

## Datasheet: MCA1038PE

|                      |                      |
|----------------------|----------------------|
| <b>Description:</b>  | RAT ANTI DOG CD4:RPE |
| <b>Specificity:</b>  | CD4                  |
| <b>Format:</b>       | RPE                  |
| <b>Product Type:</b> | Monoclonal Antibody  |
| <b>Clone:</b>        | YKIX302.9            |
| <b>Isotype:</b>      | IgG2a                |
| <b>Quantity:</b>     | 100 TESTS/1ml        |

## 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](http://www.bio-rad-antibodies.com/protocols).

|                | Yes | No | Not Determined | Suggested Dilution |
|----------------|-----|----|----------------|--------------------|
| Flow Cytometry | ▪   |    |                | Neat - 1/10        |

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 in their own system using appropriate negative/positive controls.

|                        |  |                            |                          |
|------------------------|--|----------------------------|--------------------------|
| <b>Target Species</b>  | Dog  |                            |                          |
| <b>Product Form</b>    | Purified IgG conjugated to R. Phycoerythrin (RPE) - lyophilized                                |                            |                          |
| <b>Reconstitution</b>  | Reconstitute with 1.0 ml distilled water   |                            |                          |
| <b>Max Ex/Em</b>       | <b>Fluorophore</b>   | <b>Excitation Max (nm)</b> | <b>Emission Max (nm)</b> |
|                        | RPE 488nm laser  | 496                        | 578                      |
| <b>Preparation</b>     | Purified IgG prepared by affinity chromatography on Protein G from tissue culture supernatant. |                            |                          |
| <b>Buffer Solution</b> | Phosphate buffered saline  |                            |                          |
| <b>Preservative</b>    | 0.09% Sodium Azide   |                            |                          |
| <b>Stabilisers</b>     | 1%   | Bovine Serum Albumin       |                          |
|                        | 5%   | Sucrose                    |                          |

**Immunogen** Canine concanavilin A activated T cell blasts.

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**External Database**

**Links**

**UniProt:**

[P33705](#) [Related reagents](#)

**Entrez Gene:**

[403931](#) CD4 [Related reagents](#)

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**RRID**

AB\_323495

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**Fusion Partners**

Spleen cells from immunised DA rats were fused with cells of the Y3/Ag1.2.3 rat myeloma cell line.

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**Specificity**

**Rat anti Dog CD4 antibody, clone YKIX302.9**, is a monoclonal antibody specific for the canine CD4 cell surface antigen. Clone YKIX302.9 was clustered at the first Canine Leukocyte Antigen Workshop (CLAW) [[Cobbold et al. 1992](#)] along with clone [CA13.1E4](#).

Rat anti Dog CD4 antibody, clone YKIX302.9 partially depletes circulating T lymphocytes when administered *in vivo*, but alone is not sufficient to prolong allograft survival in a canine transplant model ([Watson et al. 1993](#)).

Uniquely amongst mammals, canine CD4 is expressed by neutrophils as well as by lymphocyte subsets ([Moore et al. 1992](#)).

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**Flow Cytometry**

Use 10ul of the suggested working dilution to label 10<sup>6</sup> cells or 100ul whole blood.

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**References**

- Schaut, R.G. *et al.* (2016) Recovery of antigen-specific T cell responses from dogs infected with *Leishmania (L.) infantum* by use of vaccine associated TLR-agonist adjuvant. [Vaccine. 34 \(44\): 5225-34.](#)
- Gorman, S.D. *et al.* (1994) Isolation and expression of cDNA encoding the canine CD4 and CD8 alpha antigens. [Tissue Antigens. 43 \(3\): 184-8.](#)
- Watson, C.J. *et al.* (1993) CD4 and CD8 monoclonal antibody therapy: strategies to prolong renal allograft survival in the dog. [Br J Surg. 80 \(11\): 1389-92.](#)
- Papadogiannakis, E.I. *et al.* (2009) Determination of intracellular cytokines IFN-gamma and IL-4 in canine T lymphocytes by flow cytometry following whole-blood culture. [Can J Vet Res. 73 \(2\): 137-43.](#)
- Bauer, T.R. Jr. *et al.* (2006) Correction of the disease phenotype in canine leukocyte adhesion deficiency using *ex vivo* hematopoietic stem cell gene therapy. [Blood. 108: 3313-20.](#)
- Reis, A.B. *et al.* (2006) Phenotypic features of circulating leucocytes as immunological markers for clinical status and bone marrow parasite density in dogs naturally infected by *Leishmania chagasi*. [Clin Exp Immunol. 146: 303-11.](#)
- Araújo, M.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.](#)
- Benyacoub, J. *et al.* (2003) Supplementation of food with *Enterococcus faecium* (SF68) stimulates immune functions in young dogs. [J Nutr. 133: 1158-62.](#)

9. 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.](#)
10. 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.](#)
11. Out, T.A. *et al.* (2002) Local T-cell activation after segmental allergen challenge in the lungs of allergic dogs. [Immunology. 105: 499-508.](#)
12. Boggiatto, P.M. *et al.* (2010) Immunologic indicators of clinical progression during canine *Leishmania infantum* infection. [Clin Vaccine Immunol. 17: 267-73.](#)
13. Mitchell, L. *et al.* (2012) Clinical and immunomodulatory effects of toceranib combined with low-dose cyclophosphamide in dogs with cancer. [J Vet Intern Med. 26: 355-62.](#)
14. Tominaga, M. *et al.* (2010) Flow cytometric analysis of peripheral blood and tumor-infiltrating regulatory T cells in dogs with oral malignant melanoma. [J Vet Diagn Invest. 22: 438-41.](#)
15. Figueiredo, M.M. *et al.* (2014) Expression of Regulatory T Cells in Jejunum, Colon, and Cervical and Mesenteric Lymph Nodes of Dogs Naturally Infected with *Leishmania infantum*. [Infect Immun. 82: 3704-12.](#)
16. Aresu, L. *et al.* (2014) VEGF and MMP-9: biomarkers for canine lymphoma. [Vet Comp Oncol. 12: 29-36.](#)
17. Costa-Pereira, C. *et al.* (2015) One-year timeline kinetics of cytokine-mediated cellular immunity in dogs vaccinated against visceral leishmaniasis. [BMC Vet Res. 11 \(1\): 92.](#)
18. Hauck, V. *et al.* (2016) Increased numbers of FoxP3-expressing CD4(+) CD25(+) regulatory T cells in peripheral blood from dogs with atopic dermatitis and its correlation with disease severity. [Vet Dermatol. 27 \(1\): 26-e9.](#)
19. Riondato, F. *et al.* (2015) Analytical and diagnostic validation of a flow cytometric strategy to quantify blood and marrow infiltration in dogs with large b-cell lymphoma. [Cytometry B Clin Cytom. Dec 13. \[Epub ahead of print\]](#)
20. Miranda, S. *et al.* (2007) Characterization of circulating lymphocyte subpopulations in canine leishmaniasis throughout treatment with antimonials and allopurinol. [Vet Parasitol. 144 \(3-4\): 251-60.](#)
21. Yamaya, Y. & Watari, T. (2015) Increased proportions of CCR4(+) cells among peripheral blood CD4(+) cells and serum levels of allergen-specific IgE antibody in canine chronic rhinitis and bronchitis. [J Vet Med Sci. 77 \(4\): 421-5.](#)
22. Schaut, R.G. *et al.* (2016) Regulatory IgDhi B Cells Suppress T Cell Function via IL-10 and PD-L1 during Progressive Visceral Leishmaniasis. [J Immunol. 196 \(10\): 4100-9.](#)
23. Tagawa, M. *et al.* (2016) Evaluation of Costimulatory Molecules in Peripheral Blood Lymphocytes of Canine Patients with Histiocytic Sarcoma. [PLoS One. 11 \(2\): e0150030.](#)
24. Munhoz.T.D. *et al.* (2016) Regulatory T cells in dogs with multicentric lymphoma: peripheral blood quantification at diagnosis and after initial stage chemotherapy. [Arg. Bras. Med. Vet. Zootec. 68 \(1\): 1-9.](#)
25. Miller, J. *et al.* (2015) Humoral and Cellular Immune Response in Canine Hypothyroidism. [J Comp Pathol. 153 \(1\): 28-37.](#)
26. Duz AL *et al.* (2014) The TcI and TcII *Trypanosoma cruzi* experimental infections induce distinct immune responses and cardiac fibrosis in dogs. [Mem Inst Oswaldo Cruz. 109 \(8\): 1005-13.](#)
27. 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.](#)

28. Viana, K.F. *et al.* (2015) Setting the proportion of CD4+ and CD8+ T-cells co-cultured with canine macrophages infected with *Leishmania chagasi*. [Vet Parasitol. 211 \(3-4\): 124-32.](#)
29. Viana, K.F. *et al.* (2016) Application of rapid in vitro co-culture system of macrophages and T-cell subsets to assess the immunogenicity of dogs vaccinated with live attenuated *Leishmania donovani* centrin deleted parasites (LdCen-/-). [Parasit Vectors. 9: 250.](#)
30. Michael HT *et al.* (2013) Isolation and characterization of canine natural killer cells. [Vet Immunol Immunopathol. 155 \(3\): 211-7.](#)
31. 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.](#)
32. 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.](#)
33. Deravi, N. *et al.* (2017) Specific immunotypes of canine T cell lymphoma are associated with different outcomes. [Vet Immunol Immunopathol. 191: 5-13.](#)
34. Bahamondes, F. *et al.* (2017) Omental adipose tissue is a more suitable source of canine Mesenchymal stem cells. [BMC Vet Res. 13 \(1\): 166.](#)
35. Pinheiro, D. (2011) Phenotypic and functional characterization of a CD4(+) CD25(high) FOXP3(high) regulatory T-cell population in the dog. [Immunology. 132: 111-22.](#)
36. Withers, S.S. *et al.* (2018) Multi-color flow cytometry for evaluating age-related changes in memory lymphocyte subsets in dogs. [Dev Comp Immunol. 87: 64-74.](#)
37. 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.](#)
38. 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.](#)
39. Roatt, B.M. *et al.* (2017) A Vaccine Therapy for Canine Visceral Leishmaniasis Promoted Significant Improvement of Clinical and Immune Status with Reduction in Parasite Burden. [Front Immunol. 8: 217.](#)
40. Lisiecka, U. *et al.* (2019) Evaluation of T regulatory lymphocytes and serum concentration of selected cytokines in dogs with perianal tumors. [Vet Immunol Immunopathol. 207: 10-17.](#)
41. 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.](#)
42. Aguiar-Soares, R.D.O. *et al.* (2020) Phase I and II Clinical Trial Comparing the LBSap, Leishmune<sup>®</sup>, and Leish-Tec<sup>®</sup> Vaccines against Canine Visceral Leishmaniasis. [Vaccines \(Basel\). 8 \(4\)Nov 17 \[Epub ahead of print\].](#)
43. Akiyama, S. *et al.* (2019) Th17 cells increase during maturation in peripheral blood of healthy dogs. [Vet Immunol Immunopathol. 209: 17-21.](#)
44. 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.](#)
45. Yasuda, N. *et al.* (2008) CC chemokine receptor 4-positive CD4(+) lymphocytes in peripheral blood increases during maturation in healthy beagles. [J Vet Med Sci. 70 \(9\):](#)

[989-92.](#)

46. Martins, G.C. *et al.* (2018) Clinical-pathological and immunological biomarkers in dogs with atopic dermatitis. [Vet Immunol Immunopathol. 205: 58-64.](#)
47. Anai, L.A. *et al.* (2017) Quantification of Treg cells in peripheral blood and lymph nodes of dogs with multicentric lymphoma [Arquivo Brasileiro de Medicina Veterinária e Zootecnia. 69 \(6\): 1496-502.](#)
48. 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.](#)
49. Sayag, D. *et al.* (2020) Proof-of-concept study: Evaluation of plasma and urinary electrolytes as markers of response to L-asparaginase therapy in dogs with high-grade lymphoma. [Vet Clin Pathol. 49 \(3\): 476-83.](#)
50. 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.](#)
51. Grudzien, M. *et al.* (2021) A newly established canine NK-type cell line and its cytotoxic properties. [Vet Comp Oncol. 19 \(3\): 567-77.](#)
52. Pellin, M.A. *et al.* (2017) Safety evaluation of combination doxorubicin and toceranib phosphate (Palladia®) in tumour bearing dogs: a phase I dose-finding study. [Vet Comp Oncol. 15 \(3\): 919-31.](#)
53. Kanei, T. *et al.* (2021) Expression and functional analysis of chemokine receptor 7 in canine lymphoma cell lines. [J Vet Med Sci. Dec 03 \[Epub ahead of print\].](#)
54. Lee, S.H. *et al.* (2021) Safety and immunological effects of recombinant canine IL-15 in dogs. [Cytokine. 148: 155599.](#)
55. Knebel, A. *et al.* (2021) Measurement of canine Th17 cells by flow cytometry. [Vet Immunol Immunopathol. 243: 110366.](#)
56. do Prado Duzanski, A. *et al.* (2022) Cell-mediated immunity and expression of MHC class I and class II molecules in dogs naturally infected by canine transmissible venereal tumor: Is there complete spontaneous regression outside the experimental CTVT? [Res Vet Sci. 145: 193-204.](#)
57. Karayannopoulou, M. *et al.* (2022) Effect of major versus minor mastectomy on host immunity in canine mammary cancer [Vet Immunol Immunopathol. Feb 24: 110403.](#)
58. Bragato, J.P. *et al.* (2022) miRNA-21 regulates CD69 and IL-10 expression in canine leishmaniasis. [PLoS One. 17 \(3\): e0265192.](#)

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**Storage**

Prior to reconstitution store at +4°C. Following reconstitution store at +4°C.

DO NOT FREEZE.

This product should be stored undiluted. This product is photosensitive and should be protected from light. Should this product contain a precipitate we recommend microcentrifugation before use.

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**Guarantee**

12 months from date of despatch

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**Health And Safety Information**

Material Safety Datasheet documentation #20487 available at:  
20487: <https://www.bio-rad-antibodies.com/uploads/MSDS/20487.pdf>

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**Regulatory**

For research purposes only

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## Related Products

### Recommended Negative Controls

[RAT IgG2a NEGATIVE CONTROL:RPE \(MCA1212PE\)](#)

[RAT IgG2a NEGATIVE CONTROL:RPE \(MCA6005PE\)](#)

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