

Monoclonal Antibody to TLR9/CD289 (Clone 26C593.2)



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Monoclonal Antibody to TLR9/CD289 (Clone 26C593.2)

Catalog No : IMG-305A
Formulation : 100 ug in 200 ul PBS containing 0.05% BSA and 0.05% sodium azide. Sodium azide is highly toxic.
Isotype : Mouse IgG1, Kappa
Clone : 26C593.2
Purification : Protein G Chromatography
Species React : Dog, Horse, Human, Mouse, Rat, Rhesus Monkey
Host : Mouse

Application
Confocal Microscopy: see Greene et. al. (2005)
Western blot analysis: 1-5 ug/ml
Flow (Intracellular): 0.1-2 ug/ 1x10⁶ cells
IHC (frozen): 10-20 ug/ml (see Miller et al, 2005).
IHC (paraffin): see Martin-Armas et al. 2005
IF/ICC: see Greene et. al. (2005), see Tabeta et al
Flow (Cell Surface): see Lee et al. (2006)

Storage
Store at 4°C, stable for 6 months. For long-term storage, store at -20°C.

Recommended Positive Control: Human PBMCs, Ramos cells, Intestine, Testis

Background

The Toll-like receptor (TLR) family in mammal comprises a family of transmembrane proteins characterized by multiple copies of leucine rich repeats in the extracellular domain and 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). By using a BLAST search, Hemmi et al., 2000 (5) have identified and subsequently isolated a cDNA coding for TLR9. Gene knockout experiments suggest that TLR9 acts as a receptor for unmethylated CpG dinucleotides in the bacterial DNA (4). Human and mouse TLR9 share an overall amino-acid identity of 75.5%. TLR9 is highly expressed in spleen.

Antigen

This antibody was developed against KLH-conjugated synthetic peptide corresponding to amino acids 268-284 (CPRHFPQLHPDTFSHLS) of human TLR9 isoform A (Genbank accession no. AAF78037).

Application Notes

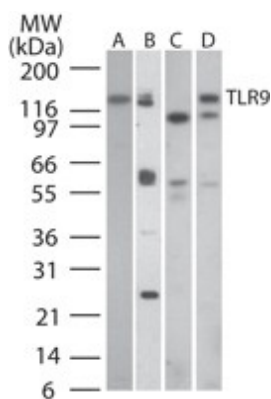
In human PBMC, a ~120 kDa band is observed. A smaller isoform, TLR9 isoform B (Genbank accession no. AAF72190) containing 975 amino acids may also be observed in some cases.

TLR9 Cleavage: Proteolytic cleavage is thought to occur in the endolysosome and be required for TLR9 activation. The cleavage results in different size fragments depending on the protease. Approximately 45 kD, 65 kD and 80 kD cleavage fragments have been observed (Ewald, et al, 2008 and Park, et al, 2008-please see Reference section).

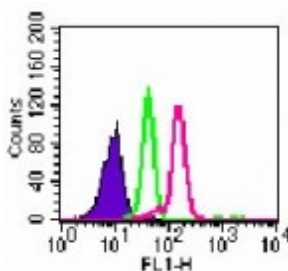
Genebank Info (Protein)

NP_059138

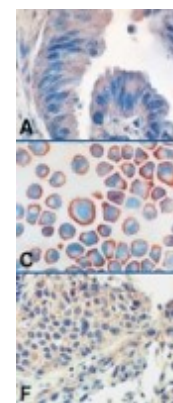
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Western blot analysis of TLR9 in A) human PBMCs, B) human intestine, C) mouse intestine and D) rat intestine tissue lysates using IMG-305A at 3 µg/ml and IMGENEXs goat anti-mouse HRP conjugate (IMGENEX, 20101) as secondary.



Intracellular flow analysis of TLR9 in Ramos cells using 0.1 µg of IMG-305A. Shaded histogram represents Ramos cells without antibody; green represents isotype control (IMGENEX, 20109) red represents anti-TLR9 antibody. IMGENEXs goat anti-mouse IgG FITC secondary (IMGENEX, 20102) was used.



IHC analysis of TLR9 in Adenocarcinoma of the lung (A), A549 cells (C), and malignant lung tissues (F) at 1:100 dilution, (600 × magnification).

Related Products

1. IMG-305D [Monoclonal Antibody to TLR9/CD289 (Clone 26C593.2)]
2. IMG-305C [Monoclonal Antibody to TLR9/CD289 (Clone 26C593.2)]
3. IMG-305B [Monoclonal Antibody to TLR9/CD289 (Clone 26C593.2) Biotin Conjugate]
4. 20101 [Goat Anti-Mouse Ig HRP Conjugate]
5. 20102 [Goat Anti-Mouse IgG (H+L)-FITC Conjugate]
6. 20103 [Goat Anti-Mouse IgG (H+L) PE conjugated secondary antibody]
7. IMG-5019A-1 [Monoclonal Antibody to GAPDH - Loading Control]
8. IMG-5019A-2 [Monoclonal Antibody to GAPDH - Loading Control]
9. 40143 [Human Intestine Tissue lysate]
10. 10083K [IC-Flow (Intracellular Staining Flow Assay) Kit]
11. IMG-2209H [CpG ODN (2006) with negative control oligo, TLR9 ligand (human)]

Reference

1. Muzio M, Natoli G, Saccani 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, Kawai T, Sanjo H, Copeland NG, Gilbert DJ, Jenkins NA, Takeda K, and Akira S. Gene 231: 59-65 (1999).
5. Hemmi H, Takeuchi O, Kawai T, Kaisho T, Sato S, Sanjo H, Matsumoto M, Hoshino K, Wagner H, Takeda K, and Shizo A. Nature 408: 740-745 (2000).

Product Citations

1. 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., and B.I.S. Srivastava. *Leukemia Res.*, 29: 813-820 (2005). **The following Imgenex antibodies cited were used for IF/ICC in SRIK-NKL cells: TLR2 (IMG416), TLR4 (IMG-417), TLR7 (IMG-581), and TLR9 (IMG-305).**
2. TLR-Induced Inflammation in Cystic Fibrosis and Non-Cystic Fibrosis Airway Epithelial Cells. Greene C.M., T. P. Carroll, S. G. J. Smith, C. C. Taggart, J. Devaney, S. Griffin, S. J. O'Neill, and N. G. McElvaney. *J. Immunol.*, 174: 1638-1646 (2005). **Imgenex antibodies cited: 1. TLR9 (IMG-305) [Confocal Microscopy, Fig.1A and 1B (CFTE290- and 16HBE140-cells)].**
3. Cytoplasmic domain-mediated dimerizations of toll-like receptor 4 observed by lactamase enzyme fragment complementation. Lee H-K, S. Duzendorfer, and P.S. Tobias. *J. Biol. Chem.*, 279: 10564-10574 (2004). **Imgenex antibodies cited: TLR9 (IMG-305) [WB, Fig5B (HEK293 cells)].**
4. Human lung cancer cells express functionally active Toll-like receptor 9. Daniel Droemmann, Dirk Albrecht, Johannes Gerdes, Artur J Ulmer, Detlev Branscheid, Ekkehard Vollmer, Klaus Dahlhoff, Peter Zabel and Torsten Goldmann. *Respiratory Research* 2005, 6:1 doi:10.1186/1465-9921-6-1. **Imgenex antibodies cited: 1. TLR9 (IMG-305) [IHC-P, Fig 1 (adenocarcinoma of the lung, squamous cell carcinoma of the lung, and A549 cells)]. [Confocal Microscopy, Fig1. (A549 cells)].**
5. Evidence of Toll-like receptor molecules on human platelets. Fabrice Cognasse, Hind Hamzeh, Patricia Chavarin, Sophie Acquart, Christian Genin and Olivier Garraud. *Immunology and Cell Biology*. Volume 83 Issue 2 Page 196 - April 2005. doi:10.1111/j.1440-1711.2005.01314.x. **The following TLR antibodies were cited in this publication: TLR2-PE (IMG-416D), TLR4-PE (IMG-417D), TLR6 (IMG-304A), TLR8-PE (IMG-321D), TLR9-PE (IMG-305D). Applications: Intracellular Flow Cytometry and Cell Surface Flow Cytometry: Figs 1 and 2. A comparison of staining results, intracellular versus cell surface flow cytometry is shown. Cell type: Human platelets**
6. TGF- α Regulates TLR Expression and Function on Epidermal Keratinocytes. Miller LS, OE Sørensen, PT Liu, HR Jalian, D Eshtiaghpour, BE Behmanesh, W Chung, TD Starner, J Kim., PA Sieling, T Ganz and RL Modlin. *J. Immunol.* 174: 6137-6143 (2005). **Imgenex antibodies cited: 1. TLR5 (IMG-664) [IHC-frozen, Fig 1 (normal human skin and psoriasis, primary human organotypic keratinocyte culture)]. 2. TLR9 (IMG-305A) [IHC-frozen, Fig 1 (normal human skin and psoriasis, primary human organotypic keratinocyte culture)].**
7. Role of pathogenic auto-antibody production by Toll-like receptor 9 of B cells in active systemic lupus erythematosus. Nakano S, S Morimoto, J Suzuki, K Nozawa, H Amano, Y Tokano, Y Takasaki. *Rheumatology* 47: 145-149 (2008). **Imgenex antibody cited: IMG-305C (TLR9-FITC) for Flow (Intracellular), human peripheral blood B cells from normal and SLE patients, Figs 1C, 2, 3.**
8. Toll like receptor 9 (TLR9) is present in murine liver sinusoidal endothelial cells (LSECs) and mediates the effect of CpG-oligonucleotides. Martin-Armas M., J. Simon-Santamaria, I. Pettersen, U. Moens, B. Smedsrød and B.R. Sveinbjornsson. *Journal of Hepatology*, In Press, Uncorrected Proof, Available online 7 November 2005. **Imgenex antibodies cited: 1. TLR9 (IMG-305) [IHC-P, Fig.4 (liver tissue of mice)].**
9. The Unc93b1 mutation 3d disrupts exogenous antigen presentation and signaling via Toll-like receptors 3, 7 and 9. Koichi Tabeta, Kasper Hoebe, Edith M Janssen, Xin Du, Philippe Georgel, Karine Crozat, Suzanne Mudd, Navjwan Mann, Sosathya Sovath, Jason Goode, Louis Shamel, Anat A, et al. *Nature Immunology* 7, 156-164 (2006). **Imgenex antibodies cited: 1. TLR9 (IMG-305) [IF/ICC, Fig.5g-i (primary mouse macrophages)]. The specificity of the TLR9 antibody is demonstrated using primary mouse macrophages from wildtype (5g) and TLR9 knockout (5i) mice.**
10. Activation of IFN pathways and plasmacytoid dendritic cell recruitment in target organs of primary Sjögren's syndrome. Jacques-Eric Gottenberg, Nicolas Cagnard, Carlo Lucchesi, Franck Letourneur, Sylvie Mistou, Thierry Lazure, Sebastien Jacques, Nathalie Ba, Marc Ittah, Christine Lepajolec, Marc Labetoulle, Marc Ardiszone, Jean Sibilia, Catherine Fournier, Gilles Chiochia, and Xavier Mariette. *PNAS*, Feb 2006; 10.1073/pnas.0510837103. **Imgenex antibodies cited: TLR9 (IMG-305) [IHC-Frozen, Fig5E. (salivary glands)].**
11. Pathogen-Sensing Plasmacytoid Dendritic Cells Stimulate Cytotoxic T-Cell Function in the Atherosclerotic Plaque Through Interferon-. Alexander Niessner, Kayoko Sato, Elliot L. Chaikof, Ines Colmegna, Jörg J. Goronzy, and Cornelia M. Weyand. *Circulation*, Nov 2006; 10.1161/CIRCULATIONAHA.106.642801. **Imgenex antibodies cited: TLR9 (IMG-305) [IHC-F, Fig.3A (carotid plaque tissues)].**
12. Members of the Toll-like Receptor Family of Innate Immunity Pattern-Recognition Receptors Are Abundant in the Male Rat Reproductive Tract. Palladino MA., TA Johnson, R Gupta, JL Chapman, and P Ojha. *Biol Reproduction.*, in press, DOI: 10.1095/biolreprod.106.059410 (2007). **IMGENEX antibodies cited: The following antibodies were used for WB in Fig. 2 using rat, testis, epididymis, and vas deferens: TLR 1 (IMG-5012), TLR2 (IMG-545), TLR5 (IMG-580), TLR6 (IMG-527), TLR7 (IMG-581) TLR9 (IMG-305A), TLR10 (IMG-5255A), TLR11 (IMG-5034) and MYD88 (IMG-178).**

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- 13. 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).
- 14. Activation of anti-hepatitis C virus responses via Toll-like receptor 7.** Lee J, CCN Wu, KJ Lee T-H Chuang, K Katakura, Y-T Liu, M Chan, R Tawatao, M Chung, C Shen, HB Cottam, MMC Lai, E Raz and DA Carson. *PNAS* 103:1828-1833 (2006). **Imgenex antibodies cited in this study: Flow (Intracellular) and Flow (Cell Surface) in human Huh-7 hepatoma cells, Fig. 1A [TLR7 (IMG-665A), TLR8 (IMG-321C)], and [TLR9 (IMG-305D)]; IHC (paraffin) on Huh-7 cells, normal fibroblasts, HCV-infected liver, and liver carcinoma, Fig 1C-E (TLR7, IMG-665A). The specificity of the TLR7 antibody (IMG-665A) was validated using TLR7 293 transfected cells in Flow (Intracellular) (Supplemental Data, Fig. 5).**
- 15. Surface expression of Toll-like receptor 9 is upregulated on intestinal epithelial cells in response to pathogenic bacterial DNA.** Ewaschuk JB, JL Backer, TA Churchill, F Obermeier, DO Krause, and KL Masden. *Infection and Immunity* 75:2572-2579 (2007). **Imgenex antibody cited: IMG-305A in human HT-29 colon carcinoma cells Flow (Intracellular) Fig 4, IF (Fig 5), WB (Fig 6) and in mouse colon tissue (from normal and germ-free mice) for WB (Fig 7A, B) and IHC (paraffin) (Fig 7C).**
- 16. Toll-like receptor 9 expression in murine and human adrenal glands and possible implications during inflammation.** Tran N, A Koch, R Berkels, O Boehm, PA Zacharowski, G Baumgarten, P Kneuferrmann, M Schott, W Kanczkowski, SR Bornstein, SL Lightman, and K Zacharowski. *J Clin Endocrin Metab.* Doi:10.1210/jc.2006-2697 In press (2007). **Imgenex antibodies cited (mouse spleen and adrenal tissue, mouse RAW264.7 macrophage cell line, human adrenal tissue: TLR9 [(IMG-305A) IHC (paraffin): Figs 1C-D, F and 6; IF/ICC: Figs 1E and 5]; TLR9 [(IMG-431) WB: Figs 1B, 3C, and 5G]. The TLR9 IMG-431 antibody was validated by WB using adrenal gland tissue from TLR9-/- and wt mice (Fig 1B).**
- 17. Deoxycytidyl-deoxyguanosine oligonucleotide classes A, B, and C induce distinct cytokine gene expression patterns in Rhesus monkey peripheral blood mononuclear cells and distinct alpha interferon responses in TLR9-expressing Rhesus monkey plasmacytoid dendritic cells.** Abel K, Y Wang, L Fritts, E Sanchez, E Chung, P Fitzgerald-Bocarsly, AM Krieg, and CJ Miller. *Clinical and Diagnostic Laboratory Immunology* 12:606-621 (2005). **Imgenex antibodies cited: IMG-305C [Flow (Intracellular), Fig. 5] on Rhesus monkey spleen cell suspensions and PBMC.**
- 18. Toll-like receptors in cellular subsets of human tonsil T cells: altered expression during recurrent tonsillitis.** Mansson A, M Adner and LO Cardell. *Respiratory Research* doi:10.1186/1465-9921-7-36. (2006). **Imgenex antibodies cited (human tonsils separated into cell subtypes): 1. TLR3 [IMG-315D (Flow-Intracellular), Figs 5 and 6]. 2. TLR5 [IMG-663A (Flow-Intracellular), Fig 6]. 3. TLR9 [IMG-305C (Flow-Intracellular), Fig 4.]**
- 19. Maintenance of colonic homeostasis by distinctive apical TLR9 signaling in intestinal epithelial cells.** Lee J., J-H Mo, K. Katakura, I. Alkalay, A. N. Rucker, Y-T. Liu, H-K. Lee, C. Shen, G. Cojocaru, S. Shenouda, M. Kagnoff, L. Eckmann, Y. Ben-Neriah, and E. Raz., *Nature Cell Biol.*, 8, doi:10.1038/ncb1500 (2006). **Imgenex antibodies cited: 1. TLR9 (IMG-305) [Confocal Microscopy, Fig.2 (intestinal epithelial cells)]. [Flow (cell surface), Fig.S1 (293-HEK TLR9 transfected cells) and Fig.S2 (Caco-2 intestinal epithelial cells)], TLR9 mAb was transfected validated by flow (cell surface) in Fig. S1. [WB and IP, Fig S1 (293-HEK TLR9 transfected cells and Caco-2 intestinal epithelial cells), TLR9 mAb was transfected validated by IP/WB.**
- 20. Induction of pro-inflammatory programs in enteroendocrine cells by the Toll-like receptor agonists flagellin and bacterial LPS.** Selleri S, Palazzo M, Deola S, Wang E, Balsari A, Marincola F, Rumio C. *International Immunology* doi:10.1093/intimm/dxn055 (2008). **TLR9-FITC (IMG-305C): Flow (intracellular), Human colon neuroendocrine LCC-18 cell line: Fig. 4d.**
- 21. Expression of TLR9 within human glioblastoma.** Meng Y, M Kujas, Y Marie, S Paris, J Thillet, J Delattre, A Carpentier. *Journal of Neuro-Oncology*: 10.1007/s11060-008-9536-2 (2008). **IMG-305A: human glioma cell lines SNB19, HTB13 and U87, IHC(paraffin): Fig. 2a; IF: Fig. 2c,f.**
- 22. TLR9 is expressed in idiopathic interstitial pneumonia and its activation promotes in vitro myofibroblast differentiation.** Meneghin A, E Choi, H Evanoff, S Kunkel, F Martinez, K Flaherty, G Toews, C Hogaboam. *Histochemistry and Cell Biology*: 10.1007/s00418-0080466-z (2008). **Imgenex products cited (human lung fibroblast cell lines):**
1. IMG-305A (TLR9): IHC (paraffin), Fig. 2a,b,c,d,e,f; 3b,d; 4a,b,c,d,e,r,f,g,h; 5b,d,f; 6b,d,f,h.
2. IMG-305B (TLR9 biotin): IF, Fig. 8a,b,c,d.
- 23. STAT3 and STAT5-dependent pathways competitively regulate the pan-differentiation of DC34pos cells into tumor-competent dendritic cells.** Cohen P, Koski G, Czerniecki B, Bunting K, Fu X, Zhang W, Carter C, Awad M, Distel C, Nagem H, Paustian C, Johnson T, Tisdale J, Shu S. *Immunobiology* 112: 1832-1843 (2008). **Imgenex antibodies cited [Flow (intracellular), mouse bone marrow cells, Supplementary Fig. S4]:**
1. TLR3 FITC (IMG-315C)
2. TLR4 FITC (IMG-5031C)
3. TLR7 (IMG-665A)
4. TLR8 FITC (IMG-321C)
5. TLR9 FITC (IMG-305C)
- 24. CD300a/c regulate type 1 intergeron and TNF- secretion by human plasmacytoid dendritic cells stimulated with TLR7 and TLR9 ligands.** Ju X, M Zenke, D Hart, G Clark. *Blood* 112: 1184-1194 (2008). **IMG-305D: Flow (cell surface), human PBMC cells, Fig 1B.**
- 25. Molecular cloning and characterization of equine Toll-like receptor 9.** Zhang YW, EG Davis, F Blecha, MJ Wilkerson. *Veterinary Immunology and Immunopathology* 124: 208-219 (2008). **Imgenex Products cited for Flow (Cell Surface) and Flow (Intracellular): IMG-305C (TLR9-FITC) and IMG-305D (TLR9-PE): Fig 2B (HEK293 and equine TLR9 transfected cells), Fig 4 (equine leukocytes), Fig 5 (equine PHA-stimulated PBMC), Fig 6 (equine leukocyte subsets).**
Notes: TLR9 expression was found to be predominantly intracellular. HEK293 cells express endogenous TLR9. TLR9 expression increased in equine TLR9 transiently transfected HEK293 cells. TLR9 expression increased in PBMC cells following PHA stimulation.
- 26. 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
- 27. Inhibitors of TLR8 reduce TNF production from human rheumatoid synovial membrane cultures.** Sacre S, A Lo, B Gregory, R Simmonds, L Williams, M Feldmann, F Brennan, B Foxwell. *J Immunol* 181: 8002-8009 (2008). **Imgenex antibodies cited [Flow (intracellular), human synovial membrane cells, Fig. 4B]:**
1. TLR3-FITC (IMG-315C)
2. TLR8-FITC (IMG-321C)
3. TLR9-FITC (IMG-305C).
- 28. Role for plasmacytoid dendritic cells in the immune control of recurrent human herpes simplex virus infection.** Donaghy H, L Bosnjak, A Harman, V Marsden, S Tyring, T Meng, A Cunningham. *Journal of Virology* 83: 1952-1961 (2009). **IMG-305C: Human dendritic cells, Flow(cell surface), Fig. 3A(left); Flow (intracellular), Fig. 3A (right).**
- 29. Toll-like receptors in the uterus, cervix, and placenta: is pregnancy an immunosuppressed state?** Gonzalez J, H Xu, E Ofori, M Elowitz. *American Journal of Obstetrics and Gynecology* 197: 3 (2007). **WB (mouse cervix, uterus, and placenta lysates), Figs. 1,2.**
- 30.**

Stimulation of iNOS expression and apoptosis resistance in B-cell chronic lymphocytic leukemia (B-CLL) cells through engagement of Toll-like receptor 7 (TLR-7) and NF-kB activation. Hammadi A, Billard C, A-M Faussat, J-P Kolb. *Nitric Oxide* 19:138-145 (2008). **Imgenex products cited (B-CLL cells from a leukemia patient):**

1. IMG-417E (TLR4-FITC, clone HTA125): Flow (Intracellular), Fig 1: TLR4 was undetectable in the B-CLL cells.

2. IMG-305C (TLR9-FITC, clone 26C593.2): Flow (intracellular), Fig 1: TLR9 was detected in the BCLL cells

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3. IMK-501 (Phospho-IkBa ActivELISA Kit): Fig 6B, ELISA data shows increased of IkBa phosphorylation following resiquimod treatment which stimulates NF-kB activation.

Note: No expression of TLR-4 or TLR-9 was detected at the surface of B-CLL cells by Flow (cell surface).

31. Deoxynucleic acids from *Cryptococcus neoformans* activate myeloid dendritic cells via a TLR9-dependent pathway. Nakamura K, A Miyazato, G Xiao, M Hatta, K Inden, T Aoyagi, K Shiratori, K Takeda, S Akira, S Saijo, Y Iwakura, Y Adachi, N Ohno, K Suzuki, J Fujita, M Kakau, and K Kawakami. *J Immunol* 180:4067-4074 (2008). Imgenex antibody used: TLR9-FITC (IMG-305C) for IF/ICC (intracellular confocal microscopy) in the following figures:

1. Fig 8a: primary mouse bone marrow-derived myeloid dendritic cells (BM-DC) treated with Cn-DNA and CpG-Rhodamine and analyzed over a time course

2. Fig 8b: BM-DC and RAW264.1 cells treated with Cn-DNA

Note: intracellular redistribution of TLR9 was observed in treated cells

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