

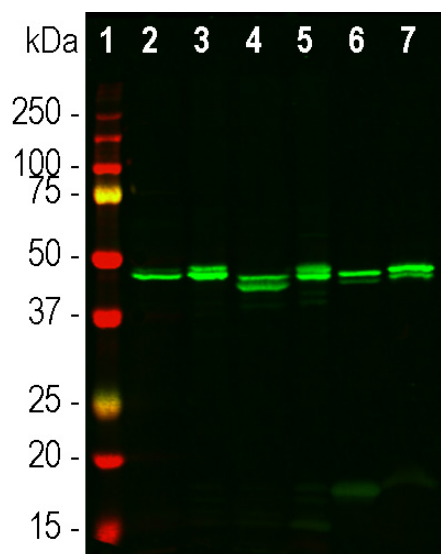
Ordering Information
Web www.encorbio.com
Email admin@encorbio.com
Phone 352-372-7022
Fax 352-372-7066

HGNC Name: CNP
UniProt: P09543
RRID: AB_2858266
Immunogen: Full length human recombinant protein expressed in and purified from E. coli
Format: Affinity purified antibody at 1mg/mL in 50% PBS, 50% glycerol plus 5mM NaN₃
Storage: Store at 4°C for short term, for longer term at -20°C
Recommended dilutions:
WB: 1:5,000. IF/ICC 1:3,000

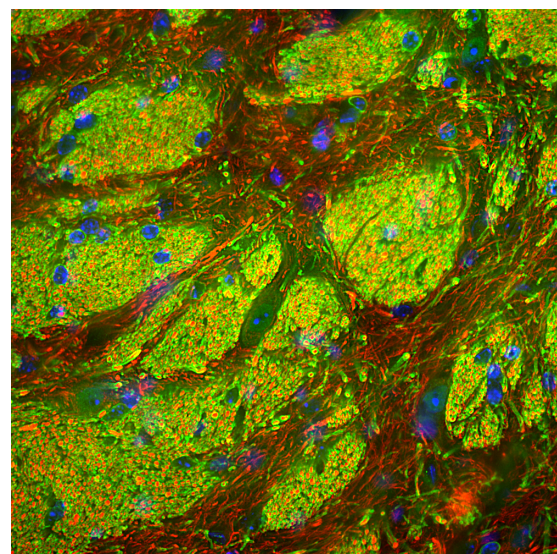
References:

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).
6. Park Y-G, et al. Protection of tissue physicochemical properties using polyfunctional crosslinkers. *Nature Biotechnology* 10.1038/nbt.4281 doi:10.1038/nbt.428137 (2018).

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



Western blot analysis of different tissue lysates using goat pAb to CNP, GPCA-CNP, dilution 1:5,000, in green: [1] protein standard, [2] rat brain, [3] rat spinal cord, [4] mouse brain, [5] mouse spinal cord, [6] cow spinal cord, and [7] pig spinal cord. Bands at 46kDa and 48kDa mark correspond to the two major isotypes of CNP protein.



Immunofluorescent analysis of a section of mouse striatum stained with goat pAb to CNP, GPCA-CNP, dilution 1:3,000 in green, and costained with rabbit pAb to NF-L, RPCA-NF-L, dilution 1:5,000, in red. The blue is Hoechst staining of nuclear DNA. Following transcardial perfusion of mouse with 4% paraformaldehyde, the brain was post fixed for 24 hours, cut to 45μm, and free-floating sections were stained with above antibodies. The CNP antibody stains myelin sheath and the plasma membranes of oligodendrocytes, the myelin producing cells of the CNS. The NF-L antibody labels axons of neuronal cells enclosed by the myelin.

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 GPCA-CNP antibody was made against the full length recombinant form of human CNP expressed in and purified from E. Coli, and the antibody 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 mouse monoclonal anti CNP MCA-1H10, and rabbit and chicken polyclonal anti CNP antibodies, RPCA-CNP and CPCA-CNP. Like 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.