SANTA CRUZ BIOTECHNOLOGY, INC.

Smurf1 (45-K): sc-100616

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

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 speci-fically 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 TGFβ 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.

CHROMOSOMAL LOCATION

Genetic locus: SMURF1 (human) mapping to 7q22.1; Smurf1 (mouse) mapping to 5 G2.

SOURCE

Smurf1 (45-K) is a mouse monoclonal antibody raised against a partial recombinant peptide (165-269) Smurf1 of human origin.

PRODUCT

Each vial contains 100 µg IgG_{2a} kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

APPLICATIONS

Smurf1 (45-K) is recommended for detection of Smurf1 of mouse, rat and human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500), immunohistochemistry (including paraffin-embedded sections) (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

Suitable for use as control antibody for Smurf1 siRNA (h): sc-41673, Smurf1 siRNA (m): sc-41674, Smurf1 shRNA Plasmid (h): sc-41673-SH, Smurf1 shRNA Plasmid (m): sc-41674-SH, Smurf1 shRNA (h) Lentiviral Particles: sc-41673-V and Smurf1 shRNA (m) Lentiviral Particles: sc-41674-V.

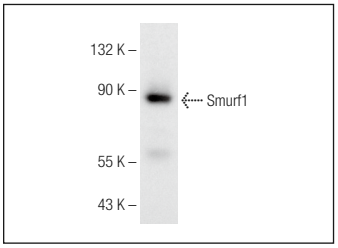
Molecular Weight of Smurf1: 86 kDa.

Positive Controls: MDA-MB-231 cell lysate: sc-2232, HeLa whole cell lysate: sc-2200 or mouse kidney extract: sc-2255.

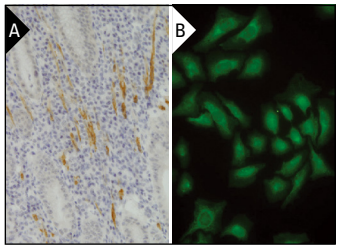
STORAGE

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

DATA



Smurf1 (45-K): sc-100616. Western blot analysis of Smurf1 expression in MDA-MB-231 whole cell lysate.



Smurf1 (45-K): sc-100616. Immunoperoxidase staining of formalin-fixed, paraffin-embedded human stomach tissue showing cytoplasmic localization (**A**). Immunofluorescence staining of paraformaldehyde-fixed HeLa cells showing cytoplasmic localization (**B**).

SELECT PRODUCT CITATIONS

1. Wang, J., et al. 2013. Impaired phosphorylation and ubiquitination by p70 S6 kinase (p70S6K) and Smad ubiquitination regulatory factor 1 (Smurf1) promote tribbles homolog 2 (TRIB2) stability and carcinogenic property in liver cancer. J. Biol. Chem. 288: 33667-33681.
2. Xu, S., et al. 2014. TRIB2 inhibits Wnt/β-Catenin/TCF4 signaling through its associated ubiquitin E3 ligases, β-TrCP, COP1 and Smurf1, in liver cancer cells. FEBS Lett. 588: 4334-4341.
3. Wen, M., et al. 2015. Stk38 protein kinase preferentially inhibits TLR9-activated inflammatory responses by promoting MEKK2 ubiquitination in macrophages. Nat. Commun. 6: 7167.
4. Qian, G., et al. 2016. Smurf1 represses TNF-α production through ubiquitination and destabilization of USP5. Biochem. Biophys. Res. Commun. 474: 491-496.
5. Wang, X., et al. 2017. A covalently bound inhibitor triggers EZH2 degradation through CHIP-mediated ubiquitination. EMBO J. 36: 1243-1260.
6. Qian, G., et al. 2018. Smurf1 restricts the antiviral function mediated by USP25 through promoting its ubiquitination and degradation. Biochem. Biophys. Res. Commun. 498: 537-543.
7. Liu, J., et al. 2018. IRAK2 counterbalances oncogenic Smurf1 in colon cancer cells by dictating ER stress. Cell. Signal. 48: 69-80.
8. Liang, C., et al. 2018. Inhibition of osteoblastic Smurf1 promotes bone formation in mouse models of distinctive age-related osteoporosis. Nat. Commun. 9: 3428.
9. Feng, X., et al. 2019. Ubiquitination of UVRAG by Smurf1 promotes autophagosome maturation and inhibits hepatocellular carcinoma growth. Autophagy 27: 1-20.

RESEARCH USE

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