

## APC Anti-Mouse CD25 Antibody

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|---------------------------|---------------------------------------------------------|
| <b>Catalog Number:</b>    | 206715, 206716                                          |
| <b>Size:</b>              | 25 µg, 100 µg                                           |
| <b>Target Name:</b>       | IL-2 receptor α chain, Low affinity IL-2R, IL-2Rα chain |
| <b>Regulatory Status:</b> | RUO                                                     |

### PRODUCT DETAILS

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| <b>Clone:</b>                  | PC61.5.3                                                                                                                                                                                                                                                                                              |
| <b>Application:</b>            | Flow Cytometry                                                                                                                                                                                                                                                                                        |
| <b>Reactivity:</b>             | Mouse                                                                                                                                                                                                                                                                                                 |
| <b>Format:</b>                 | APC                                                                                                                                                                                                                                                                                                   |
| <b>Isotype:</b>                | Rat IgG1                                                                                                                                                                                                                                                                                              |
| <b>Antibody Type:</b>          | Monoclonal                                                                                                                                                                                                                                                                                            |
| <b>Formulation:</b>            | Phosphate-buffered solution, pH 7.2, containing 0.09% sodium azide and 0.2% (w/v) BSA                                                                                                                                                                                                                 |
| <b>Protein Concentration:</b>  | 0.2 mg/mL                                                                                                                                                                                                                                                                                             |
| <b>Storage &amp; Handling:</b> | The antibody solution should be stored undiluted between 2°C and 8°C, and protected from prolonged exposure to light. Do not freeze.                                                                                                                                                                  |
| <b>Recommended Usage:</b>      | 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. APC has an excitation max at 650 nm and an emission max at 660 nm. |
| <b>Excitation Laser:</b>       | Red Laser (633 nm)                                                                                                                                                                                                                                                                                    |
| <b>Isotype Control:</b>        | 303410                                                                                                                                                                                                                                                                                                |

### BACKGROUND INFORMATION

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CD25, also known as the interleukin-2 receptor alpha chain (IL-2Rα), is a transmembrane glycoprotein that plays a central role in regulating immune responses. It functions as part of the interleukin-2 (IL-2) receptor complex, which is essential for T cell proliferation, survival, and differentiation. CD25 itself has low affinity for IL-2 when expressed alone, but when combined with IL-2 receptor beta (CD122) and the common gamma chain (CD132), it forms the high-affinity IL-2 receptor complex capable of effective signal transduction.

Structurally, CD25 is a single-pass type I membrane protein composed of an extracellular domain of approximately 219 amino acids responsible for IL-2 binding, a hydrophobic transmembrane segment, and a short cytoplasmic tail that lacks intrinsic signaling domains. The extracellular region is heavily glycosylated, which stabilizes its conformation and facilitates ligand interaction. Because the alpha chain alone is not signaling-competent, it acts primarily to increase the receptor complex's affinity for IL-2 and to expand the range of cells responsive to low cytokine concentrations.

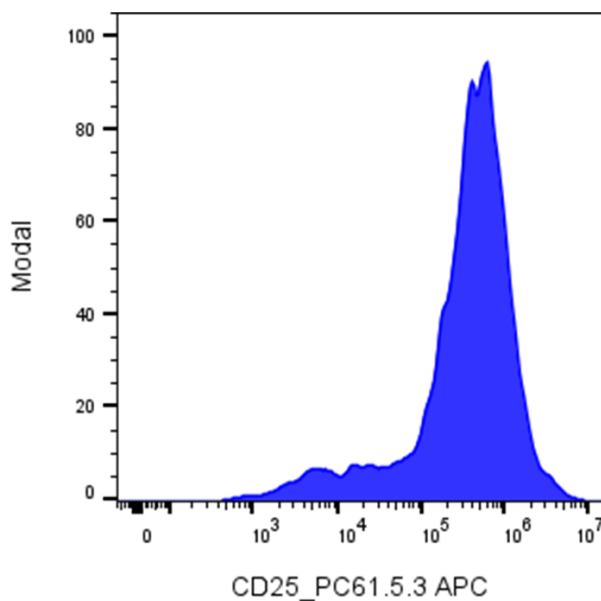
CD25's main ligand, IL-2, is a cytokine crucial for T lymphocyte expansion and immune tolerance. Engagement of IL-2 with the high-affinity receptor triggers the JAK-STAT signaling pathway, leading to cell proliferation, differentiation, and regulatory T cell (Treg) function. CD25 is constitutively expressed on Tregs and upregulated on activated CD4+ and CD8+ T cells, making it a marker of immune activation as well as immune regulation.

Aberrant CD25 expression or IL-2 signaling contributes to immune dysregulation and disease. In autoimmune disorders such as multiple sclerosis and type 1 diabetes, alterations in the IL-2/CD25 axis impair Treg function and tolerance mechanisms. Elevated CD25 expression is also found in certain malignancies, particularly adult T-cell leukemia/lymphoma and Hodgkin lymphoma, where it may serve as a biomarker of malignant proliferation. Moreover, soluble CD25, released from cell surfaces, can act as a decoy receptor, modulating IL-2 availability and contributing to immune suppression in cancer and chronic inflammation.

Therapeutically, CD25 is a prominent target for immune modulation. Monoclonal antibodies such as basiliximab and daclizumab have been developed to block IL-2 binding, preventing T cell activation and mitigating graft rejection in organ transplantation. Conversely, IL-2 or CD25-targeted therapies that enhance regulatory T cell function are being explored to treat autoimmune diseases and promote immune tolerance. Thus, CD25 remains a critical immunological node, balancing activation and regulation within the immune system.

## PRODUCT DATA

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C57BL/6 Mouse splenocytes stimulated with Anti-Mouse CD3/CD28 for 2-days were stained with APC Anti-Mouse CD25 clone PC61.5.3 (color-filled histogram).

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