

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	0.09% sodium azide (NaN ₃)
Stabilisers	1% bovine serum albumin
Approx. Protein Concentrations	IgG concentration 0.5 mg/ml
Immunogen	Activated, Lewis rat derived microglial cells.
External Database Links	<p>UniProt: Q3SWT0 Related reagents</p> <p>Entrez Gene: 29583 Pecam1 Related reagents</p>
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	<p>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.</p> <p>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).</p> <p>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)</p>
Flow Cytometry	Use 10µl of the suggested working dilution to label 10 ⁶ cells in 100µl
References	<ol style="list-style-type: none"> Williams, K.C. <i>et al.</i> (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. Graham, M.J. <i>et al.</i> (1998) <i>In vivo</i> distribution and metabolism of a phosphorothioate oligonucleotide within rat liver after intravenous administration. J Pharmacol Exp Ther. 286: 447-58. MacLean, A.G. <i>et al.</i> (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. Çakala-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 \(MCA1209F\)](#)

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