Anti-TCR Vβ1 antibodies, human

For research use only

One test corresponds to labeling of up to 10^7 cells in a total volume of 100 µL.

Product	Content	Order no.
Anti-TCR Vβ1-FITC	for 30 tests	130-110-017
Anti-TCR Vβ1-FITC	for 100 tests	130-110-044
Anti-TCR Vβ1-PE	for 30 tests	130-110-018
Anti-TCR Vβ1-PE	for 100 tests	130-110-045
Anti-TCR Vβ1-APC	for 30 tests	130-110-019
Anti-TCR Vβ1-APC	for 100 tests	130-110-046
Anti-TCR Vβ1-PE-Vio770	for 30 tests	130-110-020
Anti-TCR Vβ1-PE-Vio770	for 100 tests	130-110-047
Anti-TCR Vβ1-APC-Vio770	for 30 tests	130-110-021
Anti-TCR Vβ1-APC-Vio770	for 100 tests	130-110-048
Anti-TCR Vβ1-Biotin	for 30 tests	130-110-016
Anti-TCR Vβ1-Biotin	for 100 tests	130-110-043

Warnings

Reagents contain sodium azide. Under acidic conditions sodium azide yields hydrazoic acid, which is extremely toxic. Azide compounds should be diluted with running water before discarding. These precautions are recommended to avoid deposits in plumbing where explosive conditions may develop.

Technical data and background information

Antigen	TCR Vβ1
Clone	REA662
Isotype	recombinant human IgG1
Isotype control	REA Control (S) antibodies
Distribution of antigen	T cells
Product format	Reagents are supplied in buffer containing stabilizer and 0.05% sodium azide.
Fixation	Cells should be stained prior to fixation, if formaldehyde is used as a fixative.
Storage	Store protected from light at 2–8 °C. Do not freeze.

Clone REA662 recognizes the human variable beta 1 subunit of the αβ T cell receptor (TCR Vβ1). The TCR is a heterodimeric glycoprotein associated with the CD3 antigen. The α and β TCR chains are composed of constant and variable regions, each encoded by distinct gene segments. TCR Vβ1 is a variant of the TCR β chain. αβ T cells express a diverse αβ TCR repertoire that specifically co-recognizes self or foreign antigen bound to antigen-presenting molecules, which thereby leads to T

cell–mediated immunity. For example, the TCR can directly bind to peptide fragments, riboflavin precursors, and lipid antigens that are presented by major histocompatibility complex (MHC) molecules, MR1 and CD1, respectively. In each case, the antigen sits within the antigen-binding cleft, whereupon the TCR recognizes a composite surface formed by the antigen-presenting molecule and surface-exposed regions of the antigen itself. This co-recognition paradigm is a central tenet of αβ T cell–mediated immunity and underpins MHC restriction.
Additional information: Clone REA662 displays negligible binding to Fc receptors.

Reagent requirements

- Buffer: Prepare a solution containing phosphate-buffered saline (PBS), pH 7.2, 0.5% bovine serum albumin (BSA), and 2 mM EDTA by diluting MACS® BSA Stock Solution (# 130-091-376) 1:20 with autoMACS® Rinsing Solution (# 130-091-222). Keep buffer cold (2−8 °C).
  Note: EDTA can be replaced by other supplements such as anticoagulant citrate dextrose formula-A (ACD-A) or citrate phosphate dextrose (CPD). Buffers or media containing Ca^{2+} or Mg^{2+} are not recommended for use.
- (Optional) Fluorochrome-conjugated anti-biotin antibodies, e.g., Anti-Biotin-PE (# 130-090-756) as secondary antibody reagent in combination with biotinylated antibodies.
- (Optional) Propidium Iodide Solution (# 130-093-233) for flow cytometric exclusion of dead cells without fixation.
- (Optional) Fixation and Dead Cell Discrimination Kit (# 130-091-163) for cell fixation and flow cytometric exclusion of dead cells.

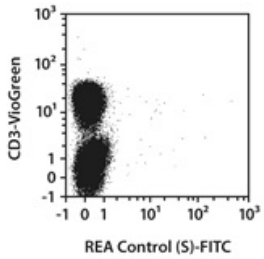
Protocol for cell surface staining

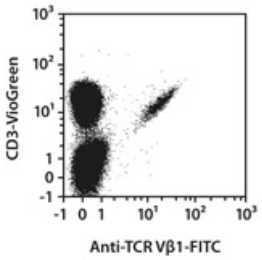
- The recommended antibody dilution for labeling of cells and subsequent analysis by flow cytometry is 1:11 for up to 10^7 cells/100 µL of buffer.
- Volumes given below are for up to 10^7 nucleated cells. When working with fewer than 10^7 cells, use the same volumes as indicated. When working with higher cell numbers, scale up all reagent volumes and total volumes accordingly (e.g. for 2×10^7 nucleated cells, use twice the volume of all indicated reagent volumes and total volumes).

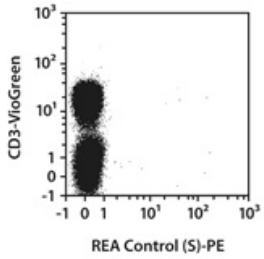
1. Determine cell number.
2. Centrifuge cell suspension at 300×g for 10 minutes. Aspirate supernatant completely.
3. Resuspend up to 10^7 nucleated cells per 100 µL of buffer.
4. Add 10 µL of the antibody.
5. Mix well and incubate for 10 minutes in the dark in the refrigerator (2−8 °C).
   Note: Higher temperatures and/or longer incubation times may lead to non-specific cell labeling. Working on ice requires increased incubation times.
6. Wash cells by adding 1−2 mL of buffer and centrifuge at 300×g for 10 minutes. Aspirate supernatant completely.
7. (Optional) If biotinylated antibody was used, resuspend the cell pellet in 100 µL of buffer, add 10 µL of fluorochrome-conjugated anti-biotin antibody, and continue as described in steps 5 and 6.
8. Resuspend cell pellet in a suitable amount of buffer for analysis by flow cytometry or fluorescence microscopy.

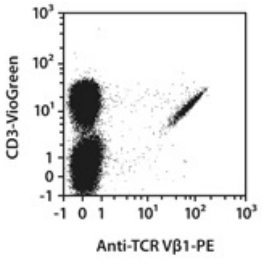
Examples of immunofluorescent staining

Human peripheral blood mononuclear cells (PBMCs) were stained with Anti-TCR Vβ1 antibodies or with the corresponding REA Control (S) antibodies (left image) as well as with CD3 antibodies. Flow cytometry was performed using the MACSQuant® Analyzer. Cell debris and dead cells were excluded from the analysis based on scatter signals and propidium iodide fluorescence. The Tandem Signal Enhancer has been used to increase binding specificity of tandem-dye–conjugated antibodies. Cell debris and dead cells were excluded from the analysis based on scatter signals and propidium iodide fluorescence or 4',6-diamidino-2-phenylindole (DAPI) fluorescence, as in the case of tandem conjugates.


CD3-VioGreen
REA Control (S)-FITC


CD3-VioGreen
Anti-TCR Vβ1-FITC


CD3-VioGreen
REA Control (S)-PE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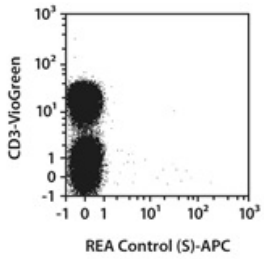
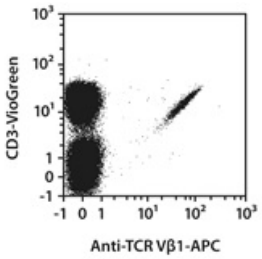
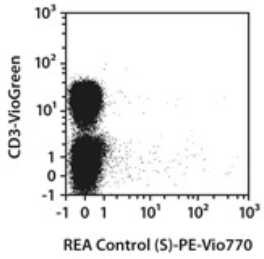
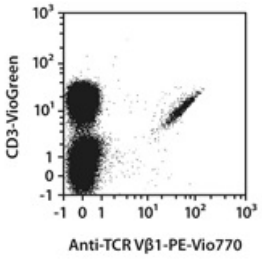
Anti-TCR Vβ1-PE


CD3-VioGreen
REA Control (S)-APC


CD3-VioGreen
Anti-TCR Vβ1-APC


CD3-VioGreen
REA Control (S)-PE-Vio770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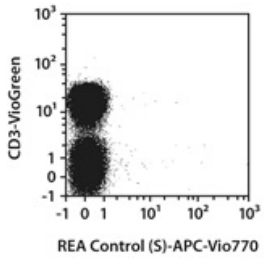
Anti-TCR Vβ1-PE-Vio770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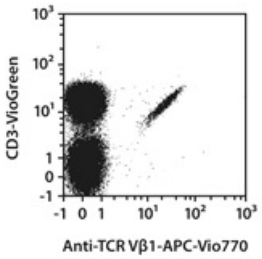
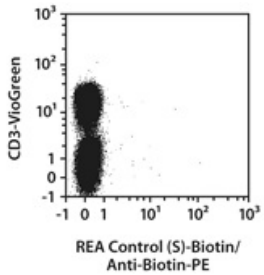
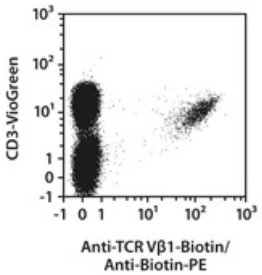
REA Control (S)-APC-Vio770


CD3-VioGreen
Anti-TCR Vβ1-APC-Vio770


CD3-VioGreen
REA Control (S)-Biotin/
Anti-Biotin-PE


CD3-VioGreen
Anti-TCR Vβ1-Biotin/
Anti-Biotin-PE

References

1. **Wei, S. *et al.*** (1994) The extent of the human germline T-cell receptor V beta gene segment repertoire. Immunogenetics 40(1): 27–36.
2. **Dunon, D. *et al.*** (1994) T cell migration during development: homing is not related to TCR V beta 1 repertoire selection. EMBO J. 13(4): 808–815.
3. **Born, W. *et al.*** (1985) Rearrangement of T-cell receptor beta-chain genes during T-cell development. Proc. Natl. Acad. Sci. U.S.A. 82(9): 2925–2929.
4. **van den Beemd, R. *et al.*** (2000) Flow cytometric analysis of the Vbeta repertoire in healthy controls. Cytometry 40(4): 336–345.

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