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NOD1 Antibody

Catalog # ASC11188

Product Information

Application	WB, E
Primary Accession	Q9Y239
Other Accession	Q9Y239, 20137579
Reactivity	Human, Mouse, Rat
Host	Rabbit
Clonality	Polyclonal
Isotype	IgG
Calculated MW	107691
Concentration (mg/ml)	1 mg/mL
Conjugate	Unconjugated
Application Notes	NOD1 antibody can be used for detection of NOD1 by Western blot at 1 g/mL.

Additional Information

Gene ID	10392
Other Names	Nucleotide-binding oligomerization domain-containing protein 1, Caspase recruitment domain-containing protein 4, NOD1, CARD4
Target/Specificity	NOD1;
Reconstitution & Storage	NOD1 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	NOD1 Antibody is for research use only and not for use in diagnostic or therapeutic procedures.

Protein Information

Name	NOD1 {ECO:0000303|PubMed:10329646, ECO:0000312|HGNC:HGNC:16390}
Function	Pattern recognition receptor (PRR) that detects bacterial peptidoglycan fragments and other danger signals and thus participates in both innate and adaptive immune responses (PubMed:11058605, PubMed:12791997, PubMed:12796777, PubMed:15044951, PubMed:16172124, PubMed:19043560, PubMed:22672233, PubMed:27099311). Specifically recognizes and binds gamma-D-glutamyl-meso-diaminopimelic acid (iE- DAP), a dipeptide present in peptidoglycan of Gram-negative bacteria (PubMed:12791997, PubMed:12796777, PubMed:12871942, PubMed:16172124, PubMed:16211083). Preferentially binds iE-DAP in tripeptide-containing muropeptides (MurNAc-TriDAP or TriDAP)

	(PubMed:16211083). Ligand binding triggers oligomerization that facilitates the binding and subsequent activation of the proximal adapter receptor-interacting RIPK2 (PubMed:12791997, PubMed:12796777, PubMed:17054981). Following recruitment, RIPK2 undergoes 'Met-1'- (linear) and 'Lys-63'-linked polyubiquitination by E3 ubiquitin-protein ligases XIAP, BIRC2, BIRC3 and the LUBAC complex, becoming a scaffolding protein for downstream effectors, triggering activation of the NF-kappa-B and MAP kinases signaling (PubMed:10880512, PubMed:12791997, PubMed:19043560). This in turn leads to the transcriptional activation of hundreds of genes involved in immune response (PubMed:10880512, PubMed:19043560). Also acts as a regulator of antiviral response elicited by dsRNA and the expression of RLR pathway members by targeting IFIH1 and TRAF3 to modulate the formation of IFIH1-MAVS and TRAF3-MAVS complexes leading to increased transcription of type I IFNs (PubMed:32169843). Also acts as a regulator of autophagy via its interaction with ATG16L1, possibly by recruiting ATG16L1 at the site of bacterial entry (By similarity). Besides recognizing pathogens, also involved in the endoplasmic reticulum stress response: acts by sensing and binding to the cytosolic metabolite sphingosine-1-phosphate generated in response to endoplasmic reticulum stress, initiating an inflammation process that leads to activation of the NF-kappa-B and MAP kinases signaling (PubMed:27007849, PubMed:33942347). In addition, plays a role in insulin trafficking in beta cells in a cell-autonomous manner (By similarity). Mechanistically, upon recognizing cognate ligands, NOD1 and RIPK2 localize to insulin vesicles where they recruit RAB1A to direct insulin trafficking through the cytoplasm (By similarity).
Cellular Location	Cell membrane; Lipid-anchor. Apical cell membrane. Basolateral cell membrane. Cytoplasm. Note=Detected in the cytoplasm and at the cell membrane (PubMed:31649195). Following bacterial infection, localizes to bacterial entry sites in the cell membrane (PubMed:31649195). Recruited to the basolateral and apical membranes in polarized epithelial cells (PubMed:19043560)
Tissue Location	Highly expressed in adult heart, skeletal muscle, pancreas, spleen and ovary (PubMed:10224040). Also detected in placenta, lung, liver, kidney, thymus, testis, small intestine and colon (PubMed:10224040).

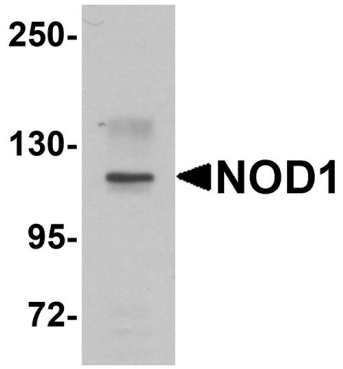
Background

NOD1 Antibody: NOD1 is a member of the NOD (nucleotide-binding oligomerization domain) family, a group of proteins that are involved in innate immune defense. NOD1 contains an N-terminal caspase recruitment domain (CARD), a centrally located nucleotide-binding domain (NBD), and ten tandem leucine-rich repeats (LRRs) in its C-terminus. The CARD is involved in apoptotic signaling, and NOD1 activates caspase-9 and NF-κB. LRRs participate in protein-protein interactions, and mutations in the NBD may affect the process of oligomerization and subsequent function of the LRR domain. This protein is an intracellular pattern-recognition receptor (PRR) that initiates inflammation in response to a subset of bacteria through the detection of bacterial diaminopimelic acid.

References

Kufer TA, Banks DJ, and Philpott DJ. Innate immune sensing of microbes by Nod proteins. Ann. NY Acad. Sci.2006; 1072:19-27.
Inohara N, Koseki T, del Peso L, et al. Nod1, an Apaf-1-like activator of caspase-9 and nuclear factor-kappaB. J. Biol. Chem.1999; 274:14560-7.
Chamaillard M, Hashimoto M, Horie Y, et al. An essential role for NOD1 in host recognition of bacterial peptidoglycan containing diaminopimelic acid. Nat. Immunol.2003; 4:702-7.

Images



Western blot analysis of NOD1 in EL4 cell lysate with NOD1 antibody at 1 µg/mL.

Please note: All products are 'FOR RESEARCH USE ONLY. NOT FOR USE IN DIAGNOSTIC OR THERAPEUTIC PROCEDURES'.