

Mouse monoclonal antibody to Myelin Basic Protein [7G7]

Catalogue No.: M-1384-50

Description: Myelin is a membrane characteristic of the nervous tissue and functions as an insulator to increase the velocity of the stimuli being transmitted between a nerve cell body and its target. Myelin isolated from human and bovine nervous tissue is composed of approximately 80% lipid and 20% protein, and 30% of the protein fraction constitutes myelin basic protein (MBP). MBP is an 'intrinsically unstructured' protein with a high proportion (approximately 75%) of random coil, but postulated to have core elements of beta-sheet and alpha-helix. MBP is a major protein in CNS myelin and is expressed specifically in the nervous system. A detailed immunochemical examination of monoclonal and polyclonal antibody responses to MBP and its peptides has revealed the existence of as many as 27 antigenic determinants, many of them conformational. Topological mapping of the potential antigenic determinants onto a model of MBP secondary structure places these determinants within 11 separate regions of the molecule, including those portions that have been found to be encephalitogenic. The message for myelin basic protein is selectively translocated to the ends of the cell processes. Immunization with myelin-associated antigens including MBP significantly promotes recovery after spinal cord contusion injury in the rat model. **FUNCTION:** Is, with PLP, the most abundant protein component of the myelin membrane in the CNS. Has a role in both the formation and stabilization of this compact multilayer arrangement of bilayers. Each splice variant and charge isomer may have a specialized function in the assembly of an optimized, biochemically functional myelin membrane (By similarity). **SUBUNIT:** Homodimer (By similarity). **SUBCELLULAR LOCATION:** Myelin membrane; peripheral membrane protein; cytoplasmic side. Cytoplasmic side of myelin. **TISSUE SPECIFICITY:** Found in both the central and the peripheral nervous system.

The 7G7 monoclonal 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 insensitive to aldehyde fixation and so can be used in immunohistochemistry of paraffin sections. The 7G7 antibody binds all four of the CNS MBP isoforms, so that the epitope for the antibody is located in the "core" shared by all four gene products. 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 the splicing mechanism is different producing four forms of slightly different sizes, 21.5, 18.5, 17 and 14kDa. Further mapping localizes the epitope to peptide TPPPSQGKG, amino acids 125-133 of the human 21.5kDa sequence. The data was produced with overlapping peptides which suggests that the last four amino acids, SQGKG, are likely to be key elements of the epitope. This peptide is invariant in rat, mouse, cow and many other species, so this antibody will have wide applicability.

Batch No.: See product label

Unit size: 50 uL

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Antigen:	Three peptide sequences conserved in higher vertebrate MBP protein.
Antibody Type:	Monoclonal
Isotype:	IgG
Clone:	7G7
Other Names:	Myelin Basic Protein; Myelin A1 protein; Myelin membrane encephalitogenic protein; MBP;
Accession:	P02686 MBP_HUMAN;
Produced in:	Mouse
Applications:	Western Blotting (WB), Immunocytochemistry (IC), Immunohistochemistry (IH). IH(P), and Flow Cytometry (~2 ug per 10 ⁶ cells). The recommended dilution for WB is 1:5,000-10,000 and 1:500-1,000 for IC and IH and IH(P). Material should not be over fixed; 2-3 hour post-fixing time is recommended. Long fixations can effect reactivity. In paraffin citrate acid treatment for antigen recovery is recommended. Biosensis recommends optimal dilutions/concentrations should be determined by the end user.
Specificity:	The specificity of this antibody has been confirmed by WB. This antibody stains bands around 21.5, 18.5, 17 and 14kDa. A suitable control tissue is rat spinal cord or peripheral nerve homogenate. The major isoforms of MBP run as a closely spaced double of 22 kDa and 18 kDa but 17 and 14kDa bands can also be observed with 7G7..
Antibody Against:	Myelin Basic Protein
Cross-reactivity:	Human, Rat. other species not yet tested but expected (see description)
Form:	Lyophilised with 5% trehalose
Appearance:	White powder
Reconstitution:	Reconstitute in sterile distilled water. Centrifuge to remove any insoluble material.
Storage:	After reconstitution of lyophilised antibody, aliquot and store at -20C for a higher stability. Avoid freeze-thaw cycles.
Expiry Date:	12 months after purchase
References:	<ol style="list-style-type: none">1. Schwartz, et al., Prog Brain Res 137, 401-6 (2002)2. Hauben, et al., J Clin Invest 108, 591-9 (Aug, 2001)3. Yoles, et al., J Neurosci 21, 3740-8 (Jun 1, 2001)4. Hauben, et al., J Neurosci 20, 6421-30 (Sep 1, 2000)5. Harauz, et al., Nature 389, 783-4 (1997). Micron 35, 503-42 (2004)6. Givogri, et al., J Neurosci Res 59, 153-9 (Jan 15, 2000)7. Kim, et al., Int J Biochem Cell Biol 29, 743-51 (May, 1997)8. Kalwy, et al., Mol Membr Biol 11, 67-78 (Apr-Jun, 1994)9. Wajgt, et al., Acta Neurol Scand 68, 337-43 (Nov, 1983)10. Day, et al., J Neuroimmunol 10, 289-312 (Feb, 1986)11. Mikoshiba, et al., Comp Biochem Physiol C 98, 51-61 (1991)12. Brophy, et al., Trends Neurosci 16, 515-21 (Dec, 1993)13. Matsuo, A. et al. (1997) Am. J. Pathol. 150(4): 1253-1266

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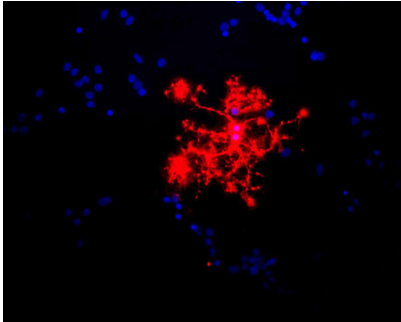


Image shows rat mixed neuron/glia cultures stained with Mouse monoclonal antibody to Myelin Basic Protein [7G7] M-1384-50 (red). Blue is a DNA stain. Note that this antibody stains an oligodendrocyte and some membrane shed from this cell. Other cells in the field include neurons, astrocytes, microglia and fibroblasts, all of which are completely negative.

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