

NLRP6 Protein, Human (Sf9)

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| Cat. No.: | HY-P702005 |
| Synonyms: | NLRP6; NACHT; LRR and PYD domains-containing protein 6; Angiotensin II/vasopressin receptor; PYRIN-containing APAF1-like protein 5 |
| Species: | Human |
| Source: | Sf9 insect cells |
| Accession: | P59044 (M1-F892) |
| Gene ID: | 171389 |
| Molecular Weight: | |

PROPERTIES

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| Appearance | Solution. |
| Formulation | Supplied as a 0.22 µm filtered solution of 50 mM Tris-HCl, pH7.5, 200 mM NaCl, 20% glycerol. |
| Endotoxin Level | <1 EU/µg, determined by LAL method. |
| Reconstitution | Please use rapid thawing with running water to thaw the protein. |
| Storage & Stability | Stored at -80°C for 1 year. It is stable at -20°C for 3 months after opening. It is recommended to freeze aliquots at -80°C for extended storage. Avoid repeated freeze-thaw cycles. |
| Shipping | Shipping with dry ice. |

DESCRIPTION

Background

The NLRP6 protein functions as the key sensor component within the NLRP6 inflammasome, orchestrating inflammasome activation in response to a spectrum of pathogen-associated signals, ultimately culminating in the maturation and secretion of IL1B and IL18. Inflammasomes, intricate supramolecular complexes assembled in the cytosol in response to pathogens and damage-associated signals, play pivotal roles in innate immunity and inflammation. Operating as a recognition receptor (PRR), NLRP6 discerns and binds specific pathogens and damage-associated signals, such as lipoteichoic acid (LTA) from Gram-positive bacteria, or double-stranded RNA (dsRNA). Although it may also recognize lipopolysaccharide (LPS), a major component of Gram-negative bacteria, it is likely not a primary activator of the NLRP6 inflammasome. Upon binding LTA or dsRNA, NLRP6 undergoes liquid-liquid phase separation (LLPS), intensifying multivalent interactions, a crucial step for forming the NLRP6 inflammasome polymeric complex. This complex, comprised of NLRP6, PYCARD/ASC, and effector pro-inflammatory caspases (CASP1 and/or CASP4), facilitates the maturation and secretion of IL1B and IL18. The NLRP6 inflammasome assumes a central role in maintaining epithelial integrity and defending against microbial infections in the intestine. It is essential for restricting Gram-positive bacterial infections, recognizing LTA, and recruiting CASP4 and CASP1 for subsequent cytokine maturation and secretion. Additionally, it participates in intestinal antiviral innate immunity, recognizing viral dsRNA, and collaborates with DHX15 to restrict enteric viral infections. Beyond microbial defense, NLRP6 also regulates gut microbiota composition, influences gut mucosal self-renewal and proliferation, and modulates mucus secretion to prevent bacterial invasion. During systemic bacterial infections, the NLRP6 inflammasome negatively regulates

neutrophil recruitment and neutrophil extracellular trap (NET) formation. Furthermore, it may contribute to peripheral nerve recovery following injury through an inflammasome-independent mechanism. The NLRP6 inflammasome forms a homomultimeric complex in response to pathogens and damage-associated signals, featuring NLRP6 as the signal sensor, PYCARD/ASC as the adapter, and effector pro-inflammatory caspases (CASP1 and CASP4). The interaction of NLRP6 with PYCARD/ASC, facilitated by liquid-liquid phase separation, initiates nucleation and prion-like polymerization, culminating in CASP1 filament formation and subsequent cytokine release, driving the inflammatory response. Additionally, NLRP6 interacts with DHX15, further expanding its functional repertoire in intestinal antiviral immunity.

Caution: Product has not been fully validated for medical applications. For research use only.

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