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IRAK Antibody

Catalog # ASC10000

Product Information

Application	WB, IF, IP, ICC, E
Primary Accession	P51617
Other Accession	P51617, 8928535
Reactivity	Human, Mouse, Rat
Host	Rabbit
Clonality	Polyclonal
Isotype	IgG
Calculated MW	76537
Concentration (mg/ml)	1 mg/mL
Conjugate	Unconjugated
Application Notes	IRAK antibody can be used for Western blot at 1 μg/mL and for immunoprecipitation with 2 to 4 μg per sample. Antibody can also be used for immunocytochemistry starting at 10 μg/mL. For immunofluorescence start at 20 μg/mL.

Additional Information

Gene ID	3654
Other Names	IRAK Antibody: IRAK, pelle, IRAK, Interleukin-1 receptor-associated kinase 1, IRAK-1, interleukin-1 receptor-associated kinase 1
Target/Specificity	IRAK1; At least three isoforms of IRAK are known to exist; this antibody will detect all three isoforms. IRAK antibody is predicted to not cross-react with other members of the IRAK protein family.
Reconstitution & Storage	IRAK antibody can be stored at 4℃ for three months and -20℃, stable for up to one year. As with all antibodies care should be taken to avoid repeated freeze thaw cycles. Antibodies should not be exposed to prolonged high temperatures.
Precautions	IRAK Antibody is for research use only and not for use in diagnostic or therapeutic procedures.

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

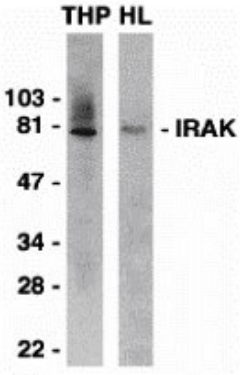
IRAK Antibody: Nuclear factor kappa B (NF-κB) is a ubiquitous transcription factor and an essential mediator of gene expression during activation of immune and inflammatory responses. NF-κB mediates the expression of a great variety of genes in response to extracellular stimuli including IL-1, TNFα and LPS. A serine/threonine protein kinase associated with IL-1 receptor (IRAK) and its homologue mouse pelle-like protein kinase (mPLK) were identified recently. IRAK is associated with the IL-1 receptor subunits IL-1RI and IL-1RAcP after IL-1 binding and serves as a signaling molecule to mediate IL-1 response. IRAK mediates a signaling cascade leading to NF-κB activation by members in IL-1 family including IL-1 and a novel cytokine IL-18 (also termed IGIF).

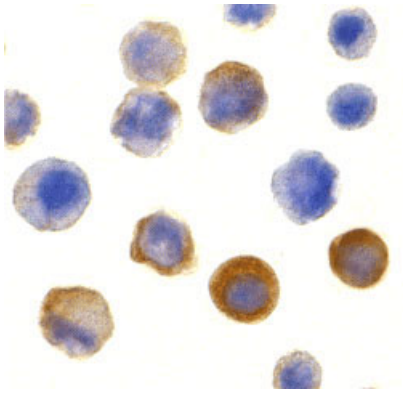
References

Cao Z; Henzel WJ; Gao X. IRAK: a kinase associated with the interleukin-1 receptor. Science 1996;271:1128-31.
Trofimova M; Sprenkle AB; Green M; Sturgill TW; Goebl MG; Harrington MA. Developmental and tissue-specific expression of mouse pelle-like protein kinase. J Bio Chem 1996; 271: 17609-1
Jianing Huang, Xiong Gao, Shyun Li, and Zhaodan Cao. Recruitment of IRAK to the interleukin 1 receptor complex requires interleukin-1 receptor accessory protein. Proc Natl Acad Sci USA 1997;94:12829-12832
Robinson D, Shibuya K, Mui A, Zonin F, Murphy E, Sana T, Hartley SB, Menon S, Kastelein R, Bazan F, O'Garra A. IGIF does not drive Th1 development but synergizes with IL-12 for interferon-γ production and activates IRAK and NF-κB. Immunity 1997;7:571-581

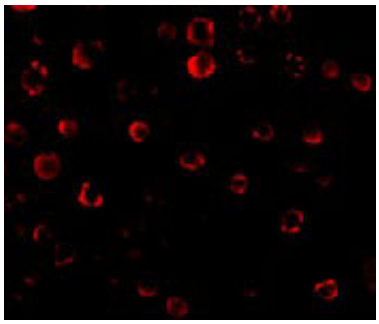
Images

Western blot analysis of IRAK in THP-1 (THP) and HeLa (HL) whole cell lysates with IRAK antibody 1 µg/mL.





Immunocytochemistry of IRAK in HeLa cells with IRAK antibody at 10 µg/mL.



Immunofluorescence of IRAK in HeLa cells with IRAK antibody at 20 µg/mL.

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