

Smurf1 (C-16): sc-5732

BACKGROUND

Smurf1 and Smurf2 (Smad ubiquitination regulatory factor 1 and 2) are members of the Hect family of proteins, which also includes the ubiquitin (Ub) E3-type ligases NEDD3 and E6-AP. E3 ligases are involved in the enzymatic reactions of the Ub conjugating pathway, which targets proteins for degradation by the 26S proteasome. Within the Ub pathway, the E3 ligases specifically catalyze the transfer of Ub from the Ub-conjugating enzymes to the individual protein substrate. As an E3 ligase, Smurf1 selectively interacts with receptor-regulated Smads specific to the BMP pathway in order to trigger their ubiquitination and degradation. Smurf2 interacts with receptor-activated Smads (R-Smads), including Smad1, Smad2 and Smad3, but not Smad4. Although Smurf2 localizes to the nucleus, binding to Smad7 induces its export and its recruitment to the activated TGF β receptor, where it causes degradation of Smad7.

REFERENCES

1. Scheffner, M., et al. 1993. The HPV-16 E6 and E6-AP complex functions as a ubiquitin-protein ligase in the ubiquitination of p53. *Cell* 75: 495-505.
2. Huibregtse, J.M., et al. 1995. A family of proteins structurally and functionally related to the E6-AP ubiquitin-protein ligase. *Proc. Natl. Acad. Sci. USA* 92: 2563-2567.
3. Heldin, C.H., et al. 1997. TGF- β signalling from cell membrane to nucleus through SMAD proteins. *Nature* 390: 465-471.
4. Candia, A.F., et al. 1997. Cellular interpretation of multiple TGF- β signals: intracellular antagonism between activin/BVg1 and BMP-2/4 signaling mediated by Smads. *Development* 124: 4467-4480.
5. Macias-Silva, M., et al. 1998. Specific activation of Smad1 signaling pathways by the BMP7 type I receptor, ALK2. *J. Biol. Chem.* 273: 25628-25636.
6. Hershko, A., et al. 1998. The ubiquitin system. *Annu. Rev. Biochem.* 67: 425-479.
7. Zhu, H., et al. 1999. A Smad ubiquitin ligase targets the BMP pathway and affects embryonic pattern formation. *Nature* 400: 687-693.

CHROMOSOMAL LOCATION

Genetic locus: SMURF1 (human) mapping to 7q22.1, SMURF2 (human) mapping to 17q24.1.

SOURCE

Smurf1 (C-16) is an affinity purified goat polyclonal antibody raised against a peptide mapping near the C-terminus of Smurf1 of human origin.

PRODUCT

Each vial contains 200 μ g IgG in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

Blocking peptide available for competition studies, sc-5732 P, (100 μ g peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% BSA).

APPLICATIONS

Smurf1 (C-16) is recommended for detection of Smurf1 and Smurf2 of human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

Smurf1 (C-16) is also recommended for detection of Smurf1 and Smurf2 in additional species, including equine, canine, bovine, porcine and avian.

Molecular Weight of Smurf1: 86 kDa.

Positive Controls: HeLa whole cell lysate: sc-2200.

RECOMMENDED SECONDARY REAGENTS

To ensure optimal results, the following support (secondary) reagents are recommended: 1) Western Blotting: use donkey anti-goat IgG-HRP: sc-2020 (dilution range: 1:2000-1:100,000) or Cruz Marker™ compatible donkey anti-goat IgG-HRP: sc-2033 (dilution range: 1:2000-1:5000), Cruz Marker™ Molecular Weight Standards: sc-2035, TBS Blotto A Blocking Reagent: sc-2333 and Western Blotting Luminol Reagent: sc-2048. 2) Immunofluorescence: use donkey anti-goat IgG-FITC: sc-2024 (dilution range: 1:100-1:400) or donkey anti-goat IgG-TR: sc-2783 (dilution range: 1:100-1:400) with UltraCruz™ Mounting Medium: sc-24941.

SELECT PRODUCT CITATIONS

1. Fukasawa, H., et al. 2004. Down-regulation of Smad7 expression by ubiquitin-dependent degradation contributes to renal fibrosis in obstructive nephropathy in mice. *Proc. Natl. Acad. Sci. USA* 101: 8687-8692.

STORAGE

Store at 4° C, **DO NOT FREEZE**. Stable for one year from the date of shipment. Non-hazardous. No MSDS required.

RESEARCH USE

For research use only, not for use in diagnostic procedures.

PROTOCOLS

See our web site at www.scbt.com or our catalog for detailed protocols and support products.



Try **Smurf1 (45-K): sc-100616**, our highly recommended monoclonal alternative to Smurf1 (C-16).