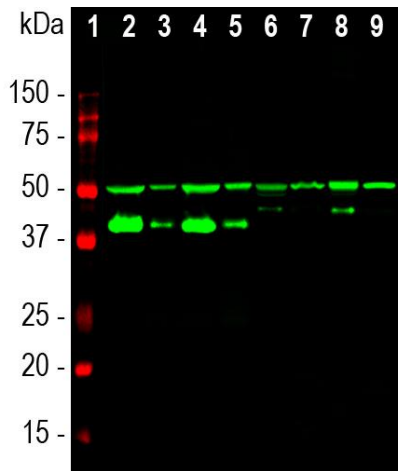
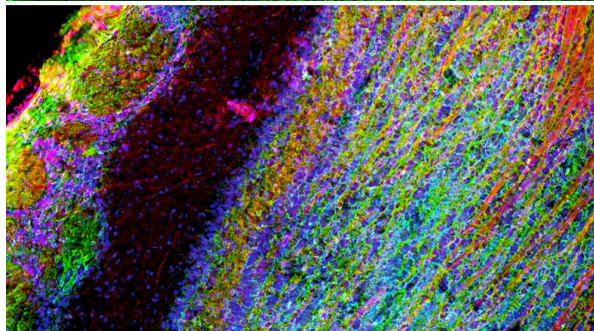
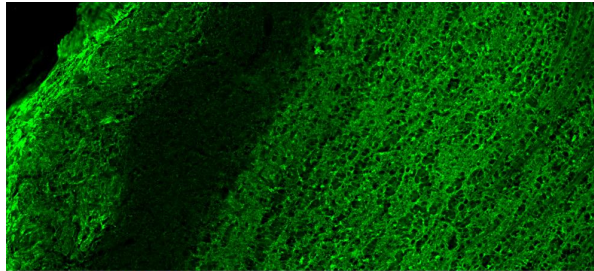

Product name:	GAP43
Cat number:	MAB-94087
Conjugate:	Unconjugated
Size:	100 ug
Clone:	1E3
Concentration:	1mg/ml
Host:	Ms
Isotype:	IgG1
Immunogen:	C-terminal peptide of rat and mouse GAP43, which is KEDPEADQEHA, with an N-terminal Cys added to allow chemical coupling to KLH carrier protein.
Reactivity:	Hu, Ho,Cw, Pg, Ch, Rt, Ms
Applications:	Western Blot: 1:10,000 Immunofluorescence: 1:1,000 Immunocytochemistry: 1:1,000 Immunohistochemistry: 1:1,000
Molecular Weight:	38, 43kDa by SDSPAGE
Purification:	Purified
Form:	Liquid
Buffer:	Affinity purified at 1mg/mL in PBS, 50% glycerol, 5mM NaN3
Storage:	For long term storage, leave frozen at -20°C. Avoid freeze / thaw cycles

Background:

GAP43 is an abundant protein which is found heavily concentrated in developing neurons, in particular at the growing tips, the growth cones. One group discovered it since it becomes unregulated during the regeneration of the toad optic nerve, and named it "growth associated protein 43", the 43 referring to the apparent molecular weight on SDS-PAGE gels (1). GAP43 does not run on SDS-PAGE in a fashion which accurately reflects its molecular weight, since the full length molecule human GAP43 is 238 amino acids giving a real molecular weight 24.8kDa. The molecule is very rich in charged and has few large hydrophobic amino acids which causes it to bind SDS poorly. The same GAP43 preparation will also give a different SDS-PAGE molecular weight depending on the percentage acrylamide content of the gel, the protein appearing relatively larger on gels with higher acrylamide concentration. GAP43 proteins from different species also may run at different apparent molecular weights on the same gel. Partly due to these unusual 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, the numbers 46, 50 and 57 reflecting the apparent SDS-PAGE molecular weight (2). GAP43 is a major protein kinase C substrate and binds calmodulin avidly, this being mediated by an N-terminal IQ calmodulin binding motif (3). GAP43 may be anchored to the plasma membrane by reversible palmitoylation on two Cys residues close to the N-terminus (4). Knock out of the GAP43 gene in mice is lethal early in postnatal life and is associated with defects in axonal pathfinding (5). GAP43 is one of a large family of "intrinsically disordered proteins" which typically have little defined structure unless they are bound to a more structured partner (6). The GAP43 antibody was made against the C-terminal peptide of rat GAP43 and binds to GAP43 in rodents and other mammalian species. It binds strongly to growth cones and axonal processes of neurons in cell culture and to synaptic regions in sectioned material.



Western blot of whole rat spinal cord lysates probed with GAP43 antibody to GAP43 in lane 16 and another similar antibody in lane 17. Dots in middle of strips indicate position of 50kDa and 37kDa protein bands. The strong single band running at about 43kDa corresponds to GAP43.



Mixed neuronal cultures stained with GAP43 (green), MAP2, a rabbit antibody to microtubule associated protein 2 (MAP2, red) and DNA (blue). The GAP43 antibody stains the plasma membrane of neurons and is particularly concentrated in dendrites.