SANTA CRUZ BIOTECHNOLOGY, INC.

α-Actin (a-SM1): sc-130616

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- 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 and Cdc42 stimulates formation of filopodia.

CHROMOSOMAL LOCATION

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

SOURCE

α-Actin (a-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 (a-SM1) is available conjugated to agarose (sc-130616 AC), 500 µg/ 0.25 ml agarose in 1 ml, for IP.

APPLICATIONS

α-Actin (a-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: A-10 cell lysate: sc-3806, L6 whole cell lysate: sc-364196 or NIH/3T3 whole cell lysate: sc-2210.

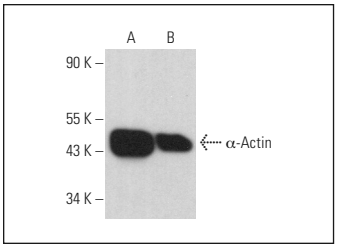
STORAGE

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

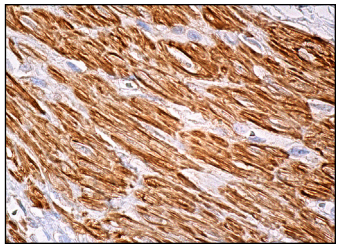
RESEARCH USE

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

DATA



α-Actin (a-SM1): sc-130616. Western blot analysis of α-Actin expression in A-10 (**A**) and L6 (**B**) whole cell lysates.



α-Actin (a-SM1): sc-130616. Immunoperoxidase staining of formalin fixed, paraffin-embedded human smooth muscle tissue showing cytoplasmic and cytoskeletal staining of smooth muscle cells.

SELECT PRODUCT CITATIONS

1. Zuo, H., et al. 2009. CD151 gene delivery after myocardial infarction promotes functional neovascularization and activates FAK signaling. Mol. Med. 15: 307-315.
2. Steib, C.J., et al. 2010. Amiloride reduces portal hypertension in rat liver cirrhosis. Gut 59: 827-836.
3. Spencer, M., et al. 2011. Adipose tissue extracellular matrix and vascular abnormalities in obesity and Insulin resistance. J. Clin. Endocrinol. Metab. 96: E1990-E1998.
4. Yoshida, A., et al. 2012. *In vitro* tissue engineering of smooth muscle sheets with peristalsis using a murine induced pluripotent stem cell line. J. Pediatr. Surg. 47: 329-335.
5. Spencer, M., et al. 2013. Omega-3 fatty acids reduce adipose tissue macrophages in human subjects with insulin resistance. Diabetes 62: 1709-1717.
6. Karki, S., et al. 2014. Wilms' tumor 1 (Wt1) regulates pleural mesothelial cell plasticity and transition into myofibroblasts in idiopathic pulmonary fibrosis. FASEB J. 28: 1122-1131.
7. Bautista-Pérez, R., et al. 2015. Involvement of neutral sphingomyelinase in the angiotensin II signaling pathway. Am. J. Physiol. Renal Physiol. 308: F1178-F1187.
7. Arentson-Lantz, E.J., et al. 2016. Fourteen days of bed rest induces a decline in satellite cell content and robust atrophy of skeletal muscle fibers in middle-aged adults. J. Appl. Physiol. 120: 965-975.
8. Fang, J.F., et al. 2016. Periprostatic implantation of neural differentiated mesenchymal stem cells restores cavernous nerve injury-mediated erectile dysfunction. Am. J. Transl. Res. 8: 2549-2561.

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.