SIGMA-ALDRICH®

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Product Information

Anti-Actin, N-terminal
produced in rabbit, affinity isolated antibody,

Product Number **A2103**

Product Description

Anti-Actin, N-terminal is produced in rabbit using as immunogen a synthetic actin N-terminal nonapeptide conjugated to KLH. The antibody is affinity-purified using the immunizing peptide immobilized on agarose.

Anti-Actin, N-terminal recognizes one or more epitope(s) located on the first nine amino acid residues of the N-terminal region of actin. The antibody specifically detects actin in human, rat, mouse, chicken, and frog tissues. The antibody recognizes actin by immunoblotting (42 kDa) and specifically stains typical stress fibers in cultured cells using indirect immunofluorescent staining. The antibody is also applicable in immunohistochemistry; the epitope(s) recognized is resistant to formalin-fixation and paraffin embedding.

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 maintenance of cell shape, locomotion, secretion, cytoplasmic streaming, phagocytosis, and cytokinesis. Actin is present in cells both as a globular monomer (G-actin) and as a polymer in filamentous actin (F-actin) that participates in the formation of a variety of stable and labile structures. The presence of actin in cell nuclei and cell membranes has been reported. Although actin is one of the most conserved eukaryotic proteins, it is expressed in mammals and birds as at least six major different isoforms characterized by electrophoresis and amino acid sequence analysis.[1-3] Four of them represent the differentiation markers of muscle tissues and two are found practically in all non-muscle 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-nonmuscle). Actin isoforms show >90% overall sequence homology, but only 50-60% homology in their 18 N-terminal residues.[4]

The N-terminal domain of actin appears to be a major antigenic region of the molecule.[5] *In vivo*, different isoforms can coexist in the same cell but are differentially regulated, and in most cases cannot substitute for each other functionally.[6]

Reagent

Supplied as a solution in 0.01 M phosphate buffered saline (PBS), pH 7.4, containing 1% BSA and 15 mM sodium azide.

Antibody concentration: ~0.5 mg/ml

Precautions and Disclaimer

This product is 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 prolonged storage, freeze in working aliquots at −20 °C. 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. Working dilution samples should be discarded if not used within 12 hours.

Product Profile

Immunoblotting: a working antibody concentration of 2-4 ng/ml is recommended using a whole extract of rat skeletal muscle.

Immunoblotting: a working antibody concentration of 0.5-1 μg/ml is recommended using a whole extract of the human epitheloid carcinoma HeLa cell line.

Indirect immunofluorescence: a working antibody concentration of 1-2 μg/ml is recommended using cultured chicken fibroblasts.

Indirect immunoperoxidase staining: a working antibody concentration of 2-4 μg/ml is recommended using formalin-fixed, paraffin-embedded sections of human appendix, mouse heart, and frog skeletal muscle.

Note: In order to obtain the best results in various techniques and preparations we recommend determining optimal working dilutions by titration.

References

1. Herman, I.M., *Curr. Opin. Cell Biol*., **5**, 48-55 (1993).
2. Vandekerckhove, J., and Weber, K., *Eur. J. Biochem*., **90**, 451-462 (1978).
3. Drew, J.S., et al., *Am. J. Physiol*., **260**, C1332-C1340 (1991).
4. Lessard, J.L., *Cell Motil. Cytoskeleton*, **10**, 349-362 (1988).
5. Roustan, C., et al., *Biochem. J*., **233**, 193-197 (1986).
6. Kumar, A., et al., *Proc. Natl. Acad. Sci. USA*, **94**, 4406-4411 (1997).

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