

## Datasheet for ABIN3094134 NOD2 Protein (AA 1-1040) (Strep Tag)

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### 1 Image

#### Overview

Quantity:	1 mg
Target:	NOD2
Protein Characteristics:	AA 1-1040
Origin:	Human
Source:	Tobacco (Nicotiana tabacum)
Protein Type:	Recombinant
Purification tag / Conjugate:	This NOD2 protein is labelled with Strep Tag.
Application:	ELISA, SDS-PAGE (SDS), Western Blotting (WB)

#### Product Details

Sequence:	<p>MGEEGGSASH DEERASVLL GHSPGCEMCS QEAFQAQRSQ LVELLVSGSL EGFESVLDWL LSWEVLSWED YEGFHLLGQP LSHLARRLLD TVWNKGTWAC QKLIAAAQEA QADSQSPKLH GCWDPHSLHP ARDLQSHRPA IVRRLLHSHVE NMLDLAWERG FVSQYECDEI RLPFTPSQR ARRLLDLATV KANGLAAFL QHVQELPVPL ALPLEAATCK KYMAKLRTTV SAQSRFLSTY DGAETLCLED IYTENVLEVW ADVGMAGPPQ KSPATLGLEE LFSTPGHLND DADTVLVVGE AGSGKSTLLQ RLHLLWAAGQ DFQEFLFVFP FSCRQLQCMA KPLSVRTLFF EHCCWPDVGQ EDIFQLLLDH PDRVLLTFDG FDEFKFRFTD RERHCSPTDP TSVQTLLFNL LQGNLLKNAR KVVTSRPAAV SAFLRKYIRT EFNLKGFFSEQ GIELYLRKRH HEPGVADRLL RLLQETSALH GLCHLPVFSW MVSKCHQELL LQEGGSPKTT TDMYLLILQH FLLHATPPDS ASQGLGPSLL RGRLPTLLHL GRLALWGLGM CCYVFSAQQL QAAQVSPDDI SLGFLVRAKG VPGSTAPLE FLHITFCFF AAFYLALSAD VPPALLRHLF NCGRPGNSPM ARLLPTMCIQ ASEGKDSSVA ALLQKAEPHN LQITAAFLAG LLSREHWGLL AECQTSEKAL LRRQACARWC LARSLRKHFH</p>
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SIPPAAPGEA KSVHAMPGFI WLIRSLYEMQ EERLARKAAR GLNVGHLKLT FCSVGPTECA  
ALAFVLQHLR RPVALQLDYN SVGDIGVEQL LPCLGVCKAL YLRDNNISDR GICKLIECAL  
HCEQLQKLAL FNNKLTGCA HSMAKLLACR QNFLALRLGN NYITAAGAAQV LAEGLRGNTS  
LQFLGFWGNR VGDEGAQALA EALGDHQSLR WLSLVGNNIG SVGAQALALM LAKNVMLEEL  
CLEENHLQDE GVCSLAEGLK KNSSLKILKL SNNCITYLGA EALLQALERN DTILEVWLRG  
NTFSLEEVDK LGCRDTRLLL

**Sequence without tag. The proposed Strep-Tag is based on experience s with the expression system, a different complexity of the protein could make another tag necessary. In case you have a special request, please contact us.**

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### Characteristics:

#### Key Benefits:

- Made in Germany - from design to production - by highly experienced protein experts.
- Protein expressed with ALiCE® and purified by multi-step, protein-specific process to ensure correct folding and modification.
- These proteins are normally active (enzymatically functional) as our customers have reported (not tested by us and not guaranteed).
- State-of-the-art algorithm used for plasmid design (Gene synthesis).

This protein is a **made-to-order protein** and will be made for the first time for your order. Our experts in the lab will ensure that you receive a correctly folded protein.

The big advantage of ordering our **made-to-order proteins** in comparison to ordering custom made proteins from other companies is that there is no financial obligation in case the protein cannot be expressed or purified.

#### Expression System:

- ALiCE®, our Almost Living Cell-Free Expression System is based on a lysate obtained from *Nicotiana tabacum* c.v.. This contains all the protein expression machinery needed to produce even the most difficult-to-express proteins, including those that require post-translational modifications.
- During lysate production, the cell wall and other cellular components that are not required for protein production are removed, leaving only the protein production machinery and the mitochondria to drive the reaction. During our lysate completion steps, the additional components needed for protein production (amino acids, cofactors, etc.) are added to produce something that functions like a cell, but without the constraints of a living system - all that's needed is the DNA that codes for the desired protein!

#### Concentration:

- The concentration of our recombinant proteins is measured using the absorbance at 280nm.

## Product Details

- The protein's absorbance will be measured in several dilutions and is measured against its specific reference buffer.
- We use the Expasy's ProtParam tool to determine the absorption coefficient of each protein.

Purification:	Two step purification of proteins expressed in Almost Living Cell-Free Expression System (ALiCE®):  1. In a first purification step, the protein is purified from the cleared cell lysate using StrepTag capture material. Eluate fractions are analyzed by SDS-PAGE. 2. Protein containing fractions of the best purification are subjected to second purification step through size exclusion chromatography. Eluate fractions are analyzed by SDS-PAGE and Western blot.
Purity:	>80 % as determined by SDS PAGE, Size Exclusion Chromatography and Western Blot.
Endotoxin Level:	Low Endotoxin less than 1 EU/mg (< 0.1 ng/mg)
Grade:	Crystallography grade

## Target Details

Target:	NOD2
Alternative Name:	NOD2 ( <a href="#">NOD2 Products</a> )
Background:	Nucleotide-binding oligomerization domain-containing protein 2 (Caspase recruitment domain-containing protein 15) (Inflammatory bowel disease protein 1),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: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).

{ECO:0000250|UniProtKB:Q8K3Z0, ECO:0000269|PubMed:11087742, ECO:0000269|PubMed:12514169, ECO:0000269|PubMed:12527755, ECO:0000269|PubMed:12626759, ECO:0000269|PubMed:12871942, ECO:0000269|PubMed:15044951, ECO:0000269|PubMed:15198989, ECO:0000269|PubMed:15998797, ECO:0000269|PubMed:17355968, ECO:0000269|PubMed:18511561, ECO:0000269|PubMed:19701189, ECO:0000269|PubMed:20637199, ECO:0000269|PubMed:21887730,

## Target Details

ECO:0000269|PubMed:22857257, ECO:0000269|PubMed:23322906,  
ECO:0000269|PubMed:23806334, ECO:0000269|PubMed:27007849,  
ECO:0000269|PubMed:27283905, ECO:0000269|PubMed:27748583,  
ECO:0000269|PubMed:28436939, ECO:0000269|PubMed:31649195,  
ECO:0000269|PubMed:33942347, ECO:0000269|PubMed:36002575}., FUNCTION: [Isoform 2]:  
Acts as a pattern recognition receptor (PRR), able to activate NF-kappa-B.  
{ECO:0000269|PubMed:11087742}., FUNCTION: [Isoform 3]: Can activate NF-kappa-B in a  
muramyl dipeptide (MDP)-independent manner. {ECO:0000269|PubMed:20698950}.

Molecular Weight: 115.3 kDa

UniProt: [Q9HC29](#)

Pathways: [Activation of Innate immune Response](#), [Cellular Response to Molecule of Bacterial Origin](#),  
[Regulation of Leukocyte Mediated Immunity](#), [Positive Regulation of Immune Effector Process](#),  
[Production of Molecular Mediator of Immune Response](#), [Toll-Like Receptors Cascades](#),  
[Inflammasome](#)

## Application Details

Application Notes: In addition to the applications listed above we expect the protein to work for functional studies as well. As the protein has not been tested for functional studies yet we cannot offer a guarantee though.

Comment: ALiCE®, our Almost Living Cell-Free Expression System is based on a lysate obtained from *Nicotiana tabacum* c.v.. This contains all the protein expression machinery needed to produce even the most difficult-to-express proteins, including those that require post-translational modifications.

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Restrictions: For Research Use only

## Handling

Format: Liquid

## Handling

Buffer:	The buffer composition is at the discretion of the manufacturer. If you have a special request, please contact us.
Handling Advice:	Avoid repeated freeze-thaw cycles.
Storage:	-80 °C
Storage Comment:	Store at -80°C.
Expiry Date:	Unlimited (if stored properly)

## Images



**Image 1.** „Crystallography Grade“ protein due to multi-step, protein-specific purification process