Mouse V\(\beta\) TCR Screening Panel

Monoclonal Antibodies Which Recognize Mouse V\(\beta\) 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 flow cytometers are class I (1) laser products.

©2006 Becton, Dickinson and Company. All rights reserved. No part of this publication may be reproduced, transmitted, transcribed, stored in retrieval systems, or translated into any language or computer language, in any form or by any means: electronic, mechanical, magnetic, optical, chemical, manual, or otherwise, without prior written permission from BD Biosciences.

For research use only. Not for use in diagnostic or therapeutic procedures. Purchase does not include or carry any right to resell or transfer this product either as a stand-alone product or as a component of another product. Any use of this product other than the permitted use without the express written authorization of Becton Dickinson and Company is strictly prohibited.

BD, BD Logo and all other trademarks are the property of Becton, Dickinson and Company. ©2006 BD
# Table of Contents

Mouse Vβ TCR Screening Panel ........................................... 4
FITC anti-mouse Vβ 2 T-cell Receptor ............................... 5
FITC anti-mouse Vβ 3 T-cell Receptor ................................ 6
FITC anti-mouse Vβ 4 T-cell Receptor ............................... 7
FITC anti-mouse Vβ 5.1, 5.2 T-cell Receptor ....................... 8
FITC anti-mouse Vβ 6 T-cell Receptor ............................... 9
FITC anti-mouse Vβ 7 T-cell Receptor ............................... 10
FITC anti-mouse Vβ 8.1, 8.2 T-cell Receptor ....................... 11
FITC anti-mouse Vβ 8.3 T-cell Receptor ............................ 12
FITC anti-mouse Vβ 9 T-cell Receptor ............................... 13
FITC anti-mouse Vβ 10b T-cell Receptor ........................... 14
FITC anti-mouse Vβ 11 T-cell Receptor ............................. 15
FITC anti-mouse Vβ 12 T-cell Receptor ............................. 16
FITC anti-mouse Vβ 13 T-cell Receptor ............................. 17
FITC anti-mouse Vβ 14 T-cell Receptor ............................. 18
FITC anti-mouse Vβ 17a T-cell Receptor ........................... 19
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, 10b, 11, 12, 13, 14, and 17a 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 4ºC 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 10⁶ 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://wwwbdbiosciences.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
Isotype: Rat (LOU/W1) IgG₂a, 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

References

**FITC anti-mouse Vβ 3 T-cell Receptor**

**Clone:** KJ25  
**Immunogen:** αβ TCR purified from mouse T-cell hybridoma 2B4.6

**Isotype:** Armenian Hamster IgG2, κ

**Component No.:** 51-01404L

**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-4a, Mls1), Mtv-3 (Mls3), Mtv-6 (Mls3a, Mls1), Mtv-13 (Mls2a, Mls1), 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

![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).](image)

**References**


FITC anti-mouse Vβ 4 T-cell Receptor

Clone: KT4
Immunogen: B10.D2 mouse T-cell clone I3
Isotype: Rat (Sprague-Dawley) IgG2b, 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

References

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

Clone: MR9-4
Immunogen: Mouse T-cell hybridoma 2HB51.8
Isotype: Mouse (SWR) IgG1, κ
Component No.: 51-01354L

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-4a, Mls⁵), Mtv-3 (Mls⁵), Mtv-8 (Mls), Mtv-9 (Etc-1, Mls), Mtv-11 (Mls), Mtv-13 (Mls-2a, Mls), 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).⁴,⁵,⁶ Activation of Vβ 5 TCR-expressing T cells by these determinants is dependent upon presentation by I-E.⁷,⁸

References


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).
FITC anti-mouse Vβ 6 T-cell Receptor

Clone: RR4-7
Immunogen: C57BL/6 mouse helper T-cell clone O111
Isotype: Rat (Fischer) IgG2b, λ
Component No.: 51-01364L

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-1b, Mls-2) 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

FITC anti-mouse Vβ 7 T-cell Receptor

**Clone:** TR310

**Immunogen:** AKR/Cum mouse spontaneous T lymphoma cell line TK1

**Isotype:** Rat (Fischer) IgG_{2b}, κ

**Component No.:** 51-01424L

**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, RIll) haplotypes of the Tcrb gene complex. Vβ 7 is among the predominant TCRs expressed by NK-T cells of C57BL/6 mice. Vβ 7 TCR-bearing T lymphocytes are clonally eliminated in mice expressing superantigens encoded by Mtv-7 (Mls-1^s, Mls^s) 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.

**References**


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

Clone: MR5-2
Immunogen: C57BL/6 mouse helper T-cell clone OI6
Isotype: Mouse (C57L) IgG\(_{2a}\), κ
Component No.: 51-01344L

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. The Tcrb-V8 subfamily gene loci are deleted in mice having the a (eg, C57BR, C57L, SJL, SWR) or c (eg, RIII) haplotype. Vβ 8.1 TCR-bearing T lymphocytes are clonally eliminated in mice expressing superantigen encoded by the Mtv-7 (Mls-1\(^a\), Mls\(^s\)) 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. In addition to expression on conventional T lymphocytes, Vβ 8.2 is the predominant β chain of the TCR on NK-T cells. Staphylococcal enterotoxin B, in association with antigen-presenting cells expressing I-A and/or I-E, stimulates lymphocytes bearing Vβ 8 TCR and selectively eliminates those T cells in vivo.

References

References (continued)


FITC anti-mouse Vß 8.3 T-cell Receptor

Clone: 1B3.3
Immunogen: Vß 8.3 TCR-expressing mouse Th1 clone 3.L2
Isotype: Armenian Hamster IgG3, λ
Component No.: 51-09044L

Specificity

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

References


FITC anti-mouse Vβ 9 T-cell Receptor

Clone: MR10-2
Immunogen: Mouse T-cell hybridoma 2BR18
Isotype: Mouse (SWR) IgG1, κ
Component No.: 51-01384L

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. The Tcrb-V9 gene locus is deleted in mice having the a (eg, C57BR, C57L, SJL, SWR) or c (eg, RIII) haplotype. Vβ 9 TCR-bearing T lymphocytes are clonally eliminated in mice expressing superantigen encoded by Mtv-7 (Mls-1a, Mlsa) 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.

References

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
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

References
FITC anti-mouse Vβ 11 T-cell Receptor

Clone: RR3-15
Immunogen: Mouse cytolytic T-cell clone OH6
Isotype: Rat (Fischer) IgG2b, κ
Component No.: 51-01374L

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. The Tcrb-V11 gene locus is deleted in mice having the a (eg, C57BR, C57L, SJL, SWR) and c (eg, RIII) haplotypes. Vβ 11 TCR-bearing T lymphocytes are clonally eliminated in mice expressing I-E and superantigens encoded by the Mtv-9 (Ect-1, Mls', Dvb11.2) and/or Mtv-11 (Mls', 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', Dvb11.1) superantigen (eg, A). Activation of Vβ 11 TCR-expressing T cells by these determinants is dependent upon presentation by I-E. 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.

References


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-CD8α, Cat. no. 553032/553033) monoclonal antibodies. Flow cytometry was performed on a BD FACScan™ (BD Biosciences, San Jose, CA).
FITC anti-mouse Vβ 12 T-cell Receptor

Clone: MR11-1
Immunogen: Not reported
Isotype: Mouse (SWR) IgG1, κ
Component No.: 51-01684L

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\(^s\), Dvb11.1), Mtv-9 (Etc-1, Mls\(^s\), Dvb11.2), and/or Mtv-11 (Mls\(^s\), 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.
FITC anti-mouse Vβ 13 T-cell Receptor

Clone: MR12-3
Immunogen: Not reported
Isotype: Mouse (C57BR) IgG1, 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

References

1. Kanagawa, O. Personal communication.
FITC anti-mouse Vβ 14 T-cell Receptor

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

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.²³⁴⁵⁶

Recognition of these determinants by Vβ 14 TCR-expressing T cells is dependent upon presentation by I-E.⁷

References

FITC anti-mouse Vβ 17a T-cell Receptor

Clone: KJ23
Immunogen: SWR mouse T cells
Isotype: Mouse (BALB/c) IgG2a, κ
Component No.: 51-01414L

Specificity

The KJ23 antibody reacts with the Vβ 17a 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 17a 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 17a 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 17a TCR-bearing T cells is associated with superantigens encoded by Mtv3 (Mlsr) and/or Mtv-6 (Mls-3a, Mlsr).6,7

References
