MAP2
Chicken Polyclonal Antibody

CPCA-MAP2

Ordering Information
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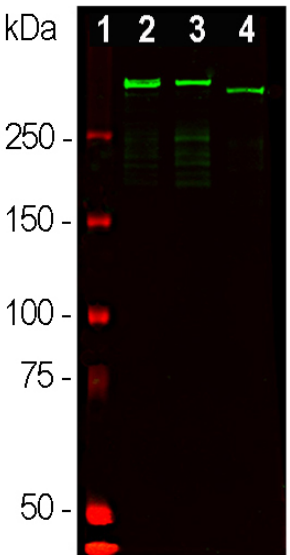
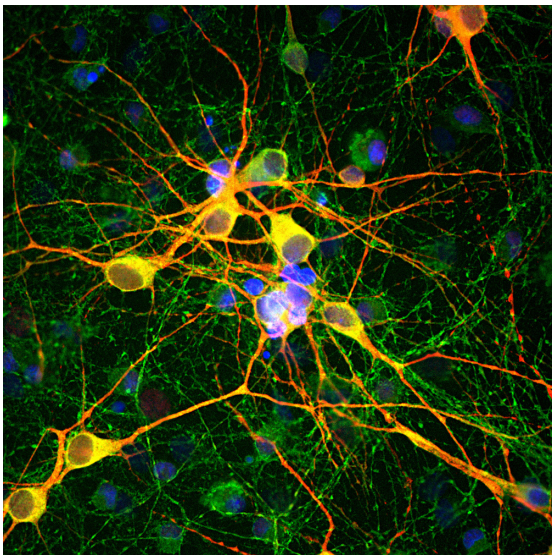
HGNC Name: *MAP2*
UniProt: *P11137*
RRID: *AB_2138173*
Immunogen: *Mix of recombinant human constructs of projection domain sequences, amino acids 235-1588, EnCor products Prot-r-MAP2-P1, Prot-r-MAP2-P2 and Prot-r-MAP2-P3.*
Format: *Concentrated IgY preparation in PBS plus 0.02% NaN_3*
Storage: *Stable at 4°C for at least one year*
Recommended dilutions:
WB: 1:20,000-50,000. IF/ICC and IHC: 1:5,000-1:10,000.

Applications	Host	Isotype	Molecular Wt.	Species Cross-Reactivity
WB, IF/ICC, IHC	Chicken		~280kDa by SDS-PAGE	Human, Rat, Mouse, Cow, Pig



Western blot analysis of whole brain tissue lysates using chicken pAb to microtubule associated protein 2 (MAP2), CPCA-MAP2, dilution 1:50,000 in green: [1] protein standard (red), [2] adult rat brain, [3] embryonic E20 rat brain, [4] adult mouse brain. Strong band at ~280kDa mark corresponds to two major isoforms of MAP2 protein referred to as MAP2A and MAP2B. Smaller fragments of these isoforms are also detected if the antibody is used at higher concentrations.



Immunofluorescent analysis of cortical neuron-glial cell culture from E20 rat stained with chicken pAb to microtubule associated protein 2 (MAP2), CPCA-MAP2, dilution 1:10,000 in red, and mouse mAb to MAP-tau, MCA-2E9, dilution 1:2,000, in green. The blue is DAPI staining of nuclear DNA. CPCA-MAP2 antibody stains dendrites and perikarya of neurons, while MCA-2E9 antibody labels neuronal perikarya, dendrites and also axonal process. As a result perikarya and dendrites appears orange-yellow, since they contain both MAP2 and tau, while axons are green.

Background:

Microtubules are 25nm diameter protein rods found in most kinds of eukaryotic cells and are associated with a family of proteins called microtubule associated proteins (MAPs). MAPs play a crucial role in the regulation of microtubule dynamics and interactions *in vivo*. MAP2 was originally named as one of the higher molecular weight MAPs with an SDS-PAGE molecular weight of about 280kDa (1-3). There is a single mammalian MAP2 gene which may generates two high molecular weight proteins of ~280kDa name MAP2A and MAP2B and multiple lower molecular weight forms usually named MAP2C and MAP2D which run on SDS-PAGE gels at 60-70kDa. The lower molecular weight forms are found in neurons early in development, but as the animal matures they are replaced by the higher molecular weight forms (2). The MAP2A and MAP2B forms include a protein insert missing in MAP2C and MAP2D which forms fine filamentous protrusions from the sides of brain microtubules referred to as the projection domain. This antibody was made against the projection domain sequences and so is specific for MAP2A and MAP2B, EnCor products Prot-r-MAP2-P1, Prot-r-MAP2-P2 and Prot-r-MAP2-P3, corresponding to amino acids 233-1588. MAP2 isoforms are expressed only in neuronal perikarya and dendrites so appropriate antibodies are used to identify neurons and dendrites in cell culture and sections (4-8). Examples of this antibody in use are seen on several EnCor posters, Poster-2, Poster-6, Poster-10, Poster-12, Poster-18 and Poster-27. This antibody was raised against recombinant constructs of the entire human projection domain, and so recognizes only the high molecular MAP2 forms, MAP2A and MAP2B. The lower molecular weight forms of MAP2, MAP2C and MAP2D are expressed earlier in neuronal development, so expression of the higher molecular forms indicates a later stage in neuronal maturity. The antibody has an unusually high titre and works well on western blots and on formalin fixed and paraffin embedded material. The antibody is widely used and sold through many vendors, see for example the results of Google Scholar search for CPCA-MAP2. EnCor markets a monoclonal antibody binding sequence found in all MAP2 isoforms, MCA-2C4, and others binding epitopes only in MAP2A/B MCA-4H5 and MCA-5H11. We also market a goat polyclonal antibody to MAP2 with properties similar to this chicken antibody, GPCA-MAP2.

References:

1. Dehmelt, H and Halpain, S. The MAP2/Tau family of microtubule-associated proteins. Genome Biol. 6:204 (2005). 2. Nunez J. Immature and mature variants of MAP2 and tau proteins and neuronal plasticity. Trends Neurosci. 11:477-9 (1998). 3. Vallee R. A taxol-dependent procedure for the isolation of microtubules and microtubule-associated proteins (MAPs). J. Cell Biol. 92:435-42 (1992). 4. Goetz AK et al. Temporally restricted substrate interactions direct fate and specification of neural precursors derived from embryonic stem cells. PNAS 103:11063-8 (2006). 5. Walton NM et al. Gliotypic neural stem cells transiently adopt tumorigenic properties during normal differentiation. Stem Cells 27:280-9 (2009). 6. Gasser et al. An ankyrinG-binding motif is necessary and sufficient for targeting Nav1.6 sodium channels to axon initial segments and nodes of Ranvier. J. Neurosci. 32:7232-43 (2012). 7. Rush, AM. et al. Differential modulation of sodium channel Nav1.6 by two members of the fibroblast growth factor homologous factor 2 subfamily. Eur. J. Neurosci. 23:2551-62 (2006). 8. Eckenstein FP, McGovern T, Kern D. and Deignan J. Neuronal vulnerability in transgenic mice expressing an inducible dominant-negative FGF receptor. Exp. Neurol. 198:338-49 (2006).

This antibody has been on the market for many years and sold through EnCor and our many OEM partners. Here is a CiteAb link to peer reviewed publications which use this antibody obtained directly from EnCor. Many more peer-reviewed publications making use of CPCA-MAP2 can be found by searching Google Scholar for "CPCA-MAP2 AND antibody" or, if you are viewing this online, simply by selecting here. The antibody has also been sold through many more OEM partners but references are difficult to find on-line if the particular vendor does not use our CPCA-MAP2 catalog number.

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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.