

NOD2 / CARD15 Antibody (C-Terminus)
Rabbit Polyclonal Antibody
Catalog # ALS12421**Specification****NOD2 / CARD15 Antibody (C-Terminus) - Product Information**

Application	IF, IHC, ICC, WB
Primary Accession	O9HC29
Reactivity	Human
Host	Rabbit
Clonality	Polyclonal
Calculated MW	115kDa KDa

NOD2 / CARD15 Antibody (C-Terminus) - Additional Information**Gene ID** 64127**Other Names**

Nucleotide-binding oligomerization domain-containing protein 2, Caspase recruitment domain-containing protein 15, Inflammatory bowel disease protein 1, NOD2, CARD15, IBD1

Target/Specificity

synthetic peptide corresponding to 14 amino acids at the carboxy terminus of human NOD2

Reconstitution & Storage

Short term 4°C, long term aliquot and store at -20°C, avoid freeze thaw cycles. Store undiluted.

Precautions

NOD2 / CARD15 Antibody (C-Terminus) is for research use only and not for use in diagnostic or therapeutic procedures.

NOD2 / CARD15 Antibody (C-Terminus) - Protein Information**Name** NOD2 {ECO:0000303|PubMed:11087742, ECO:0000312|HGNC:HGNC:5331}**Function**

Pattern recognition receptor (PRR) that detects bacterial peptidoglycan fragments and other danger signals and plays an important role in gastrointestinal immunity (PubMed:12514169, PubMed:12527755, PubMed:12626759, PubMed:15044951, PubMed:15998797, PubMed:27283905, PubMed:27748583, PubMed:31649195). Specifically activated by muramyl dipeptide (MDP), a fragment of bacterial peptidoglycan found in every bacterial peptidoglycan type (PubMed:<a href="http://www.uniprot.org/citations/12514169"

target="_blank">12514169, PubMed:12871942, PubMed:12527755, PubMed:12626759, PubMed:15044951, PubMed:15998797, PubMed:22857257, PubMed:23322906, PubMed:27748583, PubMed:36002575, PubMed:15198989). NOD2 specifically recognizes and binds 6-O-phospho- MDP, the phosphorylated form of MDP, which is generated by NAGK (PubMed:36002575).

6-O-phospho-MDP-binding triggers oligomerization that facilitates the binding and subsequent activation of the proximal adapter receptor-interacting RIPK2 (PubMed:11087742, PubMed:17355968, PubMed:21887730, PubMed:23806334, PubMed:28436939). 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:11087742, PubMed:12514169, PubMed:12626759, PubMed:21887730, PubMed:23806334, PubMed:23322906, PubMed:28436939, PubMed:15198989). This in turn leads to the transcriptional activation of hundreds of genes involved in immune response (PubMed:15198989). Its ability to detect bacterial MDP plays a central role in maintaining the equilibrium between intestinal microbiota and host immune responses to control inflammation (By similarity). An imbalance in this relationship results in dysbiosis, whereby pathogenic bacteria prevail on commensals, causing damage in the intestinal epithelial barrier as well as allowing bacterial invasion and inflammation (By similarity). Acts as a regulator of appetite by sensing MDP in a subset of brain neurons: microbiota-derived MDP reach the brain, where they bind and activate NOD2 in inhibitory hypothalamic neurons, decreasing neuronal activity, thereby regulating satiety and body temperature (By similarity). NOD2- dependent MDP-sensing of bacterial cell walls in the intestinal epithelial compartment contributes to sustained postnatal growth upon undernutrition (By similarity). Also plays a role in antiviral response by acting as a sensor of single-stranded RNA (ssRNA) from viruses: upon ssRNA-binding, interacts with MAVS, leading to activation of interferon regulatory factor-3/IRF3 and expression of type I interferon (PubMed:19701189). Also acts as a regulator of autophagy in dendritic cells via its interaction with ATG16L1, possibly by recruiting ATG16L1 at the site of bacterial entry (PubMed:20637199). NOD2 activation in the small intestine crypt also contributes to intestinal stem cells survival and function: acts by promoting mitophagy via its association with ATG16L1 (By similarity). In addition to its main role in innate immunity, also regulates the adaptive immune system by acting as regulator of helper T-cell and regulatory T-cells (Tregs) (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). May also be involved in NLRP1 activation following activation by MDP, leading to CASP1 activation and IL1B release in macrophages (PubMed:18511561).

Cellular Location

Cell membrane; Lipid-anchor. Basolateral cell membrane. Cytoplasm Mitochondrion.
Note=Palmitoylation promotes localization to the cell membrane, where it detects bacterial invasion at the point of entry.

Tissue Location

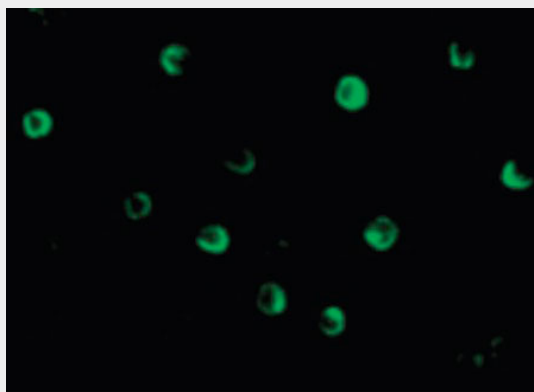
Expressed in monocytes, macrophages, dendritic cells, hepatocytes, preadipocytes, epithelial cells of oral cavity, lung and intestine, with higher expression in ileal Paneth cells and in intestinal stem cells.

NOD2 / CARD15 Antibody (C-Terminus) - Protocols

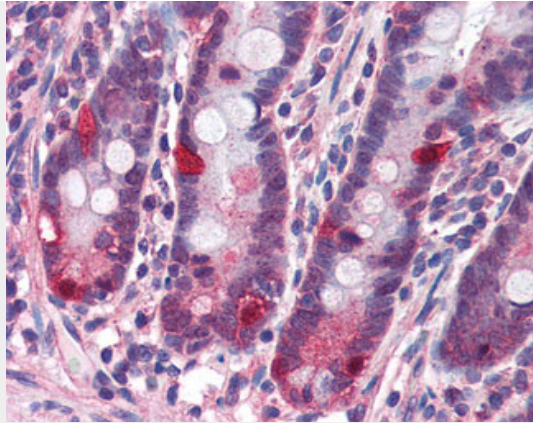
Provided below are standard protocols that you may find useful for product applications.

- [Western Blot](#)
- [Blocking Peptides](#)
- [Dot Blot](#)
- [Immunohistochemistry](#)
- [Immunofluorescence](#)
- [Immunoprecipitation](#)
- [Flow Cytometry](#)
- [Cell Culture](#)

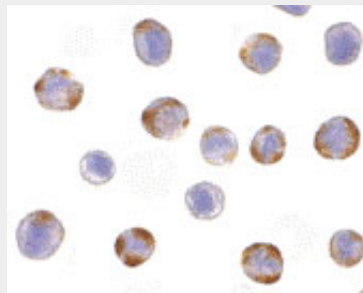
NOD2 / CARD15 Antibody (C-Terminus) - Images



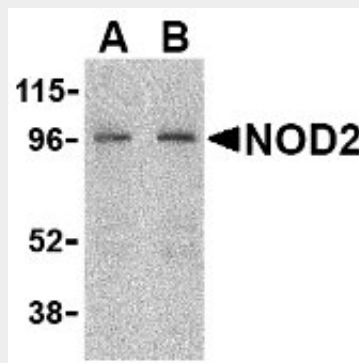
Immunofluorescence of NOD2 in HeLa cells with NOD2 antibody at 20 ug/ml.



Anti-NOD2 antibody IHC of human small intestine.



Immunocytochemistry of NOD2 in HeLa cells with NOD2 antibody at 10 µg/ml.



Western blot of NOD2 in HeLa cell lysate with NOD2 antibody at (A) 2 and (B) 4 µg/ml.

NOD2 / CARD15 Antibody (C-Terminus) - Background

Recognizes muramyl dipeptide (MDP) constituents of bacterial peptidoglycans and plays a key role in gastrointestinal immunity: upon stimulation, binds the proximal adapter receptor- interacting RIPK2, which recruits ubiquitin ligases as XIAP, BIRC2, BIRC3 and the LUBAC complex, triggering activation of MAP kinases and activation of NF-kappa-B signaling, leading to activate the transcription of hundreds of genes involved in immune response.

NOD2 / CARD15 Antibody (C-Terminus) - References

- Ogura Y.,et al.J. Biol. Chem. 276:4812-4818(2001).
- Hugot J.-P.,et al.Nature 411:599-603(2001).
- Kramer M.,et al.BMC Res. Notes 3:224-224(2010).
- Tao M.,et al.Curr. Biol. 19:1255-1263(2009).
- Zhao Y.,et al.Inflamm. Bowel Dis. 18:603-612(2012).