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### Cytokine Signaling Targets

#### Suppressor of Cytokine Signaling 3 (SOCS3) selective Antibodies (Cat # SOCS3-101AP, P-SOCS3 and PC-SOCS3)

*Alternate nomenclature: Suppressor of Cytokine Signaling 3, STAT induced STAT inhibitor (SSI) family member,*

Suppressors of cytokine signaling (SOCS) proteins are intracellular regulators of receptor signal transduction, mainly Janus kinase/signal transducers and activators of transcription (JAK/STAT). The suppressor for cytokine signaling 3 is a key regulator of cytokine signaling in inflammatory diseases and in breast cancer progression. Over expression of SOCS3 in response to prolactin, suppresses STAT3 expression and abrogate STAT5 phosphorylation which resulted in decrease cell proliferation of T47D breast cancer cells. SOCS3 acts as an anti-proliferative agent in breast cancer cells whose mechanism of action and cross talk with other cellular pathways are complex (1). The IL6 signaling on both hepatic and hematopoietic cells is mediated through gp130 receptor and SOCS3 is a critical inhibitor of this pathway (2). SOCS3 knockout mice revealed significant enhancement in DNA replication and liver weight restoration after partial hepatectomy (PH) compared to littermate controls. The absence of SOCS3, STAT3 phosphorylation is prolonged activation of ERK1/2 is enhanced after PH. SOCS protein inhibit cytokine signaling by targeting different component of signaling complex. These include either direct binding of SOCS to activated, tyrosine phosphorylated cytokine receptors at JAK via their Src homology 2 domain or via targeting receptor complexes for proteosomal degradation via SOCS box (3). SOCS3 has been shown to regulate the activity of proline rich tyrosine kinase 2 (PYK2) in A549 cells as a result of epigenetic regulatory mechanism involving methylation of exon 2, and 5. Recent literature suggest that infections (hepatitis C and Leishmania donovani) caused an induction is SOCS3 that interfere with host immune responses.

There are eight SOCS family members known, SOCS1, SOCS2 and SOCS3, SOCS2 can enhance IL2 and IL3 induced STAT phosphorylation followed by potentiate proliferation in response to cytokine stimulation. Expression of SOCS2 also resulted in marked proteasome-dependent reduction in SOCS3 and SOCS1 proteins. SOCS2 also bind to SOCS3 and elongin B/C to form an E3 ligase complex resulting in degradation of SOCS3 (4). SOCS3 is localized on chromosome 17q25 and was found to be expressed at higher concentration in skin of atopic dermatitis patients than in healthy individuals (5). SOCS3 is a 225 amino acid containing protein with apparent MW 28kDa. SOCS3 protein contains several phospho-tyrosine binding pockets at the N-terminal end, a SH2 superfamily domain and a SOCS-SOCS3 family domain near the C-terminal end called SOCS box.

The SOCS3-selective antibody was generated against a peptide from near N-terminus of the protein corresponding to amino acids 83-105 of the G6PC2 a 154 amino acid protein. The affinity purified mono epitope-specific rabbit polyclonal antibody strongly labels a broad band at 29 kDa in SOCS3 western blot control samples. The SOCS3 rabbit mono-epitope specific polyclonal antibodies are affinity purified on immobilized antigen affinity matrix, the affinity purified antibodies are also available in FITC and Biotin-conjugated form for use in IHC and cells labeling experiments. Limited quantities of antigenic blocking peptide and western blot positive controls samples are also available. FabGennix has a wide range of antibodies to innate immune and other targets, for a complete listing please visit [www.FabGennix.com](http://www.FabGennix.com)

Catalog #	Host Species	Nature	Cross reactivity	Volume	Qty
SOCS3-101AP	Rabbit	Affinity purified SOCS3 antibody	R, M, H, monk	200ul	100ug
FITC-SOCS3	Rabbit	FITC-conjugated SOCS3 Antibody	R, M, H, monk	100 g	100ug
Biotin-SOCS3	Rabbit	Biotinylated SOCS3 antibody	R, M, H, monk	250 ug	100ug
P-SOCS3	n/a	Antigenic blocking peptide for SOCS3-101AP	n/a	5 appl	250ug
PC-SOCS3	n/a	Western blot positive control for SOCS3	n/a	5 appl	For 5 applications

R = rat; M = mouse; H = human; C = chicken; monk = monkey ; \* not all variants are labeled equally

**Immunogen:** Synthetic peptide corresponding to amino acids 202-225 of the human Receptor of cytokine signaling 3 protein corresponding to amino acid sequence (dsy ekv tqf ppp ire fld qyd apl), the peptide was amidated and conjugated to a carrier protein for preparation of antigen to generate antibodies in rabbit.

**Concentration:** SOCS3-101AP, FITC-SOCS3 and Biotin-SOCS3 IgG concentrations 0.58-0.65 mg/ml.

**Applications:** Antibody SOCS3-101AP is ideal for WB, use of this antibody in other applications has not yet worked out. The dilution of SOCS3-101AP antibody is for reference only, investigators are expected to determine the optimal conditions for specific assay. WB; 1:500; IMM & i.p pull-down assays:> n.d.

**Reactivity:** This antibody detects a band of broad band of 27-29kDa in PC-SOCS3 samples. The antibody also reacts to a 29kDa protein in rat pancreas extracts.

**Protocols:** Standard protocol for various applications (WB, IMM and IHC) of this antibody is provided with the product specification sheet, however, FabGennix Int. Inc.

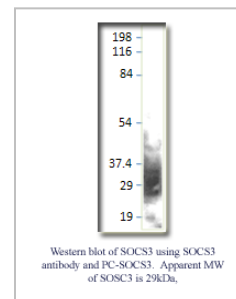
**Form/Storage:** The antiserum is supplied in antibody stabilization buffer with 0.02% sodium azide. For long-term storage of antibodies, store at -20°C. FabGennix Int. Inc. does not recommend storage of very dilute antibody solutions unless they are prepared in specially formulated multi use antibody dilution buffer (Cat # DiUbuffer). Working solutions of antibodies in DiUbuffer should be filtered through 0.45 µm filter after every use for long-term storage.

#### References:

1. Barclay JL, Anderson ST, Waters MJ, Curlewis JD. SOCS3 as a tumor suppressor in breast cancer cells, and its regulation by PRL. *Int J Cancer*. 2009 Apr 15;124:1756-66.
2. Croker, B.A., D.L. Krebs, J.G. Zhang, S. Wormald, T.A. Willson, E.G. Stanley, L. Robb, C.J. Greenhalgh, I. Forster, B.E. Clausen, et al. 2003. SOCS3 negatively regulates IL-6 signaling in vivo. *Nat. Immunol.* 4:540-545.
3. Alexander, W.S., & D.J. Hilton. 2004. The role of suppressors of cytokine signaling (SOCS) proteins in regulation of the immune response. *Annu. Rev. Immunol.* 22:503-529.
4. Gillian M. Tannahill, Joanne Elliott, Anna C. Barry, Linda Hibbert, Nicolas A. Cacalano, and James A. Johnston et al., SOCS2 Can Enhance Interleukin-2 (IL-2) and IL-3 Signaling by Accelerating SOCS3 Degradation. *Mol Cell Biol.* 2005 October; 25(20): 9115-9126.
5. J. Barker, 10 N. J. Reynolds, 11 S. J. Meggitt, 12 J. Kere, 6 C.-F. Wahlgren, 3 G. Pershagen, 4,8 M. Wickman, 4,5,8 M. Nordenskjöld, 1 I. Kockum, 1,7 and M. Bradley. Elevated Expression and Genetic Association Links the SOCS3 Gene to Atopic Dermatitis. *Am J Hum Genet.* 2006 June; 78(6): 1060-1065.

\*For users who may require large amounts of SOCS3-101AP, FITC-SOCS3 and Biotin-SOCS3, please enquire about bulk material discounts.  
This Product is for Research Use Only and is NOT intended for use in humans or clinical diagnosis.

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