

Datasheet: MCA2235

BATCH NUMBER 161736

Description:	RAT ANTI MOUSE CD206
Specificity:	CD206
Other names:	MANNOSE RECEPTOR C TYPE 1
Format:	Purified
Product Type:	Monoclonal Antibody
Clone:	MR5D3
Isotype:	IgG2a
Quantity:	0.25 mg

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 (1)	▪			1/10 - 1/20
Immunohistology - Frozen	▪			
Immunohistology - Paraffin			▪	
ELISA			▪	
Immunoprecipitation	▪			
Western Blotting			▪	
Immunofluorescence	▪			

Where this antibody 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 antibody for use their own system using appropriate negative/positive controls.

(1) CD206 is expressed weakly at the cell surface. Staining may be increased following membrane permeabilisation. Bio-Rad recommends the use of Leucoperm™ (Product Code [BUF09](#)) for this purpose.

Target Species	Mouse
Product Form	Purified IgG - liquid
Preparation	Purified IgG prepared by affinity chromatography on Protein G from tissue culture supernatant

Buffer Solution	Phosphate buffered saline
Preservative Stabilisers	0.09% Sodium Azide
Carrier Free	Yes
Approx. Protein Concentrations	IgG concentration 1.0 mg/ml
Immunogen	Chimaeric CRD4-7-Fc protein
External Database Links	UniProt: Q61830 Related reagents Entrez Gene: 17533 Mrc1 Related reagents
RRID	AB_324622
Fusion Partners	Spleen cells from immunized Fischer rats were fused with cells of the Y3 myeloma cell line
Specificity	Rat anti Mouse CD206 antibody, clone MR5D3 recognizes the mouse mannose receptor, a ~175 kDa type 1 membrane glycoprotein that is also known as CD206. CD206 is expressed on most tissue macrophages, certain endothelial cells and <i>in vitro</i> derived dendritic cells (Zamze et al. 2002). The mannose receptor, CD206, is composed of a N-terminal cysteine-rich domain, a fibronectin type II domain, eight tandemly arranged C-type lectin domains (CTLD), a transmembrane domain, and a cytoplasmic domain. The terminal cysteine-rich domain binds sulfated sugars, and the CTLD recognizes carbohydrates terminating in mannose, fucose and N-acetylglucosamine, all sugars found on microorganisms and on some endogenous proteins (Su et al. 2005). Rat anti mouse CD206 antibody, clone MR5D3 has been reported to be non-inhibitory for the binding of the mannose receptor to carbohydrate ligands (Zamze et al. 2002). Clone MR5D3 has also been shown to work in western blotting (Martinez-Pomares et al. 2003 and Su et al. 2005).
Flow Cytometry	Use 10ul of the suggested working dilution to label 10 ⁶ cell in 100ul.
References	1. Martinez-Pomares, L. <i>et al.</i> (2003) Analysis of mannose receptor regulation by IL-4, IL-10, and proteolytic processing using novel monoclonal antibodies. J Leukoc Biol. 73 (5): 604-13. 2. Nair, M.G. <i>et al.</i> (2009) Alternatively activated macrophage-derived RELM-α is a negative regulator of type 2 inflammation in the lung. J Exp Med. 206: 937-52. 3. Hassan, M.F. <i>et al.</i> (2006) The <i>Schistosoma mansoni</i> hepatic egg granuloma provides

- a favorable microenvironment for sustained growth of *Leishmania donovani*. [Am J Pathol. 169: 943-53.](#)
4. Hardison, S.E. *et al.* (2010) Interleukin-17 Is Not Required for Classical Macrophage Activation in a Pulmonary Mouse Model of *Cryptococcus neoformans* Infection. [Infect Immun. 78: 5341-51.](#)
 5. Geier, H. & Celli, J. (2011) Phagocytic receptors dictate phagosomal escape and intracellular proliferation of *Francisella tularensis*. [Infect Immun. 79 \(6\): 2204-14.](#)
 6. Bacci, M. *et al.* (2009) Macrophages are alternatively activated in patients with endometriosis and required for growth and vascularization of lesions in a mouse model of disease. [Am J Pathol. 175: 547-56.](#)
 7. Chavele, K.M. *et al.* (2010) Mannose receptor interacts with Fc receptors and is critical for the development of crescentic glomerulonephritis in mice. [J Clin Invest. 120: 1469-78.](#)
 8. deSchoolmeester, M.L. *et al.* (2009) The mannose receptor binds *Trichuris muris* excretory/secretory proteins but is not essential for protective immunity. [Immunology 126: 246-55.](#)
 9. Devey, L. *et al.* (2009) Tissue-resident macrophages protect the liver from ischemia reperfusion injury via a heme oxygenase-1-dependent mechanism. [Mol Ther. 17: 65-72.](#)
 10. Dewals, B.G. *et al.* (2010) IL-4/Ralpha-independent expression of mannose receptor and Ym1 by macrophages depends on their IL-10 responsiveness. [PLoS Negl Trop Dis. 4 \(5\): e689.](#)
 11. Hardison, S.E. *et al.* (2010) Pulmonary infection with an interferon-gamma-producing *Cryptococcus neoformans* strain results in classical macrophage activation and protection. [Am J Pathol. 176: 774-85.](#)
 12. Hawkes, C.A. *et al.* (2009) Selective targeting of perivascular macrophages for clearance of beta-amyloid in cerebral amyloid angiopathy. [Proc Natl Acad Sci USA 106: 1261-6.](#)
 13. Zehner, M. *et al.* (2011) Mannose receptor polyubiquitination regulates endosomal recruitment of p97 and cytosolic antigen translocation for cross-presentation. [Proc Natl Acad Sci USA 108: 9933-8.](#)
 14. Famulski, K.S. *et al.* (2010) Alternative macrophage activation-associated transcripts in T-cell-mediated rejection of mouse kidney allografts. [Am J Transplant 10 \(3\): 490-7.](#)
 15. Takagi, H. *et al.* (2009) Cooperation of specific ICAM-3 grabbing nonintegrin-related 1 (SIGNR1) and complement receptor type 3 (CR3) in the uptake of oligomannose-coated liposomes by macrophages. [Glycobiology 19: 258-66.](#)
 16. Deepe, G.S. Jr. & Buesing, W.R. (2011) Deciphering the Pathways of Death of *Histoplasma capsulatum*-Infected Macrophages: Implications for the Immunopathogenesis of Early Infection. [J Immunol. 188: 334-44.](#)
 17. Schneider, D. *et al.* (2012) Neonatal rhinovirus infection induces mucous metaplasia and airways hyperresponsiveness. [J Immunol. 188 \(6\): 2894-904.](#)
 18. Kondo, Y. *et al.* (2011) Macrophages counteract demyelination in a mouse model of globoid cell leukodystrophy. [J Neurosci. 31: 3610-24.](#)
 19. Joyce, K.L. *et al.* (2012) Using eggs from *Schistosoma mansoni* as an *in vivo* model of helminth-induced lung inflammation. [J Vis Exp. Jun 5 \(64\): e3905.](#)
 20. Su, Y. *et al.* (2005) Glycosylation influences the lectin activities of the macrophage mannose receptor. [J Biol Chem. 280: 32811-20.](#)
 21. Verheijden, S. *et al.* (2015) Identification of a chronic non-neurodegenerative microglia activation state in a mouse model of peroxisomal β -oxidation deficiency. [Glia. 63 \(9\):](#)

[1606-20.](#)

22. O'Flaherty, B.M. *et al.* (2015) CD8+ T Cell Response to Gammaherpesvirus Infection Mediates Inflammation and Fibrosis in Interferon Gamma Receptor-Deficient Mice. [PLoS One. 10 \(8\): e0135719.](#)
23. Eßlinger M *et al.* (2016) Schizophrenia associated sensory gating deficits develop after adolescent microglia activation. [Brain Behav Immun. 58: 99-106.](#)
24. Øie, C.I. *et al.* (2016) FITC Conjugation Markedly Enhances Hepatic Clearance of N-Formyl Peptides. [PLoS One. 11 \(8\): e0160602.](#)
25. Manning, C.N. *et al.* (2015) Adipose-derived mesenchymal stromal cells modulate tendon fibroblast responses to macrophage-induced inflammation *in vitro*. [Stem Cell Res Ther. 6: 74.](#)
26. Sindrilaru, A. *et al.* (2011) An unrestrained proinflammatory M1 macrophage population induced by iron impairs wound healing in humans and mice. [J Clin Invest. 121: 985-97.](#)
27. Braune, J. *et al.* (2017) IL-6 Regulates M2 Polarization and Local Proliferation of Adipose Tissue Macrophages in Obesity. [J Immunol. 198 \(7\): 2927-34.](#)
28. Bongiorno, E.K. *et al.* (2017) Type 1 Immune Mechanisms Driven by the Response to Infection with Attenuated Rabies Virus Result in Changes in the Immune Bias of the Tumor Microenvironment and Necrosis of Mouse GL261 Brain Tumors. [J Immunol. 198 \(11\): 4513-23.](#)
29. Litvack ML *et al.* (2016) Alveolar-like Stem Cell-derived Myb(-) Macrophages Promote Recovery and Survival in Airway Disease. [Am J Respir Crit Care Med. 193 \(11\): 1219-29.](#)
30. Sameshima, A. *et al.* (2015) Teneligliptin improves metabolic abnormalities in a mouse model of postmenopausal obesity. [J Endocrinol. 227 \(1\): 25-36.](#)
31. Eskilsson, A. *et al.* (2014) Distribution of microsomal prostaglandin E synthase-1 in the mouse brain. [J Comp Neurol. 522 \(14\): 3229-44.](#)
32. Hosono, K. *et al.* (2016) Signaling of Prostaglandin E Receptors, EP3 and EP4 Facilitates Wound Healing and Lymphangiogenesis with Enhanced Recruitment of M2 Macrophages in Mice. [PLoS One. 11 \(10\): e0162532.](#)
33. Han, Y.H. *et al.* (2019) A maresin 1/ROR α /12-lipoxygenase autoregulatory circuit prevents inflammation and progression of nonalcoholic steatohepatitis. [J Clin Invest. 130. pii: 124219](#)
34. Rahman, K. *et al.* (2017) Inflammatory Ly6Chi monocytes and their conversion to M2 macrophages drive atherosclerosis regression. [J Clin Invest. 127 \(8\): 2904-2915.](#)
35. Qiao, X. *et al.* (2020) Magnesium-doped Nanostructured Titanium Surface Modulates Macrophage-mediated Inflammatory Response for Ameliorative Osseointegration. [Int J Nanomedicine. 15: 7185-98.](#)
36. Shiau, D.J. *et al.* (2020) Hepatocellular carcinoma-derived high mobility group box 1 triggers M2 macrophage polarization via a TLR2/NOX2/autophagy axis. [Sci Rep. 10 \(1\): 13582.](#)
37. Fan, A. *et al.* (2020) High-salt diet decreases mechanical thresholds in mice that is mediated by a CCR2-dependent mechanism. [J Neuroinflammation. 17 \(1\): 179.](#)
38. Kalovyrna, N. *et al.* (2020) A 3'UTR modification of the TNF- α mouse gene increases peripheral TNF- α and modulates the Alzheimer-like phenotype in 5XFAD mice. [Sci Rep. 10 \(1\): 8670.](#)
39. Kishimoto, S. *et al.* (2020) Surgical Injury and Ischemia Prime the Adipose Stromal Vascular Fraction and Increase Angiogenic Capacity in a Mouse Limb Ischemia Model.

[Stem Cells Int. 2020: 7219149.](#)

40. Espagnolle, N. *et al.* (2014) Specific Inhibition of the VEGFR-3 Tyrosine Kinase by SAR131675 Reduces Peripheral and Tumor Associated Immunosuppressive Myeloid Cells. [Cancers \(Basel\). 6 \(1\): 472-90.](#)
41. Fridlender, Z.G. *et al.* (2013) Using macrophage activation to augment immunotherapy of established tumours. [Br J Cancer. 108 \(6\): 1288-97.](#)
42. Igarashi, Y. *et al.* (2018) Partial depletion of CD206-positive M2-like macrophages induces proliferation of beige progenitors and enhances browning after cold stimulation. [Sci Rep. 8 \(1\): 14567.](#)
43. Orsini, F. *et al.* (2018) Mannose-Binding Lectin Drives Platelet Inflammatory Phenotype and Vascular Damage After Cerebral Ischemia in Mice via IL (Interleukin)-1 α . [Arterioscler Thromb Vasc Biol. 38 \(11\): 2678-90.](#)
44. Cao, W. *et al.* (2019) Hoxa5 alleviates obesity-induced chronic inflammation by reducing ER stress and promoting M2 macrophage polarization in mouse adipose tissue. [J Cell Mol Med. 23 \(10\): 7029-42.](#)
45. Welc, S.S. *et al.* (2020) Modulation of Klotho expression in injured muscle perturbs Wnt signalling and influences the rate of muscle growth. [Exp Physiol. 105 \(1\): 132-47.](#)
46. Flores, I. *et al.* (2021) Myeloid cell-mediated targeting of LIF to dystrophic muscle causes transient increases in muscle fiber lesions by disrupting the recruitment and dispersion of macrophages in muscle. [Hum Mol Genet. ddab230.](#)
47. Catrysse, L. *et al.* (2021) A20 deficiency in myeloid cells protects mice from diet-induced obesity and insulin resistance due to increased fatty acid metabolism. [Cell Rep. 36 \(12\): 109748.](#)
48. Sui, A. *et al.* (2020) Inhibiting NF- κ B Signaling Activation Reduces Retinal Neovascularization by Promoting a Polarization Shift in Macrophages. [Invest Ophthalmol Vis Sci. 61 \(6\): 4.](#)
49. Lindhorst, A. *et al.* (2021) Adipocyte death triggers a pro-inflammatory response and induces metabolic activation of resident macrophages. [Cell Death Dis. 12 \(6\): 579.](#)
50. Zhang, H. *et al.* (2021) Circulating Pro-Inflammatory Exosomes Worsen Stroke Outcomes in Aging. [Circ Res. 129 \(7\): e121-e140.](#)
51. Brodaczewska, K. *et al.* (2017) Biodegradable Chitosan Decreases the Immune Response to *Trichinella spiralis*. in Mice. [Molecules. 22\(11\):2008.](#)
52. He, S. *et al.* (2018) Endothelial extracellular vesicles modulate the macrophage phenotype: Potential implications in atherosclerosis. [Scand J Immunol. 87 \(4\): e12648.](#)
53. Ackermann, J. *et al.* (2021) Myeloid Cell-Specific IL-4 Receptor Knockout Partially Protects from Adipose Tissue Inflammation. [J Immunol. Nov 17;ji2100699.](#)
54. Lei, Y. *et al.* (2021) miR-129-5p Ameliorates Ischemic Brain Injury by Binding to SIAH1 and Activating the mTOR Signaling Pathway. [J Mol Neurosci. 71 \(9\): 1761-71.](#)
55. Yao, Y. *et al.* (2022) Antinociceptive and anti-inflammatory activities of ethanol-soluble acidic component from *Ganoderma atrum* by suppressing mannose receptor [Journal of Functional Foods. 89: 104915.](#)
56. Micanovic, R. *et al.* (2018) Tamm-Horsfall Protein Regulates Mononuclear Phagocytes in the Kidney. [J Am Soc Nephrol. 29 \(3\): 841-856.](#)
57. Balza, E. *et al.* (2022) Therapeutic efficacy of proton transport inhibitors alone or in combination with cisplatin in triple negative and hormone sensitive breast cancer models. [Cancer Med. 11 \(1\): 183-93.](#)
58. Yao, Y. *et al.* (2022) Antinociceptive and anti-inflammatory activities of ethanol-soluble

acidic component from *Ganoderma atrum*. by suppressing mannose receptor. [J Funct Foods.89: 104915.](#)

59. Császár, E. *et al.* (2022) Microglia modulate blood flow, neurovascular coupling, and hypoperfusion via purinergic actions. [J Exp Med. 219 \(3\): e20211071.](#)

60. Klein, D. *et al.* (2022) Early targeting of endoneurial macrophages alleviates the neuropathy and affects abnormal Schwann cell differentiation in a mouse model of Charcot-Marie-Tooth 1A. [Glia. Feb 21 \[Epub ahead of print\].](#)

61. Han, I. *et al.* (2022) Therapeutic Effect of Melittin–dKLA Targeting Tumor-Associated Macrophages in Melanoma [International Journal of Molecular Sciences. 23 \(6\): 3094.](#)

62. Louet, E.R. *et al.* (2022) tPA-NMDAR Signaling Blockade Reduces the Incidence of Intracerebral Aneurysms. [Transl Stroke Res. Mar 21 \[Epub ahead of print\].](#)

63. Vlachou, F. *et al.* (2022) Galectin-3 interferes with tissue repair and promotes cardiac dysfunction and comorbidities in a genetic heart failure model. [Cell Mol Life Sci. 79 \(5\): 250.](#)

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.
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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
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Health And Safety Information	Material Safety Datasheet documentation #10040 available at: https://www.bio-rad-antibodies.com/SDS/MCA2235 10040
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Regulatory	For research purposes only
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Related Products

Recommended Secondary Antibodies

Rabbit Anti Rat IgG (STAR16...)	DyLight®800
Rabbit Anti Rat IgG (STAR17...)	FITC
Goat Anti Rat IgG (STAR73...)	RPE
Rabbit Anti Rat IgG (STAR21...)	HRP
Goat Anti Rat IgG (MOUSE ADSORBED) (STAR71...)	DyLight®550 , DyLight®650 , DyLight®800
Goat Anti Rat IgG (STAR131...)	Alk. Phos. , Biotin
Goat Anti Rat IgG (STAR72...)	HRP
Goat Anti Rat IgG (STAR69...)	FITC

Recommended Negative Controls

[RAT IgG2a NEGATIVE CONTROL \(MCA1212\)](#)

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