3050 Spruce Street, St. Louis, MO 63103 USA
Tel: (800) 521-8956 (314) 771-5765 Fax: (800) 325-5052 (314) 771-5757
email: techservice@sial.com sigma-aldrich.com

Product Information

Anti-Actin, α-Smooth Muscle - Alkaline Phosphatase antibody, Mouse monoclonal
clone 1A4, purified from hybridoma cell culture

Catalog Number **A5691**

Product Description

Anti-Actin, α-Smooth Muscle (mouse IgG2a isotype) is derived from the hybridoma produced by the fusion of mouse myeloma cells and splenocytes from an immunized mouse. The NH_2 terminal synthetic decapeptide of α–smooth muscle actin coupled to keyhole limpet hemocyanin (KLH) was used as the immunogen. The isotype is determined by a double diffusion immunoassay using Mouse Monoclonal Antibody Isotyping Reagents, Catalog Number ISO-2. The immunoglobulin fraction of the ascites fluid is conjugated to Alkaline Phosphatase using 0.2% glutaraldehyde.

Anti-Actin, α-Smooth Muscle specifically recognizes the α smooth muscle actin isoform of actin (42 kDa) in ELISA and immunoblotting.[1] It does not react with the other major actin isoforms present in fibroblasts or epithelial cells (β and γ cytoplasmic), striated muscle (α-sarcomeric) and myocardium (α-myocardial). No reactivity is displayed with γ-smooth muscle isoform.

Anti-Actin, α-Smooth Muscle (also known Anti-α-SM-1) recognizes the α-smooth muscle isoform of actin (42 kDa). The antibody reacts with normal and neoplastic, human vascular and visceral smooth muscle cells. It also reacts with normal myoepithelial cells, pericytes, eye lens cells, hair follicle cells and certain stromal cells in the intestine, testis, lymphoid organs, liver, ovary and bone marrow.[1,2,3,4,5,6] The antibody also reacts with stromal myofibroblasts in hypertrophic scars, and in neoplastic tissues.[7]
α-Smooth muscle actin is also transiently co-expressed with sarcomeric α-actin during myo-genesis in chicken and rat embryos.[8,9] It was also found in the ventricular conducting tract of adult mammalian heart. It is expressed in leiomyomas, leiomyosarcomas and leiomyoblastomas, as well as in a proportion of rhabdomyosarcomas.[10,11] The antibody cross reacts with actin expressing cells in human, bovine, goat, sheep, rabbit, cat, dog, mouse, rat, hamster, guinea pig, chicken, viper, lizard, frog, snail and crayfish tissues. It can be used for staining acetone-fixed, frozen sections, smears, cytospins and EM preparations. The Alkaline Phosphatase conjugated Monoclonal Anti-Actin, α-Smooth Muscle is especially useful for direct staining of tissues and cells.

Uses

1. Identification of developing and adult smooth muscle pericytes and myoepithelial cells.
2. Detection and characterization of smooth muscle tumors, glomus tumors and certain myoepithelial tumors, osteosarcomas and soft tissue tumors.
3. Differentiation between glomus tumors and hemangiopericytomas, and between epitheliosis and intraductal breast carcinoma.
4. Studies on the expression of actins in cultured cells.
5. Detection of α-smooth muscle actin positive cells in hepatic fibrosis, bone marrow fibrosis, experimental gliosis, atherosclerosis, pulmonary hypertension and wound healing.

Reagents

Supplied as a liquid in 0.05 M Tris buffer, pH 8.0, containing 1% BSA, 50% glycerol, with 1 mM $MgCl_2$ and 15mM sodium azide as a preservative.

Precautions

For R&D use only. Not for drug, household, or other uses. Please consult the Material Safety Data Sheet for information regarding hazards and safe handling practices.

Product Profile

Immunohistochemistry: a working dilution of 1:20 was determined using human tonsil or appendix sections.

Direct immunoblotting: a working dilution of 1:100 was determined using chicken gizzard or mouse heart extract.

Note: In order to obtain best results, it is recommended that each user determine the optimal working dilution for individual applications by titration assay.

Storage

Store at 2-8 °C. Do Not Freeze.
Working dilution should be discarded if unused within 12 hours.

References

1. Skalli, O., et al., *J. Cell Biol*., **103**, 2787 (1986).
2. Skalli, O., et al., *Lab. Invest*., **60**, 275 (1989).
3. Skalli, O., et al., *J. Histochem. Cytochem*., **37**, 315 (1989).
4. Peled, A., et al., *Blood*, **78**, 304 (1991).
5. Schmitt-Graff, A., et al., *Differentiation*, **43**, 115 (1990).
6 Jahoda, C., et al., *J. Cell Sci*., **99**, 627 (1991).
7. Sappino, A., et al., *Lab. Invest*., **63**, 144 (1990).
8. Ruzicka, D., et al., *J. Cell Biol*., **107**, 2575 (1988).
9. Babai, F., et al., *Differentiation*, **44**, 132 (1990).
10. Jones, H., et al., *J. Pathol*., **162**, 29 (1990).
11. Roholl, P., et al., *Hu. Pathol*., **21**, 1269 (1990).

RC,DS,PHC 04/21-1