

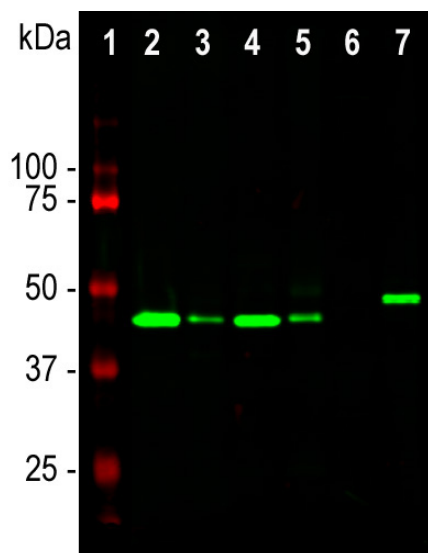
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**HGNC Name:** GAP43  
**UniProt:** P17677  
**RRID:** AB\_2572286  
**Immunogen:** Recombinant full-length Human GAP43  
**Format:** Purified antibody at 1mg/mL in 50% PBS, 50% glycerol plus 5mM Na<sub>2</sub>S<sub>2</sub>O<sub>5</sub>  
**Storage:** Store at 4°C for short term, for longer term store at -20°C  
**Recommended dilutions:**  
 WB: 5,000 IF/ICC and IHC: 1:1,000-5,000

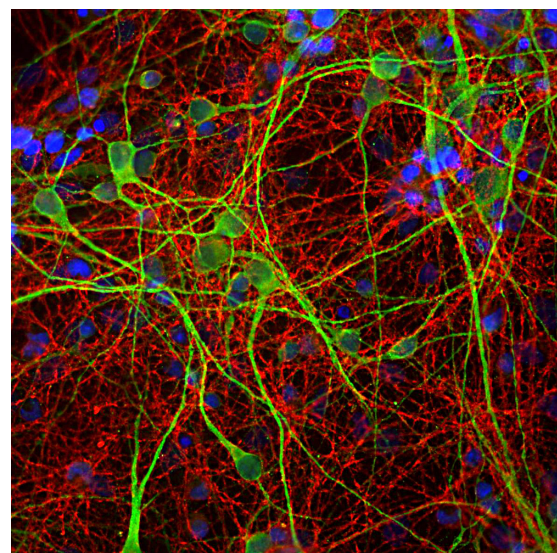
### References:

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. Benowitz LI, Routtenberg A. GAP-43: an intrinsic determinant of neuronal development and plasticity. *Trends Neurosci.* 20:84-91 (1997).
3. Kosik KS, et al. Human GAP-43: its deduced amino acid sequence and chromosomal localization in mouse and human. *Neuron* 1:137-32 (1988).
4. Gauthier-Kemper A, et al. Interplay between phosphorylation and palmitoylation mediates plasma membrane targeting and sorting of GAP43. *Mol Biol Cell.* 25:3284-99 (2014).
5. Strittmatter SM, et al. Neuronal pathfinding is abnormal in mice lacking the neuronal growth cone protein GAP-43. *Cell* 80:445-52 (1995).
6. Wright PE, Dyson HJ. Intrinsically disordered proteins in cellular signalling and regulation. *Nat. Rev. Mol. Cell Biol.* 16:18-29 (2015).

Applications	Host	Isotype	Molecular Wt.	Species Cross-Reactivity
WB, IF/ICC, IHC	Mouse	IgM	~43kDa on SDS-PAGE	Hu, Rt, Ms



Western blot analysis of different tissue and cell lysates using mouse mAb to GAP43, MCA-3H14, dilution 1:5,000, in green: [1] protein standard (red), [2] rat brain, [3] rat spinal cord, [4] mouse brain, [5] mouse spinal cord, [6] C6 cells, [7] SH-SY5Y cells. The single band at the 43kDa mark corresponds to the GAP43 protein. The protein is expressed in rodent and human neurons and neuronal derived cells but not in C6 cells which are of glial origin.



Immunofluorescent analysis of cortical neuron-glial cell culture from E20 rat stained with mouse mAb to GAP43, MCA-3H14, dilution 1:1,000, in red, and costained with chicken pAb to MAP2, CPCA-MAP2, dilution 1:10,000, in green. The blue is DAPI staining of nuclear DNA. GAP43 antibody labels protein expressed in the axonal membrane of the neuronal cells, while the MAP2 antibody stains dendrites and perikarya of neurons.

### 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 is very highly charged and does not run on SDS-PAGE in a fashion which accurately reflects its molecular weight, since human GAP43 is 238 amino acids giving a real molecular weight 24.8kDa. 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 MCA-3H14 antibody was made against the full length recombinant human protein 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. It works well on western blots and in IF, ICC and IHC. We also supply rabbit and chicken polyclonal antibodies to GAP43, **RPCA-GAP43** and **CPCA-GAP43** respectively.

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### Abbreviation Key:

**mAb**—Monoclonal Antibody **pAb**—Polyclonal Antibody **WB**—Western Blot **IF**—Immunofluorescence **ICC**—Immunocytochemistry  
**IHC**—Immunohistochemistry **E**—ELISA **Hu**—Human **Mo**—Monkey **Do**—Dog **Rt**—Rat **Ms**—Mouse **Co**—Cow **Pi**—Pig **Ho**—Horse **Ch**—Chicken  
**Dr**—*D. rerio* **Dm**—*D. melanogaster* **Sm**—*S. mutans* **Ce**—*C. elegans* **Sc**—*S. cerevisiae* **Sa**—*S. aureus* **Ec**—*E. coli*.