Recombinant Human Interferon lambda-1 protein (IFNL1) (Active)

Product Code	CSB-AP002811HU
Abbreviation	Recombinant Human IFNL1 protein (Active)
Uniprot No.	Q8IU54
Form	Lyophilized powder
Storage Buffer	Lyophilized from a 0.2 μm filtered PBS, pH 7.4
Product Type	Interferon
Immunogen Species	Homo sapiens (Human)
Biological Activity	Fully biologically active when compared to standard. The ED50 as determined by an anti-viral assay using human HepG2 cells infected with encephalomyocarditis is less than 5 ng/ml, corresponding to a specific activity of $>2.0 \times 10^{5}$ IU/mg.
Purity	>97% as determined by SDS-PAGE.
Sequence	GPVPTSKPTT TGKGCHIGRF KSLSPQELAS FKKARDALEE SLKLKNWSCS SPVFPGNWDL RLLQVRERPV ALEAELALTL KVLEAAAGPA LEDVLDQPLH TLHHILSQLQ ACIQPQPTAG PRPRGRLHHW LHRLQEAPKK ESAGCLEASV TFNLFRLLTR DLKYVADGNL CLRTSTHPES T
Lead Time	5-10 business days
Research Area	Immunology
Source	E.coli
Target Names	IFNL1
Expression Region	20-200aa
Notes	Repeated freezing and thawing is not recommended. Store working aliquots at 4°C for up to one week.
Tag Info	Tag-Free
Mol. Weight	19.8 kDa
Protein Length	Full Length of Mature Protein
PubMed ID	12469119; 12483210; 15057824; 15489334; 20712453; 24751921; 20934432
Image	
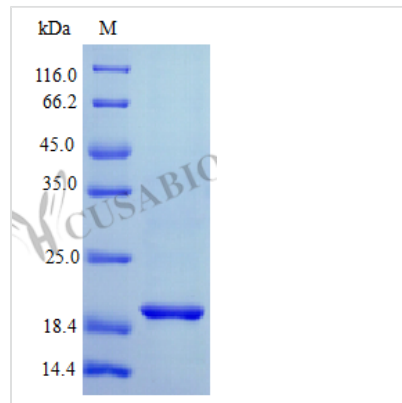
Description

Recombinant Human Interferon lambda-1 protein (IFNL1) is produced in E. coli and contains the complete mature protein sequence from amino acids 20-200. This tag-free protein achieves purity levels above 97% based on SDS-PAGE analysis. The protein shows full biological activity, with an ED50 below 5 ng/ml when tested in anti-viral assays using human HepG2 cells. Endotoxin levels remain under 1.0 EU/µg, which appears to make it well-suited for high-quality research work.

Interferon lambda-1 belongs to the type III interferon family and seems to play an important role in how the immune system responds to viral infections. What makes it particularly interesting is that it signals through a receptor complex that's different from type I and II interferons. This pathway primarily targets epithelial cells. Scientists are drawn to this protein because of its involvement in antiviral defense and its potential therapeutic uses - it may be able to modulate immune responses without causing the inflammatory side effects that often come with other interferons.

Potential Applications

Note: The applications listed below are based on what we know about this protein's biological functions, published research, and experience from experts in the field. However, we haven't fully tested all of these applications ourselves yet. We'd recommend running some preliminary tests first to make sure they work for your specific research goals.

1. Antiviral Activity Screening and Mechanism Studies

This recombinant IFNL1 protein works well for investigating how interferon lambda-1 fights various viral pathogens in controlled laboratory conditions. With its proven biological activity (ED50 less than 5 ng/ml in anti-viral tests), researchers can map out dose-response relationships across different virus-cell model systems. The high purity (>97%) and minimal endotoxin contamination make it possible to study direct antiviral effects without getting confused by inflammatory responses. Research like this could help clarify interferon lambda's role in innate immunity and how its antiviral capabilities differ from type I interferons.

2. Interferon Lambda Receptor Binding and Signaling Studies

The biologically active IFNL1 protein serves as a useful ligand for exploring how interferon lambda receptors (IFNLR1/IL10RB) bind and trigger downstream signaling pathways. Scientists can incorporate this protein into binding competition assays, receptor internalization experiments, and JAK-STAT pathway studies using various cell lines. Since the protein lacks fusion tags, it's less likely to interfere with receptor binding experiments. This type of work may advance our understanding of interferon lambda receptor biology and why different tissues respond differently.

3. Comparative Interferon Response Analysis

This recombinant IFNL1 proves useful for comparative studies that examine how type III interferons affect gene expression and cellular responses differently than type I interferons. The high specific activity (>2.0 × 10? IU/mg) allows for precise dosing in transcriptomic and proteomic studies across different cell types. Scientists can explore how various tissues respond to interferon, particularly in epithelial cells where interferon lambda responses tend to be most prominent. Studies like these might help clarify the distinct biological roles that different interferon classes play.

4. Antibody Development and Validation

The high-purity, tag-free IFNL1 protein works well as both an immunogen and standard for developing and testing anti-IFNL1 antibodies for research purposes. Its biological activity can help validate whether neutralizing antibodies actually work in the established HepG2 antiviral assay system. Low endotoxin content helps ensure that immune responses target the IFNL1 protein specifically rather than bacterial contaminants. This application supports the creation of research tools for studying how interferon lambda is naturally expressed and functions.

5. Cell-Based Assay Development and Standardization

This biologically active IFNL1 protein can serve as a reference standard for creating and validating new cell-based assays that measure interferon lambda activity or how well cells respond to it. The established ED50 value provides a useful benchmark for assay sensitivity and helps ensure reproducibility between different laboratories. Researchers can use this protein to fine-tune assay conditions, test new reporter cell lines, or build high-throughput screening platforms for interferon lambda research. The consistent biological activity appears to support standardization efforts across interferon lambda research methods.

Recovery	We recommend that this vial be briefly centrifuged prior to opening to bring the contents to the bottom. Please reconstitute protein in deionized sterile water to a concentration of 0.1-1.0 mg/mL.We recommend to add 5-50% of glycerol (final concentration) and aliquot for long-term storage at -20°C/-80°C. Our default final concentration of glycerol is 50%. Customers could use it as reference.
Endotoxin	Less than 1.0 EU/μg as determined by LAL method.