

# PRODUCT INFORMATION



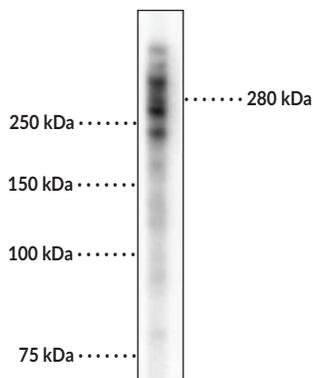
## MAP2 (human) Polyclonal Antibody

Item No. 29282

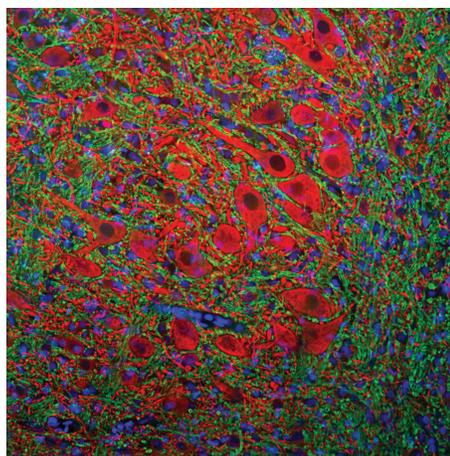
### Overview and Properties

<b>Contents:</b>	This vial contains 100 µl of protein G-purified polyclonal antibody.
<b>Synonyms:</b>	MAP-2, Microtubule-associated Protein 2
<b>Immunogen:</b>	Recombinant human MAP2 expressed in <i>E. coli</i>
<b>Molecular Weight:</b>	~280 kDa
<b>Species Reactivity:</b>	(+) Human, mouse, rat
<b>Form:</b>	Liquid
<b>Storage:</b>	-20°C (as supplied)
<b>Stability:</b>	≥1 year
<b>Storage Buffer:</b>	PBS with 50% glycerol and 5 mM sodium azide
<b>Host:</b>	Goat
<b>Applications:</b>	Immunocytochemistry (ICC), immunohistochemistry (IHC), and Western blot (WB); the recommended starting dilution for WB is 1:1,000 and 1:1,000-1:2,000 for ICC and IHC. Other applications were not tested, therefore optimal working concentration/dilution should be determined empirically.

### Images



WB of rat cortical lysate showing specific immunolabeling of the ~280 kDa MAP2 protein.



Immunofluorescent labeling of a section of rat brain stem showing specific labeling of MAP2 (1:2,000, red) in the perikarya and dendrites of neurons, and specific labeling of the myelin sheath around axons with anti-MBP (1:5,000, green). The blue is DAPI revealing nuclear DNA.

**WARNING**  
THIS PRODUCT IS FOR RESEARCH ONLY - NOT FOR HUMAN OR VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.

**SAFETY DATA**  
This material should be considered hazardous until further information becomes available. Do not ingest, inhale, get in eyes, on skin, or on clothing. Wash thoroughly after handling. Before use, the user must review the [complete](#) Safety Data Sheet, which has been sent via email to your institution.

**WARRANTY AND LIMITATION OF REMEDY**  
Buyer agrees to purchase the material subject to Cayman's Terms and Conditions. Complete Terms and Conditions including Warranty and Limitation of Liability information can be found on our website.

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**CAYMAN CHEMICAL**  
1180 EAST ELLSWORTH RD  
ANN ARBOR, MI 48108 · USA  
PHONE: [800] 364-9897  
[734] 971-3335  
FAX: [734] 971-3640  
CUSTSERV@CAYMANCHEM.COM  
WWW.CAYMANCHEM.COM

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## Description

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Microtubule-associated protein 2 (MAP2) belongs to the microtubule-associated protein (MAP) family of cytoskeletal filament proteins, which includes MAP1-5 and tau.<sup>1</sup> MAP2 is composed of an N-terminal projection domain that interacts with PKA and a C-terminal domain that contains microtubule binding repeats containing a KXGS motif that is subject to phosphorylation.<sup>2</sup> Five isoforms of MAP2 are generated through alternative splicing and are found in the cell body and dendrites of neurons, with some isoforms also found in astrocytes and oligodendrocytes of the CNS and in the testis.<sup>1,2</sup> MAP2 is expressed in mature neurons, with the MAP2a and MAP2c isoforms expressed in a developmental stage-dependent manner while the MAP2b isoform is expressed throughout development and adulthood.<sup>1,3</sup> MAP2 binds to and stabilizes microtubules and increases their rigidity, as well as interacts with F-actin during neurite initiation and with proteins involved in signal transduction.<sup>2</sup> Phosphorylation of the KXGS motif by MAP/microtubule affinity-regulating kinase 1 (MARK1), MARK2, or PKA decreases the affinity of MAP2 for microtubules, and the detachment of MAP2 leads to microtubule destabilization and disassembly. Decreased levels of MAP2 protein have been found in postmortem brain tissue from patients with a Lewy body variant of Alzheimer's disease.<sup>4</sup> MAP2 has been found in cytoplasmic neuronal Lewy bodies colocalized with  $\alpha$ -synuclein and ubiquitin in postmortem substantia nigra from patients with Parkinson's disease.<sup>5</sup> Cayman's MAP2 (human) Monoclonal Antibody can be used for immunocytochemistry (ICC), immunohistochemistry (IHC), and Western blot (WB) applications. The antibody recognizes MAP2 at approximately 280 kDa from human, mouse, and rat samples.

## References

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1. Kindler, S. and Garner, C.C. Four repeat MAP2 isoforms in human and rat brain. *Brain Res. Mol. Brain Res.* **26(1-2)**, 218-224 (1994).
2. Dehmelt, L. and Halpain, S. The MAP2/Tau family of microtubule-associated proteins. *Genome Biol.* **6(1)**, 204 (2004).
3. Cáceres, A., Banker, G.A., and Binder, L. Immunocytochemical localization of tubulin and microtubule-associated protein 2 during the development of hippocampal neurons in culture. *J. Neurosci.* **6(3)**, 714-722 (1986).
4. Melková, K., Zapletal, V., Narasimhan, S., *et al.* Structure and functions of microtubule associated proteins tau and MAP2c: Similarities and differences. *Biomolecules* **9(3)**, 105 (2019).
5. D'Andrea, M.R., Ilyin, S., and Plata-Salaman, C.R. Abnormal patterns of microtubule-associated protein-2 (MAP-2) immunolabeling in neuronal nuclei and Lewy bodies in Parkinson's disease substantia nigra brain tissues. *Neurosci. Lett.* **306(3)**, 137-140 (2001).

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