

Product No. G-9264

Lot 116H4810

Monoclonal Anti-GAP-43

Mouse Ascites Fluid

Clone GAP-7B10

Monoclonal Anti GAP-43 (mouse IgG2a isotype) is derived from the GAP-7B10 hybridoma produced by the fusion of mouse myeloma cells and splenocytes from BALB/c mice immunized with HPLC-purified GAP-43 from neonatal rat forebrain membranes. The isotype is determined using the Sigma ImmunoType™ Kit (Sigma Stock No. ISO-1) and by a double diffusion immunoassay using Mouse Monoclonal Antibody Isotyping Reagents (Sigma Stock No. ISO-2). The product is provided as ascites fluid with 0.1% sodium azide (see MSDS)* as preservative.

Specificity

Monoclonal Anti GAP-43 (Growth-Associated Protein-43)¹ recognizes an epitope present on both kinase C phosphorylated and dephosphorylated forms of GAP-43. The epitope detected by the antibody seems to be a tertiary configuration, existing in all 3 isoforms of GAP-43, which is destroyed by even a limited proteolysis (e.g. by Chymotrypsin or V8 protease). Nevertheless, SDS and heat-denaturation does not significantly effect the epitope recognized by the antibody in an immunoblot. Following SDS-PAGE (10% gel) of denatured-reduced newborn rat brain preparation, the antibody localizes a band at 46 kD in immunoblotting. An additional band of approx. 55 kD may also be stained when using higher concentrations of the antibody. The antibody has been used for immunohistochemical staining of formalin-fixed, paraffin-embedded and frozen tissue sections.¹ The product exhibits a wide interspecies cross-reactivity (e.g., human, hamster, cat, rat, mouse, chick and snake).

Description

The neural-specific Growth-Associated Protein-43 (GAP-43, also known as B-50, F1, pp46, p57 and neuromodulin), is an intracellular phosphoprotein found exclusively in the peripheral and central nervous systems.² GAP-43 is a major protein of axonal growth cones³ (the structure that is elaborated at the tip of growing axons specifically to perform functions of

motility and pathfinding during axonogenesis and regeneration) and in certain presynaptic terminals. GAP-43 is absent from dendritic growth cones. It has a very acidic pI (4.3-4.6, depending on the species) and an anomalous behavior in SDS gels such that its reported molecular mass ranges from 43-57 kD, whereas the primary sequence of the protein and its hydrodynamic behavior indicate a molecular mass of about 24 kD. Although its precise function in growth cones and synaptic terminals is not known, increased phosphorylation of GAP-43 correlates with exocytosis, depolarization, and treatment of growth cones with NGF, implying that kinase C and possibly other protein kinase-mediated phosphorylation of GAP-43 could be a component of a common response of growth cones to diverse extracellular stimuli. GAP-43 associates with the plasma membrane via acylated residues near the amino terminus and with the submembrane fraction of the cytoskeleton, presumably through its highly charged, extended carboxyl terminus, which bears similarities to neurofilament proteins. Monoclonal antibody reacting specifically against GAP-43 is a useful tool in the study of the role and function of GAP-43⁴ during axonogenesis and in the adult nervous system.

Uses

Monoclonal Anti GAP-43 may be used for the localization of GAP-43 using various immunochemical assays including ELISA, immunoblot and immunohistochemistry.

Titer: 1:2,000

The antibody titer was determined by indirect immunoblotting using newborn rat brain extract.

In order to obtain best results in different techniques and preparations, it is recommend to determine optimal working dilutions by titration assay.

Storage

For continuous use, store at 2-8°C. For extended storage, the solution may be frozen 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.

* Due to the sodium azide content a material safety sheet (MSDS) for this product has been sent to the attention of the safety officer of your institution. Consult the MSDS for information regarding hazardous and safe handling practices.

References

1. Meiri, K., et al., J. Cell Biol., **112**, 991 (1991).
2. Skene, J., Ann. Rev. Neurosci., **12**, 127 (1989).
3. Meiri, K., et al., Proc. Natl. Acad. Sci. USA, **83**, 3537 (1986).
4. Gordon-Weeks, P., Trends Neurosci., **12**, 363 (1989).