Datasheet: MCA409S

Description:	RAT ANTI MBP (aa82-87)
Specificity:	MBP (aa82-87)
Other names:	MYELIN BASIC PROTEIN
Format:	S/N
Product Type:	Monoclonal Antibody
Clone:	12
Isotype:	IgG2a
Quantity:	2 ml

Product Details

Applications

This product has been reported to work in the following applications. This information is derived from testing within our laboratories, peer-reviewed publications or personal communications from the originators. Please refer to references indicated for further information. For general protocol recommendations, please visit www.bio-rad-antibodies.com/protocols.

	Yes	No	Not Determined	Suggested Dilution
Flow Cytometry			▪	
Immunohistology - Frozen			▪	
Immunohistology - Paraffin			▪	
ELISA	▪			
Immunoprecipitation			▪	
Western Blotting	▪			
Immunofluorescence	▪			
Radioimmunoassays	▪			

Where this product has not been tested for use in a particular technique this does not necessarily exclude its use in such procedures. Suggested working dilutions are given as a guide only. It is recommended that the user titrates the product for use in their own system using appropriate negative/positive controls.

Target Species

Bovine

Species Cross Reactivity

Reacts with: Mouse, Rabbit, Rat, Guinea Pig, Sheep, Human, Chicken, Pig
Based on sequence similarity, is expected to react with:Mammals
N.B. Antibody reactivity and working conditions may vary between species. Cross reactivity is derived from testing within our laboratories, peer-reviewed publications or personal communications from the originators. Please refer to references indicated for further information.

Product Form

Tissue Culture Supernatant - liquid

Buffer Solution	0.1M TRIS
Preservative Stabilisers	0.1% Sodium Azide
Immunogen	Bovine MBP.
External Database Links	**UniProt:** P02687 Related reagents **Entrez Gene:** 618684 MBP Related reagents
RRID	AB_325004
Fusion Partners	Spleen cells from an immunised outbred rat were fused with cells of the mouse NS0 myeloma cell line.
Specificity	**Rat anti MBP antibody, clone 12** recognizes myelin basic protein from a wide range of species. Rat anti MBP antibody, clone 12 reacts weakly with peptides ending in the Phe 91 where the 91-92 Phe-Phe bond is broken. Synthetic peptide 82-99 reacts very well with Rat anti MBP antibody, clone 12, as does intact MBP. Further epitope analysis indicates binding to a region defined by amino acids 82-87 (DENPVV). Rat anti MBP antibody, clone 12 has been reported as being suitable for use in western blotting (Glynn *et al.* 1987).

References

1. Groome, N.P. *et al.* (1986) Region-specific immunoassays for human myelin basic protein. J Neuroimmunol. 12 (4): 253-64.
2. Glynn, P. *et al.* (1987) Basic protein dissociating from myelin membranes at physiological ionic strength and pH is cleaved into three major fragments. J Neurochem. 48 (3): 752-9.
3. Hruby, S. *et al.* (1987) Monoclonal antibodies reactive with myelin basic protein. Mol Immunol. 24 (12): 1359-64.
4. Homchaudhuri L *et al.* (2009) Influence of membrane surface charge and post-translational modifications to myelin basic protein on its ability to tether the Fyn-SH3 domain to a membrane *in vitro*. Biochemistry. 48 (11): 2385-93.
5. Pohl, H.B. *et al.* (2011) Genetically induced adult oligodendrocyte cell death is associated with poor myelin clearance, reduced remyelination, and axonal damage. J Neurosci. 31 (3): 1069-80.
6. Laursen, L.S. *et al.* (2011) Translation of myelin basic protein mRNA in oligodendrocytes is regulated by integrin activation and hnRNP-K. J Cell Biol. 192: 797-811.
7. Relucio, J. *et al.* (2009) Laminin alters fyn regulatory mechanisms and promotes oligodendrocyte development. J Neurosci. 29: 11794-806.
8. Savvaki, M. *et al.* (2010) The expression of TAG-1 in glial cells is sufficient for the formation of the juxtaparanodal complex and the phenotypic rescue of tag-1 homozygous

mutants in the CNS. J Neurosci. 30: 13943-54.
9. Massa, P.T. *et al.* (2004) Dysmyelination and reduced myelin basic protein gene expression by oligodendrocytes of SHP-1-deficient mice. J Neurosci Res. 77: 15-25.
10. Monk, K.R. *et al.* (2011) Gpr126 is essential for peripheral nerve development and myelination in mammals. Development. 138: 2673-80.
11. Massa, P.T. *et al.* (2002) Critical role for protein tyrosine phosphatase SHP-1 in controlling infection of central nervous system glia and demyelination by Theiler's murine encephalomyelitis virus. J Virol. 76:8335-46.
12. Relvas, J.B. *et al.* (2001) Expression of dominant-negative and chimeric subunits reveals an essential role for beta1 integrin during myelination. Curr Biol. 11: 1039-43.
13. Rittchen S *et al.* (2015) Myelin repair *in vivo* is increased by targeting oligodendrocyte precursor cells with nanoparticles encapsulating leukaemia inhibitory factor (LIF). Biomaterials. 56: 78-85.
14. Ioannidou, K. *et al.* (2012) Time-lapse imaging of the dynamics of CNS glial-axonal interactions *in vitro* and *ex vivo*. PLoS One. 7: e30775.
15. Horn, M. *et al.* (2012) Myelin is dependent on the Charcot-Marie-Tooth Type 4H disease culprit protein FRABIN/FGD4 in Schwann cells. Brain. 135 (Pt 12): 3567-83.
16. Müller, C. *et al.* (2015) SncRNA715 Inhibits Schwann Cell Myelin Basic Protein Synthesis. PLoS One. 10 (8): e0136900.
17. Brügger V *et al.* (2015) HDAC1/2-Dependent P0 Expression Maintains Paranodal and Nodal Integrity Independently of Myelin Stability through Interactions with Neurofascins. PLoS Biol. 13 (9): e1002258.
18. Natrajan, M.S. *et al.* (2015) Retinoid X receptor activation reverses age-related deficiencies in myelin debris phagocytosis and remyelination. Brain. 138(Pt 12):3581-97
19. Fernandes, A.R. & Chari, D.M. (2016) Part I: Minicircle vector technology limits DNA size restrictions on ex vivo gene delivery using nanoparticle vectors: Overcoming a translational barrier in neural stem cell therapy. J Control Release. 238: 289-99.
20. Friess, M. *et al.* (2016) Intracellular ion signaling influences myelin basic protein synthesis in oligodendrocyte precursor cells. Cell Calcium. 60 (5): 322-30.
21. Fernandes, A.R. & Chari, D.M. (2016) Part II: Functional delivery of a neurotherapeutic gene to neural stem cells using minicircle DNA and nanoparticles: Translational advantages for regenerative neurology. J Control Release. 238: 300-10.
22. Crawford, A.H. *et al.* (2016) Pre-Existing Mature Oligodendrocytes Do Not Contribute to Remyelination following Toxin-Induced Spinal Cord Demyelination. Am J Pathol. 186 (3): 511-6.
23. Lim, J.L. *et al.* (2016) Protandim Protects Oligodendrocytes against an Oxidative Insult. Antioxidants (Basel). 5 (3): pii: E30.
24. Isoda, M. *et al.* (2016) Robust production of human neural cells by establishing neuroepithelial-like stem cells from peripheral blood mononuclear cell-derived feeder-free iPSCs under xeno-free conditions. Neurosci Res. 110: 18-28.
25. Grigoletto, J. *et al.* (2017) Higher levels of myelin phospholipids in brains of neuronal α-Synuclein transgenic mice precede myelin loss. Acta Neuropathol Commun. 5 (1): 37.
26. Moreno, B. *et al.* (2017) Methylthioadenosine promotes remyelination by inducing oligodendrocyte differentiation Multiple Sclerosis and Demyelinating Disorders. 2 (1) [Epub ahead of print].
27. Qin, J. *et al.* (2017) GD1a Overcomes Inhibition of Myelination by Fibronectin via Activation of Protein Kinase A: Implications for Multiple Sclerosis. J Neurosci. 37 (41):

9925-38.
28. Aranmolate, A. *et al.* (2017) Myelination is delayed during postnatal brain development in the mdx mouse model of Duchenne muscular dystrophy. BMC Neurosci. 18 (1): 63.
29. Yu, Q. *et al.* (2017) Strain differences in cuprizone induced demyelination. Cell Biosci. 7: 59.
30. Dillenburg, A. *et al.* (2018) Activin receptors regulate the oligodendrocyte lineage in health and disease. Acta Neuropathol. 135 (6): 887-906.
31. Sekizar, S. & Williams, A. (2019) *Ex Vivo* Slice Cultures to Study Myelination, Demyelination, and Remyelination in Mouse Brain and Spinal Cord. Methods Mol Biol. 1936: 169-83.
32. Martinez-rachadell, L. *et al.* (2019) Cell-specific expression of insulin/insulin-like growth factor-I receptor hybrids in the mouse brain. Growth Horm IGF Res. 45: 25-30.
33. Nocita, E. *et al.* (2019) EGFR/ErbB Inhibition Promotes OPC Maturation up to Axon Engagement by Co-Regulating PIP2 and MBP. Cells. 8 (8) Aug 06 [Epub ahead of print].
34. Vogel, J.K. *et al.* (2020) Sox9 overexpression exerts multiple stage-dependent effects on mouse spinal cord development. Glia. 68 (5): 932-46.
35. Vanheel, H. *et al.* (2020) Duodenal acidification induces gastric relaxation and alters epithelial barrier function by a mast cell independent mechanism. Sci Rep. 10 (1): 17448.
36. Swire, M. *et al.* (2019) Endothelin signalling mediates experience-dependent myelination in the CNS. Elife. 8:e49493
37. di Petna, A. *et al.* (2013) Oxidative stress and proinflammatory cytokines contribute to demyelination and axonal damage in a cerebellar culture model of neuroinflammation. PLoS One. 8 (2): e54722.
38. Melero-Jerez, C. *et al.* (2020) Myeloid-derived suppressor cells support remyelination in a murine model of multiple sclerosis by promoting oligodendrocyte precursor cell survival, proliferation, and differentiation. Glia. 20 Nov [Epub ahead of print].
39. Klein, B. *et al.* (2020) DCX^+ neuronal progenitors contribute to new oligodendrocytes during remyelination in the hippocampus. Sci Rep. 10 (1): 20095.
40. Yetiş, Ç. *et al.* (2020) Myelin detection in fluorescence microscopy images using machine learning. J Neurosci Methods. 346: 108946.
41. Werkman, I.L. *et al.* (2020) Transcriptional heterogeneity between primary adult grey and white matter astrocytes underlie differences in modulation of *in vitro* myelination. J Neuroinflammation. 17 (1): 373.
42. Kerman, B.E. *et al.* (2020) Motoneuron expression profiling identifies an association between an axonal splice variant of HDGF-related protein 3 and peripheral myelination. J Biol Chem. 295 (34): 12233-46.
43. Holloway, R.K. *et al.* (2021) Microglial inflammasome activation drives developmental white matter injury. Glia. Jan 08 [Epub ahead of print].
44. Schultz, V. *et al.* (2021) Zika Virus Infection Leads to Demyelination and Axonal Injury in Mature CNS Cultures. Viruses. 13 (1): 91.
45. Meireles, A.M. *et al.* (2018) The Lysosomal Transcription Factor TFEB Represses Myelination Downstream of the Rag-Ragulator Complex. Dev Cell. 47 (3): 319-330.e5.
46. Lloyd, A.F. *et al.* (2019) Central nervous system regeneration is driven by microglia necroptosis and repopulation. Nat Neurosci. 22 (7): 1046-52.
47. Yamazaki, R. *et al.* (2021) Macroscopic detection of demyelinated lesions in mouse PNS with neutral red dye. Sci Rep. 11 (1): 16906.
48. Alhajlah, S. *et al.* (2021) Overexpression of Reticulon 3 Enhances CNS Axon

Regeneration and Functional Recovery after Traumatic Injury. Cells. 10 (8): 2015.
49. Swire, M. *et al.* (2021) Oligodendrocyte HCN2 Channels Regulate Myelin Sheath Length. J Neurosci. 41 (38): 7954-64.
50. Niu, J. *et al.* (2021) Oligodendroglial ring finger protein Rnf43 is an essential injury-specific regulator of oligodendrocyte maturation. Neuron. 109 (19): 3104-18.e6.
51. Moyon, S. *et al.* (2021) TET1-mediated DNA hydroxymethylation regulates adult remyelination in mice. Nat Commun. 12 (1): 3359.
52. Bechler, M.E. (2019) A Neuron-Free Microfiber Assay to Assess Myelin Sheath Formation. Methods Mol Biol. 1936: 97-110.
53. Sekizar, S. & Williams, A. (2019) *Ex Vivo.* Slice Cultures to Study Myelination, Demyelination, and Remyelination in Mouse Brain and Spinal Cord. Methods Mol Biol. 1936: 169-83.
54. Li, S. *et al.* (2019) Induction of immunological tolerance to myelinogenic glial-restricted progenitor allografts. Brain. 142 (11): 3456-72.

Storage	This product is shipped at ambient temperature. It is recommended to aliquot and store at -20°C on receipt. When thawed, aliquot the sample as needed. Keep aliquots at 2-8°C for short term use (up to 4 weeks) and store the remaining aliquots at -20°C. Avoid repeated freezing and thawing as this may denature the antibody. Storage in frost-free freezers is not recommended.
Guarantee	12 months from date of despatch
Health And Safety Information	Material Safety Datasheet documentation #10451 available at: 10451: https://www.bio-rad-antibodies.com/uploads/MSDS/10451.pdf
Regulatory	For research purposes only

Related Products

Recommended Secondary Antibodies

Goat Anti Rat IgG (STAR69...)	FITC
Goat Anti Rat IgG (STAR73...)	RPE
Rabbit Anti Rat IgG (STAR16...)	DyLight®800
Rabbit Anti Rat IgG (STAR21...)	HRP
Rabbit Anti Rat IgG (STAR17...)	FITC
Goat Anti Rat IgG (STAR131...)	Alk. Phos., Biotin
Goat Anti Rat IgG (STAR72...)	HRP
Goat Anti Rat IgG (MOUSE ADSORBED) (STAR71...)	DyLight®650, DyLight®800