

Datasheet: MCA709EL

Description:	RAT ANTI HUMAN CD28:Low Endotoxin
Specificity:	CD28
Format:	Low Endotoxin
Product Type:	Monoclonal Antibody
Clone:	YTH913.12
Isotype:	IgG2b
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
Immunohistology - Frozen	■			
Immunohistology - Paraffin			■	
ELISA			■	
Immunoprecipitation			■	
Western Blotting			■	
Functional Assays	■			

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.

Target Species	Human
Product Form	Purified IgG - liquid
Preparation	Purified IgG prepared by affinity chromatography on Protein G from tissue culture supernatant
Buffer Solution	Phosphate buffered saline
Preservative Stabilisers	None present
Carrier Free	Yes
Endotoxin Level	<0.01 EU/ug
Approx. Protein Concentrations	IgG concentration 1.0 mg/ml
Immunogen	Human peripheral blood T-cells

External Database Links	UniProt: P10747 Related reagents Entrez Gene: 940 CD28 Related reagents
Fusion Partners	Spleen cells from an immunised DA rat were fused with cells of the Y3/Ag 1.2.3 rat myeloma cell line
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 <i>et al.</i> 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 <i>et al.</i> 1996). CD28 along with CD152, also known as CTLA-4 acts as a co-receptor for the co-stimulatory molecules CD80 and CD86 (Azuma <i>et al.</i> 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 <i>et al.</i> 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 <i>et al.</i> 1999.) Other reports however have failed to demonstrate CD28 staining on peripheral blood derived NK cells using clone YTH913.12 (Wilson <i>et al.</i> 1999).
Flow Cytometry	Use 10ul of the suggested working dilution to label 10⁶ cells in 100ul.
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. <i>et al.</i> (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. <i>et al.</i> (2007) High rate of mutation reporter gene inactivation during human T cell proliferation. Immunogenetics. 59: 135-43. 4. Pridgeon, C. <i>et al.</i> (2011) Regulation of IL-17 in chronic inflammation in the human lung. Clin Sci (Lond). 120: 515-24. 5. Blanco, B. <i>et al.</i> (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. <i>et al.</i> (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. 7. Litjens, N.H. <i>et al.</i> (2011) Identification of Circulating Human Antigen-Reactive CD4+FOXP3+ Natural Regulatory T Cells. J Immunol. 188: 1083-90. 8. Goodier, M.R. and Londei, M. (2004) CD28 is not directly involved in the response of human CD3- CD56+ natural killer cells to lipopolysaccharide: a role for T cells. Immunology. 111: 384-90. 9. Wilson, J.L. <i>et al.</i> (1999) NK cell triggering by the human costimulatory molecules CD80 and CD86. J Immunol. 163: 4207-12. 10. Kropf, P. <i>et al.</i> (2007) Arginase activity mediates reversible T cell hyporesponsiveness in human pregnancy. Eur J Immunol. 37: 935-45. 11. Ponchel, F. <i>et al.</i> (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.](#)

Storage

Store at -20°C only.

This product should be stored undiluted.

Storage in frost-free freezers is not recommended. Avoid repeated freezing and thawing as this may denature the antibody. Should this product contain a precipitate we recommend microcentrifugation before use.

Shelf Life

18 months from date of despatch.

Health And Safety Information

Material Safety Datasheet documentation #10162 available at:
10162: <https://www.bio-rad-antibodies.com/uploads/MSDS/10162.pdf>

Regulatory

For research purposes only

Related Products

Recommended Secondary Antibodies

Rabbit Anti Rat IgG (STAR16...)	DyLight®800
Goat Anti Rat IgG (STAR73...)	RPE
Rabbit Anti Rat IgG (STAR21...)	HRP
Rabbit Anti Rat IgG (STAR17...)	FITC
Goat Anti Rat IgG (MOUSE ADSORBED) (STAR71...)	DyLight®649 , DyLight®800
Goat Anti Rat IgG (STAR131...)	Alk. Phos. , Biotin
Goat Anti Rat IgG (STAR69...)	FITC
Goat Anti Rat IgG (STAR72...)	HRP

Recommended Negative Controls

[RAT IgG2b NEGATIVE CONTROL:Low Endotoxin \(MCA6006EL\)](#)

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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