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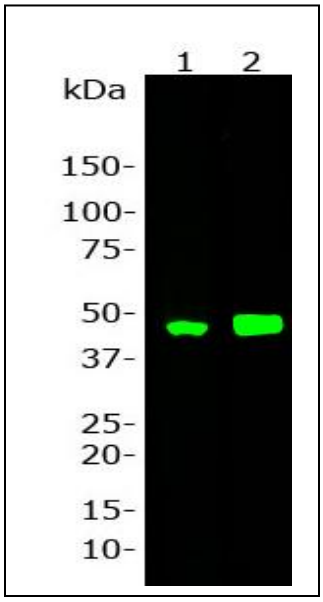
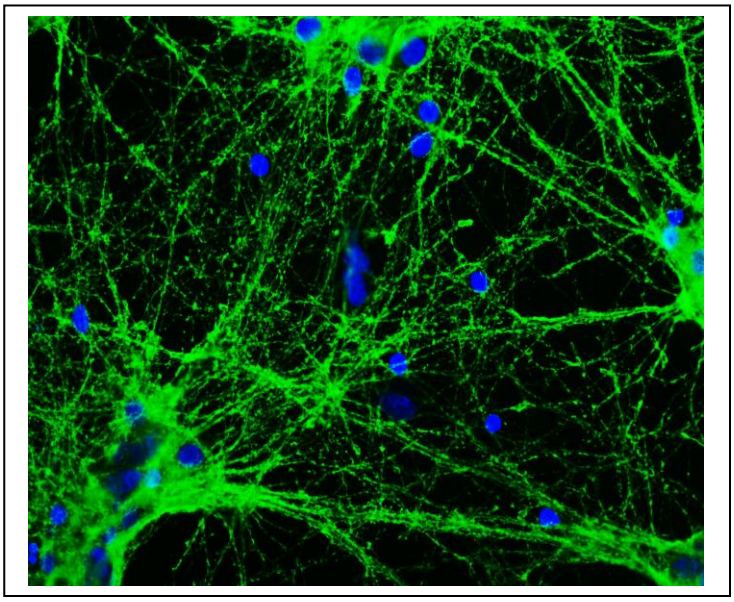
Catalogue# MCA-5E8: Mouse Monoclonal Antibody to GAP43

The Immunogen: GAP43 is a very abundant nervous system protein which is found concentrated in neurons. One group discovered it as one of three proteins which becomes unregulated during the regeneration of the toad optic nerve (1).

Three GAPs (Growth associated proteins) were discovered, and the number 43 comes from the apparent SDS-PAGE molecular weight of the one named GAP43. The HGNC name for this protein is, not surprisingly, GAP43. Later work showed that GAP43 does not run on SDS-PAGE in a fashion which accurately reflects its molecular weight, and that GAP43 proteins from different species may run at different apparent molecular weights. Partly due to these features GAP43 was independently discovered by several different groups and therefore has several alternate names, such as protein F1, pp46, neuromodulin, neural phosphoprotein B-50 and calmodulin-binding protein P-57. In each case the number reflects the apparent SDS-PAGE molecular weight, and underlines the unusual SDS-PAGE mobility properties of this molecule.

Mammalian GAP43 protein contains only 226-243 amino acids, and so the real molecular weight is 23.61-25.14 kDa. GAP43 is one of many highly negatively charged extended molecules which lack well defined tertiary structure and contain few hydrophobic residues and which run anomalously on SDS-PAGE. Other examples are CAP23, MARCKS, microtubule associated proteins MAP2, tau and the Neurofilament subunits. GAP43 has been extensively studied and is known to be a major protein kinase C substrate and to bind calmodulin avidly. GAP43 is anchored to the plasma membrane by palmitoylation modifications





Left: Blot of SH-SY5Y cell lysate (lane 1) and whole rat brain lysate (lane 2) was probed with MCA-5E8 antibody to GAP43 at dilution of 1: 1:2,000. Note that the strong single band running at about 43 kDa corresponds to GAP43. **Right:** Mixed neuronal cultures stained with MCA-5E8 (green) and DNA (blue). The GAP43 antibody stains the plasma membrane of neurons and is particularly concentrated in dendrites.

Antibody characteristics: The antibody was raised against recombinant full -length human GAP43 protein. MCA-5E8 is a mouse IgG1 class antibody with a k light chain. MCA-5E8 recognizes GAP43 specifically both in western blots and in immunocytochemical experiments.

Suggestions for use: The antibody solution is purified from tissue culture supernatant and is at concentration of 1 mg/mL in phosphate buffered saline preparation containing 5 mM sodium azide preservative (Link to

http://www.encorbio.com/MSDS/azide.htm for Material Safety Data Sheet). The antibody solution can be used at dilutions of at 1:1,000-1: 2,000 in immunofluorescence experiments. In western blotting using chemiluminescence it can be used at dilutions of 1:1,000-1: 5,000. Avoid repeated freezing and thawing, store at 4°C or -20°C.

Omim Link: http://omim.org/entry/162060..

References:

1. Skene JH, Willard M. Changes in axonally transported proteins during axon regeneration in toad retinal ganglion cells. J Cell Biol. 89:86-95 (1981).

2. Wiederkehr A, Staple J, Caroni P. The Motility-Associated Proteins GAP-43, MARCKS, and CAP-23 Share Unique Targeting and Surface Activity-Inducing Properties. Exp. Cell Res. 236:103-116 (1997).

Limitations: This product is for research use only and is not approved for use in humans or in clinical diagnosis.