

Anti-human TCR α/β Antibody

Catalog Number:	119801, 119802
Size:	25 μ g, 100 μ g
Target Name:	TCR α/β , α/β TCR
Regulatory Status:	RUO

PRODUCT DETAILS

Clone:	IP26
Application:	Flow Cytometry
Reactivity:	Human
Format:	Purified
Isotype:	mouse IgG1
Antibody Type:	Monoclonal
Formulation:	Phosphate-buffered solution, pH 7.2, containing 0.09% sodium azide
Protein Concentration:	0.5 mg/mL
Storage & Handling:	The antibody solution should be stored between 2°C and 8°C
Recommended Usage:	For flow cytometric staining, it is recommended to use less than 0.2 μ g of this reagent per 0.5-1.0 million cells in a 100 μ L volume. Optimal reagent performance should be determined by titration for each specific application
Isotype Control:	301401

BACKGROUND INFORMATION

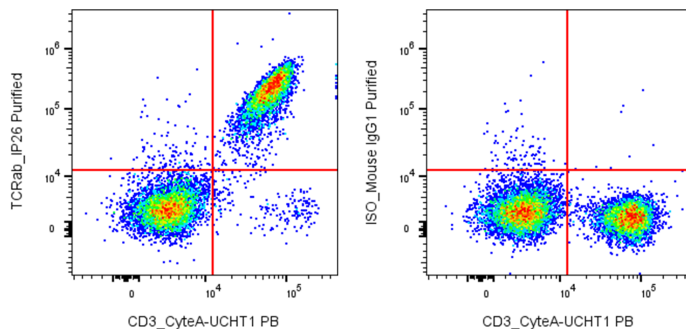
Human T-cell receptor α/β (TCR $\alpha\beta$) is the antigen-recognition receptor expressed by the majority of mature T cells and is central to adaptive cellular immunity. It enables T cells to distinguish foreign, altered-self, and self antigens and, following appropriate recognition, initiates signaling that regulates T-cell activation, proliferation, cytokine production, and cytotoxicity. Unlike antibodies, TCR $\alpha\beta$ generally recognizes antigen only when it is presented by another molecule, most commonly a peptide bound to a major histocompatibility complex (MHC).

TCR $\alpha\beta$ is a clonotypic heterodimer consisting of one TCR α chain and one TCR β chain. Each chain contains an extracellular variable (V) and constant (C) immunoglobulin-like domain, a connecting peptide, a transmembrane region, and a short cytoplasmic tail. The variable domains contain three complementarity-determining regions (CDR1, CDR2, and CDR3); the highly diverse CDR3 regions make major contributions to peptide specificity. TCR $\alpha\beta$ associates noncovalently with the CD3 $\gamma\epsilon$, CD3 $\delta\epsilon$, and CD3 $\zeta\eta$ signaling modules, which transmit activation signals after ligand engagement.

The principal ligands for TCR $\alpha\beta$ are peptide-MHC class I (pMHC-I) complexes recognized predominantly by CD8 T cells and peptide-MHC class II (pMHC-II) complexes recognized predominantly by CD4 T cells. TCRs can also recognize antigens presented by certain nonclassical MHC-like molecules and can respond to superantigens through distinct mechanisms.

Dysregulated TCR signaling or inappropriate antigen recognition contributes to autoimmune and inflammatory diseases, infections, transplant rejection, and T-cell malignancies. Therapeutically, TCR biology is exploited through TCR-engineered T cells (TCR-T), in which tumor-antigen-specific TCRs are introduced into patient T cells to recognize intracellular tumor-derived peptides presented by MHC. TCRs are also being developed as soluble TCR-based therapeutics and diagnostic reagents. Their ability to recognize intracellular antigens provides an important therapeutic advantage over conventional antibodies and CAR-T cells, although MHC restriction, antigen heterogeneity, and potential off-target cross-reactivity remain significant challenges.

PRODUCT DATA



Human peripheral blood lymphocytes were stained with PB Anti-Human CD3 clone 003CB and Purified Anti-Human TCR $\alpha\beta$ clone IP26 (left) or an isotype control (right), followed by PE Anti-Mouse IgG.

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