

# smoothelin (2Q1120): sc-73042

## BACKGROUND

The cytoskeletal protein smoothelin is highly conserved among vertebrates and is expressed exclusively by contractile smooth muscle cells where it localizes to the filament network. Smoothelin associates with actin stress fibers but does not interact with desmin. At least two isoforms of smoothelin are produced by alternative splicing. The short isoform lacks amino acids 1-456 at the amino-terminus of the long isoform. The short isoform is expressed in visceral muscle tissue, including intestine and stomach, but not in brain, while the long isoform is expressed in all vascularized organs. In the vascular system, smoothelin expression is limited to large veins and arteries capable of pulsatile contraction. As a marker for the highly differentiated contractile smooth muscle cell, smoothelin expression is useful for studying vascular malformation and injury. The gene encoding human smoothelin maps to chromosome 22q12.2.

## REFERENCES

1. van der Loop, F.T., et al. 1996. smoothelin, a novel cytoskeletal protein specific for smooth muscle cells. *J. Cell Biol.* 134: 401-411.
2. van Eys, G.J., et al. 1997. smoothelin expression characteristics: development of a smooth muscle cell *in vitro* system and identification of a vascular variant. *Cell Struct. Funct.* 22: 65-72.
3. van der Loop, F.T., et al. 1997. Differentiation of smooth muscle cells in human blood vessels as defined by smoothelin, a novel marker for the contractile phenotype. *Arterioscler. Thromb. Vasc. Biol.* 17: 665-671.
4. Johnson, J.L., et al. 2001. Injury induces dedifferentiation of smooth muscle cells and increased matrix-degrading metalloproteinase activity in human saphenous vein. *Arterioscler. Thromb. Vasc. Biol.* 21: 1146-1151.
5. Rensen, S.S., et al. 2002. Expression of the smoothelin gene is mediated by alternative promoters. *Cardiovasc. Res.* 55: 850-863.

## CHROMOSOMAL LOCATION

Genetic locus: SMTN (human) mapping to 22q12.2; Smtn (mouse) mapping to 11 A1.

## SOURCE

smoothelin (2Q1120) is a mouse monoclonal antibody raised against cytoskeletal extract from gizzard of chicken origin.

## PRODUCT

Each vial contains 200 µg IgG<sub>1</sub> in 1.0 ml PBS with < 0.1% sodium azide and 0.1% gelatin.

## 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.

## APPLICATIONS

smoothelin (2Q1120) is recommended for detection of long and short isoforms of smoothelin 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) and immunohistochemistry (including paraffin-embedded sections) (starting dilution 1:50, dilution range 1:50-1:500).

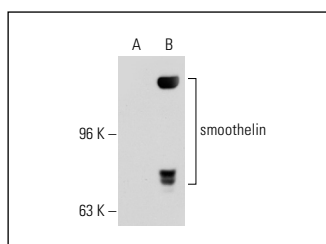
Suitable for use as control antibody for smoothelin siRNA (h): sc-36512, smoothelin siRNA (m): sc-36513, smoothelin shRNA Plasmid (h): sc-36512-SH, smoothelin shRNA Plasmid (m): sc-36513-SH, smoothelin shRNA (h) Lentiviral Particles: sc-36512-V and smoothelin shRNA (m) Lentiviral Particles: sc-36513-V.

Molecular Weight of smoothelin short isoform: 59 kDa.

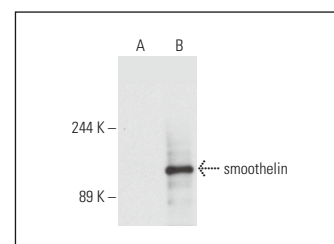
Molecular Weight of smoothelin long isoform: 110 kDa.

Positive Controls: smoothelin (h): 293T Lysate: sc-113663, smoothelin (m): 293T Lysate: sc-126019 or COLO 320DM cell lysate: sc-2226.

## DATA



smoothelin (2Q1120): sc-73042. Western blot analysis of smoothelin expression in non-transfected: sc-117752 (A) and mouse smoothelin transfected: sc-126019 (B) 293T whole cell lysates.



smoothelin (2Q1120): sc-73042. Western blot analysis of smoothelin expression in non-transfected: sc-117752 (A) and human smoothelin transfected: sc-113663 (B) 293T whole cell lysates.

## SELECT PRODUCT CITATIONS

1. Lim, K., et al. 2012. Vascular Klotho deficiency potentiates the development of human artery calcification and mediates resistance to fibroblast growth factor 23. *Circulation* 125: 2243-2255.
2. Lino Cardenas, C.L., et al. 2018. An HDAC9-MALAT1-BRG1 complex mediates smooth muscle dysfunction in thoracic aortic aneurysm. *Nat. Commun.* 9: 1009.
3. He, C., et al. 2018. Isolation and culture of vascular smooth muscle cells from rat placenta. *J. Cell. Physiol.* 234: 7675-7682.
4. Wang, L., et al. 2019. Identification of filamin A mechanobinding partner I: smoothelin specifically interacts with the filamin A mechanosensitive domain 21. *Biochemistry* 58: 4726-4736.



See **smoothelin (C-8): sc-376902** for smoothelin antibody conjugates, including AC, HRP, FITC, PE, and Alexa Fluor® 488, 546, 594, 647, 680 and 790.