SANTA CRUZ BIOTECHNOLOGY, INC.

α-Actin (alpha-SM1): sc-130617

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

BACKGROUND

All eukaryotic cells express Actin, which often constitutes as much as 50% of total cellular protein. Actin filaments can form both stable and labile structures and are crucial components of microvilli and the contractile apparatus of muscle cells. While lower eukaryotes, such as yeast, have only one Actin gene, higher eukaryotes have several isoforms encoded by a family of genes. At least six types of Actin are present in mammalian tissues and fall into three classes. α-Actin expression is limited to various types of muscle, whereas β-Actin and γ-Actin are the principle constituents of filaments in other tissues. Members of the small GTPase family regulate the organization of the Actin cytoskeleton. Rho controls the assembly of Actin stress fibers and focal adhesion. Rac regulates Actin filament accumulation at the plasma membrane. Cdc42 stimulates formation of filopodia.

CHROMOSOMAL LOCATION

Genetic locus: ACTA2 (human) mapping to 10q23.31; Acta2 (mouse) mapping to 19 C1.

SOURCE

α-Actin (alpha-SM1) is a mouse monoclonal antibody raised against an N-terminal peptide corresponding to smooth muscle α-Actin of human origin.

PRODUCT

Each vial contains 200 µg IgG_{2a} kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

α-Actin (alpha-SM1) is available conjugated to agarose (sc-130617 AC), 500 µg/0.25 ml agarose in 1 ml, for IP.

APPLICATIONS

α-Actin (alpha-SM1) is recommended for detection of smooth muscle α-Actin 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); non cross-reactive with Actin from fibroblasts (β- and γ-cytoplasmic), myocardium (α-myocardial), and striated muscle (α-sarcomeric).

Suitable for use as control antibody for ACTA2 siRNA (h): sc-43590, ACTA2 siRNA (m): sc-43591, ACTA2 shRNA Plasmid (h): sc-43590-SH, ACTA2 shRNA Plasmid (m): sc-43591-SH, ACTA2 shRNA (h) Lentiviral Particles: sc-43590-V and ACTA2 shRNA (m) Lentiviral Particles: sc-43591-V.

Molecular Weight of α-Actin: 43 kDa.

Positive Controls: ACTA2 (h): 293 Lysate: sc-111833, mouse heart extract: sc-2254 or IMR-32 cell lysate: sc-2409.

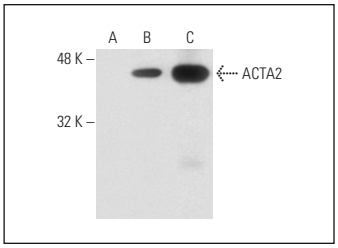
STORAGE

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

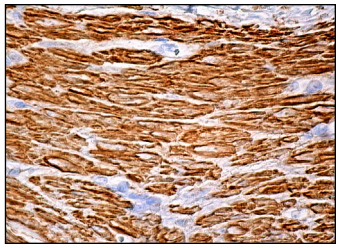
RESEARCH USE

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

DATA



α-Actin (alpha-SM1): sc-130617. Western blot analysis of ACTA2 expression in non-transfected: sc-110760 (**A**) and human ACTA2 transfected: sc-111833 (**B**) 293 whole cell lysates and mouse heart tissue extract (**C**).



α-Actin (alpha-SM1): sc-130617. Immunoperoxidase staining of formalin fixed, paraffin-embedded human smooth muscle tissue showing cytoplasmic and cytoskeletal staining of smooth muscle cells.

SELECT PRODUCT CITATIONS

1. Liu, X., et al. 2010. Fibroblast-specific expression of AC6 enhances β-adrenergic and prostacyclin signaling and blunts bleomycin-induced pulmonary fibrosis. Am. J. Physiol. Lung Cell. Mol. Physiol. 298: L819-L829.
2. Zemskov, E.A., et al. 2012. Tissue transglutaminase promotes PDGF/PDGFR-mediated signaling and responses in vascular smooth muscle cells. J. Cell. Physiol. 227: 2089-2096.
3. Cárdenas, A., et al. 2013. Adenosine A_{2B} receptor-mediated VEGF induction promotes diabetic glomerulopathy. Lab. Invest. 93: 135-144.
4. Kunit, T., et al. 2014. Inhibition of smooth muscle force generation by focal adhesion kinase inhibitors in the hyperplastic human prostate. Am. J. Physiol. Renal Physiol. 307: F823-F832.
5. Nishimatsu, H., et al. 2015. Neuromedin B restores erectile function by protecting the cavernous body and the nitrergic nerves from injury in a diabetic rat model. PLoS ONE 10: e0133874.
6. Ryu, Y., et al. 2016. Gallic acid prevents isoproterenol-induced cardiac hypertrophy and fibrosis through regulation of JNK2 signaling and Smad3 binding activity. Sci. Rep. 6: 34790.
7. Choi, S.Y., et al. 2016. Class I HDACs specifically regulate E-cadherin expression in human renal epithelial cells. J. Cell. Mol. Med. 20: 2289-2298.
8. Verma, S.C., et al. 2016. Primary mouse lung fibroblasts help macrophages to tackle *Mycobacterium tuberculosis* more efficiently and differentiate into myofibroblasts up on bacterial stimulation. Tuberculosis 97: 172-80.
8. Choi, S.Y., et al. 2016. Piceatannol attenuates renal fibrosis induced by unilateral ureteral obstruction via downregulation of histone deacetylase 4/5 or p38-MAPK signaling. PLoS ONE 11: e0167340.

CONJUGATES

See **α-Actin (1A4): sc-32251** for α-Actin antibody conjugates, including AC, HRP, FITC, PE, and Alexa Fluor® 488, 546, 594, 647, 680 and 790.