

# Human Cytokine Products

## Highly Active Human Interferon Proteins

### High quality recombinant proteins derived from bacterial or mammalian cells

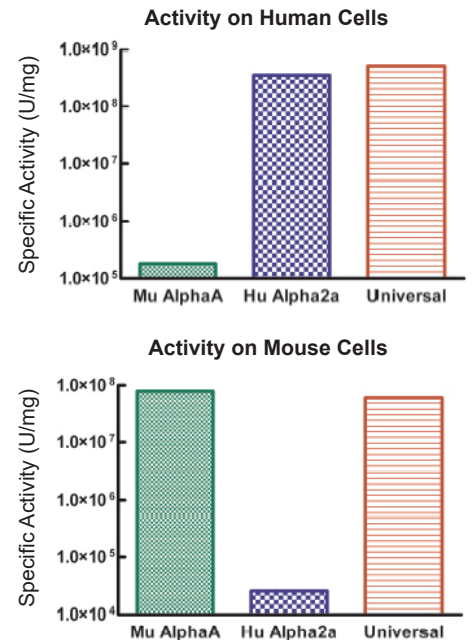
- Consistent performance and biological activity
- 95% or greater purity
- Endotoxin level < 1 EU/μg
- Suitable for use in a range of applications including ELISAs & cytopathic effect assays

### Featured:

#### Universal Type I Interferon (Cat. No. 11200)

#### Unique hybrid interferon exhibiting activity across multiple species

- Useful for cross-species comparative studies of Type I IFN effects
- Broad crossover to multiple animal models *in vivo* and *in vitro* where the species relevant Type I IFN-Alpha is unavailable or performs inconsistently
- High specific activity on multiple animal cell lines



**Figure 1.** Comparison of the Activities of Universal Type I IFN, Human IFN-Alpha 2a, and Mouse IFN-Alpha A.

Cat. No.	Description	Size
11002-1	Human IFN-Alpha (IFN-α) Sampler Set (subtypes also sold individually) IFNa-A (2a); IFNa-B2 (8); IFNa-C (10); IFNa-D (1 [Val(114)]); IFNa-F (21); IFNa-G (5); IFNa-H2 (14); IFNa-I (17); IFNa-J1 (7); IFNa-K (6); IFNa-4b (4); IFNa-WA (16)	1 x 10 <sup>5</sup> U
11101-1, 2	Human IFN-Alpha A (Alpha 2a), carrier-free	5 μg, 20 μg
11105-1	Human IFN-Alpha 2 (Alpha 2b)	1 x 10 <sup>5</sup> U
11175-1	Human IFN-Alpha 1 (Alpha D)	1 x 10 <sup>5</sup> U
11177-1	Human IFN-Alpha 4a (Alpha M1)	1 x 10 <sup>5</sup> U
11200-1, 2	Universal Type I IFN	1 x 10 <sup>5</sup> U, 1 x 10 <sup>6</sup> U
11395-1	Human IFN-Omega	25 μg
11410-2	Human IFN-Beta 1a, mammalian, carrier-free	1 x 10 <sup>6</sup> U
11415-1	Human IFN-Beta 1a, mammalian	1 x 10 <sup>5</sup> U
11420-1	Human IFN-Beta 1b, E.coli	1 x 10 <sup>5</sup> U
11500-1, 2	Human IFN-Gamma	50 μg, 100 μg
11720-1	Human IL-28A/IFN Lambda 2, HCE	1 x 10 <sup>5</sup> U
11725-1	Human IL-29/IFN Lambda 1, HCE	1 x 10 <sup>5</sup> U
11730-1	Human IL-28B/IFN Lambda 3, HCE	1 x 10 <sup>5</sup> U
11821-1	Human IL-28A/IFN Lambda 2, carrier-free	25 μg
11826-1	Human IL-29/IFN Lambda 1, carrier-free	25 μg



# Human Interferon Alpha (IFN- $\alpha$ ) ELISAs



Detect and quantitate human IFN-Alpha subtypes in serum, plasma, or Tissue Culture Media (TCM).

## Featured:

### Human IFN-Alpha All Subtype ELISA (Cat. No. 41115)

#### High Sensitivity

- Assay Standard Range: 1.95 – 125 pg/ml
- Accurate low pg/ml detection of all 12 human IFN-Alpha subtypes
- Robust matrix tolerance including normal & autoimmune disease sera, EDTA plasma, and TCM
- Optimized for autoimmune sera and plasma samples
- Consistent, reproducible results with < 10% inter- and < 8% intra-assay CVs
- Detects previously “missed” IFN-Alpha subtypes

Subtype	LOD (pg/ml)	LOQ (pg/ml)
$\alpha 1$ ( $\alpha D$ )	0.09	0.343
$\alpha 2a$ ( $\alpha A$ )	0.056	0.214
$\alpha 4a$ ( $\alpha M1$ )	0.099	0.382
$\alpha 5$ ( $\alpha G$ )	0.083	0.276
$\alpha 6$ ( $\alpha K$ )	0.041	0.183
$\alpha 7$ ( $\alpha J1$ )	0.112	0.423
$\alpha 8$ ( $\alpha B2$ )	0.284	0.993
$\alpha 10$ ( $\alpha C$ )	0.108	0.447
$\alpha 14$ ( $\alpha H$ )	0.168	0.585
$\alpha 16$ ( $\alpha WA$ )	0.078	0.328
$\alpha 17$ ( $\alpha I$ )	0.156	0.522
$\alpha 21$ ( $\alpha F$ )	0.293	1.129

Figure 2. Global Human IFN-Alpha-Specific Signals in Lupus Patient Sera

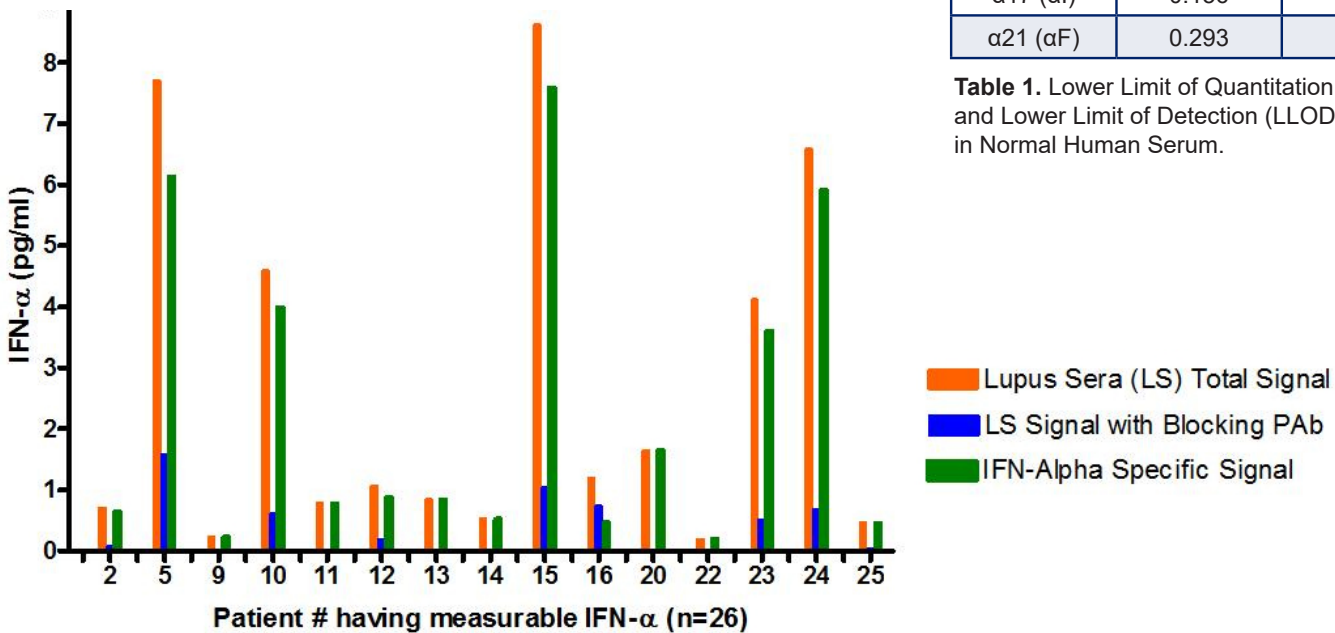


Table 1. Lower Limit of Quantitation (LLOQ) and Lower Limit of Detection (LLOD) in Normal Human Serum.

	41135 (TCM)	41115
High sensitivity for low level Human IFN-Alpha quantification	1.95 - 125 pg/ml	
Human IFN-Alpha all subtype reactivity for total amount measurement	12 of 12	
Robust sample matrix compatibility	TCM	TCM; EDTA Plasma; Healthy & Autoimmune Disease Sera

Cat. No.	Description	Size
41135-1	VeriKine-HS Human IFN-Alpha All Subtype TCM ELISA Kit (TCM)	1 x 96-well plate
41115-1	VeriKine-HS Human IFN-Alpha All Subtype ELISA Kit (S, P, TCM)	1 x 96-well plate



# Human Interferon Beta (IFN-β) ELISAs



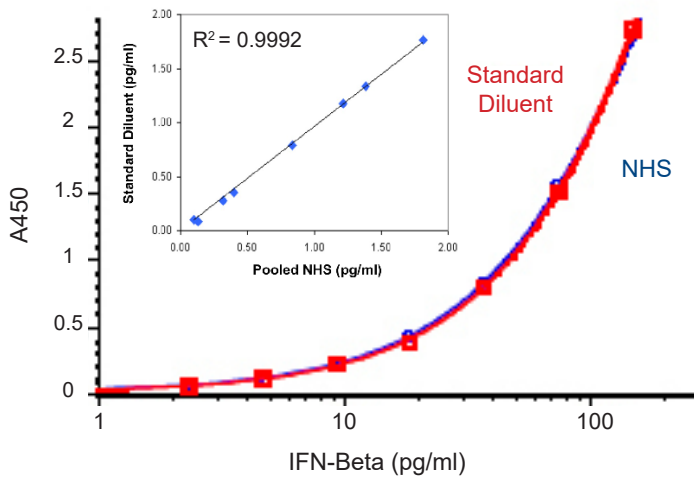
Accurately detect and measure human IFN-Beta in serum, plasma, or TCM at an improved level of sensitivity.

## Featured:

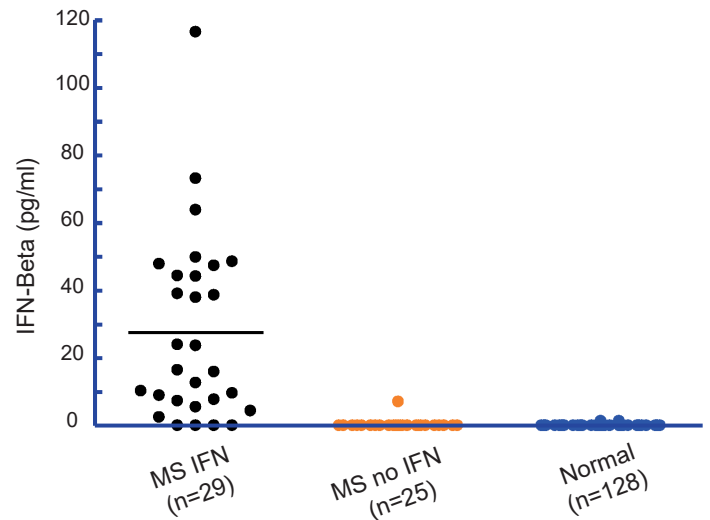
### Human IFN-Beta Serum ELISA (Cat. No. 41415)

#### High Sensitivity

- Assay Standard Range: 1.2 – 150 pg/ml
- Provides > 90% serum spike-recovery
- Reproducible results with < 8% inter- and intra-assay CVs
- Robust matrix tolerance for autoimmune disease sera
- Validated by multiple CROs for sensitive measurement of IFN-Beta therapeutics in human serum samples
  - e.g. Rebif®, Avonex®, Extavia®, Betaseron®
- Suitable for PK, PD, Toxicity & Biomarker studies



**Figure 3. ELISA Standard Curve in Normal Human Serum (NHS) vs. Standard Curve in Standard Diluent.** No observable inhibitory effect of normal human serum.



**Figure 4. Multiple Sclerosis (MS).** IFN-Beta was measured in sera/plasma of Multiple Sclerosis (MS) patients and Normal Donors. IFN-Beta was found to be quantifiable in 86% of MS patients on IFN-Beta therapy, 4.1% of MS patients on other therapies, and 1.5% of Normal Donor samples.

	41435 (TCM)	41415
High sensitivity for Human IFN-Beta quantification	2.34 pg/ml	1.2 pg/ml
Robust sample matrix compatibility	TCM	TCM; Plasma; Healthy & Autoimmune Disease Sera
Interference by sIFNAR2	No	No

Cat. No.	Description	Size
41435-1	VeriKine-HS Human IFN-Beta TCM ELISA Kit (TCM)	1 x 96-well plate
41415-1	VeriKine-HS Human IFN-Beta Serum ELISA Kit (S, P, TCM)	1 x 96-well plate
41410-1, 2	VeriKine Human IFN-Beta ELISA Kit (TCM)	1 x 96-well plate, 5 x 96-well plate



# Anti-Human IFN Monoclonal (MAb) & Polyclonal (PAb) Antibodies

## Labeled & unlabeled antibodies for a variety of uses

- MAbs offer high specificity in applications where specific binding is desirable
- PABs are preferable for neutralization because they target a variety of specific epitopes of a particular antigen

## Featured:

### Anti-Human IFNAR2, Clone MMHAR-2 (MAb) (Cat. No. 21385-1)

- Blocks biological activity of human Type I IFNs and IFN-Alpha receptor
- Binds to human IFN-Alpha receptor with high affinity

### Human Type I IFN Neutralizing Antibody Mixture (Cat. No. 39000)

#### Mixture of MAbs and PABs directed against human Type I IFNs & IFNAR2

- Effectively neutralizes biological activity of human IFN-Alpha( $\alpha$ ), IFN-Beta( $\beta$ ), IFN-Omega( $\omega$ ), IFN-Kappa( $\kappa$ ), and IFN-Epsilon( $\epsilon$ )
- Improves neutralization of multiple Type I IFNs often found in complex samples by employing a broadly neutralizing custom antibody cocktail

Figure 5. (top right) Mouse MAb to Human IFN-Alpha/Beta Receptor 2.

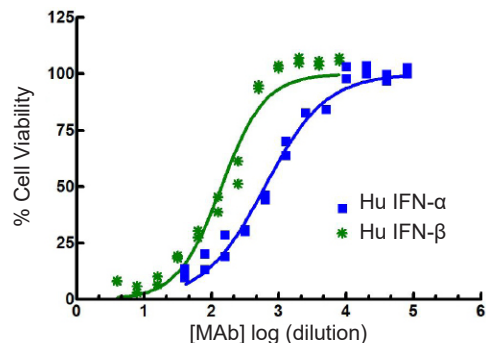
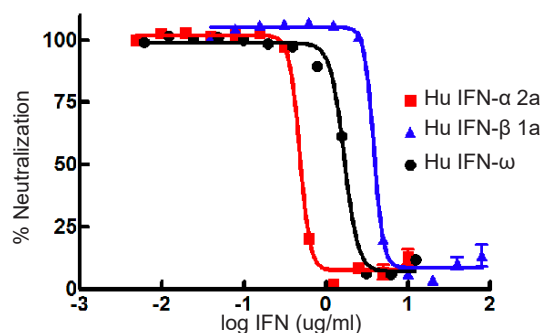


Figure 6. (bottom right) Representative neutralization curves (diluted 1:50) to human IFN- $\alpha$ , - $\beta$ , and - $\omega$ . A549 cells incubated with antibody mixture and titrated IFN, subsequently challenged with EMCV.



Cat. No.	Description	Size
<b>Anti-Human IFN-Alpha (MAb) (multiple clones available in varying sizes)</b>		
21112-3	FITC Conjugated Anti-Human IFN-Alpha, Clone MMHA-11 (MAb)	25 $\mu$ g
21370-1	Mouse MAb against Human IFN-Alpha/Beta Receptor 1, Clone MMHAR-3 (MAb)	50 $\mu$ g
21370-3	R-Phycoerythrin (PE) Conjugated Mouse MAb against Human IFNAR1, Clone MMHAR-3 (MAb)	50 tests
21375-1	Anti-Human IFN-Alpha/Beta Receptor 1, Clone MMHAR-1 (MAb)	50 $\mu$ g
21375-3	PE Conjugated Anti-Human IFN-Alpha/Beta Receptor 1, Clone MMHAR-1 (MAb)	100 tests
21376-3	CFS Conjugated Anti-Human IFN-Alpha/Beta Receptor 1, Clone MMHAR-1 (MAb)	100 tests
21385-1	Anti-Human IFN-Alpha/Beta Receptor Chain 2 (IFNAR2), Clone MMHAR-2 (MAb)	50 $\mu$ g
21385-3	PE Conjugated Anti-Human IFN-Alpha/Beta Receptor Chain 2 (IFNAR2), Clone MMHAR-2 (MAb)	50 tests
<b>Anti-Human IFN-Beta (MAb) (multiple clones available in varying sizes)</b>		
21400-3	FITC Conjugated Anti-Human IFN-Beta, Clone MMHB-3 (MAb)	20 $\mu$ g
<b>Anti-Human IFN-Gamma (MAb) (multiple clones available in varying sizes)</b>		
21585-1	Anti-Human IFN-Gamma Receptor Chain 2, Clone MMHGR-2 (MAb)	250 $\mu$ g
21720-1	Anti-Human IL-28A/IFN-Lambda 2, neutralizing, Clone MMHL-2 (MAb)	200 $\mu$ g
21730-1	Anti-Human IL-28B/IFN-Lambda 3, neutralizing, Clone MMHL-3 (MAb)	100 $\mu$ g
21885-1	Anti-Human IFN-Lambda Receptor 1, Clone MMHLR-1 (MAb)	50 $\mu$ g
21900-1	Anti-Human ISG15, Clone 2.1 (MAb)	100 $\mu$ g
<b>Anti-Human IFN-Alpha (PAb) (multiple available)</b>		
<b>Anti-Human IFN-Beta (PAb) (multiple available, including protein A or affinity purified)</b>		
31500-1	Anti-Human IFN-Gamma, Rabbit Serum (PAb)	2 x 10 <sup>4</sup> units
39000-1	Human Type I IFN Neutralizing Ab Mixture	0.2 ml



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