

## Datasheet: MCA709A488

|                      |                                      |
|----------------------|--------------------------------------|
| <b>Description:</b>  | RAT ANTI HUMAN CD28:Alexa Fluor® 488 |
| <b>Specificity:</b>  | CD28                                 |
| <b>Format:</b>       | ALEXA FLUOR® 488                     |
| <b>Product Type:</b> | Monoclonal Antibody                  |
| <b>Clone:</b>        | YTH913.12                            |
| <b>Isotype:</b>      | IgG2b                                |
| <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               |

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.

|                                       |   |                            |                          |
|---------------------------------------|---|----------------------------|--------------------------|
| <b>Target Species</b>                 | Human   |                            |                          |
| <b>Product Form</b>                   | Purified IgG conjugated to Alexa Fluor 488 - liquid   |                            |                          |
| <b>Max Ex/Em</b>                      | <b>Fluorophore</b>  | <b>Excitation Max (nm)</b> | <b>Emission Max (nm)</b> |
|                                       | Alexa Fluor®488   | 495                        | 519                      |
| <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   |                            |                          |
| <b>Approx. Protein Concentrations</b> | IgG concentration 0.05 mg/ml  |                            |                          |

Immunogen Human peripheral blood T-cells

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**External Database Links**

**UniProt:**

[P10747](#) [Related reagents](#)

**Entrez Gene:**

[940](#) CD28 [Related reagents](#)

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**Fusion Partners**

Spleen cells from an immunised DA rat were fused with cells of the Y3/Ag 1.2.3 rat myeloma cell line

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**Specificity**

**Rat anti Human CD28 antibody, clone YTH913.12** recognizes human CD28, a ~44 kDa single pass type 1 trans-membrane protein expressed as a homodimer on a major subset of human T-cells ([Thompson \*et al.\* 1989](#)), responsible for activation of these cells via interaction with the TCR. CD28 is involved in the tuning of the T-cell for activation via TCR, lowering the threshold for activation from around 8000 triggered TCRs to approximately 1500 ([Viola \*et al.\* 1996](#)).

CD28 along with CD152, also known as CTLA-4 acts as a co-receptor for the co-stimulatory molecules CD80 and CD86 ([Azuma \*et al.\* 1993](#)). CD28 offers a positive stimulatory role on ligation of CD80 and CD86 while CTLA-4 offers a negative feedback signal preventing CD28 mediated T-cell activation of CD86 ([Krummel \*et al.\* 1995](#)).

Rat anti human CD28, clone YTH913.12 has been reported to recognize an epitope of CD28 expressed by NK cells, which is not recognized by other anti human CD28 clones such as 9.3 and CD28.2 ([Galea-Lauri \*et al.\* 1999](#).) Other reports however have failed to demonstrate CD28 staining on peripheral blood derived NK cells using clone YTH913.12 ([Wilson \*et al.\* 1999](#)).

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**Flow Cytometry**

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

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**References**

1. Reiter, C. (1989) Cluster Report: CD28 in Leucocyte Typing IV: White Cell Differentiation Antigens. Edited by Knapp, W., Dorken, B., Gilks, W.R., Rieber, E.P., Schmidt, R.E., Stein, H. and von dem Borne, A.E.G.Kr. Oxford University Press. pp 352-3.
2. Galea-Lauri, J. *et al.* (1999) Expression of a variant of CD28 on a subpopulation of human NK cells: implications for B7-mediated stimulation of NK cells. [J Immunol. 163 \(1\): 62-70.](#)
3. Gabdoulkhakova, A. *et al.* (2007) High rate of mutation reporter gene inactivation during human T cell proliferation. [Immunogenetics. 59: 135-43.](#)
4. Pridgeon, C. *et al.* (2011) Regulation of IL-17 in chronic inflammation in the human lung. [Clin Sci \(Lond\). 120: 515-24.](#)
5. Blanco, B. *et al.* (2003) Induction of human T lymphocyte cytotoxicity and inhibition of tumor growth by tumor-specific diabody-based molecules secreted from gene-modified bystander cells. [J Immunol. 171: 1070-7.](#)
6. Costa, C. *et al.* (2002) Human NK cell-mediated cytotoxicity triggered by CD86 and Gal alpha 1,3-Gal is inhibited in genetically modified porcine cells. [J Immunol. 168: 3808-16.](#)
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- CD4+FOXP3+ Natural Regulatory T Cells. [J Immunol. 188: 1083-90.](#)
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9. Wilson, J.L. *et al.* (1999) NK cell triggering by the human costimulatory molecules CD80 and CD86. [J Immunol. 163: 4207-12.](#)
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11. Ponchel, F. *et al.* (2002) Dysregulated lymphocyte proliferation and differentiation in patients with rheumatoid arthritis. [Blood. 100: 4550-6.](#)
12. McLeod, J.D. *et al.* (1998) Activation of human T cells with superantigen (staphylococcal enterotoxin B) and CD28 confers resistance to apoptosis via CD95. [J Immunol. 160: 2072-9.](#)
13. Svensson-Arvelund, J. *et al.* (2015) The human fetal placenta promotes tolerance against the semiallogeneic fetus by inducing regulatory T cells and homeostatic M2 macrophages. [J Immunol. 194 \(4\): 1534-44.](#)
14. Hasib, L. *et al.* (2016) Functional and homeostatic defects of regulatory T cells in patients with coronary artery disease. [J Intern Med. 279 \(1\): 63-77.](#)
15. Siska, E.K. *et al.* (2017) Generation of an immortalized mesenchymal stem cell line producing a secreted biosensor protein for glucose monitoring. [PLoS One. 12 \(9\): e0185498.](#)

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**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.

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**Guarantee** 12 months from date of despatch

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**Health And Safety Information** Material Safety Datasheet documentation #10041 available at: 10041: <https://www.bio-rad-antibodies.com/uploads/MSDS/10041.pdf>

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**Regulatory** For research purposes only

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## Related Products

### Recommended Negative Controls

[RAT IgG2b NEGATIVE CONTROL:Alexa Fluor® 488 \(MCA6006A488\)](#)

### Recommended Useful Reagents

[HUMAN SEROBLOCK \(BUF070A\)](#)

[HUMAN SEROBLOCK \(BUF070B\)](#)

**North & South** Tel: +1 800 265 7376

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