

## POLG Protein, Hepatitis C virus genotype 1b

|                   |                      |
|-------------------|----------------------|
| Cat. No.:         | HY-P702127           |
| Synonyms:         | Genome polyprotein   |
| Species:          | Virus                |
| Source:           | E. coli              |
| Accession:        | O92972 (S2420-R2989) |
| Gene ID:          | /                    |
| Molecular Weight: |                      |

### PROPERTIES

|                     |  |
|---------------------|--|
| 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 POLG protein plays a multifaceted role in the life cycle of the virus, contributing to various stages of viral replication and modulating host cellular processes. It is instrumental in packaging viral RNA to form the viral nucleocapsid, promoting virion budding, and participating in viral particle production through interaction with non-structural protein 5A. Additionally, POLG exhibits RNA-binding activity, suggesting a potential role as an RNA chaperone that induces structural rearrangements during virus replication. This versatile protein influences viral translation initiation by interacting with viral internal ribosomal entry site (IRES) and 40S ribosomal subunits. Beyond its direct involvement in viral processes, POLG impacts cell signaling pathways, host immunity, and lipid metabolism. It impedes the establishment of a cellular antiviral state by blocking interferon-alpha/beta and interferon-gamma signaling, inhibiting STAT1 phosphorylation, and promoting STAT1 degradation. Moreover, POLG activates STAT3, contributing to cellular transformation. The protein also regulates cellular gene activity, suppressing p53 promoter activity, sequestering CREB3 and SP110 isoform 3 in the cytoplasm, and repressing CDKN1A, thereby disrupting cell cycle regulation. POLG further influences transcription factors involved in inflammatory responses and the immune response, affecting NF-kappa-B activation and AP-1. Its interaction with dendritic cells down-regulates T-lymphocyte proliferation. In the context of lipid metabolism, POLG interacts with hepatocellular proteins to induce lipid accumulation and storage. Additionally, POLG forms a heterodimer with envelope glycoprotein E2, facilitating virus attachment, internalization, and fusion with the host membrane. The E1/E2 heterodimer's interaction with host apolipoproteins forms a lipo-viro-particle, allowing virus attachment to cell surface receptors and triggering HCV entry.

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via activation of the EGFR signaling pathway.

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

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