abcam

ab22048

Anti-TLR4 antibody [76B357.1]

Anti-TLR4 antibody [76B357.1] (ab22048) is a mouse monoclonal antibody detecting TLR4 in **Flow Cytometry (Intra), IHC-P, IHC-Fr, ICC/IF, ELISA**. Suitable for **Human, Mouse, Pig, Rat**.

- Over 290 publications
- Trusted since 2006

Key facts

Isotype	IgG2b
Host species	Mouse
Storage buffer	pH: 7.4 Preservative: 0.05% Sodium azide Constituents: PBS, 0.05% BSA
Form	Liquid
Clonality	Monoclonal
Immunogen	Synthetic Peptide within Human TLR4 aa 100-200 conjugated to Keyhole Limpet Haemocyanin. The exact immunogen used to generate this antibody is proprietary information. Database link O00206
Clone number	76B357.1
Purification technique	Affinity purification Protein G
Specificity	TLR4 expression levels and cleavage or degradation products can vary between different cell and tissue samples. Customers have observed this variability in WB band size and our laboratory has confirmed this variability as well observing lower molecular weight cleavage and degradation products and in some samples a lack of the full length TLR4 band. The TLR4 cleavage and degradation products and potential lack of full length TLR4 are well documented in the literature, including PMID 16885150 and 22927440. We recommend running a positive control human intestine tissue lysate.
Light chain type	kappa
Concentration	1 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →

Reactivity data

ICC

Expected

Species	Mouse, Rat, Pig, Human
Dilution info	Use at an assay dependent concentration.
Notes	-

Predicted

Species	Sheep, Horse, Cow, Cat, Chimpanzee
Dilution info	-
Notes	-

ELISA

Expected

Species	Mouse, Rat, Pig, Human
Dilution info	Use at an assay dependent concentration.
Notes	-

Predicted

Species	Sheep, Horse, Cow, Cat, Chimpanzee
Dilution info	-
Notes	-

IHC-P

Tested

Species	Rat, Human

Dilution info	-
Notes	-

Predicted

Species	Sheep, Horse, Cow, Cat, Chimpanzee, Mouse, Pig
Dilution info	-
Notes	-

ICC/IF

Expected

Species	Mouse, Rat, Pig, Human
Dilution info	Use at an assay dependent concentration.
Notes	-

Predicted

Species	Sheep, Horse, Cow, Cat, Chimpanzee
Dilution info	-
Notes	-

IHC-Fr

Expected

Species	Mouse, Rat, Pig, Human
Dilution info	Use at an assay dependent concentration.
Notes	-

Predicted

Species	Sheep, Horse, Cow, Cat, Chimpanzee
Dilution info	-
Notes	-

Flow Cyt (Intra)

Tested

Species	Human
Dilution info	1 µg for 10^6 Cells
Notes	Methanol or paraformaldehyde fixed cells. ab170192 - Mouse monoclonal IgG2b, is suitable for use as an isotype control with this antibody.

Expected

Species	Rat
Dilution info	Use at an assay dependent concentration.
Notes	-

Predicted

Species	Sheep, Horse, Cow, Cat, Chimpanzee, Mouse, Pig
Dilution info	-
Notes	-

Target data

See full target information TLR4

Function

Transmembrane receptor that functions as a pattern recognition receptor recognizing pathogen- and damage-associated molecular patterns (PAMPs and DAMPs) to induce innate immune responses via downstream signaling pathways (PubMed:10835634, PubMed:15809303, PubMed:16622205, PubMed:17292937, PubMed:17478729, PubMed:20037584, PubMed:20711192, PubMed:23880187, PubMed:27022195, PubMed:29038465, PubMed:17803912, PubMed:15852007). At the plasma membrane, cooperates with LY96 to mediate the innate immune response to bacterial lipopolysaccharide (LPS) (PubMed:27022195). Also involved in LPS-independent inflammatory responses triggered by free fatty acids, such as palmitate, and Ni(2+) (PubMed:20711192). Mechanistically, acts via MYD88, TIRAP and TRAF6, leading to NF-kappa-B activation, cytokine secretion and the inflammatory response (PubMed:10835634, PubMed:21393102, PubMed:27022195, PubMed:36945827, PubMed:9237759). Alternatively, CD14-mediated TLR4 internalization via endocytosis is associated with the initiation of a MYD88-independent signaling via the TICAM1-TBK1-IRF3 axis leading to type I interferon production (PubMed:14517278). In addition to the secretion of proinflammatory cytokines, initiates the activation of NLRP3 inflammasome and formation of a

positive feedback loop between autophagy and NF-kappa-B signaling cascade (PubMed:32894580). In complex with TLR6, promotes inflammation in monocytes/macrophages by associating with TLR6 and the receptor CD86 (PubMed:23880187). Upon ligand binding, such as oxLDL or amyloid-beta 42, the TLR4:TLR6 complex is internalized and triggers inflammatory response, leading to NF-kappa-B-dependent production of CXCL1, CXCL2 and CCL9 cytokines, via MYD88 signaling pathway, and CCL5 cytokine, via TICAM1 signaling pathway (PubMed:23880187). In myeloid dendritic cells, vesicular stomatitis virus glycoprotein G but not LPS promotes the activation of IRF7, leading to type I IFN production in a CD14-dependent manner (PubMed:15265881, PubMed:23880187). Required for the migration-promoting effects of ZG16B/PAUF on pancreatic cancer cells.

Storage

Shipped at conditions	Blue Ice
Appropriate short-term storage duration	1-2 weeks
Appropriate short-term storage conditions	+4°C
Appropriate long-term storage conditions	-20°C
Aliquoting information	Upon delivery aliquot
Storage information	Avoid freeze / thaw cycle

Notes

Product Specifications

Anti-TLR4 antibody [76B357.1] (ab22048) is a mouse monoclonal antibody and is validated for use in ELISA, Flow Cyt (Intra), ICC, ICC/IF, IHC-Fr, IHC-P in human, mouse, pig, rat samples.

Anti-TLR4 antibody [76B357.1] (ab22048) specifically detects TLR4 (UniProt ID: O00206; Molecular weight: 93kDa) and is sold in 100 µg selling sizes.

Quality and Validation

Abcam's high quality validation processes ensure Anti-TLR4 antibody [76B357.1] (ab22048) has high sensitivity and specificity.

Anti-TLR4 antibody [76B357.1] (ab22048) has been cited over 297 times in peer reviewed journals and is trusted by the scientific community.

Anti-TLR4 antibody [76B357.1] (ab22048) has 26 independent reviews from customers.

Supplementary info

This supplementary information is collated from multiple sources and compiled automatically.

Activity summary	Toll-like receptor 4 (TLR4) is a membrane protein involved in the innate immune response. It serves as a receptor that recognizes pathogen-associated molecular patterns such as lipopolysaccharides from bacterial cell walls. Often referred to by its alternate names TLR-2 and CD284 this protein has a molecular weight of approximately 95 kDa. TLR4 is mainly expressed on the surface of immune cells like macrophages and dendritic cells enabling these cells to detect and respond to microbial invaders effectively.
Biological function summary	TLR4 plays an important role in activating the immune system. It forms a complex with myeloid differentiation factor 2 (MD-2) to facilitate binding to its ligands. Upon activation TLR4 triggers a signaling cascade that leads to the release of pro-inflammatory cytokines and interferons which are important for initiating the immune response. This early detection mechanism alerts the immune system to the presence of pathogens allowing the body to mount a defense.
Pathways	TLR4 participates in the nuclear factor kappa-light-chain-enhancer of activated B cells (NF-κB) and mitogen-activated protein kinase (MAPK) signaling pathways. These pathways are central to the inflammatory response with TLR4 acting as a sensor that activates downstream components like the MyD88 and TRIF proteins. These interactions result in the expression of genes that produce cytokines and enzymes involved in inflammation and immunity.
Associated diseases and disorders	TLR4 has been implicated in the development of sepsis and atherosclerosis. In sepsis TLR4 recognizes lipopolysaccharides from bacterial infections which can cause excessive inflammation if uncontrolled. In atherosclerosis TLR4 receptors on vascular cells respond to endogenous ligands such as oxidized low-density lipoproteins contributing to plaque formation. The TLR4 interaction with proteins like CD14 and MD-2 is significant as it influences the inflammatory pathways that exacerbate these conditions.

Product promise

Tested

We have tested this species and application combination and it works. It is covered by our product promise.

Expected

We have not tested this specific species and application combination in-house, but expect it will work. It is covered by our product promise.

Predicted

This species and application combination has not been tested, but we predict it will work based on strong homology. However, this combination is not covered by our product promise.

Not recommended

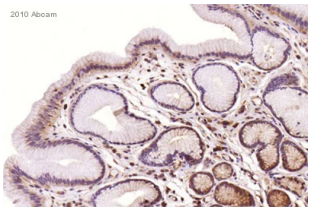
We do not recommend this combination. It is not covered by our product promise.

We are dedicated to supporting your work with high quality reagents and we are here for you every step of the way should you need us.

In the unlikely event of one of our products not working as expected, you are covered by our product promise.

Full details and terms and conditions can be found here:
Terms & Conditions.

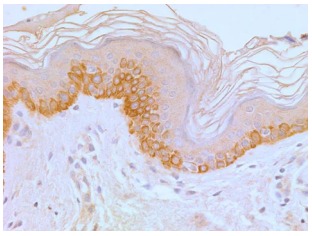
7 product images



This image is courtesy of an anonymous customer review

Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-TLR4 antibody [76B357.1] (ab22048)

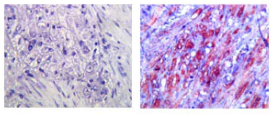
ab22048 staining TLR4 in Human stomach tissue sections by Immunohistochemistry (IHC-P - formaldehyde-fixed, paraffin-embedded sections). Tissue was fixed with formaldehyde and blocked with 5% serum for 1 hour; antigen retrieval was by heat mediation in citrate buffer (10mM, pH 6) (ab64236). Samples were incubated with primary antibody (1/100) for 1 hour at 23°C. An undiluted HRP-conjugated goat anti-mouse IgG polyclonal was used as the secondary antibody.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-TLR4 antibody [76B357.1] (ab22048)

TLR4 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using mouse Anti-TLR4 antibody

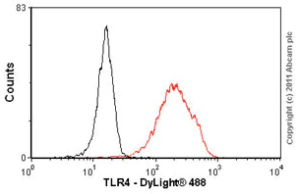
ab22048 (5 ug/ml) staining TLR4 in Human skin tissue sections by Immunohistochemistry (IHC-P - paraformaldehyde-fixed, paraffin-embedded sections). Membrane-cytoplasmic immunopositivity of TLR4 was primarily observed in the pigmented basel cells and the adjacent keratinocytes in the epidermal layer.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-TLR4 antibody [76B357.1] (ab22048)

TLR4 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using mouse Anti-TLR4 antibody

ab22048 at 5 µg/ml staining TLR4 in Human colon tissue sections by Immunohistochemistry (Formalin/ PFA-fixed paraffin-embedded tissue sections). Left hand image shows staining with an isotype control antibody whilst right one shows staining with ab22048.

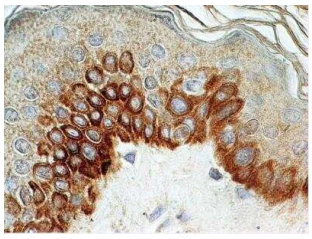


Flow Cytometry (Intracellular) - Anti-TLR4 antibody [76B357.1] (ab22048)

TLR4 Flow Cytometry (Intracellular) staining using mouse Anti-TLR4 antibody

Overlay histogram showing Jurkat cells (ab7899) stained with ab22048 (red line). The cells were fixed with methanol (5 min) and incubated in 1x PBS / 10% normal goat serum (ab7481) / 0.3M glycine to block non-specific protein-protein interactions. The cells were then incubated with the antibody (ab22048, 1µg/1x10^6 cells) for 30 min at 22°C. The secondary antibody used was DyLight® 488 goat anti-mouse IgG (H+L) (ab96879) at 1/500 dilution for 30 min at 22°C. Isotype control antibody (black line) was mouse IgG2b [PLPV219] (ab91366, 2µg/1x10^6 cells) used under the same conditions. Acquisition of >5,000 events was performed. This antibody gave a positive signal in Jurkat cells fixed with 4% paraformaldehyde (10 min) used under the same conditions.

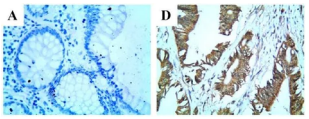
Please note that Abcam do not have data for use of this antibody on non-fixed cells. We welcome any customer feedback.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-TLR4 antibody [76B357.1] (ab22048)

Immunohistochemical analysis of paraffin-embedded Human skin tissue labeling TLR4 with ab22048 at 5 ug/ml. The section was blocked using blocking solution (1% BSA in PBS) for 1 hour at room temperature and incubated with ab22048 overnight at 4°C after removing blocking solution.

Antigen retrieval: Bring slides to a boil in 10 mM sodium citrate buffer (pH 6.0) then maintain at a sub-boiling temperature for 10 minutes. Cool slides on bench-top for 30 minutes (keep slides in the sodium citrate buffer all the time).



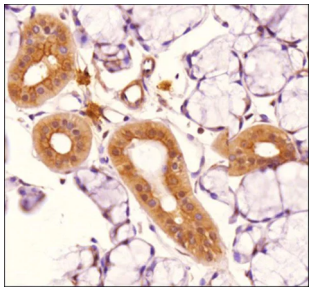
Xu H. et al PLoS One. 2011;6(12):e27399. doi: 10.1371/journal.pone.0027399. Epub 2011 Dec 13
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Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-TLR4 antibody [76B357.1] (ab22048)

Representative examples of immunohistochemical staining of TLR4 in colorectal carcinoma tissues (original magnification 100×).
Paraffin-embedded human normal colorectal tissue (A) and colorectal carcinoma tissue (D) stained for TLR4 with ab22048 in immunohistochemical analysis. Counter stained with hematoxylin.

No staining is observed in normal colorectal tissue (A).

(From Figure 4A and 4D of Xu et al)



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-TLR4 antibody [76B357.1] (ab22048)

TLR4 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using mouse Anti-TLR4 antibody

ab22048 staining TLR4 in Rat's salivary gland tissue sections by Immunohistochemistry (IHC-P - paraformaldehyde-fixed, paraffin-embedded sections). ab22048 at a dilution of 1:100 generated a membrane-cytoplasmic staining in the tissue with stronger signal in ductal epithelial cells.

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