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Monoclonal Antibody to Smoothelin - Purified

Alternate names: SMSMO, SMTN

Catalog No.: BM5081

Quantity: 0.1 ml

Concentration: 1.0 mg/ml

Background: Smoothelin is a constituent of the smooth muscle cell (SMC) cytoskeleton. Antibodies directed to smoothelin are useful tools to monitor SMC differentiation. Smoothelin is exclusively expressed in fully differentiated (contractile) SMCs. RNA and protein analyses revealed a broad species distribution of this protein. Cells with SMC-like characteristics, such as myofibroblasts and myoepithelial cells, as well as skeletal and cardiac muscle do not contain smoothelin. Confocal scanning laser microscopy of tissue sections and cells in culture show a filamentous organization of smoothelin colocalizing with actin stress fibers. In immunoblots two molecular weight isoforms are detected i.e. a 59 kDa isoform specific for visceral SMC (smoothelin A), and an isoform with a molecular weight of approximately 100 kDa in vascular SMC (smoothelin B). Human smoothelin is encoded by a single copy gene which is located on chromosome 22.

Uniprot ID: P53814

NCBI: 9606

GeneID: 6525

Host / Isotype: Mouse / IgG1

Recommended Isotype Controls: SM10P (for use in human samples), SM20P (for use in rat samples), AM03095PU-N

Clone: R4A

Immunogen: Cytoskeletal extract of Chicken gizzard

Format:
State: Liquid purified IgG fraction
Buffer System: PBS
Preservatives: 0.09% Sodium Azide

Applications:
Western Blot: 1/1000.
Cytological Material.
Immunofluorescence Microscopy.
Immunocytochemistry.
Immunohistochemistry on Frozen and Paraffin Sections: 1/100-1/200 with PBS, pH 7.4 (ABC Method).
Microwave pretreatment is required.
Incubation Time: 1 h at RT, extended with Paraffin.
Other applications not tested. Optimal dilutions are dependent on conditions and should be determined by the user.

Specificity: This antibody is specific for Smoothelin.
Reactive with a novel cytoskeletal protein specific for smooth muscle cells: smoothelin.
In Western Blot 2 Molecular weight isoforms are detected: 59 kD isoform specific to visceral SMC (Smoothelin A) and 100 kD isoform in vascular SMC (Smoothelin B).
The antibody is very useful for characterization of atherosclerotic lesions.
The antibody is useful tool to monitor SMC differentiation.
Confocal scanning laser microscopy of tissue sections and cells in culture showed a filamentous organization of smoothelin co-localizing with actin stress fibers.

Species Reactivity: **Tested:** Human, Monkey, Canine, Feline, Porcine and Chicken

Add. Information: Smoothelin was not detetced in primary or long term smooth muscle cell cultures.

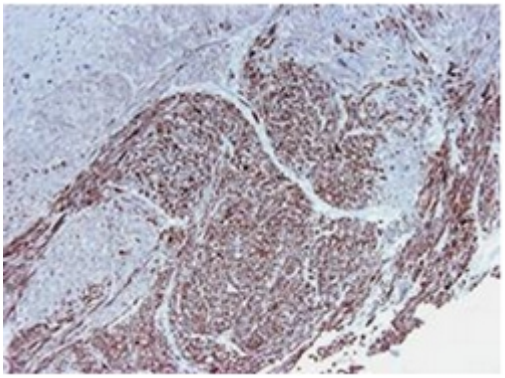
Storage: Store undiluted at 2-8°C for one month or (in aliquots) at -20°C for longer.
Avoid repeated freezing and thawing.
Shelf life: one year from despatch.

General Readings:

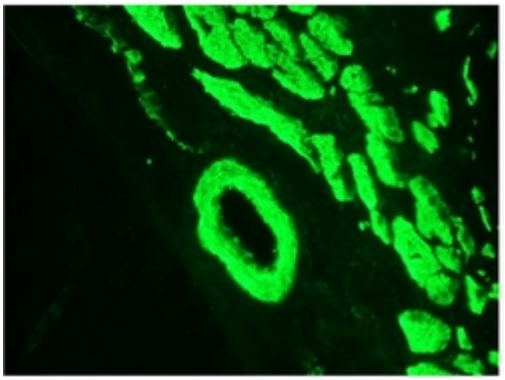
1. van der Loop FT, Schaart G, Timmer ED, Ramaekers FC, van Eys GJ. Smoothelin, a novel cytoskeletal protein specific for smooth muscle cells. J Cell Biol. 1996 Jul;134(2):401-11. PubMed PMID: 8707825.
2. Wehrens XH, Mies B, Gimona M, Ramaekers FC, Van Eys GJ, Small JV. Localization of smoothelin in avian smooth muscle and identification of a vascular-specific isoform. FEBS Lett. 1997 Apr 1;405(3):315-20. PubMed PMID: 9108311.
3. van der Loop FT, Gabbiani G, Kohnen G, Ramaekers FC, van Eys GJ. Differentiation of smooth muscle cells in human blood vessels as defined by smoothelin, a novel marker for the contractile phenotype. Arterioscler Thromb Vasc Biol. 1997 Apr;17(4):665-71. PubMed PMID: 9108778.
4. Christen T, Bochaton-Piallat ML, Neuville P, Rensen S, Redard M, van Eys G, et al. Cultured porcine coronary artery smooth muscle cells. A new model with advanced differentiation. Circ Res. 1999 Jul 9;85(1):99-107. PubMed PMID: 10400915.
5. Johansson B, Eriksson A, Ramaekers F, Thornell L. Smoothelin in adult and developing human arteries and myocardium. Histochem Cell Biol. 1999 Oct;112(4):291-9. PubMed PMID: 10550614.
6. Johansson B, Eriksson A, Ramaekers F, Thornell LE. Smoothelin and intermediate filament proteins in human aortocoronary saphenous vein by-pass grafts. Histochem J. 1999 Nov;31(11):723-7. PubMed PMID: 10646837.
7. Deruiter MC, Rensen SS, Coolen GP, Hierck BP, Bergwerff M, Debie WM, et al. Smoothelin expression during chicken embryogenesis: detection of an embryonic isoform. Dev Dyn. 2001 Aug;221(4):460-3. PubMed PMID: 11500983.
8. Council L, Hameed O. Differential expression of immunohistochemical markers in bladder smooth muscle and myofibroblasts, and the potential utility of desmin, smoothelin, and vimentin in staging of bladder carcinoma. Mod Pathol. 2009 May;22(5):639-50. doi: 10.1038/modpathol.2009.9. Epub 2009 Feb 27. PubMed PMID: 19252475.
9. Coco DP, Hirsch MS, Hornick JL. Smoothelin is a specific marker for smooth muscle neoplasms of the gastrointestinal tract. Am J Surg Pathol. 2009 Dec;33(12):1795-801. PubMed PMID: 19950405.

Pictures:

Immunohistochemistry on Paraffin Section of Human smooth muscle.



Immunohistochemistry on Frozen Section of Chicken gizzard striated muscle.



Immunohistochemistry on Frozen Section of Chicken gizzard striated muscle.