

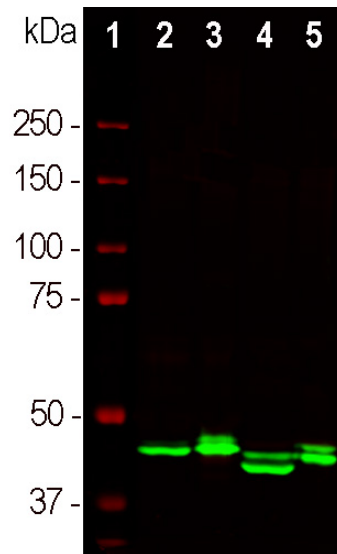
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**HGNC Name:** CNP  
**UniProt:** P09543  
**RRID:** AB\_2572250  
**Immunogen:** Full length human recombinant protein expressed in and purified from *E. coli*  
**Format:** Purified antibody at 1.0 mg/mL in 50% PBS, 50% glycerol plus 5mM Na<sub>2</sub>S<sub>2</sub>O<sub>3</sub>  
**Storage:** Store at 4°C for short term, for longer term at -20°C  
**Recommended dilutions:**  
 WB: 1:1,000. IF/ICC: 1:500.

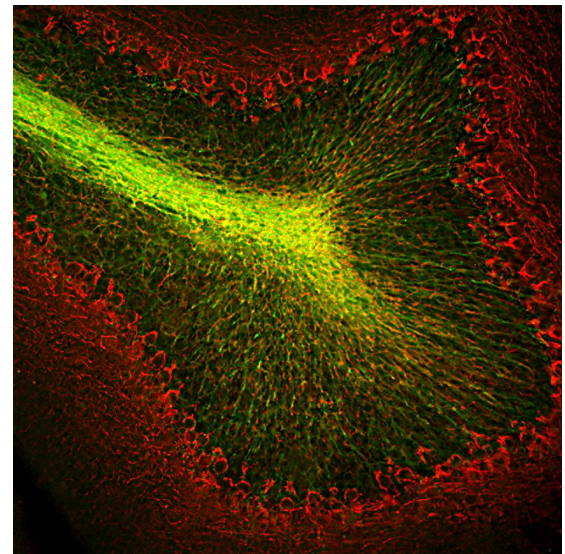
#### References:

1. Monoh K, Kurihara T, Sakimura K, Takahashi Y. Structure of mouse 2',3'-cyclic-nucleotide 3'-phosphodiesterase gene. *BBRC* 165:1213-20 (1989).
2. Kasama-Yoshida H, et al. A comparative study of 2',3'-cyclic-nucleotide 3'-phosphodiesterase in vertebrates: cDNA cloning and amino acid sequences for chicken and bullfrog enzymes. *J. Neurochem.* 69:1335-42 (1997).
3. Gravel M, et al. Overexpression of 2',3'-cyclic nucleotide 3'-phosphodiesterase in transgenic mice alters oligodendrocyte development and produces aberrant myelination. *Mol. Cell. Neurosci.* 6:453-66 (1996).
4. Bifulco M, Laezza C, Stingo S, Wolff J. 2',3'-Cyclic nucleotide 3'-phosphodiesterase: a membrane-bound, microtubule-associated protein and membrane anchor for tubulin. *PNAS* 99:1807-11 (2001).
5. Vikolinský R, Cairns N, Fountoulakis M, Lubec G. Decreased brain levels of 2',3'-cyclic nucleotide-3'-phosphodiesterase in Down syndrome and Alzheimer's disease. *Neurobiol. Aging* 22:547-53 (2001).

Applications	Host	Isotype	Molecular Wt.	Species Cross-Reactivity
WB, IF/ICC, IHC	Mouse	IgG1	46, 48kDa	Hu, Rt, Ms



Western blot analysis of different tissue lysates using mouse mAb to CNP, MCA-1H10, dilution 1:2,000 in green: [1] protein standard (red), [2] rat brain, [3] rat spinal cord, [4] mouse brain, [5] mouse spinal cord. A doublet of bands at 46 and 48kDa correspond to the major isotypes of the CNP protein.



Immunofluorescent analysis of rat cerebellum section stained with mouse mAb to CNP, MCA-1H10, dilution 1:500 in green and costained with chicken pAb to NF-M, *CPCA-NF-M*, dilution 1:1,000, in red. Following transcardial perfusion of rat with 4% paraformaldehyde, brain was post fixed for 24 hours, cut to 45µM, and free-floating sections were stained with above antibodies. The CNP antibody specifically stains oligodendrocytes, cells that create the myelin sheath around axons. NF-M antibody labels axons of neuronal cells.

#### Background:

The 2',3'-cyclic nucleotide 3'-phosphodiesterase (CNP), is an enzyme which catalyzes the hydrolysis of 2', 3'-cyclic nucleotides to 2'-nucleotides, These cyclic nucleotides are structurally different from the better known and studied 3'-5'-cyclic nucleotides of which the best known example is cyclic AMP. CNP has two isoforms, CNPase 1 (46kDa) and CNPase 2 (48kDa), which are encoded separately by different promoters of the same gene (1). These enzymes are present in very high levels in brain and peripheral nerve, makes up 4% of total CNS myelin protein. They are found almost exclusively in oligodendrocytes and Schwann cells, appearing early in oligodendrocyte development, earlier than most other myelin specific proteins (2). Antibodies to CNP have been very useful as a marker for these particular cell types. CNP is thought to play a critical role in the events leading up to myelination, for the oligodendrocytes overexpressing CNP appear to mature earlier in development, resulting in earlier maximum gene expression for myelin basic proteins (3). It has been reported that CNP is also associated with microtubules in brain tissue and may promote microtubule assembly. CNP can link tubulin to cellular membranes, and may regulate cytoplasmic microtubule distribution (4). In various diseases, neurological mutants, and in experimental conditions in which myelin is reduced, CNP levels may also be severely reduced. Decreased brain levels of CNP have also been reported in Down syndrome and Alzheimer's disease (5).

The MCA-1H10 antibody was made against the full length recombinant form of human CNP expressed in and purified from *E. Coli*, and can be used to identify myelinating cells in cell culture and in sections, and to trace axonal projections in sectioned material. The same recombinant protein was used to generate polyclonal rabbit, chicken, and goat polyclonal antibodies to CNP *RPCA-CNP*, *CPCA-CNP*, and *GPCA-CNP*. These antibodies are excellent markers of myelin and myelinating cells and recognize CNP cleanly on western blots.

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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*.