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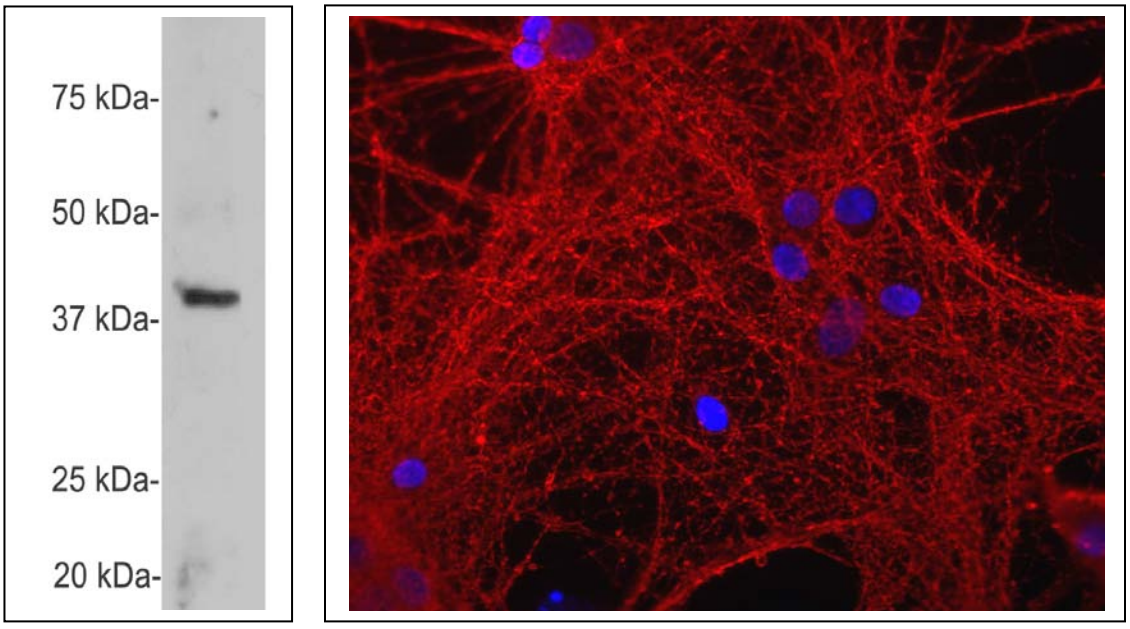
Catalogue# RPCA-GAP43: Rabbit polyclonal antibody to GAP43: GAP43

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 proteins contains only 226-243 amino acids, and so the real molecular weight is 23.61-25.14 kDa (to perform such calculations yourself see this link). 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: Western blots of homogenate of cow cerebellum stained with RPCA-GAP43 . A prominent band running at ~43 kDa represents the full length GAP43**. Right**: Mixed neuron-glial cultures stained with RPCA-GAP43 (red), blue is DNA staining. The GAP43 antibody stains numerous axonal and dendritic profiles in these cultures, clearly revealing the submembraneous cytoskeleton and vesicles.

Antibody characteristics: The antibody was raised against the C-terminal peptide of rat and mouse GAP43, which is KEDPEADQEHA, to which an N-terminal Cysteine residue was added to allow chemical coupling to Keyhole Limpet Hemocyanin carrier protein. The corresponding C-terminal peptide in the human GAP43

sequence is KGEEREADQEHA, which is similar enough so that our antibody binds to this also. The antibody is provided as an affinity purified pure preparation at 1mg/ml concentration.

Suggestions for use: The affinity purified antibody can be diluted to 1:1,000-5,000 for immunofluorescence staining and 1:10,000-50,000 for western blotting. On western blots look for a major band at about 43 kDa, though this may vary somewhat depending on the species and the acrylamide concentration of your SDS-PAGE system (see above). Store at 4°C or -20°C. Avoid repeat freezing and thawing.

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).

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