www.innocyto.com

InnoCyto Inc.

15375 Barranca Pkwy, Suite I-103
Irvine, CA 92618
Email: info@innocyto.com
Phone: 1-949-418-7543

# iF488 Anti-Mouse TCR β chain Antibody

| | |
|---|---|
| **Catalog Number:** | 200403, 200404 |
| **Size:** | 25 μg, 100 μg |
| **Target Name:** | TCR β chain, TCR-β |
| **Regulatory Status:** | RUO |

## PRODUCT DETAILS

| | |
|---|---|
| **Clone:** | H57-597-M2a |
| **Application:** | Flow Cytometry |
| **Reactivity:** | Mouse |
| **Format:** | iF488 |
| **Isotype:** | Mouse IgG2a |
| **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 and 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 less than 0.2 µg 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 Control:** | 301505 |
| **RRID:** | AB_3738987 |
| **GeneID:** | 100125262 |

## BACKGROUND INFORMATION

The mouse T cell receptor (TCR) β chain is a critical component of the heterodimeric αβ TCR complex expressed on most mature T lymphocytes. Together with the TCR α chain, it confers antigen specificity to T cells, enabling the recognition of peptide fragments presented by major histocompatibility complex (MHC) molecules on antigen-presenting cells. This recognition event is essential for initiating adaptive immune responses, including T cell activation, proliferation, and differentiation into effector and memory subsets.

Structurally, the TCR β chain is composed of variable (V), diversity (D), joining (J), and constant (C) gene segments that undergo somatic recombination during T cell development in the thymus. This recombination process generates the highly variable

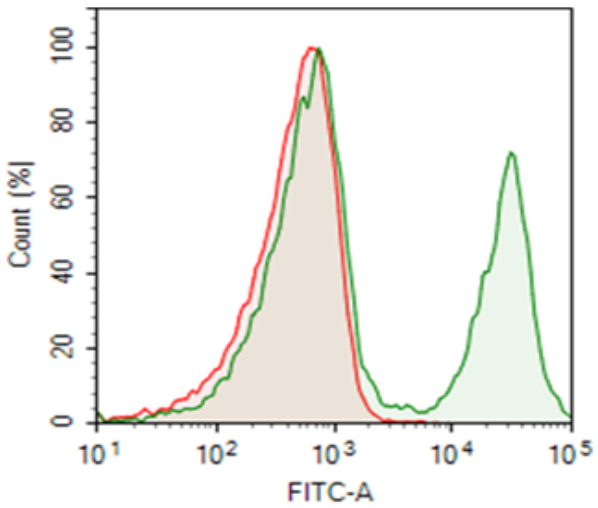
complementarity-determining region 3 (CDR3), which contributes most significantly to antigen specificity. The β chain pairs non-covalently with the TCR α chain, forming the antigen-binding site. Each chain contains two extracellular immunoglobulin-like domains, a variable domain involved in antigen binding and a constant domain that stabilizes structure, along with a transmembrane segment and a short cytoplasmic tail. The TCR complex also associates with CD3 signaling molecules (CD3γ, CD3δ, CD3ε, and CD3ζ), which transduce activation signals through immunoreceptor tyrosine-based activation motifs (ITAMs).

The ligands for the mouse TCR β chain are peptide antigens bound to MHC class I or II molecules. Engagement of the αβ TCR with these peptide-MHC complexes triggers receptor conformational changes that initiate intracellular signaling cascades involving kinases such as Lck and ZAP-70, leading to T cell activation and effector function.

In disease, alterations in TCR β chain expression or repertoire diversity can contribute to immune dysfunction. Restricted TCR β repertoires are associated with autoimmune diseases, such as experimental autoimmune encephalomyelitis (EAE, a model for multiple sclerosis), and with impaired immune defense in infections or cancer. Somatic mutations or skewed TCR β usage have also been observed in T cell lymphomas and leukemia.

The mouse TCR β chain has significant therapeutic and experimental relevance. It serves as a model for studying clonal selection, antigen recognition, and tolerance mechanisms. In immunotherapy, manipulation of TCR β sequence diversity underpins TCR-engineered T cell strategies for cancer and infection control. Furthermore, analyzing mouse TCR β repertoires provides insights into vaccine efficacy, autoimmune mechanisms, and immune reconstitution following bone marrow transplantation.

## PRODUCT DATA




Mouse splenocytes stained with either iF488 Anti-Mouse TCR β chain clone H57-597-M2a (green histogram) or an isotype control (red histogram).

This product is supplied subject to the terms and conditions at www.innocyto.com/web/terms.php and may only be used as provided in the stated terms. Products are for Research Use Only.