

Monoclonal Antibody to human TLR2 (Toll-like receptor 2)/CD282 Biotin Conjugate



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Monoclonal Antibody to human TLR2 (Toll-like receptor 2)/CD282 Biotin Conjugate

Catalog No : IMG-416B
Formulation : 100 µg in 200 µl PBS containing 0.02% sodium azide. Sodium azide is highly toxic.
Isotype : Mouse IgG2a, Kappa
Clone : TL2.1
Purification : Protein G Chromatography
Species React : Dog, Human
Host : Mouse

Application
Flow (Cell Surface): 2-5 ug/ 1x 10⁶ cells
IP: 2-5 ug/ ml
IF/ICC: please see Mempel et. al. (2003) for details
Flow (Intracellular): 2-5 ug/ 1x 10⁶ cells

FC (Intracellular):

Storage
The antibody is supplied as Protein G purified IgG fraction. Store at 4°C, stable for 6 months. Do not freeze.

Recommended Positive Control: Ramos cells can be used as positive control

Background

The Toll-like receptors (TLRs) in mammals comprise a family of transmembrane proteins characterized by multiple copies of leucine rich repeats in the extracellular domain and an IL-1 receptor motif in the cytoplasmic domain. Like its counterparts in *Drosophila*, TLRs signal through adaptor molecules (1). The TLR family is a phylogenetically conserved mediator of innate immunity that is essential for microbial recognition (2). Ten human homologs of TLRs (TLR1-10) have been described (3). TLR2 is differentially expressed in human cells. TLR2 is expressed in tonsils, lymph nodes, and appendices, activated B-cells in germinal centers. CD14+ monocytes expressed the highest level of TLR2 followed by CD15+ granulocytes, and CD19+ B-cells, CD3+ T-cells, and CD56+ NK cells did not express TLR2. The expression of TLR2 in different cell types is regulated by different immune response modifiers. For example, LPS, GM-CSF, IL-1, and IL-10 up regulates TLR2 whereas IL-4, IFN-gamma, and TNF down regulate TLR2 expression in monocytes (4).

Antigen

This antibody was raised by immunizing mice with CHO cells transfected with human TLR2 cDNA (Flo et al, 2000). The hybridoma supernatants were selected by flow cytometry (4).

Genebank Info (Protein)

NP_003255

Related Products

1. IMG-5019A-1 [Monoclonal Antibody to GAPDH - Loading Control]
2. IMG-5019A-2 [Monoclonal Antibody to GAPDH - Loading Control]
3. IMG-2201 [Pam3CSK4, TLR1 and TLR2 Ligand]

Reference

1. Muzio M, Natoli G, Sacconi S, Levrero M, and Mantovani A. *J. Exp. Med.* 187: 2097-2101 (1998).
2. Medzhitov R and Janeway CA. *Cell* 91: 295-298 (1997).
3. Chuang TH and Ulevitch RJ. *Biochim. Biophys. Acta* 1518 (1-2): 157-161 (2001).
4. Takeuchi O., Hoshino K, Kawai T, Sanjo H, Takada H, Ogawa K, Takeda K and Akira S. *Immunity* 11: 443 (1999).
5. Poltorak A, Riccardi-Castagnoli P, Citterio S, and Butler B. *Proc. Natl. Acad. Sci USA* 97: 2163-2167 (2000).
6. Medzhitov R, Preston-Hurlburt P and Janeway CA Jr. *Nature* 388 (6640), 394-397 (1997).
7. Akashi S, Shimazu R, Ogata H, Nagai Y, Takeda K, Kimoto M, Miyake K. *J Immunol* 164(7):3471-5 (2000).

Product Citations

1. **Intracellular Signaling Mechanisms Regulating Toll-Like Receptor-Mediated Activation of Eosinophils.** Wong CK, PFY Cheung, WK IP and CWK Lam. *Am. J. Respir. Cell Mol. Biol.*doi:10.1165/rcmb.2006-0457OC (2007), in press. **Imgenex antibodies cited (human blood eosinophils and neutrophils from buffy coat): For WB, Fig. 1A: TLR1 (IMG-5012), TLR5 (IMG-664), TLR6 (IMG-304A), TLR7 (IMG-540), TLR8 (IMG-321A), TLR9 (IMG-305A). For Flow (Intracellular) and Flow (Surface), Fig. 1B: TLR1 (IMG-5021), TLR2 (IMG-416C), TLR3 (IMG-315C), TLR4 (IMG-417C), TLR5 (IMG-663C), TLR6 (IMG-304C), TLR7 (IMG-665A), TLR8 (IMG-321C), TLR9 (IMG-305C).**
2. **Toll-like receptor expression in human keratinocytes: nuclear factor B controlled gene activation by *Staphylococcus aureus* is Toll-like receptor 2 but not Toll-like receptor 4 or platelet activating factor receptor dependent.** Mempel M, V Voelcker, G Köllisch, C Plank, R Rad, M Gerhard, C Schnopp, P Fraunberger, A K Walli, J Ring, D Abeck, M Ollert. *J. Invest. Dermatol.* 121: 1389-1396 (2003). **Imgenex antibodies cited [IF/ICC (human keratinocytes), Figs. 2a, 2d]:**
 1. TLR2 [IMG-416]
 2. TLR4 [IMG-417]
3. **Highly purified lipoteichoic acid activates neutrophil granulocytes and delays their spontaneous apoptosis via CD14 and TLR2.** Sonja Lotz, Eresso Aga, Inga Wilde, Ger van Zandbergen, Thomas Hartung, Werner Solbach, and Tamás Laskay. *J. Leukoc. Biol.* 75: 467-477 (2004). **Imgenex antibodies cited: 1. TLR2 (IMG-416E) 2. TLR4 (IMG-417) [FA, Fig.7C (PMN)].**
4. **Differential expression of Toll-like receptor 2 in human cells.** Flo TH, O Halaas, S Torp, L Ryan, E Lien, B Dybdahl, A Sundan, T Espvik T. *J Leukoc Biol* 69: 474-481 (2001).

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Imgenex antibodies cited: TLR2 (IMG-416):

1. Flow (Cell Surface): Figs 1 (whole blood), 5 (granulocytes), and 6 (monocytes)
2. IP: Fig 2 (monocytes)
3. IF/ICC: Fig 3 (monocyte-derived macrophages)
5. Human Toll-like receptor 2 mediates monocyte activation by *Listeria monocytogenes*, but not by group B Streptococci or lipopolysaccharide. Flo TH, O Halaas, E Lien, L Ryan, G Teti, DT Golenbock, A Sundan, T Espvik. *J Immunology* 164:2064-2069 (2000).

Imgenex antibodies cited, TLR2 (IMG-416):

1. Generation of the IMG-416 TL2.1 antibody clone, recognizing a TLR2-associated epitope (Materials and Methods)
2. The IMG-416 antibody is TLR2 transfected validated in Fig 3 [Flow (Cell Surface)], and Fig 4 (IP).
3. Flow (Cell Surface), Fig 3 (human PBMC and TLR2 transfectants)
4. IP, Fig 4 (TLR2 transfectants)
5. FA, Fig 5 [inhibition of *Listeria monocytogenes* (HKLM) and LPS-induced IL-6 production in transfected cells], and Fig 6 (inhibition of HKLM but not LPS-induced TNF production in human monocytes)
6. 2 TLR2 and TLR4 expression on the immune cells of tuberculous pleural fluid. Prabha C, P Rajashree, D Sulochana. *Immunology Letters* 117: 26-34 (2008). Imgenex antibodies cited:
 1. TLR2- FITC (IMG-416C): Flow (cell surface): Figs. 1A,B (human CD4+T cells, CD8+T cells, B cells, CD16+56+ cells and monocytes); 2(CD4+T cells); 4A,B (human Treg cells). Flow (intracellular): Fig. 3A,B (CD4+T cells)
 2. TLR4- FITC (IMG-417C).Flow (cell surface): Figs. 1B,C (human CD4+T cells, CD8+T cells, B cells, CD16+56+ cells and monocytes); 2(CD4+T cells); 4A,B (human Treg cells). Flow (intracellular): Fig. 3A,B (CD4+T cells)
- 7.

Antibodies specific for human or murine Toll-like receptors detect canine leukocytes by flow cytometry. Burgener IA and TW Jungi. *Veterinary Immunology and Immunopathology* 124:184-191 (2008). Imgenex products cited for canine (dog) PBMC subpopulations:

1. 10083K [IC-Flow (Intracellular Staining Flow Assay) Kit
2. IMG-416A (TLR2), Flow (Cell Surface), Fig 1 and Tables 1 & 2
3. IMG-315A (TLR3), Flow (Intracellular), Tables 1 & 2
4. IMG-417A (TLR4), Flow (Intracellular), Fig 1 and Tables 1 & 2
5. IMG-663A (TLR5), Flow (Cell Surface), Fig 1 and Tables 1 & 2
6. IMG-664A (TLR5), Flow (Cell Surface), Tables 1 & 2
7. IMG-305A (TLR9), Flow (Intracellular), Fig 2 and Tables 1 & 2

8. The probiotic *Escherichia coli* strain Nissle 1917 induces T cell apoptosis via caspase-and FasL-dependent pathways. *International Immunology* 20:829-840 (2008). Imgenex antibodies cited:

1. IMG-416C (TLR2 FITC) Flow (cell surface), human PBMCs, Fig. 5.
2. IMG-417C (TLR4 FITC) Flow (cell surface), human PBMCs, Fig. 5.
9. Pro-osteogenic phenotype of human aortic valve interstitial cells is associated with higher levels of toll-like receptors 2 and 4 and enhanced expression of bone morphogenetic protein 2. Yang X, D Fullerton, X Su, L Ao, J Cleveland, X Meng. *Journal of the American College of Cardiology* 53: 491-500 (2009). Imgenex antibodies cited:
 1. IMG-416D (TLR2-PE): WB, Flow (cell surface): human aortic valve interstitial cells, Figs. 1A,B; 2C; 6A.
 2. IMG-417D (TLR4-PE): WB, Flow (cell surface): human aortic valve interstitial cells, Figs. 1A,B; 2C; 6A.
10. Toll-like receptor 2 and NALP2 mediate induction of human Beta-Defensins by *Fusobacterium nucleatum* in gingival epithelial cells. Ji S, Shin J E, Kim Y S, Oh J E, Min B M, Choi Y. *Infection and Immunity* 77:1044-1052 (2009). Imgenex antibody cited:
TLR2 [IMG-416C]
Flow (Cell Surface and Intracellular) (HOK-16B cells cocultured with *F. nucleatum*), Fig. 1d
Flow (Cell Surface) (TLR2-siRNA-transfected HOK-16B cells infected with *F. nucleatum*), Fig. 4a

11. Expression of mRNA and proteins for Toll-like receptors, associated molecules, defensins and LL-37 by SRIK-NKL, a CD8+ NK/T cell line. Srivastava M D, B I S Srivastava. *Leukemia Res* 29: 813-820 (2005).

Imgenex antibodies cited [IF/ICC (SRIK-NKL cells)]:

1. TLR2 [IMG-416]
2. TLR4 [IMG-417]
3. TLR7 [IMG-581]
4. TLR9 [IMG-305]

12. Innate immune recognition of invasive bacteria accelerates atherosclerosis in apolipoprotein E-deficient mice. Gibson F C III, C Hong, H-H Chou, H Yumoto, J Chen, E Lien, J Wong, C A Genco. *Circulation* 109: 2801-2806 (2004).

Imgenex antibody cited: TLR2 [IMG-416]:

1. IHC:P (aortic tissue), Fig. 2b
2. Flow (Cell Surface) (P gingivalis, mutant P gingivalis), Figs. 3a, 3b

13. Deviation from major codons in the Toll-like receptor genes is associated with low Toll-like receptor expression. Zhong F, W Cao, E Chan, P N Tay, F F Cahya, H Zhang, J Lu. *Immunology* 114: 83 (2005).

Imgenex antibodies cited [Flow (Intracellular) (293T cells and monocytes), Fig. 1]:

1. TLR2 [IMG-416]
2. TLR9 [IMG-305]

14. Expression and function of Toll-like receptor 2 in canine blood phagocytes. Bazzocchi C, M Mortarino, S Comazzi, C Bandi, A Franceschi, C Genchi. *Veterinary Immunology and Immunopathology* 104: 15-19 (2005).

Imgenex antibody cited: TLR2 [IMG-416A]

1. Flow (dog whole blood cells), Fig. 3

15. High-avidity antitumor T-cell generation by toll receptor 8-primed, myeloid-derived dendritic cells is mediated by IL-12 production. Xu S, U Koldovsky, M Xu, D Wang, E Fitzpatrick, G Son, G Koski, B J Czerniecki. *Surgery* 140: 170-178 (2006).

Imgenex antibodies cited [Flow (Cell Surface and Intracellular) (human monocytes), Figs. 1a, 1b]:

1. TLR2 [IMG-416]
2. TLR3 [IMG-315]
3. TLR4 [IMG-417]
4. TLR8 [IMG-321]

16. A dipalmitoylated lipoprotein from *Mycoplasma pneumoniae* activates NF- B through TLR1, TLR2, and TLR6. Shimizu T, Y Kida, K Kuwano. *J Immunol* 175: 4641-4646 (2005).

Imgenex antibody cited: TLR2 [IMG-416E]

1. FA (THP-1 cells), Fig. 2

17. Signal transduction and nuclear responses in *Staphylococcus aureus*-induced expression of human -defensin 3 in skin keratinocytes. Menzies B E, A Kenoyer. *Infect Immunol* 74: 6847-6854 (2006).

Imgenex antibody cited: TLR2 [IMG-416E]

1. FA (human keratinocytes), Fig. 2

18. Dysregulation of LPS-induced Toll-like receptor 4-MyD88 complex formation and IL-1 receptor-associated kinase 1 activation in endotoxin-tolerant cells. Medvedev A E, A Lentschat, L M Wahl, D T Golenbock, S N Vogel. *J Immunol* 169: 5209-5216 (2002).

Imgenex antibody cited: TLR2 [IMG-416A]:

1. WB (human monocytes), Fig. 3
2. Flow (Cell Surface) (human monocytes), Fig. 4

19. Bacterial lipopolysaccharide and IFN- induce Toll-like receptor 2 and Toll-like receptor 4 expression in human endothelial cells: Role of NF- B activation. Faure E, L Thomas, H Xu, A E Medvedev, O Equils, M Arditi. *J Immunol* 166: 2018-2024 (2001).

Imgenex antibody cited: TLR2 [IMG-416A]:

1. WB (LPS-treated HMEC), Fig. 2a
2. IHC:P (LPS-stimulated HMEC), Figs. 2b, 2c

20. Evidence of Toll-like receptor molecules on human platelets. Cognasse F, H Hamzeh, P Chavarin, S Acquart, C Genin, O Garraud. *Immunology and Cell Biology* 83: 196-198 (2005). Imgenex antibodies cited:

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TLR2-PE [IMG-416D]
TLR4-PE [IMG-417D]
TLR6 [IMG-304A]
TLR8-PE [IMG-321D]
TLR9-PE [IMG-305D]

Applications:

Flow Cytometry (Cell Surface and Intracellular) (human platelets), Figs. 1, 2.

A comparison of staining results, intracellular versus cell surface flow cytometry is shown.

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