

## Animal-Free IFN-gamma Protein, Pig (His)

<b>Cat. No.:</b>	HY-P700240AF
<b>Synonyms:</b>	IFG; IFI; IFNG; IFN-gamma; Immune interferon; Interferon gamma
<b>Species:</b>	Pig
<b>Source:</b>	E. coli
<b>Accession:</b>	P17803 (Q24-K166)
<b>Gene ID:</b>	396991
<b>Molecular Weight:</b>	Approximately 17.7 kDa

### PROPERTIES

<b>AA Sequence</b>	<p>             M Q A P F F K E I T    I L K D Y F N A S T    S D V P N G G P L F    L E I L K N W K E E              S D K K I I Q S Q I    V S F Y F K F F E I    F K D N Q A I Q R S    M D V I K Q D M F Q              R F L N G S S G K L    N D F E K L I K I P    V D N L Q I Q R K A    I S E L I K V M N D              L S P R S N L R K R    K R S Q T M F Q G Q    R A S K           </p>
<b>Appearance</b>	Lyophilized powder.
<b>Formulation</b>	Lyophilized from a solution containing 1X PBS, pH7.4.
<b>Endotoxin Level</b>	<0.01 EU per 1 µg of the protein by the LAL method.
<b>Reconstitution</b>	It is not recommended to reconstitute to a concentration less than 100 µg/mL in ddH <sub>2</sub> O.
<b>Storage &amp; Stability</b>	Stored at -20°C for 2 years. After reconstitution, it is stable at 4°C for 1 week or -20°C for longer (with carrier protein). It is recommended to freeze aliquots at -20°C or -80°C for extended storage.
<b>Shipping</b>	Room temperature in continental US; may vary elsewhere.

### DESCRIPTION

<b>Background</b>	<p>IFN-gamma (Interferon-gamma), a type II interferon produced by immune cells like T-cells and NK cells, plays pivotal roles in antimicrobial, antiviral, and antitumor responses by activating effector immune cells and enhancing antigen presentation. Its primary signaling pathway involves the JAK-STAT pathway upon interaction with its receptor, IFNGR1, influencing gene regulation. Upon IFN-gamma binding, the IFNGR1 intracellular domain opens out, facilitating the association of downstream signaling components, including JAK2, JAK1, and STAT1. This cascade leads to STAT1 activation, nuclear translocation, and subsequent transcription of IFN-gamma-regulated genes, many of which are transcription factors like IRF1, capable of driving a subsequent wave of transcription. IFN-gamma contributes to the class I antigen presentation pathway by inducing the replacement of catalytic proteasome subunits with immunoproteasome subunits, thereby enhancing the quantity, quality, and repertoire of peptides for class I MHC loading. It also increases the efficiency of peptide</p>
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generation by inducing the expression of the activator PA28, which associates with the proteasome and alters its proteolytic cleavage preference. Furthermore, IFN-gamma up-regulates MHC II complexes on the cell surface by promoting the expression of key molecules such as cathepsins B/CTSB, H/CTSH, and L/CTSL. Beyond its direct immune functions, IFN-gamma participates in the regulation of hematopoietic stem cells during development and under homeostatic conditions, influencing their development, quiescence, and differentiation. Existing as a homodimer, IFN-gamma interacts with IFNGR1 via its extracellular domain, a crucial interaction that promotes IFNGR1 dimerization, orchestrating its diverse and critical functions in immune responses and hematopoiesis.

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

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