Myelin Basic Protein (MBP) Mouse Monoclonal Antibody

MCA-7D2

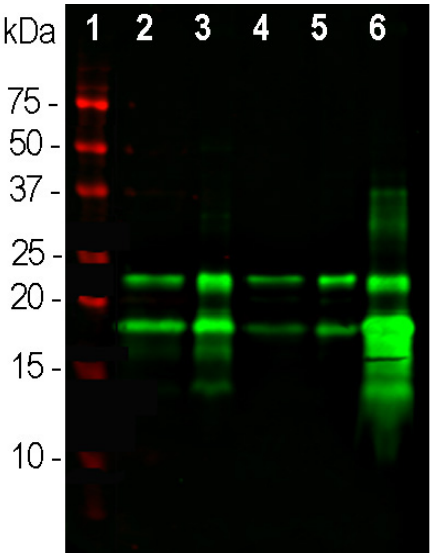
Ordering Information
Web *www.encorbio.com*
Email *admin@encorbio.com*
Phone *352-372-7022*
Fax *352-372-7066*

HGNC Name: *MBP*
UniProt: *P02687*
RRID: *AB_2140350*
Immunogen: *Purified myelin basic protein isolated from bovine brain, epitope maps to the peptide AEGQRPGFGYGGRASDYKSAHKGFKGVDAQGTLSKIFKLG, amino acids 145-184 of the human 21.5kDa sequence.*
Format: *Purified antibody at 1mg/mL in 50% PBS, 50% glycerol plus 5mM NaN_3*
Storage: *Store at 4°C for short term, for longer term store at -20°C*
Recommended dilutions:
WB: 1:5,000-1:10,000. IF/ICC: 1:2,000-5,000. IHC: 1:10,000

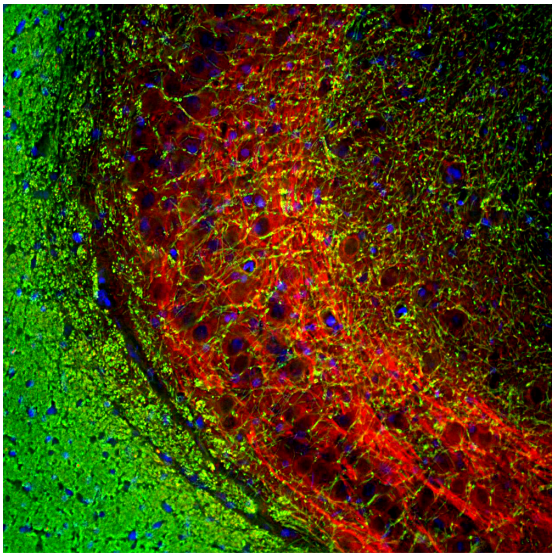
References:

1. Eylar EH, et al. Basic A1 protein of the myelin membrane. The complete amino acid sequence. J. Biol. Chem. 246:5770-84 (1971).
2. Marty MC, et al. The myelin basic protein gene is expressed in differentiated blood cell lineages and in hemopoietic progenitors. PNAS 99:8856-61 (2002).
3. Libbey JE, Fujinami RS. Experimental Autoimmune Encephalomyelitis as a Testing Paradigm for Adjuvants and Vaccines. Vaccine 29:3356–62 (2011).
4. Wucherpfennig KW, Strominger JL. Molecular mimicry in T cell-mediated autoimmunity: Viral peptides activate human T cell clones specific for myelin basic protein. Send to Cell 80:695-705 (1995).
5. Berger RP, et al. Serum neuron-specific enolase, S100B, and myelin basic protein concentrations after inflicted and noninflicted traumatic brain injury in children. J. Neurosurg. 103:61-8 (2005).

Applications	Host	Isotype	Molecular Wt.	Species Cross-Reactivity
WB, IF/ICC, IHC	Mouse	IgG1	18.5 and 21.5kDa human isotypes	Hu, Rt, Ms, Co, Pi, Ho



Western blot analysis of different tissue lysates using mouse mAb to MBP, MCA-7D2, dilution 1:10,000 in green: [1] protein standard (red), [2] rat brain, [3] rat spinal cord, [4] mouse brain, [5] mouse spinal cord, [6] cow spinal cord. Bands at 21.5kDa and 18.5kDa are the two larger transcripts from the MBP gene, showing that the epitope of this antibody depends on the sequence encoded by exon 2.



Immunofluorescent analysis of rat brain hippocampal section stained with mouse mAb to myelin basic protein (MBP), MCA-7D2, dilution 1:5,000 in green, and costained with rabbit pAb to NF-M, RPCA-NF-M, dilution 1:2,000, in red. The MBP antibody stains myelin sheathes around axons, while the NF-M antibody labels dendrites and axons of neuronal cells.

Background:

Myelin Basic Protein (MBP) is one of the major proteins of the myelin sheath surrounding axons in the nervous system. The protein sequence was determined from purified protein over 30 years ago (1). The protein is made by oligodendrocytes in the central and nervous system, so antibodies to MBP are good markers of this cell type. In the peripheral nervous system MBP is expressed by myelinating Schwann cells so this antibody can be used to identify these cells in culture or sections. In the central nervous system four different forms of the protein made by alternate transcription from a single gene, the protein products having molecular weights of 21.5, 20.5, 18.5, and 17.2kDa in humans. The single gene of rodents also produces 4 different proteins, but of slightly different sizes, 21.5, 18.5, 17 and 14kDa. Some interest has focused on MBP as a potentially significant auto-antigen involved in mouse models of multiple sclerosis (MS, 3) and in human patients (4). Detection of MBP released into blood and CSF has some potential as a surrogate biomarker of demyelination and axonal loss in MS and other damage and disease states (e.g. 5). The MCA-7D2 antibody was made against a preparation of MBP purified biochemically from bovine brain. It can be used to identify oligodendrocytes and Schwann cells in neural cell culture, to visualize myelin sheaths and myelinating cells in sectioned material and to probe western blots for MBP gene products. The antibody is also rather insensitive to aldehyde fixation and so can be used in immunohistochemistry of paraffin sections and in CLARITY type applications. The MCA-7D2 antibody binds only the 21.5kDa and 18.5kDa rat MBP isotypes, but all four isotypes of human and bovine MBP, mapping the epitope to the peptide AEGQRPGFGYGGRASDYKSAHKGFKGVDAQGTLSKIFKLG, amino acids 145-184 of the human 21.5kDa sequence. The K_{on} rate is 2.189×10^{-5}, the K_{off} rate is 4.86×10^{-4} and the K_d is 2.22×10^{-9}. The antibody works well for western blotting and for IF, ICC and IHC (for IHC see data under "Additional Info" tab). Our alternate mouse monoclonal MCA-7G7 binds to all four rat MBP gene products, mapping the epitope to the "core" of the MBP protein. A sequence alignment of the four CNS MBP isotypes in human and rat can be downloaded from here.

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.