne mouse mammary tumor virus. *J. Immunol.* 150: 1422 - 1428.

FITC anti-mouse Vβ 3 T-cell Receptor

Clone:	KJ25
Immunogen:	αβ TCR purified from mouse T-cell hybridoma 2B4.6[1]
Isotype:	Armenian Hamster IgG2, κ
Component No.:	51-01404L



Two-color analysis of the expression of Vβ 3 TCR on peripheral lymphocytes. C57BL/6 lymph node cells were incubated simultaneously with FITC-conjugated KJ25, PE-conjugated RM4-5 (anti-CD4, Cat. no. 553048/553049), and PE-conjugated 53-6.7 (anti-CD8a, Cat. no. 553032/553033) monoclonal antibodies. Flow cytometry was performed on a BD FACScan™ (BD Biosciences, San Jose, CA).

Specificity

The KJ25 antibody reacts with the Vβ 3 T-cell Receptor (TCR) of strains having the *a* (eg, C57BR, SJL), *b* (eg, AKR, CBA/Ca, C57BL, DBA/1), and *c* (eg, RIII) haplotypes of the *Tcrb* gene complex. Vβ 3 TCR-bearing T lymphocytes are clonally eliminated, either completely or partially, in mice expressing superantigens encoded by the *Mtv-1 (Mls-4^a, Mls^c), Mtv-3 (Mls^c), Mtv-6 (Mls-3^a, Mls^c), Mtv-13 (Mls-2^a, Mls^c), Mtv-27, Mtv-44, and/or Mtv-MAI* endogenous proviruses (eg, A, BALB/c, CBA/J, C3H/He, DBA/2, NZB, NZW).[1,2,3,4] Activation or elimination of Vβ 3 TCR-expressing T cells by these determinants is partially dependent upon presentation by I-E.[3]

References

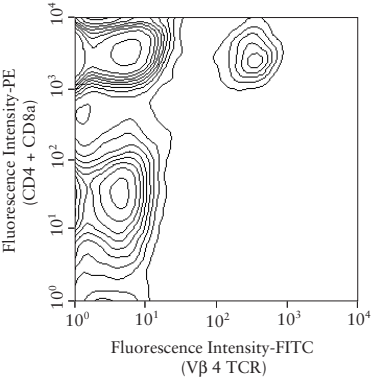
1. Pullen, A.M., P. Marrack, and J.W. Kappler. 1988. The T-cell repertoire is heavily influenced by tolerance to polymorphic self-antigens. *Nature* 335: 796 - 801.
2. Yuuki, H., Y. Yoshikai, K. Kishihara, A. Iwasaki, G. Matsuzaki, M. Ogimoto, and K. Nomoto. 1990. Deletion of self-reactive T cells in nude mice grafted with neonatal allogeneic thymus. *J. Immunol.* 144: 474 - 479.
3. Hodes, R.J., and R. Abe. 1996. Mouse endogenous superantigens: Mls and Mls-like determinants encoded by mouse retroviruses. *In Current Protocols in Immunology.* J.E. Coligan, A.M. Kruisbeek, D.H. Margulies, E.M. Shevach, and W. Strober, eds. John Wiley and Sons, New York, NY, pp. A.1F.1 - A.1F.5.
4. Tomonari, K., S. Fairchild, and O.A. Rosenwasser. 1993. Influence of viral superantigens on Vβ- and Vα-specific positive and negative selection. *Immunol. Rev.* 131: 131 - 168.

FITC anti-mouse Vβ 4 T-cell Receptor

Clone:	KT4
Immunogen:	B10.D2 mouse T-cell clone I3[1]
Isotype:	Rat (Sprague-Dawley) IgG_{2b}, κ
Component No.:	51-01934L

Specificity

The KT4 antibody reacts with the Vβ 4 T-cell Receptor (TCR) of mice having the *a* (eg, C57BR, C57L, SJL, SWR), *b* (eg, A, AKR, BALB/c, CBA, C3H/He, C57BL, C58, DBA/1, DBA/2), and *c* (eg, RIII) haplotypes of the *Tcrb* gene complex.[1] Vβ 4 TCR-bearing lymphocytes are among the $CD4^+$ autoreactive T cells which induce autoimmune thyroiditis after elimination of regulatory (CD5-bright) T-cell subsets.[2]



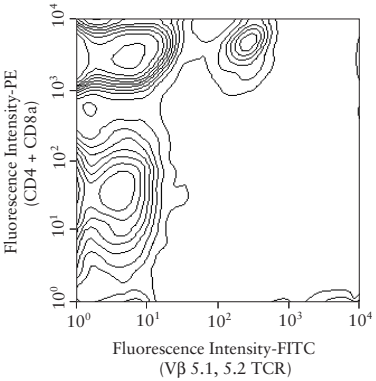
Two-color analysis of the expression of Vβ 4 TCR on peripheral lymphocytes. C57BL/6 lymph node cells were incubated simultaneously with FITC-conjugated KT4, PE-conjugated RM4-5 (anti-CD4, Cat. no. 553048/553049), and PE-conjugated 53-6.7 (anti-CD8a, Cat. no. 553032/553033) monoclonal antibodies. Flow cytometry was performed on a BD FACScan™ (BD Biosciences, San Jose, CA).

References

1. Tomonari, K., E. Lovering, and S. Spencer. 1990. Correlation between the $V\beta4^+$ $CD8^+$ T-cell population and the $H\text{-}2^d$ haplotype. *Immunogenetics* 31: 333 - 339.
2. Sugihara, S., H. Fujiwara, and G.M. Shearer. 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.

FITC anti-mouse Vβ 5.1, 5.2 T-cell Receptor

Clone:	MR9-4
Immunogen:	Mouse T-cell hybridoma 2HB51.8[1]
Isotype:	Mouse (SWR) IgG_1, κ
Component No.:	51-01354L



Two-color analysis of the expression of Vβ 5.1, 5.2 TCR on peripheral lymphocytes. C57BL/6 lymph node cells were incubated simultaneously with FITC-conjugated MR9-4, PE-conjugated RM4-5 (anti-CD4, Cat. no. 553048/553049), and PE-conjugated 53-6.7 (anti-CD8a, Cat. no. 553032/553033) monoclonal antibodies. Flow cytometry was performed on a BD FACScan™ (BD Biosciences, San Jose, CA).

Specificity

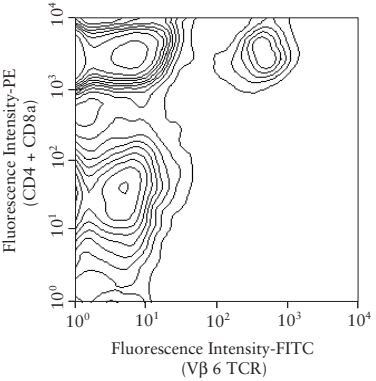
The MR9-4 antibody reacts with the Vβ 5.1 and Vβ 5.2 T-cell Receptors (TCR) of strains having the *b* haplotype (eg, C57BL) of the *Tcrb* gene complex.[1] These gene loci are deleted in mice having the *a* (eg, C57BR, C57L, SJL, SWR)[2] or *c* (eg, RIII) *Tcrb* haplotype.[3] Vβ 5.1 and 5.2 TCR-bearing T lymphocytes are clonally eliminated, either completely or partially, in mice expressing I-E and superantigens encoded by the *Mtv-1 (Mls-4^a, Mls^c)*, *Mtv-3 (Mls^c)*, *Mtv-8 (Mls^f)*, *Mtv-9 (Etc-1, Mls^f)*, *Mtv-11 (Mls^f)*, *Mtv-13 (Mls-2^a, Mls^c)*, *Mtv-27*, *Mtv-44*, *and/or Mtv-MAI* endogenous provirus (eg, A, AKR, BALB/c, C3H/He, C58, CBA/Ca, CBA/J, DBA/2, NZB, NZW).[1,4,5,6] Activation of Vβ 5 TCR-expressing T cells by these determinants is dependent upon presentation by I-E.[7,8]

References

1. Bill, J., O. Kanagawa, J. Linten, Y. Utsunomiya, and E. Palmer. 1990. Class I and Class II MHC gene products differentially affect the fate of Vβ5 bearing thymocytes. *J. Mol. Cell. Immunol.* 4: 269 - 280.
2. Behlke, M.A., H.S. Chou, K. Huppi, and D.Y. Loh. 1986. Murine T-cell receptor mutants with deletions of β-chain variable region genes. *Proc. Natl. Acad. Sci. USA* 83: 767 - 771.
3. Haqqi, T.M., S. Banerjee, G.D. Anderson, and C.S. David. 1989. RIII S/J (H-2^r). An inbred mouse strain with a massive deletion of T cell receptor V_β genes. *J. Exp. Med.* 169: 1903 - 1909.
4. Woodland, D., M.P. Happ, J. Bill, and E. Palmer. 1990. Requirement for cotolerogenic gene products in the clonal deletion of I-E reactive T cells. *Science* 247: 964 - 967.
5. Woodland, D.L., M.P. Happ, K.J. Gollob, and E. Palmer. 1991. An endogenous retrovirus mediating deletion of αβ T cells? *Nature* 349: 529 - 530.
6. Tomonari, K., S. Fairchild, and O.A. Rosenwasser. 1993. Influence of viral superantigens on Vβ- and Vα-specific positive and negative selection. *Immunol. Rev.* 131: 131 - 168.
7. Hügin, A.W., M.S. Vacchio, and H.C. Morse III. 1991. A virus-encoded "superantigen" in a retrovirus-induced immunodeficiency syndrome of mice. *Science* 252: 424 - 427.
8. Hodes, R.J., and R. Abe. 1996. Mouse endogenous superantigens: Mls and Mls-like determinants encoded by mouse retroviruses. In *Current Protocols in Immunology.* J.E. Coligan, A.M. Kruisbeek, D.H. Margulies, E.M. Shevach, and W. Strober, eds. John Wiley and Sons, New York, NY, pp. A.1F.1 - A.1F.5.

FITC anti-mouse Vβ 6 T-cell Receptor

Clone:	RR4-7
Immunogen:	C57BL/6 mouse helper T-cell clone OI11[1]
Isotype:	Rat (Fischer) IgG_{2b}, λ
Component No.:	51-01364L



Two-color analysis of the expression of Vβ 6 TCR on peripheral lymphocytes. C57BL/6 lymph node cells were incubated simultaneously with FITC-conjugated RR4-7, PE-conjugated RM4-5 (anti-CD4, Cat. no. 553048/553049), and PE-conjugated 53-6.7 (anti-CD8a, Cat. no. 553032/553033) monoclonal antibodies. Flow cytometry was performed on a BD FACScan™ (BD Biosciences, San Jose, CA).

Specificity

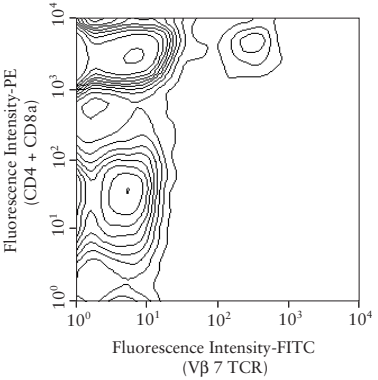
The RR4-7 antibody reacts with the Vβ 6 T-cell Receptor (TCR) of mice having the *a* (eg, C57BR, C57L, SJL) and *b* (eg, A, BALB/c, CBA/Ca, C3H/He, C57BL, DBA/1) haplotypes of the *Tcrb* gene complex.[1] The *Tcrb-V6* gene locus is deleted in mice having the *c* (eg, RIII) haplotype.[2] Vβ 6 TCR-bearing T lymphocytes are clonally eliminated in mice expressing superantigen encoded by *Mtv-7 (Mls-1^a, Mls^a)* endogenous provirus (eg, AKR, CBA/J, C58, DBA/2, NZB),[1,3,4,5,6,7] or *Mtv-43* endogenous provirus (eg, MA/MyJ).[8] Exogenous MMTV-SW, as well as endogenous *Mtv-44*-encoded superantigen (eg, NZW), also causes incomplete elimination of Vβ 6 TCR-expressing T cells.[9,10,11]

References

1. Kanagawa, O., E. Palmer, and J. Bill. 1989. The T cell receptor Vβ6 domain imparts reactivity to the Mls-1^a antigen. *Cell. Immunol.* 119: 412 - 426.
2. Haqqi, T.M., S. Banerjee, G.D. Anderson, and C.S. David. 1989. RIII S/J (H-2^r). An inbred strain with a massive deletion of T cell receptor Vβ genes. *J. Exp. Med.* 169: 1903 - 1909.
3. Ramsdell, F., T. Lantz, and B.J. Fowlkes. 1989. A nondeletional mechanism of thymic self tolerance. *Science* 246: 1038 - 1041.
4. Jones, L.A., L.T. Chin, G.R. Merriam, L.M. Nelson, and A.M. Kruisbeek. 1990. Failure of clonal deletion in neonatally thymectomized mice: Tolerance is preserved through clonal anergy. *J. Exp. Med.* 172: 1277 - 1285.
5. Webb, S., C. Morris, and J. Sprent. 1990. Extrathymic tolerance of mature T cells: Clonal elimination as a consequence of immunity. *Cell* 63: 1249 - 1256.
6. Jones, L.A., L.T. Chin, D.L. Longo, and A.M. Kruisbeek. 1990. Peripheral clonal elimination of functional T cells. *Science* 250: 1726 - 1729.
7. Rocha, B., P. Vassalli, and D. Guy-Grand. 1991. The Vβ repertoire of mouse gut homodimeric a $CD8^+$ intraepithelial T cell receptor α/β^+ lymphocytes reveals a major extrathymic pathway of T cell differentiation. *J. Exp. Med.* 173: 483 - 486.
8. Rudy, C.K., E. Kraus, E. Palmer, and B.T. Huber. 1992. Mls-1-like superantigen in the MA/MyJ mouse is encoded by a new mammary tumor provirus that is distinct from Mtv-7. *J. Exp. Med.* 175: 1613 - 1621.
9. Held, W., A.N. Shakhov, G. Waanders, L. Scarpellino, R. Luethy, J.-P. Kraehenbuhl, H.R. MacDonald, and H. Acha-Orbea. 1992. An exogenous mouse mammary tumor virus with properties of Mls-1^a (Mtv-7). *J. Exp. Med.* 175: 1623 - 1633.
10. Fairchild, S., O.A. Rosenwasser, P.J. Dyson, and K. Tomonari. 1992. Tcrb-$V3^+$ T-cell deletion and a new mouse mammary tumor provirus, *Mtv-44. Immunogenetics* 36: 189 - 194.
11. Tomonari, K., and S. Fairchild. 1992. Positive and negative selection of Tcrb-$V6^+$ T cells. *Immunogenetics* 36: 230 - 237.

FITC anti-mouse Vβ 7 T-cell Receptor

Clone:	TR310
Immunogen:	AKR/Cum mouse spontaneous T lymphoma cell line TK1[1]
Isotype:	Rat (Fischer) IgG_{2b}, κ
Component No.:	51-01424L



Two-color analysis of the expression of Vβ 7 TCR on peripheral lymphocytes. C57BL/6 lymph node cells were incubated simultaneously with FITC-conjugated TR310, PE-conjugated RM4-5 (anti-CD4, Cat. no. 553048/553049), and PE-conjugated 53-6.7 (anti-CD8a, Cat. no. 553032/553033) monoclonal antibodies. Flow cytometry was performed on a BD FACScan™ (BD Biosciences, San Jose, CA).

Specificity

The TR310 antibody reacts with the Vβ 7 T-cell Receptor (TCR) of strains having the *a* (eg, C57BR, C57L, SJL), *b* (eg, A, BALB/c, CBA/Ca, C3H/He, C57BL, DBA/1), and *c* (eg, RIII) haplotypes of the *Tcrb* gene complex. Vβ 7 is among the predominant TCRs expressed by NK-T cells of C57BL/6 mice.[2,3] Vβ 7 TCR-bearing T lymphocytes are clonally eliminated in mice expressing superantigens encoded by *Mtv-7 (Mls-1^a, Mls^a)* endogenous proviruses (eg, AKR, CBA/J, C58, DBA/2, NZB). Activation or elimination of Vβ 7 TCR-expressing T cells by these determinants is partially dependent upon presentation by I-E. *Mtv-43* and/or exogenous MMTV-SW superantigens also cause incomplete elimination of Vβ 7 TCR-bearing T cells.[1,4]

References

1. Okada, C.Y., B. Holzmann, C. Guidos, E. Palmer, and I.L. Weissman. 1990. Characterization of a rat monoclonal antibody specific for a determinant encoded by the Vβ 7 gene segment. Depletion of Vβ 7$^+$ T cells in mice with Mls-1^a haplotype. *J. Immunol.* 144: 3473 - 3477.
2. Bendelac, A. 1995. Mouse NK1$^+$ T cells. *Curr. Opin. Immunol*. 7: 367 - 374.
3. Shinohara, K., Y. Ikarashi, J. Maruoka, M. Miyata, T. Sugimura, M. Terada, and J. Wakasugi. 1999. Functional and phenotype characteristics of hepatic NK-like T cells in NK1.1-positive and -negative mouse strains. *Eur. J. Immunol.* 29: 1871 - 1878.
4. Hodes, R.J., and R. Abe. 1996. Mouse endogenous superantigens: Mls and Mls-like determinants encoded by mouse retroviruses. In *Current Protocols in Immunology.* J.E. Coligan, A.M. Kruisbeek, D.H. Margulies, E.M. Shevach, and W. Strober, eds. John Wiley and Sons, New York, NY, pp. A.1F.1 - A.1F.5.

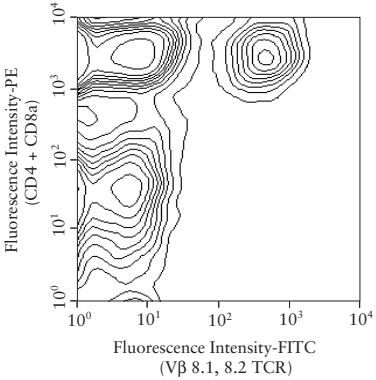
FITC anti-mouse Vβ 8.1, 8.2 T-cell Receptor

Clone: MR5-2

Immunogen: C57BL/6 mouse helper T-cell clone OI6[1]

Isotype: Mouse (C57L) IgG_{2a}, κ

Component No.: 51-01344L



Two-color analysis of the expression of Vβ 8.1, 8.2 TCR on peripheral lymphocytes. C57BL/6 lymph node cells were incubated simultaneously with FITC-conjugated MR5-2, PE-conjugated RM4-5 (anti-CD4, Cat. no. 553048/553049), and PE-conjugated 53-6.7 (anti-CD8a, Cat. no. 553032/553033) monoclonal antibodies. Flow cytometry was performed on a BD FACScan™ (BD Biosciences, San Jose, CA).

Specificity

The MR5-2 antibody reacts with the Vβ 8.1 and Vβ 8.2 T-cell Receptors (TCR), but not the Vβ 8.3 TCR, of mice having the *b* haplotype (eg, A, AKR, BALB/c, CBA/Ca, CBA/J, C3H/He, C57BL, C58, DBA/1, DBA/2) of the *Tcrb* gene complex.[1] The *Tcrb-V8* subfamily gene loci are deleted in mice having the *a* (eg, C57BR, C57L, SJL, SWR)[2] or *c* (eg, RIII) haplotype.[3] Vβ 8.1 TCR-bearing T lymphocytes are clonally eliminated in mice expressing superantigen encoded by the *Mtv-7 (Mls-1^a, Mls^a)* provirus (eg, AKR, CBA/J, C58, DBA/2), and activation or elimination of Vβ 8.1 TCR-expressing T cells by these determinants is partially dependent upon presentation by I-E. *Mtv-43* (eg, MA/MyJ), *Mtv-44* (eg, NZW), and/or exogenous MMTV-SW superantigens also cause incomplete elimination of Vβ 8.1 TCR-bearing T cells.[4,5,6] In addition to expression on conventional T lymphocytes, Vβ 8.2 is the predominant β chain of the TCR on NK-T cells.[7,8] Staphylococcal enterotoxin B, in association with antigen-presenting cells expressing 1-A and/or I-E, stimulates lymphocytes bearing Vβ 8 TCR and selectively eliminates those T cells *in vivo*.[9]

References

1. Kanagawa, O. 1988. Antibody-mediated activation of T cell clones as a method for screening hybridomas producing antibodies to the T cell receptor. *J. Immunol. Methods* 110: 169 - 178.
2. Behlke, M.A., H.S. Chou, K. Huppi, and D.Y. Loh. 1986. Murine T-cell receptor mutants with deletions of β-chain variable region genes. *Proc. Natl. Acad. Sci. USA* 83: 767 - 771.
3. Haqqi, T.M., S. Banerjee, G.D. Anderson, and C.S. David. 1989. RIII S/J (H-2^r). An inbred mouse strain with a massive deletion of T cell receptor V_β genes. *J. Exp. Med.* 169: 1903 - 1909.
4. Hodes, R.J., and R. Abe. 1996. Mouse endogenous superantigens: Mls and Mls-like determinants encoded by mouse retroviruses. *In Current Protocols in Immunology.* J.E. Coligan, A.M. Kruisbeek, D.H. Margulies, E.M. Shevach, and W. Strober, eds. John Wiley and Sons, New York, NY, pp. A.1F.1 - A.1F.5.
5. Fairchild, S., O.A. Rosenwasser, P.J. Dyson, and K. Tomonari. Tcrb-V3$^+$ T-cell deletion and a new mouse mammary tumor provirus, *Mtv-44*. *Immunogenetics* 36: 189 - 194.
6. Tomonari, K., and S. Fairchild. 1992. Positive and negative selection of Tcrb-V6$^+$ T cells. *Immunogenetics* 36: 230 - 237.

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References (*continued*)

7. Bendelac, A. 1995. Mouse NK1$^+$ T cells. *Curr. Opin. Immunol*. 7: 367 - 374.
8. Shinohara, K., Y. Ikarashi, J. Maruoka, M. Miyata, T. Sugimura, M. Terada, and J. Wakasugi. 1999. Functional and phenotype characteristics of hepatic NK-like T cells in NK1.1-positive and -negative mouse strains. *Eur. J. Immunol.* 29: 1871 - 1878.
9. MacDonald, H.R., S. Baschieri, and R.K. Lees. 1991. Clonal expansion precedes anergy and death of Vβ 8$^+$ peripheral T cells responding to staphylococcal enterotoxin B *in vivo*. *Eur. J. Immunol*. 21: 1963 - 1966.

FITC anti-mouse Vβ 8.3 T-cell Receptor

Clone: 1B3.3

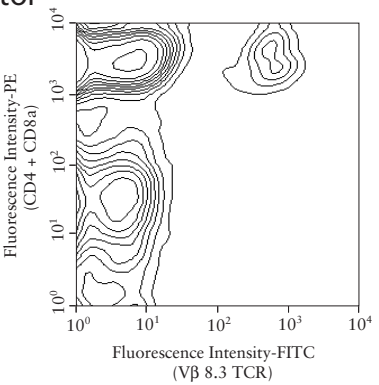
Immunogen: Vβ 8.3 TCR-expressing mouse Th1 clone 3.L2[1]

Isotype: Armenian Hamster IgG3, λ

Component No.: 51-09044L

Specificity

The 1B3.3 antibody reacts with the Vβ 8.3 T-cell Receptor (TCR), but not the Vβ 8.1 nor Vβ 8.2 TCR, of mice having the *b* haplotype (eg, A, AKR, BALB/c, CBA/Ca, CBA/J, C3H/He, C57BL, C58, DBA/1, DBA/2) of the *Tcrb* gene complex.[1] The *Tcrb-V8* subfamily gene loci are deleted in mice having the *a* (eg, C57BR, C57L, SJL, SWR)[2] or *c* (eg, RIII) haplotype.[3] Vβ 8.3 is one of the restricted TCR β chains expressed by NK-T cells.[4] Staphylococcal exterotoxin B, in association with antigen-presenting cells expressing 1-A and/or I-E, stimulates lymphocytes bearing Vβ 8 TCR and selectively eliminates those T cells *in vivo*.[5,6]



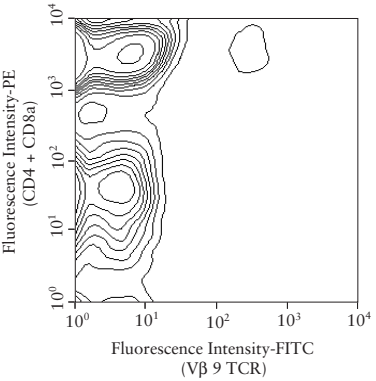
Two-color analysis of the expression of Vβ 8.3 TCR on peripheral lymphocytes. C57BL/6 lymph node cells were incubated simultaneously with FITC-conjugated 1B3.3, PE-conjugated RM4-5 (anti-CD4, Cat. no. 553048/553049), and PE-conjugated 53-6.7 (anti-CD8a, Cat. no. 553032/553033) monoclonal antibodies. Flow cytometry was performed on a BD FACScan™ (BD Biosciences, San Jose, CA).

References

1. Kersh, G.J., D.L. Donermeyer, K.E. Frederick, J.M. White, B.L. Hsu, and P.M. Allen. 1998. TCR transgenic mice in which usage of transgenic α- and β-chains is highly dependent on the level of selecting ligand. *J. Immunol.* 161: 585 - 593.
2. Behlke, M.A., H.S. Chou, K. Huppi, and D.Y. Loh. 1986. Murine T-cell receptor mutants with deletions of β-chain variable region genes. *Proc. Natl. Acad. Sci. USA* 83: 767 - 771.
3. Haqqi, T.M., S. Banerjee, G.D. Anderson, and C.S. David. 1989. RIII S/J (H-2^r). An inbred mouse strain with a massive deletion of T cell receptor V_β genes. *J. Exp. Med.* 169: 1903 - 1909.
4. Shinohara, K., Y. Ikarashi, J. Maruoka, M. Miyata, T. Sugimura, M. Terada, and J. Wakasugi. 1999. Functional and phenotype characteristics of hepatic NK-like T cells in NK1.1-positive and -negative mouse strains. *Eur. J. Immunol.* 29: 1871 - 1878.
5. White J., A. Herman, A.M. Pullen, R. Kubo, J.W. Kappler, and P. Marrack. 1989. the Vβ-specific superantigen staphylococcal enterotoxin B: Stimulation of mature T cells and clonal deletion in neonatal mice. *Cell* 56: 27 - 35.
6. MacDonald, H.R., S. Baschieri, and R.K. Lees. 1991. Clonal expansion precedes anergy and death of Vβ 8$^+$ peripheral T cells responding to staphylococcal enterotoxin B *in vivo*. *Eur. J. Immunol*. 21: 1963 - 1966.

FITC anti-mouse Vβ 9 T-cell Receptor

Clone:	MR10-2
Immunogen:	Mouse T-cell hybridoma 2BR18[1]
Isotype:	Mouse (SWR) IgG_1, κ
Component No.:	51-01384L



Two-color analysis of the expression of Vβ 9 TCR on peripheral lymphocytes. C57BL/6 lymph node cells were incubated simultaneously with FITC-conjugated MR10-2, PE-conjugated RM4-5 (anti-CD4, Cat. no. 553048/553049), and PE-conjugated 53-6.7 (anti-CD8a, Cat. no. 553032/553033) monoclonal antibodies. Flow cytometry was performed on a BD FACScan™ (BD Biosciences, San Jose, CA).

Specificity

The MR10-2 antibody reacts with the Vβ 9 T-cell Receptor (TCR) of mice having the *b* haplotype (eg, A, BALB/c, CBA/Ca, C3H/He, C57BL) of the *Tcrb* gene complex.[1] The *Tcrb-V9* gene locus is deleted in mice having the *a* (eg, C57BR, C57L, SJL, SWR)[2] or *c* (eg, RIII) haplotype.[3] Vβ 9 TCR-bearing T lymphocytes are clonally eliminated in mice expressing superantigen encoded by *Mtv-7 (Mls-1^a, Mls^a)* provirus (eg, AKR, CBA/J, DBA/2), and activation or elimination of Vβ 9 TCR-expressing T cells by this determinant is partially dependent upon presentation by I-E. *Mtv-43* (eg, MA/MyJ), Mtv-44 (eg, NZW), and/or exogenous MMTV-SW superantigens also cause incomplete elimination of Vβ 9 TCR-bearing T cells.[1,4,5,6]

References

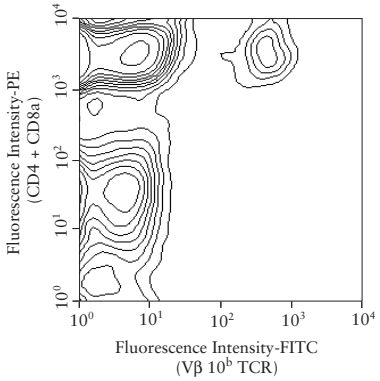
1. Utsunomiya, Y., H. Kosaka, and O. Kanagawa. 1991. Differential reactivity of V_β9 T cells to minor lymphocyte stimulating antigen *in vitro* and *in vivo*. *Eur. J. Immunol.* 21: 1007 - 1011.
2. Behlke, M.A., H.S. Chou, K. Huppi, and D.Y. Loh. 1986. Murine T-cell receptor mutants with deletions of β-chain variable region genes. *Proc. Natl. Acad. Sci. USA* 83: 767 - 771.
3. Haqqi, T.M., S. Banerjee, G.D. Anderson, and C.S. David. 1989. RIII S/J (H-2^r). An inbred mouse strain with a massive deletion of T cell receptor V_β genes. *J. Exp. Med.* 169: 1903 - 1909.
4. Hodes, R.J., and R. Abe. 1996. Mouse endogenous superantigens: Mls and Mls-like determinants encoded by mouse retroviruses. In *Current Protocols in Immunology.* J.E. Coligan, A.M. Kruisbeek, D.H. Margulies, E.M. Shevach, and W. Strober, eds. John Wiley and Sons, New York, NY, pp. A.1F.1 - A.1F.5.
5. Fairchild, S., O.A. Rosenwasser, P.J. Dyson, and K. Tomonari. 1992. Tcrb-V3$^+$ T-cell deletion and a new mouse mammary tumor provirus, *Mtv-44*. *Immunogenetics* 36: 189 - 194.
6. Tomonari, K., and S. Fairchild. 1992. Positive and negative selection of Tcrb-V6$^+$ T cells. *Immunogenetics* 36: 230 - 237.

FITC anti-mouse Vβ 10^{b} T-cell Receptor

Clone:	B21.5
Immunogen:	Soluble αβ TCR from DBA/2 mouse cytotoxic T-cell clone CW3/1.1[1]
Isotype:	Rat (LOU/W1) IgG2a, λ
Component No.:	51-01644L

Specificity

The B21.5 antibody reacts with the Vβ 10^{b} T-cell Receptor (TCR) of mice having the *b* haplotype (eg, A, AKR, BALB/c, CBA, C3H/He, C57BL, C58, DBA/1, DBA/2) of the *Tcrb* gene complex. It does not react with mice having the *a* (eg, C57BR, C57L, SJL, SWR) or *c* (eg, RIII) *Tcrb* haplotype.[1]



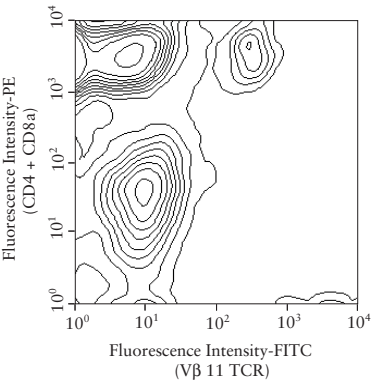
Two-color analysis of the expression of Vβ 10^{b} TCR on peripheral lymphocytes. C57BL/6 lymph node cells were incubated simultaneously with FITC-conjugated B21.5, PE-conjugated RM4-5 (anti-CD4, Cat. no. 553048/553049), and PE-conjugated 53-6.7 (anti-CD8a, Cat. no. 553032/553033) monoclonal antibodies. Flow cytometry was performed on a BD FACScan™ (BD Biosciences, San Jose, CA).

References

1. Necker, A., N. Rebaï, M. Matthes, E. Jouvin-Marche, P.-A. Cazenave, P. Swarnworawong, E. Palmer, H.R. MacDonald, and B. Malissen. 1991. Monoclonal antibodies raised against engineered soluble mouse T cell receptors and specific for V_{α}8-, V_{β}2-, or V_{β}10-bearing T cells. *Eur. J. Immunol.* 21: 3035 - 3040.

FITC anti-mouse Vβ 11 T-cell Receptor

Clone:	RR3-15
Immunogen:	Mouse cytolytic T-cell clone OH6[1]
Isotype:	Rat (Fischer) IgG_{2b}, κ
Component No.:	51-01374L



Two-color analysis of the expression of Vβ 11 TCR on peripheral lymphocytes. C57BL/6 lymph node cells were incubated simultaneously with FITC-conjugated RR3-15, PE-conjugated RM4-5 (anti-CD4, Cat. no. 553048/553049), and PE-conjugated 53-6.7 (anti-CD8a, Cat. no. 553032/553033) monoclonal antibodies. Flow cytometry was performed on a BD FACScan™ (BD Biosciences, San Jose, CA).

Specificity

The RR3-15 antibody reacts with the Vβ 11 T-cell Receptor (TCR) of mice having the *b* haplotype (eg, A, C57BL, C58, DBA/1) of the Tcrb gene complex.[1] The *Tcrb-V11* gene locus is deleted in mice having the *a* (eg, C57BR, C57L, SJL, SWR)[2] and *c* (eg, RIII) haplotypes.[3] Vβ 11 TCR-bearing T lymphocytes are clonally eliminated in mice expressing I-E and superantigens encoded by the *Mtv-9 (Etc-1, Mls^f, Dvb11.2*) and/or *Mtv-11 (Mls^f, Dvb11.2)* proviruses (eg, AKR, BALB/c, CBA/J, C3H, DBA/2), and they are incompletely eliminated in mice expressing I-E and *Mtv-8 (Mls^f, Dvb11.1)* superantigen (eg, A). Activation of Vβ 11 TCR-expressing T cells by these determinants is dependent upon presentation by I-E.[1,4,5,6] The bacterial superantigen Staphylococcal enterotoxin A (SEA) also interacts with Vβ 11 TCR, and *in vivo* exposure to SEA causes activation and subsequent deletion of Vβ 11 TCR-expressing lymphocytes.[7]

References

1. Bill, J., O. Kanagawa, D.L. Woodland, and E. Palmer. 1989. The MHC molecule I-E is necessary but not sufficient for the clonal deletion of Vβ11-bearing T cells. *J. Exp. Med.* 169: 1405 - 1419.
2. Behlke, M.A., H.S. Chou, K. Huppi, and D.Y. Loh. 1986. Murine T-cell receptor mutants with deletions of β-chain variable region genes. *Proc. Natl. Acad. Sci. USA* 83: 767 - 771.
3. Haqqi, T.M., S. Banerjee, G.D. Anderson, and C.S. David. 1989. RIII S/J (H-2^r). An inbred mouse strain with a massive deletion of T cell receptor V_β genes. *J. Exp. Med.* 169: 1903 - 1909.
4. Hodes, R.J., and R. Abe. 1996. Mouse endogenous superantigens: Mls and Mls-like determinants encoded by mouse retroviruses. In *Current Protocols in Immunology.* J.E. Coligan, A.M. Kruisbeek, D.H. Margulies, E.M. Shevach, and W. Strober, eds. John Wiley and Sons, New York, NY, pp. A.1F.1 - A.1F.5.
5. Sugihara, S., H. Fujiwara, and G.M. Shearer. 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.
6. Gao, E.-K., O. Kanagawa, and J. Sprent. 1989. Capacity of unprimed $CD4^+$ and $CD8^+$ T cells expressing V_β-11 receptors to respond to I-E alloantigens *in vivo*. *J. Exp. Med.* 170: 1947 - 1957.
7. McCormick, J.R., J.E. Callahan, J. Kappler and P.C. Marrack. 1993. Profound deletion of mature T cells *in vivo* by chronic exposure to exogenous superantigen. *J. Immunol*. 150: 3785 - 3792.

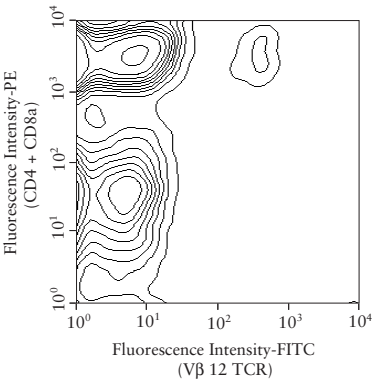
FITC anti-mouse Vβ 12 T-cell Receptor

Clone: MR11-1

Immunogen: Not reported

Isotype: Mouse (SWR) IgG_1, κ

Component No.: 51-01684L



Two-color analysis of the expression of Vβ 12 TCR on peripheral lymphocytes. C57BL/6 lymph node cells were incubated simultaneously with FITC-conjugated MR11-1, PE-conjugated RM4-5 (anti-CD4, Cat. no. 553048/553049), and PE-conjugated 53-6.7 (anti-CD8a, Cat. no. 553032/553033) monoclonal antibodies. Flow cytometry was performed on a BD FACScan™ (BD Biosciences, San Jose, CA).

Specificity

The MR11-1 antibody reacts with the Vβ 12 T-cell Receptor (TCR) of mice having the *b* haplotype (eg, C57BL, C58, DBA/1) of the *Tcrb* gene complex.[1] The *Tcrb-V12* gene locus is deleted in mice having the *a* (eg, C57BR, C57L, SJL, SWR)[2] or *c* (eg, RIII) haplotype.[3] Vβ 12 TCR-bearing T lymphocytes are clonally eliminated in mice expressing I-E and superantigens encoded by the *Mtv-8 (Mls^f, Dvb11.1), Mtv-9 (Etc-1, Mls^f, Dvb11.2)*, and/or *Mtv-11 (Mls^f, Dvb11.3)* proviruses (eg, A, AKR, BALB/c, CBA/J, C3H, DBA/2). Activation of Vβ 12 TCR-expressing T cells by these determinants is dependent upon presentation by I-E.[4,5,6] C57BL/6 spleen T cells expressing Vβ 12 TCR are among the predominant responders to MAIDS virus superantigen.[7]

References

1. Kanagawa, O. Personal communication.
2. Behlke, M.A., H.S. Chou, K. Huppi, and D.Y. Loh. 1986. Murine T-cell receptor mutants with deletions of β-chain variable region genes. *Proc. Natl. Acad. Sci. USA* 83: 767 - 771.
3. Haqqi, T.M., S. Banerjee, G.D. Anderson, and C.S. David. 1989. RIII S/J (H-2^r). An inbred mouse strain with a massive deletion of T cell receptor V_β genes. *J. Exp. Med.* 169: 1903 - 1909.
4. Vacchio, M.S., and R.J. Hodes. 1989. Selective decreases in T cell receptor Vβ expression. Decreased expression of specific Vβ families is associated with expression of multiple MHC and non-MHC gene products. *J. Exp. Med.* 170: 1335 - 1346.
5. Abe, R., O. Kanagawa, M.A. Sheard, B. Malissen, and M. Foo-Phillips. 1991. Characterization of a new minor lymphocyte stimulatory system. I. Cluster of self antigens recognized by "I-E-Reactive" Vβs, Vβ5, Vβ11, and Vβ12 T cell receptors for antigen. *J. Immunol.* 147: 739 - 749.
6. Hodes, R.J., and R. Abe. 1996. Mouse endogenous superantigens: Mls and Mls-like determinants encoded by mouse retroviruses. In *Current Protocols in Immunology.* J.E. Coligan, A.M. Kruisbeek, D.H. Margulies, E.M. Shevach, and W. Strober, eds. John Wiley and Sons, New York, NY, pp. A.1F.1 - A.1F.5.
7. Heise, M., K. Chow, and O. Kanagawa. 1993. Interaction between T cells and murine acquired immunodeficiency virus superantigen: effect of second signal on T cell reactivity to the MAIDS virus superantigen. *Int. Immunol.* 5: 583 - 590.

FITC anti-mouse Vβ 13 T-cell Receptor

Clone: MR12-3

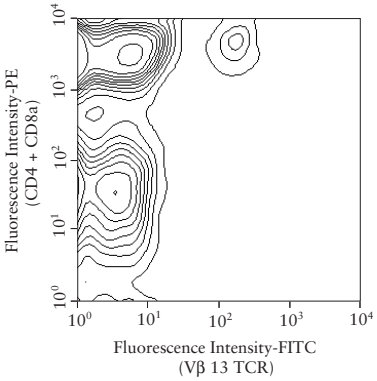
Immunogen: Not reported

Isotype: Mouse (C57BR) IgG_1, κ

Component No.: 51-01394L

Specificity

The MR12-3 antibody reacts with the Vβ 13 T-cell Receptor (TCR) of mice having the *b* haplotype (eg, A, AKR, BALB/c, CBA, C3H/He, C57BL, C58, DBA/1, DBA/2) of the *Tcrb* gene complex.[1] The *Tcrb-V13* gene locus is deleted in mice having the *a* (eg, C57BR, C57L, SJL, SWR)[2] or *c* (eg, RIII) haplotype.[3]



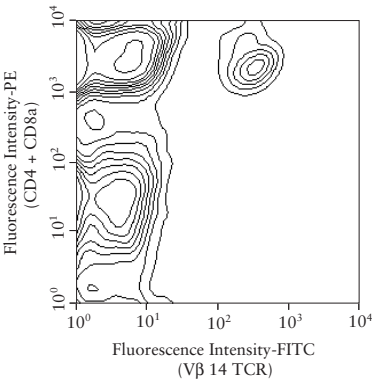
Two-color analysis of the expression of Vβ 13 TCR on peripheral lymphocytes. C57BL/6 lymph node cells were incubated simultaneously with FITC-conjugated MR12-3, PE-conjugated RM4-5 (anti-CD4, Cat. no. 553048/553049), and PE-conjugated 53-6.7 (anti-CD8a, Cat. no. 553032/553033) monoclonal antibodies. Flow cytometry was performed on a BD FACScan™ (BD Biosciences, San Jose, CA).

References

1. Kanagawa, O. Personal communication.
2. Behlke, M.A., H.S. Chou, K. Huppi, and D.Y. Loh. 1986. Murine T-cell receptor mutants with deletions of β-chain variable region genes. *Proc. Natl. Acad. Sci. USA* 83: 767 - 771.
3. Haqqi, T.M., S. Banerjee, G.D. Anderson, and C.S. David. 1989. RIII S/J (H-2^r). An inbred mouse strain with a massive deletion of T cell receptor V_β genes. *J. Exp. Med.* 169: 1903 - 1909.

FITC anti-mouse Vβ 14 T-cell Receptor

Clone:	14-2
Immunogen:	B10.A mouse helper T-cell clone J9.19[1]
Isotype:	Rat (Fischer) IgM, κ
Component No.:	51-01564L



Two-color analysis of the expression of Vβ 14 TCR on peripheral lymphocytes. C57BL/6 lymph node cells were incubated simultaneously with FITC-conjugated 14-2, PE-conjugated RM4-5 (anti-CD4, Cat. no. 553048/553049), and PE-conjugated 53-6.7 (anti-CD8a, Cat. no. 553032/553033) monoclonal antibodies. Flow cytometry was performed on a BD FACScan™ (BD Biosciences, San Jose, CA).

Specificity

The 14-2 antibody reacts with the Vβ 14 T-cell Receptor (TCR) of mice having the *a* (eg, C57BR, C57L, SJL, SWR), *b* (eg, A, AKR, BALB/c, CBA, C3H/He, C57BL, C58, DBA/1, DBA/2), and *c* (eg, RIII) haplotypes of the *Tcrb* gene complex.[1] Vβ 14 TCR-expressing T lymphocytes are incompletely eliminated in mice expressing I-E and the superantigens encoded by *Mtv2* endogenous provirus and/or MMTV-C3H, MMTV-GR, or MMTV-D2.GD exogenous virus.[2,3,4,5,6] Recognition of these determinants by Vβ 14 TCR-expressing T cells is dependent upon presentation by I-E.[7]

References

1. Liao, N.-S., J. Maltzman, and D.H. Raulet. 1989. Positive selection determines T cell receptor Vβ14 gene usage by $CD8^+$ T cells. *J. Exp. Med.* 170: 135 - 143.
2. Marrack, P., E. Kushnir, and J. Kappler. 1991. A maternally inherited superantigen encoded by a mammary tumour virus. *Nature* 349: 524 - 526.
3. Choi, Y., J.W. Kappler, and P. Marrack. 1991. A superantigen encoded in the open reading frame of the 3' long terminal repeat of mouse mammary tumour virus. *Nature* 350: 203 - 207.
4. Acha-Orbea, H., A.N. Shakhov, L. Scarpellino, E. Kolb, V. Müller, A. Vessaz-Shaw, R. Fuchs, K. Blöchlinger, P. Rollini, J. Billotte, M. Sarafidou, H.R. MacDonald, and H. Diggelmann. 1991. Clonal deletion of Vβ14-bearing T cells in mice transgenic for mammary tumour virus. *Nature* 350: 207 - 211.
5. Golovkina, T.V., A. Chervonsky, J.P. Dudley, and S.R. Ross. 1992. Transgenic mouse mammary tumor virus superantigen expression prevents viral infection. *Cell* 69: 637 - 645.
6. Tomonari, K., S. Fairchild, and O.A. Rosenwasser. 1993. Influence of viral superantigens on Vβ- and Vα-specific positive and negative selection. *Immunol. Rev.* 131: 131 - 168.
7. Hodes, R.J., and R. Abe. 1996. Mouse endogenous superantigens: Mls and Mls-like determinants encoded by mouse retroviruses. In *Current Protocols in Immunology.* J.E. Coligan, A.M. Kruisbeek, D.H. Margulies, E.M. Shevach, and W. Strober, eds. John Wiley and Sons, New York, NY, pp. A.1F.1 - A.1F.5.

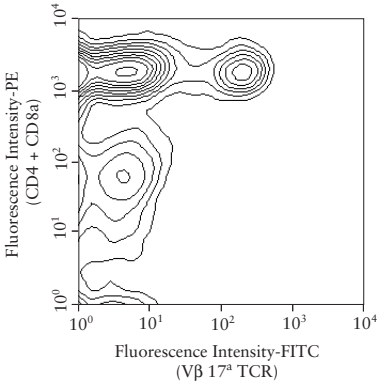
FITC anti-mouse Vβ 17^a T-cell Receptor

Clone: KJ23

Immunogen: SWR mouse T cells[1]

Isotype: Mouse (BALB/c) IgG_{2a}, κ

Component No.: 51-01414L



Two-color analysis of the expression of Vβ 17^a TCR on peripheral lymphocytes. SJL/J lymph node cells were incubated simultaneously with FITC-conjugated KJ23, PE-conjugated RM4-5 (anti-CD4, Cat. no. 553048/553049), and PE-conjugated 53-6.7 (anti-CD8a, Cat. no. 553032/553033) monoclonal antibodies. Flow cytometry was performed on a BD FACScan™ (BD Biosciences, San Jose, CA).

Specificity

The KJ23 antibody reacts with the Vβ 17^a T-cell Receptor (TCR) of mice having the *a* haplotype (eg, C57L, SJL, SWR) of the *Tcrb* gene complex.[1,2] Strains having the *b* (eg, A, AKR, BALB/c, CBA, C3H/He, C57BL, C58, DBA/1, DBA/2) *Tcrb* haplotype do not express functional Vβ 17 TCR,[3] and the *Tcrb-V17* gene locus is deleted in mice having the *c* (eg, RIII) haplotype.[4] Vβ 17^a TCR-bearing T lymphocytes are clonally eliminated in mice expressing I-E (eg, C57BR).[1,2] KJ23 antibody also recognizes the phenotypic variant of the Vβ 17^a TCR expressed in a variety of wild-derived mouse strains, which is not affected by the presence of I-E.[5] In I-E–negative mice, clonal elimination of Vβ 17^a TCR-bearing T cells is associated with superantigens encoded by *Mtv3 (Mls^c)* and/or *Mtv-6 (Mls-3^a, Mls^c)*.[6,7]

References

1. Kappler, J.W., T. Wade, J. White, E. Kushnir, M. Blackman, J. Bill, N. Roehm, and P. Marrack. 1987. A T cell receptor Vβ segment that imparts reactivity to a class II major histocompatibility complex product. *Cell* 49: 263 - 271.
2. Kappler, J.W., N. Roehm, and P. Marrack. 1987. T cell tolerance by clonal elimination in the thymus. *Cell* 49: 273 - 280.
3. Wade, T., J. Bill, P.C. Marrack, E. Palmer, and J.W. Kappler. 1988. Molecular basis for the nonexpression of Vβ17 in some strains of mice. *J. Immunol.* 141: 2165 - 2167.
4. Haqqi, T.M., S. Banerjee, G.D. Anderson, and C.S. David. 1989. RIII S/J (H-2^r). An inbred mouse strain with a massive deletion of T cell receptor V_β genes. *J. Exp. Med.* 169: 1903 - 1909.
5. Cazenave, P.-A., P.N. Marche, E. Jouvin-Marche, D. Voegtlé, F. Bonhomme, A. Bandeira, and A. Coutinho. 1990. Vβ17 gene polymorphism in wild-derived mouse strains: two amino acid substitutions in the Vβ17 region greatly alter T cell receptor specificity. *Cell* 63: 717 - 728.
6. Jouvin-Marche, E., P.-A. Cazenave, D. Voegtlé, and P.N. Marche. 1992. V_β17 T-cell deletion by endogenous mammary tumor virus in wild-type-derived mouse strain. *Proc. Natl. Acad. Sci. USA* 89: 3232 - 3235.
7. McDuffie, M., D. Schweiger, B. Reitz, A. Ostrowska, A.M. Knight, and P.J. Dyson. 1992. I-E-independent deletion of Vβ17a$^+$ T cells by Mtv-3 from the nonobese diabetic mouse. *J. Immunol.* 148: 2097 - 2102.

Notes

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10975 Torreyana Road
San Diego, CA 92121
Customer/Technical Service
Tel 877.232.8995 (US)
Fax 800.325.9637
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