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iF488 Anti-human TCR α/β Antibody

Catalog Number:	119809, 119810
Size:	25 tests, 100 tests
Target Name:	TCR α/β, α/β TCR
Regulatory Status:	RUO

PRODUCT DETAILS

Clone:	IP26
Application:	Flow Cytometry
Reactivity:	Human
Format:	iF488
Isotype:	mouse IgG1
Antibody Type:	Monoclonal
Formulation:	Phosphate-buffered solution, pH 7.2, containing 0.09% sodium azide and 0.2% (w/v) BSA
Protein Concentration:	Supplied at a lot-specific concentration.
Storage&Handling:	The antibody solution should be stored undiluted between 2°C and 8°C, and protected from prolonged exposure to light. Do not freeze.
Recommended Usage:	For flow cytometric staining, it is recommended to use 5 µL of this reagent per 0.5-1.0 million cells in a 100 µL volume. Optimal reagent performance should be determined by titration for each specific application. iF488 has an excitation max at 491 nm and an emission max at 516 nm.
Excitation Laser:	Blue Laser (488 nm)
Isotype Controls:	301409
Antibody Family:	Human Antibodies
Storage & Handling:	The antibody solution should be stored undiluted between 2°C and 8°C, and protected from prolonged exposure to light. Do not freeze.
Isotype Control:	301409

BACKGROUND INFORMATION

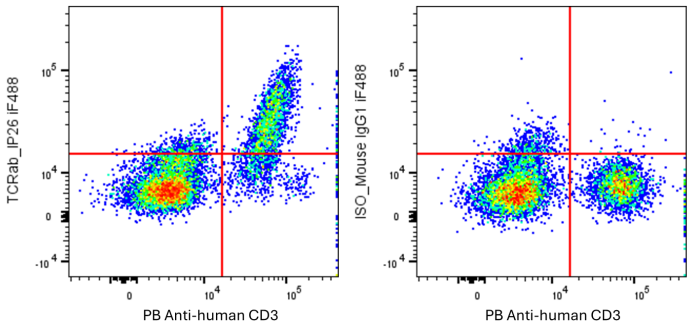
Human T-cell receptor α/β (TCRαβ) is the antigen-recognition receptor expressed by the majority of mature T cells and is central to adaptive cellular immunity. It enables T cells to distinguish foreign, altered-self, and self antigens and, following appropriate recognition, initiates signaling that regulates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

TCRαβ is a clonotypic heterodimer consisting of one TCRα chain and one TCRβ 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. TCRαβ associates noncovalently with the CD3γε, CD3δε, and CD3ζζ signaling modules, which transmit activation signals after ligand engagement.

The principal ligands for TCRαβ 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 mononuclear cells were stained with PB Anti-Human CD3 clone 003CB and iF488 Anti-Human TCRαβ clone IP26 (left) or an isotype control (right).

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