

DESCRIPTION

Source *E. coli*-derived human SOCS-1 protein
Val2-Ile211, with a C-terminal 6-His tag
Accession # O15524.1

N-terminal Sequence Analysis Val2

Predicted Molecular Mass 24 kDa

SPECIFICATIONS

SDS-PAGE 23-27 kDa, under reducing conditions.

Activity Measured by its binding ability in a functional ELISA.
Recombinant Human SOCS-1 His-tag binds to anti-human SOCS-1 antibody with an ED₅₀ of 0.500-5.00 µg/mL.

Endotoxin Level <0.10 EU per 1 µg of the protein by the LAL method.

Purity >95%, by SDS-PAGE visualized with Silver Staining and quantitative densitometry by Coomassie® Blue Staining.

Formulation Supplied as a 0.2 µm filtered solution in Tris, NaCl, EDTA, Glycerol and TCEP with Trehalose. See Certificate of Analysis for details.

PREPARATION AND STORAGE

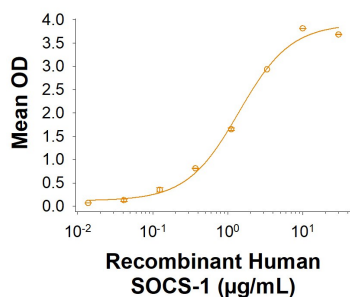
Shipping The product is shipped with dry ice or equivalent. Upon receipt, store it immediately at the temperature recommended below.

Stability & Storage Use a manual defrost freezer and avoid repeated freeze-thaw cycles.

- 6 months from date of receipt, -20 to -70 °C as supplied.
- 3 months, -20 to -70 °C under sterile conditions after opening.

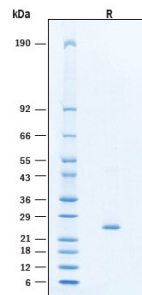
DATA

Binding Activity



Recombinant Human SOCS-1 His-tag Protein Binding Activity. Measured by its binding ability in a functional ELISA. Recombinant Human SOCS-1 His-tag Protein (Catalog # 11815-S1) binds to anti-human SOCS-1 antibody with an ED₅₀ of 0.500-5.00 µg/mL.

SDS-PAGE



Recombinant Human SOCS-1 His-tag Protein SDS-PAGE. 2 µg/lane of Recombinant Human SOCS-1 His-tag Protein (Catalog # 11815-S1) was resolved with SDS-PAGE under reducing (R) condition and visualized by Coomassie® Blue staining, showing bands at 23-27 kDa.

BACKGROUND

Suppressor of Cytokine Signaling 1 (SOCS1) is a central intracellular negative-feedback regulator of cytokine signaling, best characterized for its control of the Janus kinase/signal transducer and activator of transcription (JAK/STAT) pathway. SOCS1 is rapidly induced following cytokine stimulation and functions to terminate signaling downstream of interferons, interleukin-2 family cytokines, and other inflammatory mediators, thereby preventing excessive or sustained immune activation (1,2). SOCS1 contains an SH2 domain, a C-terminal SOCS box, and a unique kinase inhibitory region (KIR) that enables direct inhibition of JAK catalytic activity. Structural and biochemical studies have demonstrated that SOCS1 binds to the substrate-binding groove of JAKs, blocking STAT phosphorylation independently of receptor binding, distinguishing SOCS1 mechanistically from other SOCS family members (1). Through this mode of action, SOCS1 is essential for maintaining immune homeostasis. Human SOCS1 haploinsufficiency results in dysregulated cytokine signaling and is associated with a spectrum of immune-mediated pathologies, including autoimmune disease, chronic inflammation, infection susceptibility, and malignancy, underscoring its non-redundant role in immune regulation (3,4). In cancer biology, SOCS1 functions in a context-dependent manner. Within tumor cells, SOCS1 often exhibits tumor-suppressive activity by constraining oncogenic JAK/STAT signaling; however, in immune cells, SOCS1 can act as an intracellular immune checkpoint, limiting interferon-driven anti-tumor immunity. Recent studies and reviews highlight SOCS1 as a critical regulator of tumor immune surveillance and a potential target for enhancing immunotherapy responses (5,6). Recombinant human SOCS1 is therefore a valuable reagent for investigating cytokine signaling attenuation, JAK/STAT pathway mechanics, immune tolerance, inflammation, and tumor immunology, as well as for mechanistic studies aimed at therapeutic modulation of SOCS-dependent signaling.

References:

1. Liao, N. P. D. *et al.* (2018) *Nat. Commun.* **9**:1491.
2. Durham, G. A. *et al.* (2019) *Trends Pharmacol. Sci.* **40**:298.
3. Körholz, J. *et al.* (2024) *Front. Immunol.* **15**:1385190.
4. Hadjadj, J. *et al.* (2020) *Nat. Commun.* **11**:5341.
5. Bidgood, G. M. *et al.* (2024) *Front. Immunol.* **15**:1419951.
6. Ilangumaran, S. *et al.* (2024) *Front. Immunol.* **15**:1362224.