abcam

ab4207

Anti-NLRP3 antibody

Anti-NLRP3 antibody (ab4207) is a goat polyclonal antibody detecting NLRP3 in **Western Blot, Flow Cytometry (Intra)**. Suitable for **Human**.

- Over 130 publications
- Trusted since 2003

Key facts

Isotype	IgG
Host species	Goat
Storage buffer	pH: 7.3 Preservative: 0.02% Sodium azide Constituents: Tris buffered saline, 0.5% BSA
Form	Liquid
Clonality	Polyclonal
Immunogen	Synthetic Peptide within Human NLRP3 aa 1000 to C-terminus. The exact immunogen used to generate this antibody is proprietary information. Database link Q96P20
Purification technique	Affinity purification Immunogen
Concentration	0.5 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →
Purification notes	Purified from goat serum by ammonium sulphate precipitation followed by antigen affinity chromatography using the immunizing peptide.

Reactivity data

WB

Tested

Species	Human
Dilution info	1/1000
Notes	-

Predicted

Species	Rat, Cow
Dilution info	-
Notes	-

ICC/IF

Not recommended

Species	Human, Rat, Cow
Dilution info	-
Notes	-

Flow Cyt (Intra)

Tested

Species	Human
Dilution info	10 µg/mL
Notes	ab37373 - Goat polyclonal IgG, is suitable for use as an isotype control with this antibody.

Predicted

Species	Rat, Cow
Dilution info	-
Notes	-

Target data

See full target information NLRP3

Function	Sensor component of the NLRP3 inflammasome, which mediates inflammasome activation in response to defects in membrane integrity, leading to secretion of inflammatory cytokines IL1B and IL18 and pyroptosis (PubMed:16407889, PubMed:18403674, PubMed:18604214, PubMed:23582325, PubMed:25686105, PubMed:27929086, PubMed:28656979, PubMed:28847925, PubMed:30487600, PubMed:30612879, PubMed:31086327, PubMed:31086329, PubMed:31189953, PubMed:33231615, PubMed:34133077, PubMed:34341353, PubMed:34512673, PubMed:36442502, PubMed:40450990). In response to pathogens and other damage-associated signals that affect the integrity of membranes, initiates the formation of the inflammasome polymeric complex composed of NLRP3, CASP1 and PYCARD/ASC (PubMed:16407889, PubMed:18403674, PubMed:27432880, PubMed:28847925, PubMed:31189953, PubMed:33231615, PubMed:34133077, PubMed:34341353, PubMed:36142182, PubMed:36442502). Recruitment of pro-caspase-1 (proCASP1) to the NLRP3 inflammasome promotes caspase-1 (CASP1) activation, which subsequently cleaves and activates inflammatory cytokines IL1B and IL18 and gasdermin-D (GSDMD), promoting cytokine secretion and pyroptosis (PubMed:23582325, PubMed:28847925, PubMed:31189953, PubMed:33231615, PubMed:34133077, PubMed:34341353). Activation of NLRP3 inflammasome is also required for HMGB1 secretion; stimulating inflammatory responses (PubMed:22801494). Involved in the homeostatic wound healing response to tissue injury, a multistep cascade that guides neutrophil migration to necrotic sites while avoiding collateral damage of healthy tissues. ATP released from necrotic cells triggers activation of NLRP3 inflammasome through P2RX7 signaling leading to neutrophil adhesion to the vascular endothelium close to the injury site (By similarity). Under resting conditions, ADP-bound NLRP3 is autoinhibited (PubMed:35114687). NLRP3 activation stimuli include extracellular ATP, nigericin, reactive oxygen species, crystals of monosodium urate or cholesterol, amyloid-beta fibers, environmental or industrial particles and nanoparticles, such as asbestos, silica, aluminum salts, cytosolic dsRNA, etc (PubMed:16407889, PubMed:18403674, PubMed:18604214, PubMed:19414800, PubMed:23871209). Almost all stimuli trigger intracellular K(+) efflux (By similarity). These stimuli lead to membrane perturbation and activation of NLRP3 (By similarity). Upon activation, NLRP3 is transported to microtubule organizing center (MTOC), where it is unlocked by NEK7, leading to its relocalization to dispersed trans-Golgi network (dTGN) vesicle membranes and formation of an active inflammasome complex (PubMed:36442502, PubMed:39173637). Associates with dTGN vesicle membranes by binding to phosphatidylinositol 4-phosphate (PtdIns4P) (PubMed:30487600, PubMed:34554188). Shows ATPase activity (PubMed:17483456). Independently of inflammasome activation, regulates the differentiation of T helper 2 (Th2) cells and has a role in Th2 cell-dependent asthma and tumor growth (By similarity). During Th2 differentiation, required for optimal IRF4 binding to IL4 promoter and for IRF4-dependent IL4 transcription (By similarity). Binds to the consensus DNA sequence 5'-GRRGGNRGAG-3' (By similarity). May also participate in the transcription of IL5, IL13, GATA3, CCR3, CCR4 and MAF (By similarity).

Storage

Shipped at conditions	Blue Ice
Appropriate short-term storage conditions	+4°C

Appropriate long-term storage conditions	-20°C
Aliquoting information	Upon delivery aliquot
Storage information	Avoid freeze / thaw cycle

Notes

What is this antibody validated in?
Anti-NLRP3 antibody (ab4207) is a goat polyclonal antibody and is validated for use in Western Blot (WB), Flow Cytometry (Intra) in Human samples.

What is the molecular weight of NLRP3?
Anti-NLRP3 (ab4207) specifically detects a band for NLRP3 (UniProt: Q96P20) at a molecular weight of 118kDa.

Trusted by the scientific community
Anti-NLRP3 (ab4207) was first used in a scientific publication in 2003 and has been cited over 130 times in peer-reviewed journals.

Reviewed by scientists
Anti-NLRP3 (ab4207) has over 5 independent reviews from customers.

Supplementary info

This supplementary information is collated from multiple sources and compiled automatically.

Activity summary	NLRP3 also known as NALP3 or cryopyrin is a protein important for the inflammatory response. It is a component of the inflammasome which senses pathogenic microorganisms and stress. NLRP3 weighs around 118 kDa and is widely expressed in innate immune cells particularly macrophages and dendritic cells. Researchers often use techniques such as 'NLRP3 WB' (Western blot) and 'NLRP3 immunofluorescence' to study NLRP3 expression and localization.
Biological function summary	NLRP3 is central to the body’s defense mechanism by participating in forming the inflammasome complex which activates caspase-1. This activation leads to the cleavage of pro-inflammatory cytokines like IL-1B and IL-18 into their active forms. NLRP3's function is essential for mounting an effective immune response to infections and damage signals. It senses a range of stimuli including crystalline substances and cellular stress triggering an immune response. Its expression is tightly regulated to prevent excessive inflammation.
Pathways	The NLRP3 inflammasome is key in the innate immune response and inflammation pathways. It links cellular stress signals to inflammation through the activation of caspase-1 which is important for the IL-1 signaling pathway. NLRP3 interacts with other proteins like ASC (apoptosis-associated speck-like protein containing a CARD) to form the inflammasome complex which is a core part of the inflammatory signaling pathways and links innate and adaptive immunity.

Associated diseases and disorders	NLRP3 has a significant role in inflammatory diseases and is linked to conditions like cryopyrin-associated periodic syndromes (CAPS) and gout. Mutations or dysregulation of NLRP3 lead to hyperactivation resulting in autoimmune and autoinflammatory conditions. NLRP3's interaction with IL-1 contributes to the excessive inflammatory response seen in these disorders. Understanding NLRP3's function in these pathways can inform therapeutic approaches targeting chronic inflammatory diseases.

Product promise

Tested

We have tested this species and application combination and it works. It is covered by our product promise.

Expected

We have not tested this specific species and application combination in-house, but expect it will work. It is covered by our product promise.

Predicted

This species and application combination has not been tested, but we predict it will work based on strong homology. However, this combination is not covered by our product promise.

Not recommended

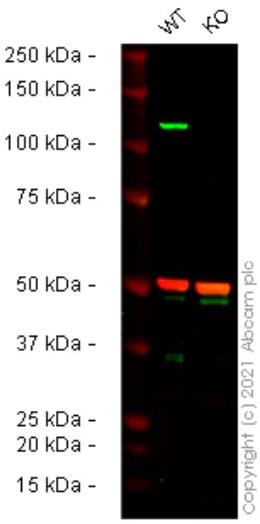
We do not recommend this combination. It is not covered by our product promise.

We are dedicated to supporting your work with high quality reagents and we are here for you every step of the way should you need us.

In the unlikely event of one of our products not working as expected, you are covered by our product promise.

Full details and terms and conditions can be found here:
Terms & Conditions.

3 product images



Western blot - Anti-NLRP3 antibody (ab4207)

NLRP3 Western blot staining using goat Anti-NLRP3 antibody

False colour image of Western blot: Anti-NLRP3 antibody staining at 1/1000 dilution, shown in green; Mouse anti-Alpha Tubulin [DM1A] (ab7291) loading control staining at 1/20000 dilution, shown in red. In Western blot, ab4207 was shown to bind specifically to NLRP3. A band was observed at 118 kDa in wild-type THP-1 cell lysates with no signal observed at this size in NLRP3 knockout cell line ab280063 (knockout cell lysate ab280122). To generate this image, wild-type and NLRP3 knockout THP-1 cell lysates were analysed. First, samples were run on an SDS-PAGE gel then transferred onto a nitrocellulose membrane. Membranes were blocked in fluorescent western blot (TBS-based) blocking solution before incubation with primary antibodies overnight at 4 °C. Blots were washed four times in TBS-T, incubated with secondary antibodies for 1 h at room temperature, washed again four times then imaged. Secondary antibodies used were Donkey anti-Goat IgG H&L (IRDye® 800CW) preabsorbed (ab216775) and Donkey anti-Mouse IgG H&L (IRDye® 680RD) preabsorbed (ab216778) at 1/20000 dilution.
All lanes:
Western blot - Anti-NLRP3 antibody (ab4207) at 1/1000 dilution

Lane 1:
Wild-type THP-1 cell lysate at 20 µg

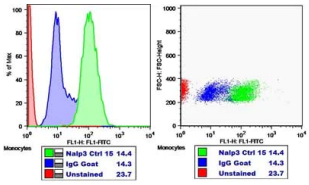
Lane 2:
NLRP3 knockout THP-1 cell lysate at 20 µg

Lane 2:
Western blot - Human NLRP3 knockout THP-1 cell line (ab280063)

Performed under reducing conditions.

Predicted band size: 118 kDa

Observed band size: 118 kDa

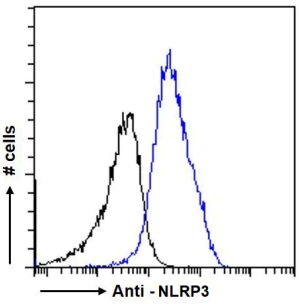


This image is courtesy of a customer review submitted by Mahesh Shivananjappa.

Flow Cytometry (Intracellular) - Anti-NLRP3 antibody (ab4207)

NLRP3 Flow Cytometry (Intracellular) staining using goat Anti-NLRP3 antibody

ab4207 staining NLRP3 in the Human White Blood Cells (Mixed Population) by Flow Cytometry. WBC were isolated spinning Blood on Ficoll Gradient after removal of RBC's and permeabilized with 0.1% Triton-X100 in 2% BSA for 15 minutes. The sample was incubated with the primary antibody (1/100 in PBS + 2% BSA in PBS) for 16 hours at 4°C. An Alexa Flour® 488 Donkey Anti Goat IgG (H+L) (1/250) was used as the secondary antibody.
Gating Strategy: Monocytes



Flow Cytometry (Intracellular) - Anti-NLRP3 antibody (ab4207)

NLRP3 Flow Cytometry (Intracellular) staining using goat Anti-NLRP3 antibody

Flow cytometric analysis of paraformaldehyde fixed U937 cells (blue line), permeabilized with 0.5% Triton. Primary incubation with ab4207 was 1hr (10ug/ml) followed by Alexa Fluor® 488 secondary antibody (1ug/ml). IgG control: Unimmunized goat IgG (black line) followed by Alexa Fluor® 488 secondary antibody.

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