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NOD2 Antibody (Center) Blocking peptide

Synthetic peptide
Catalog # BP11885c

Specification

NOD2 Antibody (Center) Blocking peptide - Product Information

Primary Accession Q9HC29

NOD2 Antibody (Center) Blocking peptide - 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

Format
Peptides are lyophilized in a solid powder format. Peptides can be reconstituted in solution using the appropriate buffer as needed.

Storage
Maintain refrigerated at 2-8°C for up to 6 months. For long term storage store at -20°C.

Precautions
This product is for research use only. Not for use in diagnostic or therapeutic procedures.

NOD2 Antibody (Center) Blocking peptide - 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:12514169, PubMed:12871942, PubMed:12527755, PubMed:12626759, PubMed:15044951, PubMed:<a href="http://www.uniprot.org/citations/15998797"

target="_blank">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 Antibody (Center) Blocking peptide - Protocols

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

- Blocking Peptides

NOD2 Antibody (Center) Blocking peptide - Images

NOD2 Antibody (Center) Blocking peptide - Background

This gene is a member of the Nod1/Apaf-1 family andencodes a protein with two caspase recruitment (CARD) domains andsix leucine-rich repeats (LRRs). The protein is primarily expressedin the peripheral blood leukocytes. It plays a role in the immuneresponse to intracellular bacterial lipopolysaccharides (LPS) byrecognizing the muramyl dipeptide (MDP) derived from them andactivating the NFKB protein. Mutations in this gene have beenassociated with Crohn disease and Blau syndrome. [provided byRefSeq].

NOD2 Antibody (Center) Blocking peptide - References

Sehgal, R., et al. Dis. Colon Rectum 53(11):1487-1494(2010)Cadwell, K. Gastroenterology 139(5):1448-1450(2010)Lacher, M., et al. J. Pediatr. Surg. 45(8):1591-1597(2010)Kramer, M., et al. BMC Res Notes 3, 224 (2010) :Kanazawa, N., et al. Blood 105(3):1195-1197(2005)