

Datasheet: MCA1781R

BATCH NUMBER 168801

Description:	MOUSE ANTI CANINE CD21
Specificity:	CD21
Format:	Purified
Product Type:	Monoclonal Antibody
Clone:	CA2.1D6
Isotype:	IgG1
Quantity:	0.1 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	▪			1/100
Immunohistology - Frozen (1)	▪			
Immunohistology - Paraffin		▪		
ELISA			▪	
Immunoprecipitation	▪			
Western Blotting			▪	

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)The epitope recognised by this antibody is reported to be sensitive to formaldehyde fixation and tissue processing. Bio-Rad recommends the use of acetone fixation for frozen sections.

Target Species

Dog

Species Cross Reactivity

Reacts with: Horse, Cat, Raccoon

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 - liquid
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)
Approx. Protein Concentrations	IgG concentration 1.0 mg/ml
RRID	AB_323665
Specificity	<p>Mouse anti Canine CD21 antibody, clone CA2.1D6 recognizes canine CD21, also known as Complement receptor type 2. CD21 is a cell surface antigen expressed by canine B lymphocytes.</p> <p>The antigen recognized may be the canine homologue of human CD21, but this has not been fully confirmed.</p> <p>Mouse anti Canine CD21 antibody , clone CA2.1D6 also recognizes the CD21 antigen in Felids. Expression in cats is analogous to that seen in dogs with strong expression on lymphocytes, in a manner mutually exclusive with expression of CD4 or CD8. Mouse anti Canine CD21 antibody, clone CA2.1D6 immunoprecipitates a ~145 kDa protein from feline lymphocytes, similar to the protein immunoprecipitated by the antibody from canine lymphocytes (Dean <i>et al.</i> 1996).</p>
Flow Cytometry	Use 10µl of the suggested working dilution to label 10 ⁶ cells or 100µl whole blood
References	<ol style="list-style-type: none"> 1. Cobbold, S. & Metcalfe, S. (1994) Monoclonal antibodies that define canine homologues of human CD antigens: summary of the First International Canine Leukocyte Antigen Workshop (CLAW). Tissue Antigens. 43 (3): 137-54. 2. Dean, G.A. <i>et al.</i> (1996) Proviral burden and infection kinetics of feline immunodeficiency virus in lymphocyte subsets of blood and lymph node. J Virol. 70 (8): 5165-9. 3. Brodersen, R. <i>et al.</i> (1998) Analysis of the immunological cross reactivities of 213 well characterized monoclonal antibodies with specificities against various leucocyte surface antigens of human and 11 animal species. Vet Immunol Immunopathol. 64 (1): 1-13. 4. Hsiao, Y.W. <i>et al.</i> (2004) Tumor-infiltrating lymphocyte secretion of IL-6 antagonizes tumor-derived TGF-beta 1 and restores the lymphokine-activated killing activity. J Immunol. 172: 1508-14. 5. Horn, P.A. <i>et al.</i> (2004) Efficient lentiviral gene transfer to canine repopulating cells using an overnight transduction protocol. Blood. 103: 3710-6. 6. Faldyna, M. <i>et al.</i> (2004) Lymphocyte subsets in synovial fluid from clinically healthy joints of dogs. Acta Vet. Brno 73: 73-8. 7. Jubala, C.M. <i>et al.</i> (2005) CD20 expression in normal canine B cells and in canine

- non-Hodgkin lymphoma. [Vet Pathol. 42: 468-76.](#)
8. Yuasa, K. *et al.* (2007) Injection of a recombinant AAV serotype 2 into canine skeletal muscles evokes strong immune responses against transgene products. [Gene Ther. 14: 1249-60.](#)
9. Wang, Y.S. *et al.* (2007) Characterization of canine monocyte-derived dendritic cells with phenotypic and functional differentiation. [Can J Vet Res. 71: 165-74.](#)
10. Huang, Y.C. *et al.* (2008) CD5-low expression lymphocytes in canine peripheral blood show characteristics of natural killer cells. [J Leukoc Biol. 84: 1501-10.](#)
11. Reggeti, F. *et al.* (2008) CD134 and CXCR4 expression corresponds to feline immunodeficiency virus infection of lymphocytes, macrophages and dendritic cells. [J Gen Virol. 89: 277-87.](#)
12. Lankford, S. *et al.* (2008) Cloning of feline FOXP3 and detection of expression in CD4+CD25+ regulatory T cells. [Vet Immunol Immunopathol. 122: 159-66.](#)
13. Mortarino, M. *et al.* (2009) ZAP-70 and Syk expression in canine lymphoid cells and preliminary results on leukaemia cases. [Vet Immunol Immunopathol. 128: 395-401.](#)
14. Estrela-Lima, A. *et al.* (2010) Immunophenotypic features of tumor infiltrating lymphocytes from mammary carcinomas in female dogs associated with prognostic factors and survival rates. [BMC Cancer. 10: 256.](#)
15. Bund, D. *et al.* (2010) Canine-DCs using different serum-free methods as an approach to provide an animal-model for immunotherapeutic strategies. [Cell Immunol. 263: 88-98.](#)
16. Araujo, M.S.S. *et al.* (2011) Immunological changes in canine peripheral blood leukocytes triggered by immunization with first or second generation vaccines against canine visceral leishmaniasis. [Vet Immunol Immunopathol. 141: 64-75.](#)
17. Gaurnier-Hausser, A. *et al.* (2011) NEMO-Binding Domain Peptide Inhibits Constitutive NF- κ B Activity and Reduces Tumor Burden in a Canine Model of Relapsed, Refractory Diffuse Large B-Cell Lymphoma. [Clin Cancer Res. 17: 4661-71.](#)
18. Mitchell, L. *et al.* (2012) Induction of remission results in spontaneous enhancement of anti-tumor cytotoxic T-lymphocyte activity in dogs with B cell lymphoma. [Vet Immunol Immunopathol. 145 \(3-4\): 597-603.](#)
19. Maiolini, A. *et al.* (2012) Toll-like receptors 4 and 9 are responsible for the maintenance of the inflammatory reaction in canine steroid-responsive meningitis-arteritis, a large animal model for neutrophilic meningitis. [J Neuroinflammation. 9: 226.](#)
20. Cave, N.J. *et al.* (2012) Systemic effects of periodontal disease in cats. [Vet Q. 32: 131-44.](#)
21. Aricò, A. *et al.* (2013) The role of vascular endothelial growth factor and matrix metalloproteinases in canine lymphoma: *in vivo* and *in vitro* study. [BMC Vet Res. 9: 94.](#)
22. Michael, H.T. *et al.* (2013) Isolation and characterization of canine natural killer cells. [Vet Immunol Immunopathol. 155 \(3\): 211-7.](#)
23. Aresu, L. *et al.* (2014) VEGF and MMP-9: biomarkers for canine lymphoma. [Vet Comp Oncol. 12: 29-36.](#)
24. Gelain, M.E. *et al.* (2014) CD44 in canine leukemia: analysis of mRNA and protein expression in peripheral blood. [Vet Immunol Immunopathol. 159 \(1-2\): 91-6.](#)
25. Lin, S-C. *et al.* (2014) Immune Characterization of Peripheral Blood Mononuclear cells of the Dogs Restored from Inoculation of Canine Transmissible Venereal Tumor Cells. [Tai Vet J. 40 \(04\): 181-90.](#)
26. Izci C *et al.* (2015) Clinical and light microscopic studies of the conjunctival tissues of dogs with bilateral keratoconjunctivitis sicca before and after treatment with topical 2%

- cyclosporine. [Biotech Histochem. 90 \(3\): 223-30.](#)
27. Heinrich, F. *et al.* (2015) Immunophenotyping of immune cell populations in the raccoon (*Procyon lotor*). [Vet Immunol Immunopathol. 168 \(3-4\): 140-6.](#)
28. Ledbetter, E.C. *et al.* (2016) Clinical and immunological assessment of therapeutic immunization with a subunit vaccine for recurrent ocular canine herpesvirus-1 infection in dogs. [Vet Microbiol. 197: 102-10.](#)
29. Bonnefont-Rebeix, C. *et al.* (2016) Characterization of a novel canine T-cell line established from a spontaneously occurring aggressive T-cell lymphoma with large granular cell morphology. [Immunobiology. 221 \(1\): 12-22.](#)
30. Gibbons, N. *et al.* (2017) Phenotypic heterogeneity of peripheral monocytes in healthy dogs. [Vet Immunol Immunopathol. 190: 26-30.](#)
31. Martini, V. *et al.* (2018) Flow cytometry for feline lymphoma: a retrospective study regarding pre-analytical factors possibly affecting the quality of samples. [J Feline Med Surg. 20 \(6\): 494-501.](#)
32. DeClue, A.E. *et al.* (2018) Identification of immunologic and clinical characteristics that predict inflammatory response to C. Novyi-NT bacteriolytic immunotherapy. [BMC Vet Res. 14 \(1\): 119.](#)
33. DaSilva, A.V.A. *et al.* (2018) Morphophysiological changes in the splenic extracellular matrix of *Leishmania infantum*-naturally infected dogs is associated with alterations in lymphoid niches and the CD4+ T cell frequency in spleens. [PLoS Negl Trop Dis. 12 \(4\): e0006445.](#)
34. Schmidli, M.R. *et al.* (2018) Inflammatory pattern of the infrapatellar fat pad in dogs with canine cruciate ligament disease. [BMC Vet Res. 14 \(1\): 161.](#)
35. Miranda, L.H.M de M. *et al.* (2018) Co-infection with feline retrovirus is related to changes in immunological parameters of cats with sporotrichosis. [PLoS One. 13 \(11\): e0207644.](#)
36. Shin, N. *et al.* (2018) INCB040093 Is a Novel PI3K δ Inhibitor for the Treatment of B Cell Lymphoid Malignancies. [J Pharmacol Exp Ther. 364 \(1\): 120-30.](#)
37. Sato, M. *et al.* (2018) Prognostic significance of hypermethylation of death-associated protein kinase (DAPK) gene CpG island in dogs with high-grade B-cell lymphoma. [Vet Comp Oncol. 16 \(3\): 409-15.](#)
38. Martini, V. *et al.* (2019) Prognostic role of non-neoplastic lymphocytes in lymph node aspirates from dogs with diffuse large B-cell lymphoma treated with chemo-immunotherapy. [Res Vet Sci. 125: 130-5.](#)
39. Jimbo, S. *et al.* (2019) Natural and inducible regulatory B cells are widely distributed in ovine lymphoid tissues. [Vet Immunol Immunopathol. 211: 44-8.](#)
40. Maeta, N. *et al.* (2019) Lymphokine-activated killer cell transplantation after anti-cancer treatment in two aged cats. [Open Vet J. 9 \(2\): 147-50.](#)
41. Aguiar-Soares, R.D.O. *et al.* (2020) Phase I and II Clinical Trial Comparing the LBSap, Leishmune(®), and Leish-Tec(®) Vaccines against Canine Visceral Leishmaniasis. [Vaccines \(Basel\). 8 \(4\): 690.](#)
42. Wolf-Ringwall, A. *et al.* (2020) Prospective evaluation of flow cytometric characteristics, histopathologic diagnosis and clinical outcome in dogs with naïve B-cell lymphoma treated with a 19-week CHOP protocol. [Vet Comp Oncol. 18 \(3\): 342-52.](#)
43. Lucassen, A. *et al.* (2021) A *Saccharomyces cerevisiae* Fermentation Product (Olimond BB) Alters the Early Response after Influenza Vaccination in Racehorses. [Animals \(Basel\). 11\(9\):2726.](#)

44. Lee, J. *et al.* (2021) Canine Natural Killer Cell-Derived Exosomes Exhibit Antitumor Activity in a Mouse Model of Canine Mammary Tumor. [Biomed Res Int. 2021: 6690704.](#)
45. Grudzien, M. *et al.* (2021) A newly established canine NK-type cell line and its cytotoxic properties. [Vet Comp Oncol. 19 \(3\): 567-77.](#)
46. Yang, Y. *et al.* (2021) Canine Multicentric Large B Cell Lymphoma with Increased Mott Cells Diagnosed by Flow Cytometry [Journal of Veterinary Clinics. 38 \(1\): 36-40.](#)
47. Lee, S.H. *et al.* (2021) Safety and immunological effects of recombinant canine IL-15 in dogs. [Cytokine. 148: 155599.](#)
48. Knebel, A. *et al.* (2021) Measurement of canine Th17 cells by flow cytometry. [Vet Immunol Immunopathol. 243: 110366.](#)
49. Riccardo, F. *et al.* (2022) Antigen mimicry as an effective strategy to induce CSPG4-targeted immunity in dogs with oral melanoma: a veterinary trial. [J Immunother Cancer. 10 \(5\): e004007.](#)
50. Jaensch, S.M. *et al.* (2022) Clinicopathologic and immunophenotypic features in dogs with presumptive large granular lymphocyte leukaemia. [Aust Vet J. 100 \(11\): 527-32.](#)
51. Troupel, T. *et al.* (2022) Generalised idiopathic polymyositis mimicking masticatory myositis in a dog [Veterinary Record Case Reports. 10 \(4\) \[Epub ahead of print\].](#)
52. Rotolo, A. *et al.* (2023) Unedited allogeneic iNKT cells show extended persistence in MHC-mismatched canine recipients. [Cell Rep Med. 4 \(10\): 101241.](#)
53. Townsend, K.S. *et al.* (2023) Concurrent chronic lymphocytic leukemia and primary hyperparathyroidism in a mule. [J Vet Intern Med. 37 \(3\): 1250-5.](#)
54. Wesolowski, M. *et al.* (2023) Long-term changes of Th17 and regulatory T cells in peripheral blood of dogs with spinal cord injury after intervertebral disc herniation. [BMC Vet Res. 19 \(1\): 90.](#)
55. Martini, V. *et al.* (2018) A retrospective study of flow cytometric characterization of suspected extranodal lymphomas in dogs. [J Vet Diagn Invest. 30 \(6\): 830-6.](#)
56. DeClue, A.E. *et al.* (2020) Transportation and Routine Veterinary Interventions Alter Immune Function in the Dog. [Top Companion Anim Med. 39: 100408.](#)
57. Rütgen, B.C. *et al.* (2022) Composition of lymphocyte subpopulations in normal and mildly reactive peripheral lymph nodes in cats. [J Feline Med Surg. 24 \(2\): 77-90.](#)
58. Cha, S. *et al.* (2023) Non-B, Non-T Acute Lymphoblastic Leukemia in a Cat [Journal of Veterinary Clinics. 40 \(4\): 298-302.](#)
59. Lee, G.W. *et al.* (2021) Case Report: Long-Term Survival of a Dog With Chronic Lymphocytic Leukemia Treated With Chlorambucil, Prednisolone, and Imatinib. [Front Vet Sci. 8: 625527.](#)
60. Sainz, Á. *et al.* (2021) Effect of chemically modified tetracycline-8 (CMT-8) on hematology, blood chemistry, cytokines and peripheral blood lymphocyte subsets of healthy dogs. [Res Vet Sci. 136: 200-8.](#)
61. Placci, M. *et al.* (2020) Natural Horse Boarding Vs Traditional Stable: A Comparison of Hormonal, Hematological and Immunological Parameters. [J Appl Anim Welf Sci. 23 \(3\): 366-77.](#)
62. Sheng, R. *et al.* (2023) Prognostic significance of CD25 expression in dogs with a noninvasive diagnosis of B-cell lymphoma treated with CHOP chemotherapy. [Vet Comp Oncol. 21 \(1\): 28-35.](#)
63. Miguelena Chamorro, B. *et al.* (2023) Characterization of Canine Peyer's Patches by Multidimensional Analysis: Insights from Immunofluorescence, Flow Cytometry, and Single-Cell RNA Sequencing. [Immunohorizons. 7 \(11\): 788-805.](#)

64. Terpeluk, R.E. *et al.* (2024) Supplementation of Foals with a *Saccharomyces cerevisiae* Fermentation Product Alters the Early Response to Vaccination [Animals. 14 \(6\): 960.](#)
65. Mason, N.J. *et al.* (2021) Development of a fully canine anti-canine CTLA4 monoclonal antibody for comparative translational research in dogs with spontaneous tumors. [MAbs. 13 \(1\): 2004638.](#)
66. Yuan, C. *et al.* (2024) Effects of Porcine Epidemic Diarrhea Virus Infection on CD21+ B cells Activation [Veterinary Microbiology. : 110087.](#)
67. Rütgen, B.C. *et al.* (2024) Flowcytometric data of intermediate-large cell gastrointestinal lymphoma presenting a gross mass in 32 cats - "let them glow in the flow". [Front Vet Sci. 11: 1378826.](#)
68. Wolfesberger, B. *et al.* (2024) Immunophenotype investigation in feline intestinal non-B-cell lymphoma. [J Comp Pathol. 212: 20-26.](#)

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 #10040 available at: <https://www.bio-rad-antibodies.com/SDS/MCA1781R>
10040

Regulatory For research purposes only

Related Products

Recommended Secondary Antibodies

- Rabbit Anti Mouse IgG (STAR12...) [RPE](#)
- Goat Anti Mouse IgG IgA IgM (STAR87...) [HRP](#)
- Goat Anti Mouse IgG (STAR76...) [RPE](#)
- Goat Anti Mouse IgG (STAR70...) [FITC](#)
- Goat Anti Mouse IgG (H/L) (STAR117...) [Alk. Phos.](#), [DyLight@488](#), [DyLight@550](#), [DyLight@650](#), [DyLight@680](#), [DyLight@800](#), [FITC](#), [HRP](#)
- Rabbit Anti Mouse IgG (STAR9...) [FITC](#)
- Rabbit Anti Mouse IgG (STAR13...) [HRP](#)
- Goat Anti Mouse IgG (Fc) (STAR120...) [FITC](#), [HRP](#)
- Goat Anti Mouse IgG (STAR77...) [HRP](#)

Recommended Negative Controls

[MOUSE IgG1 NEGATIVE CONTROL \(MCA928\)](#)

North & South Tel: +1 800 265 7376

Worldwide

Tel: +44 (0)1865 852 700

Europe

Tel: +49 (0) 89 8090 95 21

To

America Fax: +1 919 878 3751

Fax: +44 (0)1865 852 739

Fax: +49 (0) 89 8090 95 50

find a

Email: antibody_sales_us@bio-rad.com

Email: antibody_sales_uk@bio-rad.com

Email: antibody_sales_de@bio-rad.com

batch/lot specific datasheet for this product, please use our online search tool at: bio-rad-antibodies.com/datasheets

'M411490:221103'

Printed on 19 Aug 2024

© 2024 Bio-Rad Laboratories Inc | [Legal](#) | [Imprint](#)