Anti-Myelin Basic Protein antibody [MBP101] ab62631

Overview

Product name: Anti-Myelin Basic Protein antibody [MBP101]

Description: Mouse monoclonal [MBP101] to Myelin Basic Protein

Host species: Mouse

Tested applications: Suitable for: WB, ELISA, IHC-P, IHC-FoFr, ICC/IF, Flow Cyt, IHC-Fr

Species reactivity: Reacts with: Mouse, Rat, Sheep, Rabbit, Goat, Human

Predicted to work with: Non human primates

Immunogen: Purified human myelin basic protein.

Properties

Form: Liquid

Storage instructions: Shipped at 4°C. Upon delivery aliquot and store at -20°C or -80°C. Avoid repeated freeze / thaw cycles.

Storage buffer: pH: 7.40

Constituent: PBS

Purity: Protein G purified

Purification notes: Purified antibody

Clonality: Monoclonal

Clone number: MBP101

Isotype: IgG2b

Applications

Our Abpromise guarantee covers the use of ab62631 in the following tested applications.

The application notes include recommended starting dilutions; optimal dilutions/concentrations should be determined by the end user.

<table>
<thead>
<tr>
<th>Application</th>
<th>Abreviews</th>
<th>Notes</th>
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</thead>
<tbody>
<tr>
<td>WB</td>
<td>⭐⭐⭐⭐⭐</td>
<td>Use at an assay dependent concentration. Predicted molecular weight: 33 kDa.</td>
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</tbody>
</table>
### Function
The classic group of MBP isoforms (isoform 4-isoform 14) are with PLP the most abundant protein components of the myelin membrane in the CNS. They have a role in both its formation and stabilization. The smaller isoforms might have an important role in remyelination of denuded axons in multiple sclerosis. The non-classic group of MBP isoforms (isoform 1-isoform 3/Golli-MBPs) may preferentially have a role in the early developing brain long before myelination, maybe as components of transcriptional complexes, and may also be involved in signaling pathways in T-cells and neural cells. Differential splicing events combined with optional post-translational modifications give a wide spectrum of isomers, with each of them potentially having a specialized function. Induces T-cell proliferation.

### Tissue specificity
MBP isoforms are found in both the central and the peripheral nervous system, whereas Golli-MBP isoforms are expressed in fetal thymus, spleen and spinal cord, as well as in cell lines derived from the immune system.

### Involvement in disease
Note=The reduction in the surface charge of citrullinated and/or methylated MBP could result in a weakened attachment to the myelin membrane. This mechanism could be operative in demyelinating diseases such as chronic multiple sclerosis (MS), and fulminating MS (Marburg disease).

### Sequence similarities
Belongs to the myelin basic protein family.

### Developmental stage
Expression begins abruptly in 14-16 week old fetuses. Even smaller isoforms seem to be produced during embryogenesis; some of these persisting in the adult. Isoform 4 expression is more evident at 16 weeks and its relative proportion declines thereafter.

### Post-translational modifications
Several charge isomers of MBP; C1 (the most cationic, least modified, and most abundant form), C2, C3, C4, C5, C6, C7, C8-A and C8-B (the least cationic form); are produced as a result of optional PTM, such as phosphorylation, deamidation of glutamine or asparagine, arginine citrullination and methylation. C8-A and C8-B contain each two mass isoforms termed C8-A(H), C8-A(L), C8-B(H) and C8-B(L), (H) standing for higher and (L) for lower molecular weight. C3, C4 and C5 are phosphorylated. The ratio of methylated arginine residues decreases during aging, making the protein more cationic.

The N-terminal alanine is acetylated (isoform 3, isoform 4, isoform 5 and isoform 6). Arg-241 was found to be 6% monomethylated and 60% symmetrically dimethylated.

### Cellular localization
Myelin membrane. Cytoplasmic side of myelin.

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<tbody>
<tr>
<td>ELISA</td>
<td>Use at an assay dependent concentration.</td>
<td></td>
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<tr>
<td>IHC-P</td>
<td>Use at an assay dependent concentration. PubMed: 23700462</td>
<td></td>
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<tr>
<td>IHC-FoFr</td>
<td>Use at an assay dependent concentration. PubMed: 24062649</td>
<td></td>
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<tr>
<td>ICC/IF</td>
<td>★★★★★</td>
<td>1/500.</td>
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<tr>
<td>Flow Cyt</td>
<td>Use 1µg for $10^6$ cells. ab170192 - Mouse monoclonal IgG2b, is suitable for use as an isotype control with this antibody.</td>
<td></td>
</tr>
<tr>
<td>IHC-Fr</td>
<td>★★★★★</td>
<td>Use at an assay dependent concentration.</td>
</tr>
</tbody>
</table>
Myelin destruction in the CNS

Detection of myelin by immunohistochemistry for MBP in spinal cords of (A) untreated EAE mice, (B) HSV-Zeo treated EAE mice and (C) HSV-LIF treated EAE mice on day 21 post induction. The figure shows two sections of each group at two magnifications. The squares indicate the areas of inflammatory demyelinating infiltrates at higher magnification. Examples of inflammatory infiltrates disrupting the myelin are shown. Scale bars are shown in the figure.

Myelin Basic Protein (MBP) was detected using ab62631 at 1/200 dilution in formalin fixed, paraffin-embedded mouse spinal cord tissue.

(From Figure 5 of Nygardas et al)

ab62631 staining MBP in Mouse brain tissue sections by Immunohistochemistry (IHC-P - paraformaldehyde-fixed, paraffin-embedded sections). Tissue was fixed with formaldehyde and blocked with normal serum of species secondary antibody; antigen retrieval was by heat mediation in 10mM citric acid buffer. Samples were incubated with primary antibody (1/200) overnight at 4°C.
ICC/IF image of Rat Oligodendrocytes primary culture stained with ab62631. The cells on cover slip were incubated in 10% normal donkey serum in 0.1% PBS- and triton X100 for 1h to permeabilise the cells and block non-specific protein-protein interactions. The sections were then incubated with the antibody (ab62631, 2µg/ml) overnight at +4°C. The secondary antibody was Alexa Fluor®568 donkey anti-mouse IgG (H+L) used at a 1/1000 dilution for 1h. DAPI was used to stain the cell nuclei (blue) at a concentration of 1.43µM.

Overlay histogram showing SH-SY5Y cells stained with ab62631 (red line). The cells were fixed with 80% methanol (5 min) and then permeabilized with 0.1% PBS-Tween for 20 min. The cells were then incubated in 1x PBS / 10% normal goat serum / 0.3M glycine to block non-specific protein-protein interactions followed by the antibody (ab62631, 1µg/1x10^6 cells) for 30 min at 22ºC. The secondary antibody used was DyLight® 488 goat anti-mouse IgG (H+L) (ab96879) at 1/500 dilution for 30 min at 22ºC. Isotype control antibody (black line) was mouse IgG2b [PLPV219] (ab91366, 2µg/1x10^6 cells) used under the same conditions. Acquisition of >5,000 events was performed. This antibody gave a positive signal in SH-SY5Y cells fixed with 4% paraformaldehyde (10 min)/permeabilized with 0.1% PBS-Tween for 20 min used under the same conditions.

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