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

Monoclonal Anti-β-Actin
Clone AC-15
produced in mouse, ascites fluid

Catalog Number **A5441**

Product Description

Monoclonal Anti-β-Actin (mouse IgG1 isotype) is derived from the AC-15 hybridoma produced by the fusion of mouse myeloma cells and splenocytes from an immunized mouse. A slightly modified synthetic β-cytoplasmic actin N-terminal peptide Ac-Asp-Asp-Asp-Ile-Ala-Ala-Leu-Val-Ile-Asp-Asn-Gly-Ser-Gly-Lys conjugated to KLH was used as the immunogen.[1] The isotype is determined by a double diffusion immunoassay using Mouse Monoclonal Antibody Isotyping Reagents, Catalog Number ISO2.

Monoclonal Anti-β-Actin recognizes an epitope located on the N-terminal end of the β-isoform of actin. The antibody specifically labels β-actin in a wide variety of tissues and species using immunoblotting (42 kDa), immunofluorescent staining of cultured cell lines, and immunohistochemistry. In immunofluorescent staining of chicken gizzard ultrathin tissue cryosections, the antibody labels the dense bodies and the longitudinal channels linking consecutive dense bodies that are also occupied by desmin and the membrane-associated dense plaque.[1] It does not stain adult cardiac and skeletal muscles. The antibody cross reacts with β-actin expressing cells in human, bovine, sheep, pig, rabbit, cat, dog, mouse, rat, guinea pig, chicken, carp, and leech tissues, but not in amoeba nor *Drosophila*. It can be used for staining of acetone-fixed, frozen sections and EM preparations. The epitope recognized by the antibody is resistant to formalin-fixation and paraffin-embedding. Ethanol, B5, methacarn, or Bouin's solutions may also be used as fixatives.

The two major cytoskeletal proteins implicated in cell motility are actin and myosin. Actin and myosin are constituents of many cell types and are involved in a myriad of cellular processes including locomotion, secretion, cytoplasmic streaming, phagocytosis, and cytokinesis. Although actin is one of the most conserved eukaryotic proteins, it is expressed in mammals and birds as at least six isoforms characterized by electrophoresis and amino acid sequence analysis.[2,3] Four of them represent the differentiation markers of muscle tissues and two are found practically in all cells.

There are three α-actins (α-skeletal, α-cardiac, and α-smooth muscle), one β-actin (β-nonmuscle), and two γ-actins (γ-smooth muscle and γ-non-muscle). Actin isoforms show >90% overall sequence homology, but only 50–60% homology in their 18 NH_2-terminal residues.[4] The NH_2-terminal region of actin appears to be a major antigenic region and may be involved in the interaction of actin with other proteins such as myosin. The actin in cells of various species and tissue origin is very similar in its immunological and physical properties. Therefore, a specific antibody to β-actin provides a useful tool in studying the intracellular distribution of
β-actin and the static and dynamic aspects of the cytoskeleton.

Reagent

Supplied as ascites fluid with 15 mM sodium azide as a preservative.

Precautions and Disclaimer

This product is 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.

Storage

For continuous use, store at 2–8 °C for up to one month. For extended storage, the solution may be frozen in working aliquots. Repeated freezing and thawing, or storage in "frost-free" freezers, is not recommended. If slight turbidity occurs upon prolonged storage, clarify the solution by centrifugation before use.

Product Profile

Immunoblotting: a minimum dilution of 1:5,000 was determined using cultured human or chicken fibroblast cell extracts.

Indirect immunofluorescence: a minimum dilution of 1:1,000 was determined using cultured human or chicken fibroblasts.

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

References

1. North, A.J., et al., *J. Cell Biol*., **120**, 1159-67 (1993).
2. Vandekerchove, J., and Weber, K., *Eur. J. Biochem*., **90**, 451 (1978).
3. Drew, J., et al., *Amer. J. Physiol*., **260**, C1332 (1991).
4. Lessard, J., *Cell Motil. Cytoskel*., **10**, 349 (1988).

MG,KAA,PHC,MAM 10/08-1