

Phospho-IRAK1(S376) Antibody

Purified Rabbit Polyclonal Antibody (Pab)

Catalog # AP50215

Product Information

Application	WB, IHC-P, IHC-F, IF, ICC, E
Primary Accession	P51617
Reactivity	Mouse, Rat, Drosophila
Host	Rabbit
Clonality	Polyclonal
Calculated MW	76537
Physical State	Liquid
Immunogen	KLH conjugated Synthesised phosphopeptide derived from human IRAK1 around the phosphorylation site of Ser376
Epitope Specificity	QS(p-S)TV
Isotype	IgG
Purity	affinity purified by Protein A
Buffer	0.01M TBS (pH7.4) with 1% BSA, 0.02% Proclin300 and 50% Glycerol.
SUBCELLULAR LOCATION	Cytoplasm. Nucleus. Note=Translocates to the nucleus when sumoylated.
SIMILARITY	Belongs to the protein kinase superfamily. TKL Ser/Thr protein kinase family. Pelle subfamily. Contains 1 death domain. Contains 1 protein kinase domain.
SUBUNIT	Homodimer. Interacts with TOLLIP; this interaction occurs in the cytosol prior to receptor activation. Interacts with MYD88; this interaction recruits IRAK1 to the stimulated receptor complex. Interacts with IL1RL1. Interacts with IRAK1BP1. Associates with TRAF6, PELI1 and IRAK4; this complex recruits MAP3K7/TAK1, TAB1 and TAB2 to mediate NF-kappa-B activation. Interacts (when polyubiquitinated) with IKBKG/NEMO.
Post-translational modifications	Following recruitment on the activated receptor complex, phosphorylated on Thr-209, probably by IRAK4, resulting in a conformational change of the kinase domain, allowing further phosphorylations to take place. Thr-387 phosphorylation in the activation loop is required to achieve full enzymatic activity. Polyubiquitinated after cell stimulation with IL-1-beta by PELI1, PELI2 and PELI3. Polyubiquitination occurs with polyubiquitin chains linked through 'Lys-63'. Ubiquitination promotes interaction with NEMO/IKBKG. Also sumoylated; leading to nuclear translocation.
Important Note	This product as supplied is intended for research use only, not for use in human, therapeutic or diagnostic applications.
Background Descriptions	This gene encodes the interleukin-1 receptor-associated kinase 1, one of two putative serine/threonine kinases that become associated with the interleukin-1 receptor (IL1R) upon stimulation. This gene is partially responsible for IL1-induced upregulation of the transcription factor NF-kappa B. Alternatively spliced transcript variants encoding different isoforms have been found for this gene. [provided by RefSeq, Jul 2008]

Additional Information

Gene ID	3654
Other Names	Interleukin-1 receptor-associated kinase 1, IRAK-1, IRAK1, IRAK
Target/Specificity	Isoform 1 and isoform 2 are ubiquitously expressed in all tissues examined, with isoform 1 being more strongly expressed than isoform 2.
Dilution	WB=1:500-2000,IHC-P=1:100-500,IHC-F=1:100-500,ICC=1:100,IF=1:100-500,Flow-Cyt=1ug/test,ELISA=1:5000-10000
Format	0.01M TBS(pH7.4) with 1% BSA, 0.09% (W/V) sodium azide and 50% Glyce
Storage	Store at -20 °C for one year. Avoid repeated freeze/thaw cycles. When reconstituted in sterile pH 7.4 0.01M PBS or diluent of antibody the antibody is stable for at least two weeks at 2-4 °C.

Protein Information

Name	IRAK1 (HGNC:6112)
Synonyms	IRAK
Function	Serine/threonine-protein kinase that plays a critical role in initiating innate immune response against foreign pathogens. Involved in Toll-like receptor (TLR) and IL-1R signaling pathways. Is rapidly recruited by MYD88 to the receptor-signaling complex upon TLR activation. Association with MYD88 leads to IRAK1 phosphorylation by IRAK4 and subsequent autophosphorylation and kinase activation. Phosphorylates E3 ubiquitin ligases Pellino proteins (PELI1, PELI2 and PELI3) to promote pellino-mediated polyubiquitination of IRAK1. Then, the ubiquitin-binding domain of IKBKG/NEMO binds to polyubiquitinated IRAK1 bringing together the IRAK1-MAP3K7/TAK1-TRAF6 complex and the NEMO-IKKA-IKKB complex. In turn, MAP3K7/TAK1 activates IKKs (CHUK/IKKA and IKBKB/IKKB) leading to NF-kappa-B nuclear translocation and activation. Alternatively, phosphorylates TIRAP to promote its ubiquitination and subsequent degradation. Phosphorylates the interferon regulatory factor 7 (IRF7) to induce its activation and translocation to the nucleus, resulting in transcriptional activation of type I IFN genes, which drive the cell in an antiviral state. When sumoylated, translocates to the nucleus and phosphorylates STAT3.
Cellular Location	Cytoplasm. Nucleus. Lipid droplet Note=Translocates to the nucleus when sumoylated. RSAD2/viperin recruits it to the lipid droplet (By similarity).
Tissue Location	Isoform 1 and isoform 2 are ubiquitously expressed in all tissues examined, with isoform 1 being more strongly expressed than isoform 2.

Background

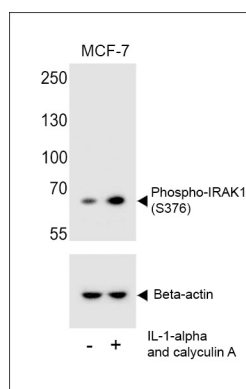
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References

Cao Z.,et al.Science 271:1128-1131(1996).
Reichwald K.,et al.Mamm. Genome 11:182-190(2000).
Jensen L.E.,et al.J. Biol. Chem. 276:29037-29044(2001).
Rao N.,et al.Mol. Cell. Biol. 25:6521-6532(2005).
Ross M.T.,et al.Nature 434:325-337(2005).

Images



Western blot analysis of extracts from MCF-7 cells, untreated or treated with Calyculin A, using Phospho-IRAK1(S376) Antibody.

Citations

- [Baicalein ameliorates TNBS-induced colitis by suppressing TLR4/MyD88 signaling cascade and NLRP3 inflammasome activation in mice.](#)
- [The anti-inflammatory effect and potential mechanism of cardamonin in DSS-induced colitis.](#)

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