



## Certificate of Analysis

### Human Interleukin-28A/Interferon Lambda 2, carrier-free

**Catalog No:** 11821-1

**Lot No:**

**Expiration:**

**Size:** 25 µg/vial

**Description:** Recombinant Human Interleukin-28A/Interferon Lambda 2, carrier-free

**Source:** DNA sequence encoding human IL-28A (Met 1 - Val 200) (Kotenko, S.V., *et al.*, 2003, *Nat. Immunol.* 4(1):69 - 77) with a carboxyl-terminal polyhistidine tag was expressed in a mouse myeloma cell line, NS0.

**Buffer:** Phosphate buffered saline (PBS)

**Reconstitution:** It is recommended that sterile PBS be added to the vial to prepare a stock solution of no less than 100 µg/ml. The carrier-free protein should be used immediately upon reconstitution to avoid losses in activity due to non-specific binding to the inside surface of the vial. For long term storage as a dilute solution, a carrier protein (e.g. 0.1% HSA or BSA) should be added to the vial.

**Endotoxin:** < 1 EU/µg

**Molecular Weight:** Based on N-terminal sequencing, the mature recombinant IL-28A starts at Val 26 and has a calculated molecular mass of 20.8 kDa. As a result of glycosylation, the recombinant monomer migrates as an approximately 24 kDa protein in SDS-PAGE under reducing conditions.

**Purity:** > 97%

**Synonyms:** Hu-IL-28A; Hu-IFN- 2

**Accession #:** NP\_742150

**Assay Used to Measure Bioactivity:** Human HepG2 cells infected with encephalomyocarditis virus (Sheppard, P., *et al.*, 2003, *Nature Immunol.* 4:63). The ED<sub>50</sub> for this effect is typically 10 - 50 ng/ml.

**Product Information:** IL-28A, IL-28B, and IL-29, also named interferon- 2 (IFN- 2), IFN- 3, and IFN- 1, respectively, are newly identified class II cytokine receptor ligands that are distantly related to members of the IL-10 family (11-13% aa sequence identity) and type I IFN family (15 - 19% aa sequence identity).<sup>1-3</sup> The genes encoding these three cytokines are localized to chromosome 19 and each is composed of multiple exons. The exon organization of these genes is also found in the IL-10 family genes but is distinct from the type I IFNs, which are encoded within a single exon. The expression of IL-28A, B, and IL-29 is induced by virus infection or double-stranded RNA. All three cytokines exert bioactivities that overlap those of type I IFNs, including antiviral activity and up-regulation of MHC class I antigen expression. The three proteins signal through the same heterodimeric receptor complex that is composed of the IL-10 receptor (IL-10 R ) and a novel IL-28 receptor (IL-28 R , also known as IFN- R1). Ligand binding to the receptor complex induces Jak kinase activation and STAT1 and STAT2 tyrosine phosphorylation. The phosphorylated STAT1 and STAT2 complex with IFN-regulatory factor 9 (IRF-9) to form the IFN-stimulated regulatory factor 3 (ISGF-3) transcription factor complex that is translocated to the nucleus. ISGF-3 binds to the IFN-stimulated response element (ISRE) present in the regulatory regions of the target genes. Human IL-28A cDNA encodes a 200 amino acid (aa) residue precursor protein with a putative 25 aa signal peptide. It shares 94% and 67% aa sequence identity with human IL-28B and human IL-29, respectively.

**Shipping Conditions:** Wet Ice

**Physical State of Product During Shipping:** Lyophilized

**Storage Conditions/Comments:** Upon receipt, the product should be kept at -20 to -70°C or below for retention of full activity. Upon reconstitution, this cytokine can be stored under sterile conditions at 2 to 8°C for one month or at -20 to -70°C in a manual defrost freezer for three months without detectable loss of activity. Avoid repeated freeze-thaw cycles. For more information on protein handling, visit our Resource Library at [www.pblsaysci.com](http://www.pblsaysci.com).



**References:**

1. Vilcek, J., 2003, *Nature Immunol.* 4:8-9.
2. Sheppard, P., *et al.* 2003, *Nature Immunol.* 4:63-68.
3. Kotenko, S.V., *et al.* 2003, *Nature Immunol.* 4:69-77.

**Authorization**

Released by: \_\_\_\_\_

Date:

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