

## Human CD25 (IL-2R $\alpha$ ) Protein (C-Fc)

|                           |                         |
|---------------------------|-------------------------|
| <b>Catalog Number:</b>    | 812901, 812902          |
| <b>Size:</b>              | 25 $\mu$ g, 100 $\mu$ g |
| <b>Target Name:</b>       | IL2RA, CD25, p55        |
| <b>Regulatory Status:</b> | RUO                     |

### PRODUCT DETAILS

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| <b>Application:</b>           | ELISA, BLI                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Format:</b>                | Liquid, Purified                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Expression Host:</b>       | CHO                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Species:</b>               | Human                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Sources:</b>               | Recombinant Human CD25 (Glu22-Cys213) with C-terminus Fc-tag is expressed in CHO cell.                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Accession Number:</b>      | P01589                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Molecular Weight:</b>      | The protein has a predicted molecular weight of 48.0 kDa. Under DTT-reducing conditions, it migrates at approximately 65 kDa on SDS-PAGE.                                                                                                                                                                                                                                                                                                                                                              |
| <b>Affinity Tag:</b>          | C-Fc                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Purity:</b>                | >95% based on SDS-PAGE under reducing condition                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Formulation:</b>           | 1xPBS buffer, pH7.4, 0.22 $\mu$ m filtered                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Endotoxin level:</b>       | Not tested                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Protein Concentration:</b> | 25 $\mu$ g size is bottled at 0.2mg/mL concentration. 100 $\mu$ g size is supplied at a lot-specific concentration.                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Storage and Handling:</b>  | Briefly centrifuge the vial upon receipt. An unopened vial can be stored at 4°C for up to 2 weeks, or at -20°C or below for up to six months. The protein may be further diluted to 0.1 mg/mL using 0.22 $\mu$ m-filtered PBS buffer (pH 7.4). For long-term storage, the diluted stock solution should be aliquoted and stored at $\leq$ -70°C to minimize freeze-thaw cycles. If additional dilution is required, carrier proteins such as FBS or BSA should be added to maintain protein stability. |

### BACKGROUND INFORMATION

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CD25, also known as the interleukin-2 receptor alpha chain (IL-2R $\alpha$ ), 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

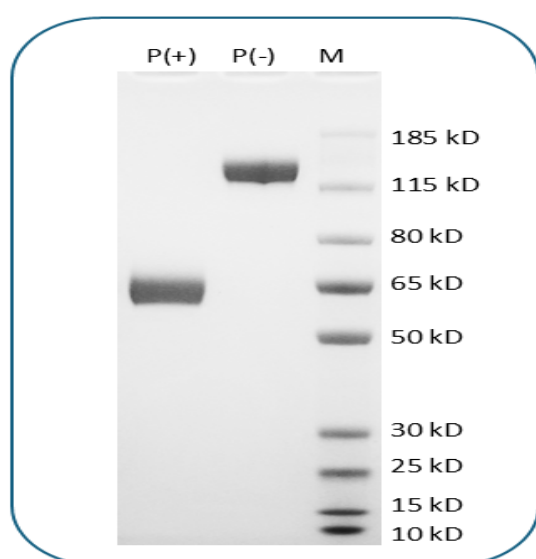
domains. The extracellular region is heavily glycosylated, which stabilizes its conformation and facilitates ligand interaction. Because the alpha chain alone is not signaling-competent, it acts primarily to increase the receptor complex's affinity for IL-2 and to expand the range of cells responsive 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



Human CD25 (C-Fc) on SDS-PAGE under reducing condition (P+) and non-reducing condition (P-). The gel was stained for 1 hour with BlinkBlue (catalog 700102). The purity of this protein appears to be greater than 95%.

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