Product Information

Anti-Actin Antibody, Mouse Monoclonal

Clone AC-40, Purified from hybridoma cell culture

A3853

Product Description

Monoclonal Anti-Actin (mouse IgG2a isotype) is derived from the AC-40 hybridoma produced by the fusion of mouse myeloma cells and splenocytes from mice immunized with a synthetic actin C-terminal peptide, attached to Multiple Antigen Peptide (MAP) backbone. The isotype is determined by a double diffusion immunoassay using Mouse Monoclonal Antibody Isotyping Reagents (CISO2).

Monoclonal Anti-Actin recognizes an epitope located on the C-terminal end of actin, but not on the N-terminus. This epitope is conserved in all actin isoforms. The antibody specifically labels actin in a wide variety of tissues and species by various immunochemical techniques including ELISA, immunoblotting (42 kDa),[1,2] immunofluorescent staining of cultured cell lines,[3,4] and immunohistology. Cross-reaction has been observed with human,[1,2] bovine,[3] sheep, goat, pig, rabbit, dog,[4] mouse, rat, guinea pig, hamster, chicken, carp, viper, frog, and snail. The antibody may be used in staining of methanol-fixed, frozen sections and the epitope recognized by the antibody is resistant to formalin-fixation and paraffin-embedding. Zinc-formalin, B5, ethanol, methacarn, Brunnel's or Bouin's solution 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 with at least six isoforms characterized by electrophoresis and amino acid sequence analysis.[5-7] Four of them represent the differentiation markers of muscle tissues and two are found in nearly all cells.

There are three α-actins (skeletal, cardiac, and smooth muscle), one β-actin (β-non-muscle), 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 N-terminal residues.[8] The N-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.[9] The actin in cells of various species and tissues are very similar in their immunological and physical properties. As a consequence, it is difficult to produce antisera to this protein. The availability of a monoclonal antibody to actin provides a specific and useful tool in studying actin structure and function and in probing sites of actin-binding proteins.

Reagent

Monoclonal Anti-Actin is supplied as a solution in 0.01 M phosphate buffered saline, pH 7.4, containing 15 mM sodium azide.

Antibody Concentration: ~1.5 mg/mL

Precautions and Disclaimer

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

Storage/Stability

For continuous use, store at 2-8 °C for up to one month. For extended storage, freeze in working aliquots. Repeated freezing and thawing is not recommended. Storage in "frost-free" freezers is not recommended. If slight turbidity occurs upon prolonged storage, clarify the solution by centrifugation before use. Working dilution samples should be discarded if not used within 12 hours.

Product Profile

By immunoblotting, a minimum working antibody concentration of 0.5 µg/mL is recommended using chicken or human fibroblasts. By immunocytochemistry, a working antibody concentration of 10-20 µg/mL is recommended using chicken or human fibroblasts by methanol/acetone fixation. Note: In order to obtain best results in various techniques and preparations, it is recommended to determine optimal working dilutions by titration.

References

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