Datasheet: MCA1334FB

Description:	MOUSE ANTI RAT CD31:FITC
Specificity:	CD31
Other names:	PECAM-1
Format:	FITC
Product Type:	Monoclonal Antibody
Clone:	TLD-3A12
Isotype:	IgG1
Quantity:	0.5 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	▪			1/50 - 1/100
Functional Assays (1)			▪	

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.

(1) **Bio-Rad recommend the use of MCA1334EL for use in functional studies**

Target Species

Rat

Species Cross Reactivity

Reacts with: Rhesus Monkey, Pig

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

Purified IgG conjugated to Fluorescein Isothiocyanate Isomer 1 (FITC) - liquid

Max Ex/Em

Fluorophore	Excitation Max (nm)	Emission Max (nm)
FITC	490	525

Preparation

Purified IgG prepared by affinity chromatography on Protein A from tissue culture supernatant

Buffer Solution	Phosphate buffered saline
Preservative Stabilisers	0.09% sodium azide (NaN_3) 1% bovine serum albumin
Approx. Protein Concentrations	IgG concentration 0.5 mg/ml
Immunogen	Activated, Lewis rat derived microglial cells.
External Database Links	**UniProt:** Q3SWT0 Related reagents **Entrez Gene:** 29583 Pecam1 Related reagents
Synonyms	Pecam
RRID	AB_566721
Fusion Partners	Spleen cells from immunized BALB/c mouse were fused with cells of the mouse SP2 myeloma cell line.
Specificity	**Mouse anti Rat CD31 antibody, clone TLD-3A12** recognizes rat PECAM-1 (CD31), a 661 amino acid type 1 transmembrane protein expressed primarily on endothelial cells, platelets and leucocytes. Clone TLD-3A12 has been shown to partially block the proliferative response of antigen-specific CD4+ T cells to antigen-presenting cells and relevant antigen (Stevenson, K.S. *et al.*2009). Mouse anti Rat CD31 antibody, clone TLD-3A12 is suitable for use in IHC on formalin-fixed paraffin-embedded sections pre-treated with 0.2M boric acid, pH7.0. (Wilson *et al.* 2007). Mouse anti Rat CD31, clone TLD-3A12 has been shown to be cross-reactive with endothelial cells derived from rhesus macaque (Maclean *et al.* 2001)
Flow Cytometry	Use 10µl of the suggested working dilution to label 10^6 cells in 100µl
References	1. Williams, K.C. *et al.* (1996) PECAM-1 (CD31) expression in the central nervous system and its role in experimental allergic encephalomyelitis in the rat. J Neurosci Res. 45 (6): 747-57. 2. Graham, M.J. *et al.* (1998) *In vivo* distribution and metabolism of a phosphorothioate oligonucleotide within rat liver after intravenous administration. J Pharmacol Exp Ther. 286: 447-58. 3. MacLean, A.G. *et al.* (2001) Rhesus macaque brain microvessel endothelial cells behave in a manner phenotypically distinct from umbilical vein endothelial cells. J Neuroimmunol. 118: 223-32.

4. Frye, C.A. & Patrick, C.W. Jr (2002) Isolation and culture of rat microvascular endothelial cells. In Vitro Cell Dev Biol Anim. 38 (4): 208-12.
5. Nakao, A. *et al.* (2003) Carbon monoxide inhalation protects rat intestinal grafts from ischemia/reperfusion injury. Am J Pathol. 163: 1587-98.
6. Seegers, H.C. *et al.* (2003) Enhancement of angiogenesis by endogenous substance P release and neurokinin-1 receptors during neurogenic inflammation. J Pharmacol Exp Ther. 306: 8-12.
7. Haywood, L. *et al.* (2003) Inflammation and angiogenesis in osteoarthritis. Arthritis Rheum. 48: 2173-7.
8. Wilson, E. *et al.* (2007) An evaluation of the immunohistochemistry benefits of boric acid antigen retrieval on rat decalcified joint tissues. J Immunol Methods. 322: 137-42.
9. Ohnishi, T. *et al.* (2007) Comparison of endothelial cell proliferation in normal liver and adipose tissue in B6C3F1 mice, F344 rats, and humans. Toxicol Pathol. 35: 904-9.
10. Ceelen, W. *et al.* (2007) Recombinant human erythropoietin alpha modulates the effects of radiotherapy on colorectal cancer microvessels. Br J Cancer. 96: 692-700.
11. Fujimoto, K.L. *et al.* (2007) An elastic, biodegradable cardiac patch induces contractile smooth muscle and improves cardiac remodeling and function in subacute myocardial infarction. J Am Coll Cardiol. 49: 2292-300.
12. Arkudas, A. *et al.* (2007) Fibrin gel-immobilized VEGF and bFGF efficiently stimulate angiogenesis in the AV loop model. Mol Med. 13: 480-7.
13. Schilte, M.N. *et al.* (2009) Long-term intervention with heparins in a rat model of peritoneal dialysis. Perit Dial Int. 29: 26-35.
14. Stevenson, K.S. *et al.* (2009) Isolation, characterization, and differentiation of thy1.1-sorted pancreatic adult progenitor cell populations. Stem Cells Dev. 18 (10): 1389-98.
15. Pedram, M.S. *et al.* (2010) Transplantation of a combination of autologous neural differentiated and undifferentiated mesenchymal stem cells into injured spinal cord of rats. Spinal Cord. 48 (6): 457-63.
16. Kielian, T. and Hickey, W.F. (2010) Proinflammatory cytokine, chemokine, and cellular adhesion molecule expression during the acute phase of experimental brain abscess development. Am J Pathol. 157: 647-58.
17. Thebault, P. *et al.* (2010) The C-type lectin-like receptor CLEC-1, expressed by myeloid cells and endothelial cells, is up-regulated by immunoregulatory mediators and moderates T cell activation. J Immunol. 183: 3099-108.
18. Willis, C.L. *et al.* (2010) Protein kinase C activation modulates reversible increase in cortical blood-brain barrier permeability and tight junction protein expression during hypoxia and posthypoxic reoxygenation. J Cereb Blood Flow Metab. 30: 1847-59.
19. Lochhead, J.J. *et al.* (2010) Oxidative stress increases blood-brain barrier permeability and induces alterations in occludin during hypoxia-reoxygenation. J Cereb Blood Flow Metab. 30: 1625-36.
20. Teng, B.T. *et al.* (2011) Protective effect of caspase inhibition on compression-induced muscle damage. J Physiol. 589: 3349-69.
21. Salehi-Had, H. *et al.* (2011) Utilizing targeted gene therapy with nanoparticles binding alpha v beta 3 for imaging and treating choroidal neovascularization. PLoS One. 6: e18864.
22. Nakao, A. *et al.* (2011) *Ex vivo* carbon monoxide delivery inhibits intimal hyperplasia in arterialized vein grafts. Cardiovasc Res. 89: 457-63.
23. Sheu, J.J. *et al.* (2012) Combination of cilostazol and clopidogrel attenuates rat critical

limb ischemia. J Transl Med. 10: 164.
24. Matsugami, H.*et al.* (2014) VEGF secretion by adipose tissue-derived regenerative cells is impaired under hyperglycemic conditions via glucose transporter activation and ROS increase. Biomed Res. 35 (6): 397-405.
25. Brandl, A. *et al.* (2014) A novel early precursor cell population from rat bone marrow promotes angiogenesis *in vitro*. BMC Cell Biol. 15: 12.
26. Oboshi, M. *et al.* (2015) Temporary dietary iron restriction affects the process of thrombus resolution in a rat model of deep vein thrombosis. PLoS One. 10 (5): e0126611.
27. Stavenuiter, A.W. *et al.* (2015) Protective Effects of Paricalcitol on Peritoneal Remodeling during Peritoneal Dialysis. Biomed Res Int. 2015: 468574.
28. Naaijkens BA *et al.* (2015) Acute myocardial infarction does not affect functional characteristics of adipose-derived stem cells in rats, but reduces the number of stem cells in adipose tissue. Cell Tissue Res. 362 (3): 623-32.
29. Sun, C.K. *et al.* (2015) Mixed serum-deprived and normal adipose-derived mesenchymal stem cells against acute lung ischemia-reperfusion injury in rats. Am J Transl Res. 7 (2): 209-31.
30. Kakaiy, A. *et al.* (2015) Comparing protective effect of grape seed extract versus atorvastatin on endometriosis in rat model: Evidence for immunohistochemical and biochemical alterations. Vet Res Forum. 6 (2): 101-10.
31. Ikutomi, M. *et al.* (2015) Diverse contribution of bone marrow-derived late-outgrowth endothelial progenitor cells to vascular repair under pulmonary arterial hypertension and arterial neointimal formation. J Mol Cell Cardiol. 86: 121-35.
32. Wu, S.H. *et al.* (2015) Autologous adipose-derived stem cells attenuate muscular atrophy and protect spinal cord ventral horn motor neurons in an animal model of burn injury. Cytotherapy. 17 (8): 1066-75.
33. Jiang, Y. *et al.* (2015) SOD1 nanozyme salvages ischemic brain by locally protecting cerebral vasculature. J Control Release. 213: 36-44.
34. Tung, H.C. *et al.* (2015) The Beneficial Effects of P2X7 Antagonism in Rats with Bile Duct Ligation-induced Cirrhosis. PLoS One. 10 (5): e0124654.
35. Park; J.R. *et al.* (2016) Effects of Peroxisome Proliferator-Activated Receptor-δ Agonist on Cardiac Healing after Myocardial Infarction. PLoS One. 11 (2): e0148510.
36. Lux, M. *et al.* (2016) *In vitro* maturation of large-scale cardiac patches based on a perfusable starter matrix by cyclic mechanical stimulation. Acta Biomater. 30: 177-87.
37. Ferrantelli, E. *et al.* (2016) The dipeptide alanyl-glutamine ameliorates peritoneal fibrosis and attenuates IL-17 dependent pathways during peritoneal dialysis. Kidney Int. 89 (3): 625-35.
38. Mirzaei, M. *et al.* (2017) Nanosilver particles increase follicular atresia: Correlation with oxidative stress and aromatization. Environ Toxicol. 32 (10): 2244-55.
39. Lim, S. *et al.* (2017) Attenuation of carotid neointimal formation after direct delivery of a recombinant adenovirus expressing glucagon-like peptide-1 in diabetic rats. Cardiovasc Res. 113 (2): 183-94.
40. Ichihara, Y. *et al.* (2018) Self-assembling peptide hydrogel enables instant epicardial coating of the heart with mesenchymal stromal cells for the treatment of heart failure. Biomaterials. 154: 12-23.
41. Melly, L. *et al.* (2018) Myocardial infarction stabilization by cell-based expression of controlled Vascular Endothelial Growth Factor levels. J Cell Mol Med. 22 (5): 2580-91.
42. Costa, B.P. *et al.* (2018) Intestinal Epithelial Stem Cells: Distinct Behavior After

Surgical Injury and Teduglutide Administration. J Invest Surg. 31 (3): 243-52.
43. Sønstevold, T. *et al.* (2018) Hyperbaric oxygen treatment did not significantly affect radiation injury in the mandibular area of rats. Oral Surg Oral Med Oral Pathol Oral Radiol. 125 (2): 112-9.
44. Aminzadeh, A. *et al.* (2020) Investigating The Alterations of Oxidative Stress Status, Antioxidant Defense Mechanisms, MAP Kinase and Mitochondrial Apoptotic Pathway in Adipose-Derived Mesenchymal Stem Cells from STZ Diabetic Rats. Cell J. 22 (Suppl 1): 38-48.
45. Kuriyama, T. *et al.* (2020) A novel rat model of inflammatory bowel disease developed using a device created with a 3D printer. Regen Ther. 14: 1-10.
46. Pun, C.K. *et al.* (2021) Glycyrrhizin Attenuates Portal Hypertension and Collateral Shunting via Inhibition of Extrahepatic Angiogenesis in Cirrhotic Rats. Int J Mol Sci. 22(14):7662.
47. Huang, H.C. *et al.* (2021) Matrix metalloproteinase-9 inhibition or deletion attenuates portal hypertension in rodents. J Cell Mol Med. 25 (21): 10073-87.
48. Huang, H.C. *et al.* (2021) Microbiota transplants from feces or gut content attenuated portal hypertension and portosystemic collaterals in cirrhotic rats. Clin Sci (Lond). 135 (24): 2709-2728.
49. Cąkała-Jakimowicz, M. & Puzianowska-Kuznicka, M. (2022) Towards Understanding the Lymph Node Response to Skin Infection with Saprophytic *Staphylococcus epidermidis*.. Biomedicines. 10 (5): 1021.
50. Huang, H.C. *et al.* (2022) Effects of PCSK-9 Inhibition by Alirocumab Treatments on Biliary Cirrhotic Rats. Int J Mol Sci. 23 (13): 7378.
51. Zhou, X. *et al.* (2022) Dusp6 deficiency attenuates neutrophil-mediated cardiac damage in the acute inflammatory phase of myocardial infarction. Nat Commun. 13 (1): 6672.
52. Sun, Y. *et al.* (2023) Effects of acupuncture on angiogenesis-associated factor expression in ischemic brain tissue following cerebral infarction in rats Acupuncture and Herbal Medicine. Jan [Epub ahead of print].
53. Zhang, Q. *et al.* (2023) Harnessing the synergy of perfusable muscle flap matrix and adipose-derived stem cells for prevascularization and macrophage polarization to reconstruct volumetric muscle loss. Bioact Mater. 22: 588-614.
54. Pun, C.K. *et al.* (2023) Dual angiotensin receptor and neprilysin inhibitor reduced portal pressure through peripheral vasodilatation and decreasing systemic arterial pressure in cirrhotic rats. J Chin Med Assoc. 86 (9): 786-94.
55. Wu, H.N. *et al.* (2023) Molecular Mechanism of Angiogenesis for Cerebral Infarction Rats by Acupuncture Intervention Based on Sonic Hedgehog Signaling Pathway. Physiol Behav. Nov 28:114420 [Epub ahead of print].
56. Hsin, I.F. *et al.* (2018) Insulin reverses major portal hypertension-related derangements in rats with liver cirrhosis and diabetes. Clin Sci (Lond). 132 (22): 2391-405.
57. Wang, X. *et al.* (2024) Curcumol Attenuates Portal Hypertension and Collateral Shunting Via Inhibition of Extrahepatic Angiogenesis in Cirrhotic Rats. Biochem Genet. Mar 04 [Epub ahead of print].
58. Huang, H.C. *et al.* (2022) Lycopene treatment improves intrahepatic fibrosis and attenuates pathological angiogenesis in biliary cirrhotic rats. J Chin Med Assoc. 85 (4): 414-20.

59. Kelly, K.A. *et al.* (2024) Nanoparticle-Mediated Delivery of Tetrahydrobiopterin Restores Endothelial Function in Diabetic Rats. Nitric Oxide. S1089-8603(24)00052-1. Apr 18 [Epub ahead of print].
60. Pun, C.K. *et al.* (2024) Low-dose alcohol exacerbates hyperdynamic circulation and shunting in non-alcoholic cirrhotic rats. Biosci Rep. 44 (7) [Epub ahead of print].
61. Pun, C.K. *et al.* (2024) Fructooligosaccharides reverses hepatic vascular dysfunction and dysbiosis in rats with liver cirrhosis and portal hypertension. Eur J Clin Invest. : e14287. [Epub ahead of print].
62. Sun, Y. *et al.* (2023) Effects of acupuncture on angiogenesis-associated factor expression in ischemic brain tissue following cerebral infarction in rats Acupuncture and Herbal Medicine. 3 (1): 46-54.
63. Wang, H. *et al.* (2024) *Trillium tschonoskii* rhizome saponin improves spatial learning and memory by enhancing neurovascular restorative in ischemic rats. Phytomedicine. : 156096.
64. Pun, C.K. *et al.* (2023) Dual angiotensin receptor and neprilysin inhibitor reduced portal pressure through peripheral vasodilatation and decreasing systemic arterial pressure in cirrhotic rats. J Chin Med Assoc. 86 (9): 786-794.

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. This product is photosensitive and should be protected from light.
Guarantee	12 months from date of despatch
Health And Safety Information	Material Safety Datasheet documentation #10041 available at: https://www.bio-rad-antibodies.com/SDS/MCA1334FB 10041
Regulatory	For research purposes only

Related Products

Recommended Negative Controls

MOUSE IgG1 NEGATIVE CONTROL:FITC (MCA1209F)

North & South America Tel: +1 800 265 7376 Fax: +1 919 878 3751 Email: antibody_sales_us@bio-rad.com
Worldwide Tel: +44 (0)1865 852 700 Fax: +44 (0)1865 852 739 Email: antibody_sales_uk@bio-rad.com
Europe Tel: +49 (0) 89 8090 95 21 Fax: +49 (0) 89 8090 95 50 Email: antibody_sales_de@bio-rad.com

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