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NOD2 Antibody

Catalog # ASC10158

Specification

NOD2 Antibody - Product Information

Application	**WB, ICC, IF**
Primary Accession	Q9HC29
Other Accession	Q9HC29, 20137973
Reactivity	**Human**
Host	**Rabbit**
Clonality	**Polyclonal**
Isotype	**IgG**
Calculated MW	**114 kDa KDa**
Application Notes	**NOD2 antibody can be used for detection of Noxa by Western blot at 2 to 4 µg/mL. Antibody can also be used for immunocytochemistry starting at 10 µg/mL. For immunofluorescence start at 20 µg/mL.**

NOD2 Antibody - Additional Information

Gene ID	**64127**

Other Names
NOD2 Antibody: CD, ACUG, BLAU, IBD1, NLRC2, NOD2B, CARD15, CLR16.3, PSORAS1, Nucleotide-binding oligomerization domain-containing protein 2, Caspase recruitment domain-containing protein 15, nucleotide-binding oligomerization domain containing 2

Target/Specificity
NOD2; NOD2 has no cross-reaction with NOD1.

Reconstitution & Storage
NOD2 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
NOD2 Antibody is for research use only and not for use in diagnostic or therapeutic procedures.

NOD2 Antibody - 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:<a

href="http://www.uniprot.org/citations/12626759" target="_blank">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: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:<a

href="http://www.uniprot.org/citations/20637199" target="_blank">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.

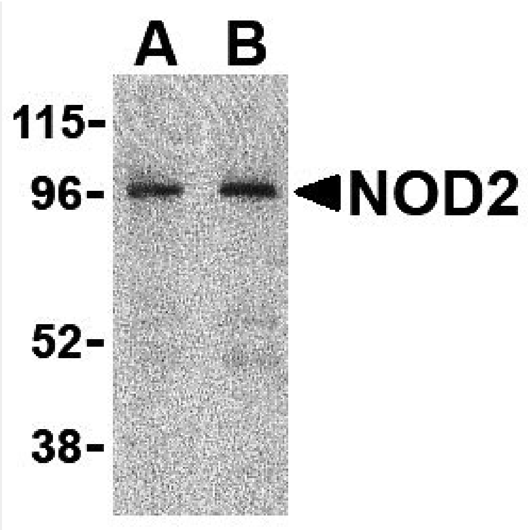
Tissue Location
Expressed in monocytes, macrophages, dendritic cells, hepatocytes, preadipocytes, epithelial cells of oral cavity, lung and intestine, with higher expression in ileal Paneth cells and in intestinal stem cells.

NOD2 Antibody - Protocols

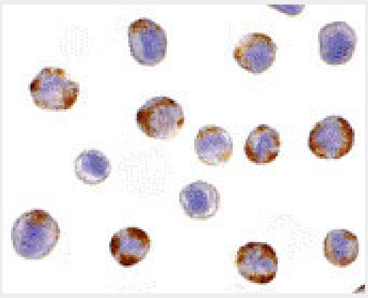
Provided below are standard protocols that you may find useful for product applications.

- Western Blot
- Blocking Peptides
- Dot Blot
- Immunohistochemistry
- Immunofluorescence
- Immunoprecipitation
- Flow Cytomety
- Cell Culture

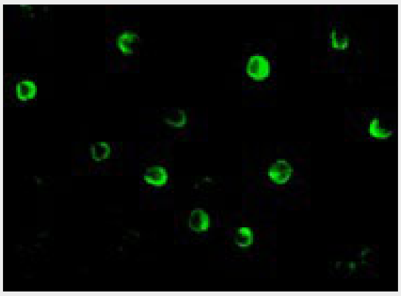
NOD2 Antibody - Images



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



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



Immunofluorescence of NOD2 in HeLa cells with NOD2 antibody at 20 µg/mL.

NOD2 Antibody - Background

NOD2 Antibody: Apaf-1 and NOD1 are members of a new family, which are involved in the regulation of apoptosis and immune response. Each of them contains a caspase recruitment domain (CARD) and a nucleotide-binding oligomerization domain (NOD). A third member in this family was recently identified and designated NOD2. NOD2 interacts with RICK via a homophilic CARD-CARD interaction. NOD2 activates NF-κB, which is regulated by its carboxy-terminal leucine-rich repeat domain that acts as an intracellular receptor for components of bacteria. The variants of NOD2, either a frameshift or a missense, were associated with Crohn's disease that is a main type of chronic inflammatory bowel disease.

NOD2 Antibody - References

Inohara N, Koseki T, del Peso L, et al. Nod1, an Apaf-1-like activator of caspase-9 and nuclear factor-κB. J. Biol. Chem. 1999; 274:14560-7.

Ogura Y, Inohara N, Benito A, et al. Nod2, a Nod1/Apaf-1 family member that is restricted to monocytes and activates NF-κB. J. Biol. Chem. 2001; 276:4812-8.
Hugot JP, Chamaillard M, et al. Association of NOD2 leucine-rich repeat variants with susceptibility to Crohn's disease. Nature 2001; 411:599-603.
Ogura Y, Bonen DK, Inohara N, et al. A frameshift mutation in NOD2 associated with susceptibility to Crohn's disease. Nature 2001; 411:603-6.