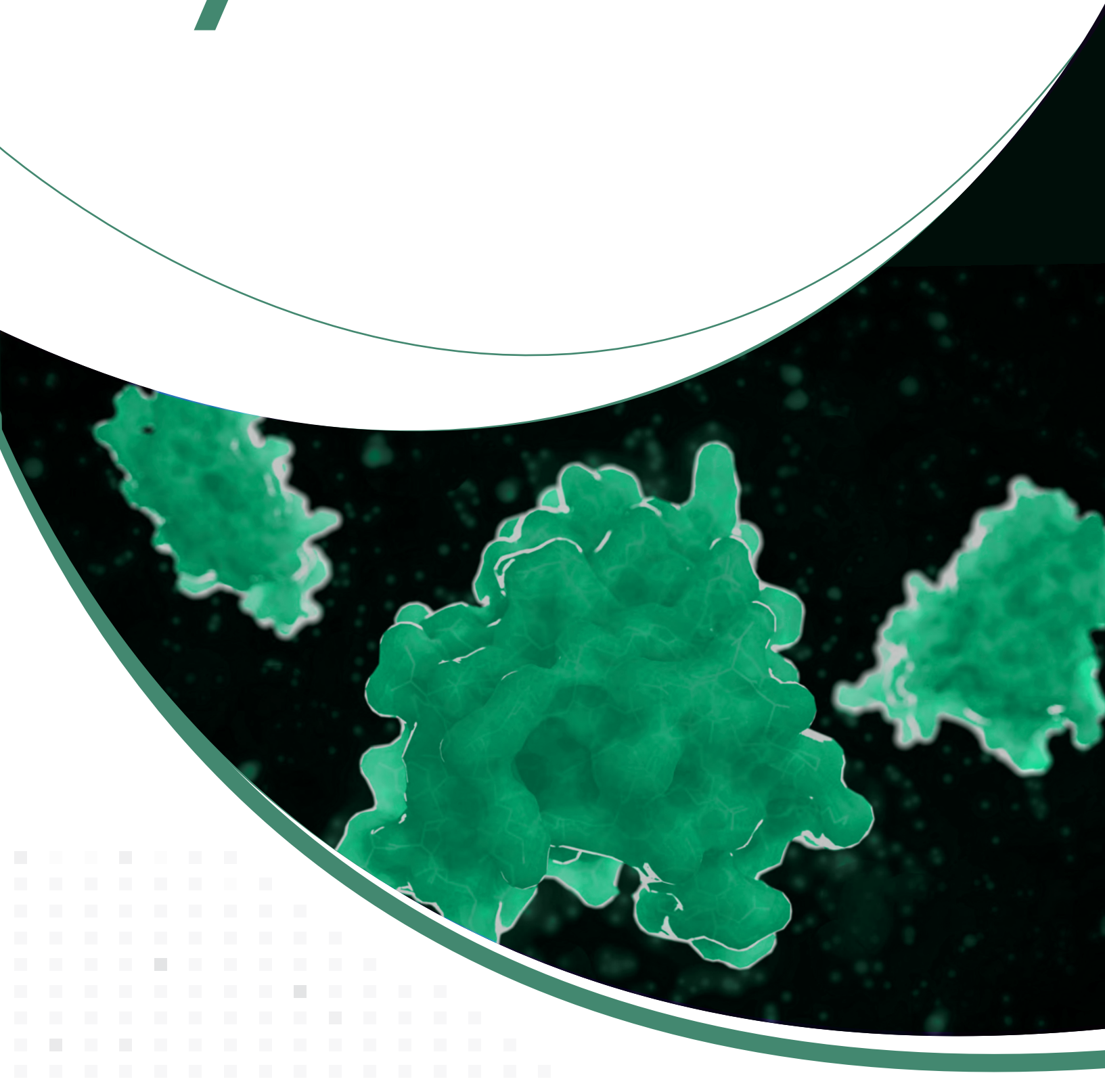


Cytokines

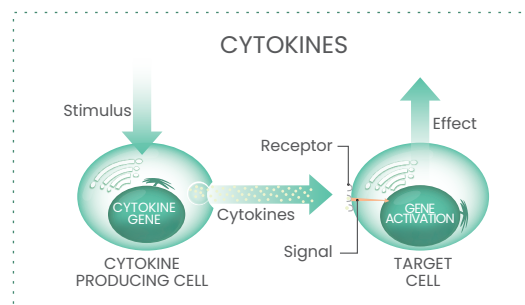


Cytokines

Cytokines are secreted immunomodulatory molecules that play an essential role in cell communication and immune reactions. Cytokines are produced throughout the body by cells of diverse embryological origins. Cytokines are defined based on their presumed function, cell of secretion, or target of action. For example, interleukins (ILs) are secreted by leukocytes and can affect the cellular responses of leukocytes.

Some cytokines, such as GM-CSF, IFN gamma (IFN γ), and IL-21, have been considered ideal targets for antitumor therapies and are being evaluated clinically. In addition to single-agent treatment, cytokines may be used with other immunomodulatory drugs, such as adoptive cell therapy, cancer vaccines, checkpoint inhibitors (anti-CTLA-4 or anti-PD-1/PD-L1), and cancer-directed monoclonal antibodies.

Sino Biological has launched a comprehensive collection of high-quality bioreagents to support the study and application of cytokines.



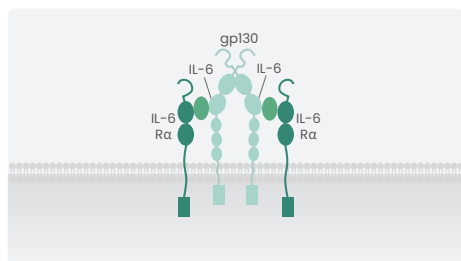
High Quality

- >1,100 cytokine products and >240 cytokine molecules
- Include growth factors, cytokines, chemokines, interferons, interleukins, etc
- ISO9001:2015 and ISO13485:2016 certified
- High batch to batch consistency
- High purity
- Carrier free, storage in PBS
- Most products are animal-free

ISO9001:2015 and ISO13485:2016 Certified

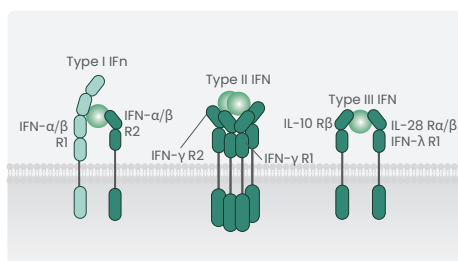


Cytokine Families



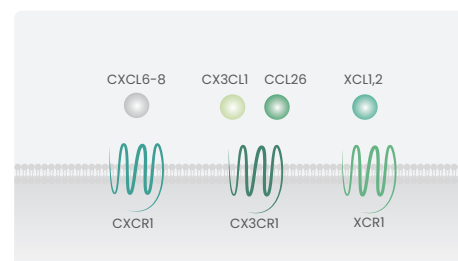
Interleukin family

Variety of actions dependent upon interleukin and cell type



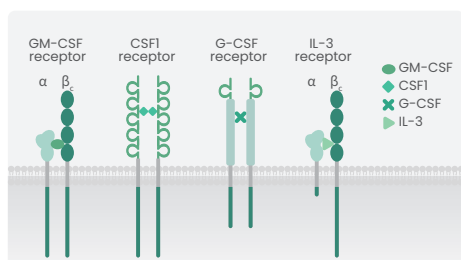
Interferon family

Antiviral proteins
Important modulators of immune responses



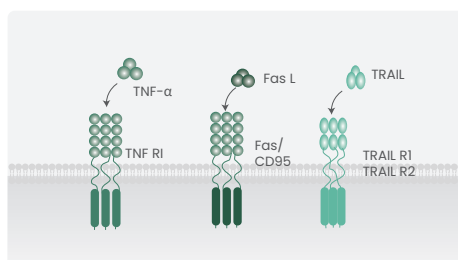
Chemokines

Direct cell migration, adhesion and activation



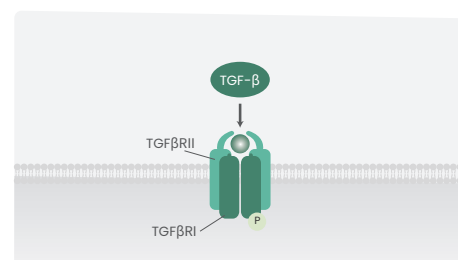
Colony stimulating factors

Promote cell proliferation and differentiation



TNF Superfamily

Involved in immune system development, effector functions, and homeostasis



Transforming growth factor beta family

Important in wound healing, angiogenesis, immunoregulation and cancer

Interleukins

Interleukins (ILs) are a group of cytokines mainly expressed and secreted by leukocytes. They play essential roles in the activation and differentiation of immune cells, as well as proliferation, maturation, migration, and adhesion. Interleukins can have both pro-inflammatory and anti-inflammatory properties.

Premium Interleukin Proteins

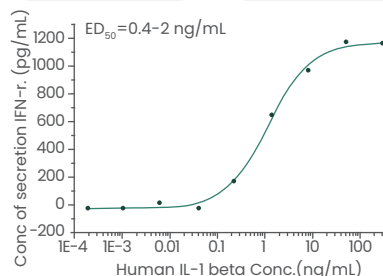
Human IL-1 β Protein: 10139-HNAE

High-purity

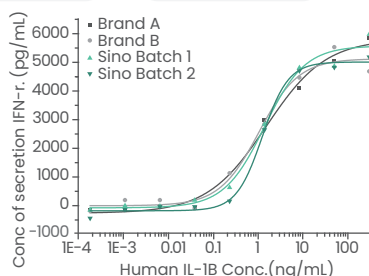
Low-endotoxin

Tag-free

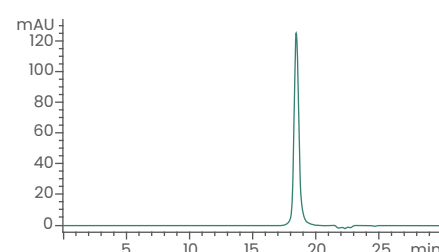
HPLC-verified



Ability to induce Interferon-gamma secretion by human natural killer lymphoma NK-92 cells

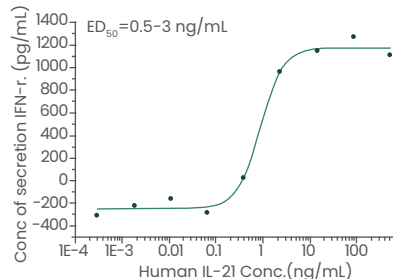


Batch-to-batch Consistency

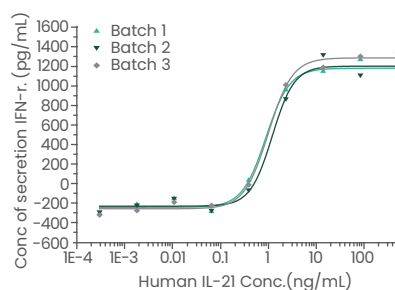


> 95% as determined by SEC-HPLC

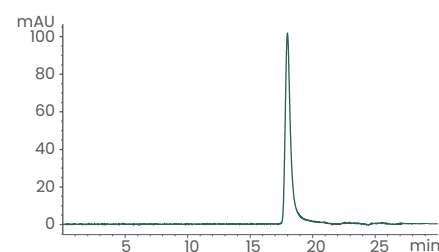
Human IL-21 Protein: 10584-HNAE



Ability to induce Interferon-gamma secretion by human natural killer lymphoma NK-92 cells

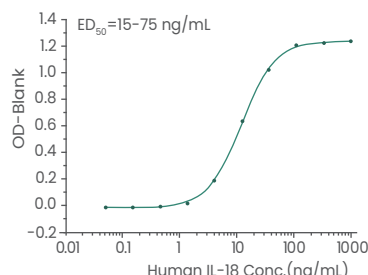


Batch-to-batch Consistency

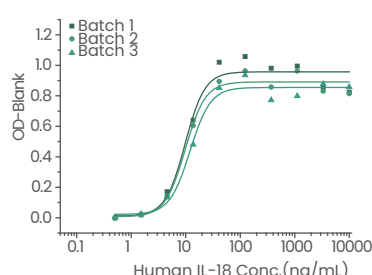


> 95% as determined by SEC-HPLC

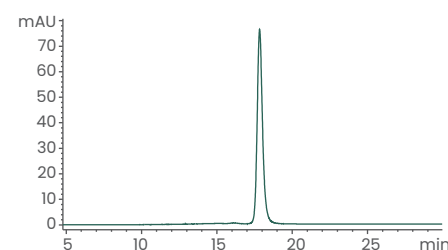
Human IL-18 Protein: 10119-HNCE



Ability to induce IFN-gamma secretion by KG-1 human acute myelogenous leukemia cells in the presence of TNF-α



Batch-to-batch Consistency



> 95 % as determined by SEC-HPLC

Hot Selling products (Partial)

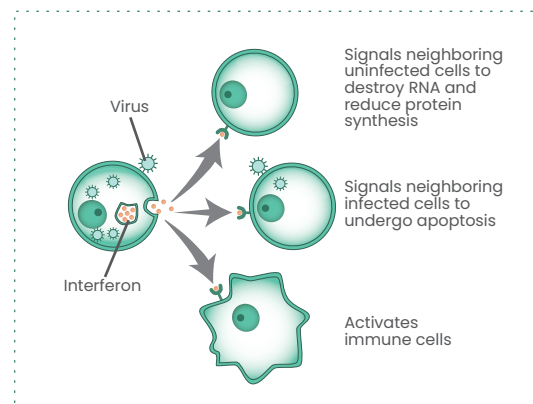
Cat#	Molecule	Species	Bioactivity	Purity
12225-HNCE	IL11	Human	Active	> 90%
CT021-M02H	IL12A & IL12B	Mouse	Active	> 85%
10369-HNAC	IL13	Human	Active	> 92%
10119-HNCE	IL18	Human	Active	> 95%
10357-H08H	IL18BP	Human	Active	> 85%
50206-M08H	IL18BP	Mouse	Active	> 95%
10357-H02H	IL18BP	Human	Active	> 95%
10128-HNCH	IL1A	Human	Active	> 95%
90010-CNAE	IL1B	Rhesus	Active	> 97%
11848-HNAH1-E	IL2	Human	Active	> 95%
50137-MNAE	IL21	Mouse	Active	> 97%
10076-H08S	IL27	Human	Active	> 90%
11846-HNAE	IL4	Human	Active	> 92%
10395-HNAE	IL6	Human	Active	>95%

Interferons

Interferons (IFNs) were first described as antiviral factors that interfere with viral replication in mammalian cells. IFNs also play essential roles in tumor immunity. Recent research on harnessing the full therapeutic potential of IFN-Is may lead to more efficacious antiviral and anti-cancer drugs.

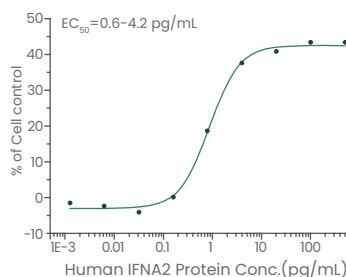
There are three classes of IFNs: Type I, II, and III. Type-I IFN family includes various IFN- α variants (13 in human and 14 in mouse) and additional subtypes: IFN β , IFN ϵ , IFN δ , IFN ω , IFN κ , and IFN τ . IFN- γ is the sole type II interferon, which can potentiate pro-inflammatory signaling by priming macrophages for antimicrobial actions. Type III IFNs or IFN- λ s primarily target mucosal epithelial cells and protect them against viral attacks.

Sino Biological has developed an array of high-quality Proteins, Antibodies, Genes, Lysate, and qPCR Primer Pairs to support the study of IFNs.



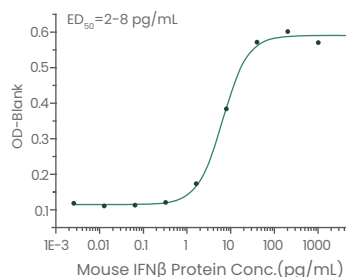
Featured Interferon Proteins and Receptors

Human IFNA2 Protein
Cat#: 13833-HNAY



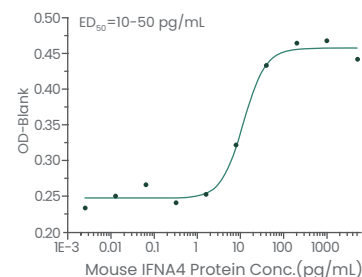
Antiviral assays using WISH human amnion cells infected with vesicular stomatitis virus (VSV)

Mouse IFN β Protein
Cat#: 50708-MCCH



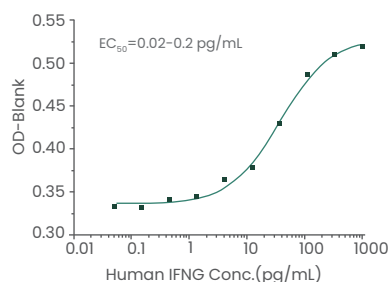
Antiviral assays using L929 cells infected with vesicular stomatitis virus (VSV)

Mouse IFNA4 Protein
Cat#: 50672-M08H



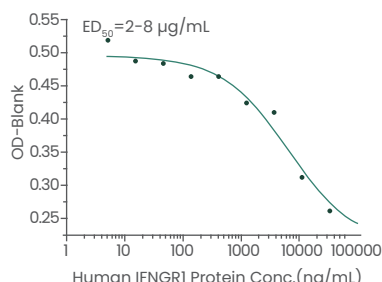
Antiviral assays using L929 cells infected with vesicular stomatitis virus (VSV)

Human Interferon Gamma Protein
Cat#: 11725-HNAS



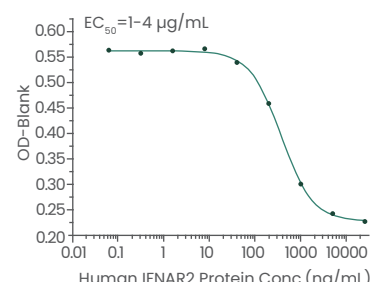
Antiviral assays using WISH cells infected with vesicular stomatitis virus (VSV)

Human IFNGR1 Protein
Cat#: 10338-H08H



Ability to inhibit rhIFN γ mediated protection of WISH cells infected with vesicular stomatitis virus (VSV)

Human IFNAR2 Protein
Cat#: 10359-H08H



Ability to inhibit rh IFN β mediated protection of WISH Human amnion cells infected with vesicular stomatitis virus (VSV) to viral lysis

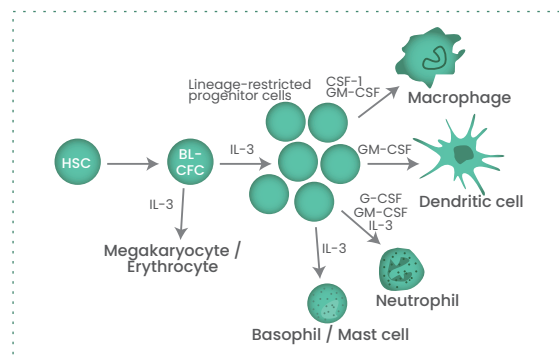
Hot Selling products (Partial)

Cat#	Molecule	Species	Bioactivity	Purity
13833-HNAY	IFNA2	Human	Active	> 95%
13222-H08H	IFNAR1	Human		> 95%
13222-H02H	IFNAR1	Human		> 88%
50469-M08H	IFNAR1	Mouse	Active	> 96%
10359-H08H-B	IFNAR2	Human		> 95%
10359-H02H	IFNAR2	Human	Active	> 90%
10359-H08H	IFNAR2	Human	Active	> 95%
10704-HNAS	IFNB1	Human	Active	> 95%
11725-HNAS	IFNG	Human	Active	> 92%
90008-C08H	IFNG	Rhesus	Active	> 90%
50709-MNAH	IFNG	Mouse	Active	> 85%

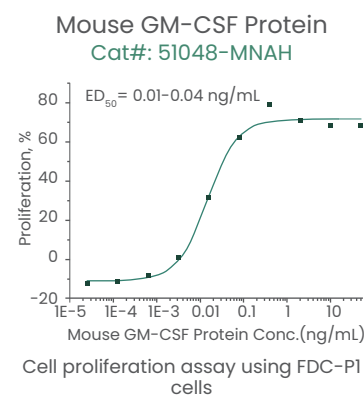
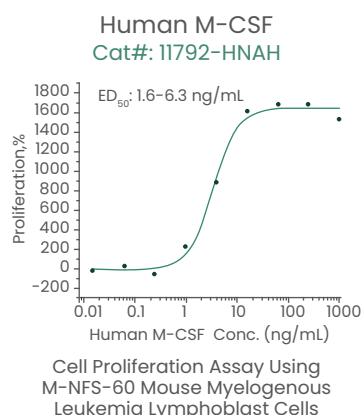
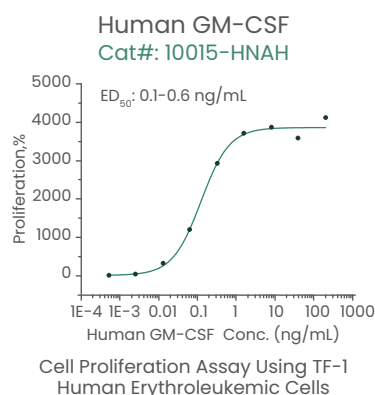
Colony stimulating factors

Colony-stimulating factors (CSFs) are growth factors that induce the clonal growth of hematopoietic progenitors. All CSFs control myeloid cell numbers, but each has a level of specificity to its target cells and effects. There is a growing interest in targeting these CSFs in inflammatory and autoimmune disorders, as well as cancer.

The CSF family includes macrophage colony-stimulating factor (M-CSF/CSF1), granulocyte-macrophage colony-stimulating factor (GM-CSF/CSF2), granulocyte colony-stimulating factor (G-CSF/CSF3), and multiple colony-stimulating factor or interleukin 3 (IL-3). Sino Biological has developed high-activity CSF ligand and receptor proteins from various species to support studying the biology of CSFs and receptors. We have also developed different functional isoforms for them.



Featured CSF Proteins and Receptors



CSF Family Receptors

10161-HCCH Human CSF1R/CD115	10161-H08H1 Human CSF1R/CD115 Domain I&II&III	10161-H08H3 Human CSF1R/CD115 Domain IV&V	50059-M08H Mouse CSF1R/CD115 His Tag
80447-R02H Rat CSF1R/CD115 Fc Tag	10218-HCCH Human G-CSFR/CD114	10701-H02H Human CSF2RA/CD116 Fc Tag	10516-H08H Human CSF2RB/CD131 His Tag
80323-R02H Rat CSF2RB/CD131 Fc Tag	10518-H02H Human IL3RA/CD123 Fc Tag	50810-M08H Mouse IL3RA/CD123 His Tag	70077-D08H Canine IL3RA/CD123 His Tag

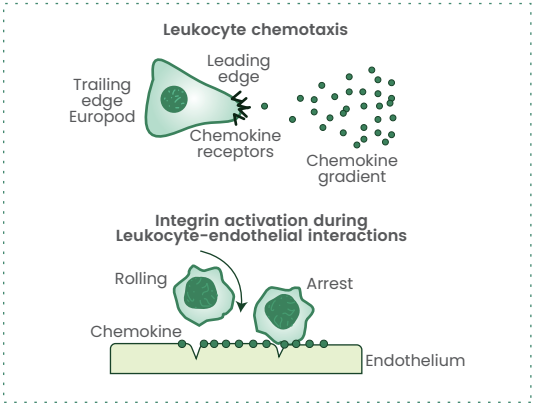
Hot Selling products (Partial)

Cat#	Molecule	Species	Bioactivity	Purity
11792-HNAH	CSF1/M-CSF	Human	Active	> 85%
11792-H08H	CSF1/M-CSF	Human	Active	> 95%
51112-MNAH	CSF1/M-CSF	Mouse	Active	> 95%
10161-H38H	CSF1R	Human	Active	> 95%
10015-H01H	CSF2/GM-CSF	Human	Active	> 97%
51048-MNAH	CSF2/GM-CSF	Mouse	Active	> 95%
10015-HNAH	CSF2/GM-CSF	Human	Active	> 90%
10701-H08H	CSF2RA	Human	Active	> 90%
10516-H08H	CSF2RB/CD131	Human	Active	> 97%
10007-H01H	CSF3/G-CSF	Human	Active	> 97%
10218-H08H	CSF3R/G-CSFR	Human	Active	> 85%

Chemokines

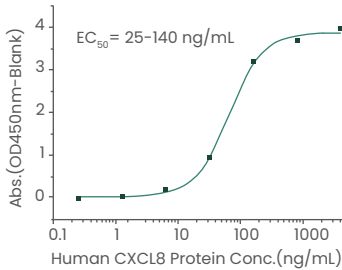
Chemokines are signaling molecules that function as chemo-attractants to mobilize immune cells. Chemokines also regulate lymphoid organ development and T-cell differentiation, mediate cancer metastasis, and function in the nervous system as neuromodulators.

Chemokines are grouped and named based on their amino acid composition, particularly on a conserved tetra-cysteine motif's first two cysteine residues. They are classified into four main subfamilies: CXC, CC, CX3C, and C. These molecules function by interacting with chemokine receptors which can be found selectively on the surfaces of their target cells. Some chemokines are considered pro-inflammatory. Others are considered homeostatic and are involved in controlling the migration of cells during normal tissue maintenance or development processes.



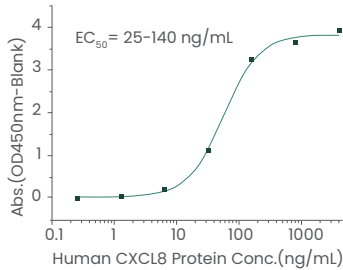
Featured Chemokine Proteins and Receptors

Human IL-8/CXCL8 Protein
Cat#: 10098-H08Y



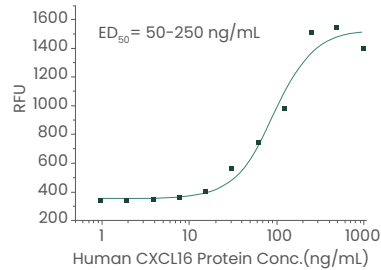
Immobilized Human IL-8/CXCL8 can bind Anti-IL-8/CXCL8 Antibody (Cat#:10098-MM18)

Human IL-8/CXCL8 Protein
Cat#: 10098-HNCH2



Immobilized Human IL-8/CXCL8 can bind Anti-IL-8/CXCL8 Antibody (Cat#:10098-MM18)

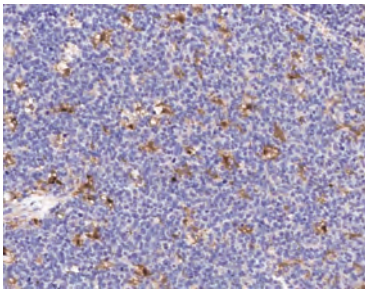
Human CXCL16 Protein
Cat#: 10834-H08H



Ability to chemoattract BaF3 mouse pro-B cells transfected with mouse CXCR6

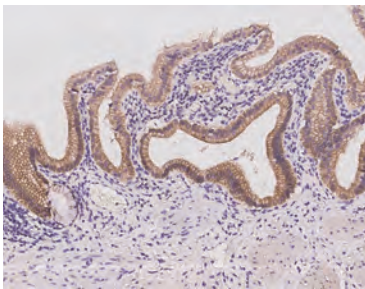
Featured Antibodies

Anti-CCL18 Antibody, Rabbit PAb
Cat#: 10502-T24



Immunohistochemical staining of human CCL18 in human tonsil tissue

Anti-MIP1-1/CCL23 Antibody,Rabbit PAb
Cat#: 201132-T08



Immunohistochemical staining of human CCL23 in human gallbladder tissue

Anti-CXCL7 Antibody, Rabbit Polyclonal
Cat#: 50145-T52



Mouse CXCL7 was immunoprecipitated using: Lane A:0.5 mg 293T Whole Cell Lysate 2 µL anti-Mouse CXCL7 rabbit polyclonal antibody and 15 µL of 50 % Protein G agarose. Primary antibody: Anti-Mouse CXCL7 rabbit polyclonal antibody,at 1:200 dilution

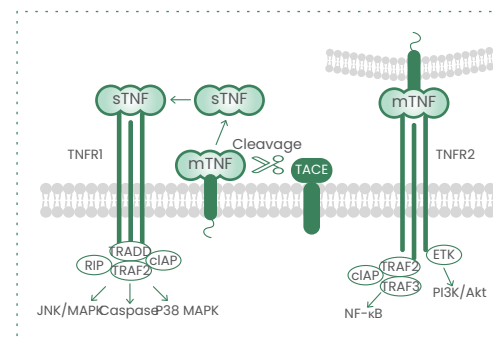
Hot Selling products (Partial)

Cat#	Molecule	Species	Bioactivity	Purity
10876-HNAE	CXCL11	Human		> 95%
10118-H01H	CXCL12/SDF-1	Human	Active	> 95%
10118-HNAE	CXCL12/SDF-1	Human		> 95%
10621-HNAE	CXCL13/BCA-1	Human		> 95%
10098-H01H2	CXCL8	Human		> 90%
10098-H08Y	CXCL8	Human	Active	> 95%
10098-HNCH1	CXCL8	Human		> 95%
10098-HNCH2	CXCL8	Human	Active	> 95%

TNF Superfamily

The tumor necrosis factor (TNF) family consists of at least 19 members that play vital roles in inflammation and immunity, as well as host defense, proliferation, neoplasia, tissue modeling, and neuronal development. Members of the TNF family of cytokines are commonly membrane-bound homotrimers that can be released as cytokines by proteolytic cleavage.

As an essential member of the TNF family, TNF- α is a cytokine important in nearly all acute inflammatory reactions by acting as an amplifier of inflammation. TNF- α trimer exerts function by binding to the trimeric receptor TNFR-1 (CD120a) or TNFR-2 (CD120b). Interestingly, TNFR1 signaling is pro-inflammatory and apoptotic. The production of other pro-inflammatory cytokines (IL-1, IL-6, GM-CSF, etc.) may be induced subsequently. In contrast, TNFR2 signaling tends to be anti-inflammatory and promotes cell proliferation.



Featured TNF Proteins and Receptors

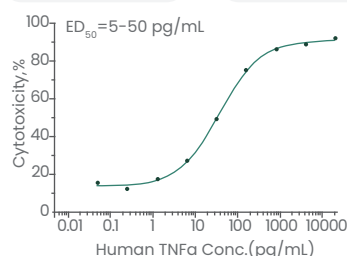
Human TNF- α Protein: 10602-HNAE

High-purity

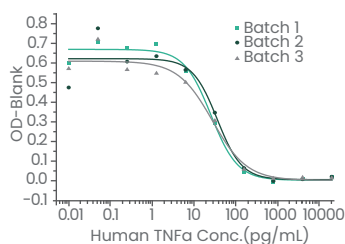
Low-endotoxin

Tag-free

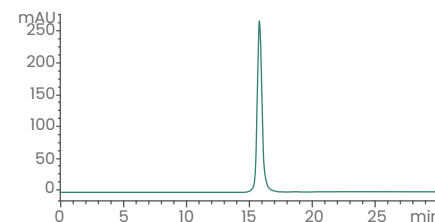
HPLC-verified



Cytotoxicity assay using L929 mouse fibrosarcoma cells in the presence of the metabolic inhibitor actinomycin D

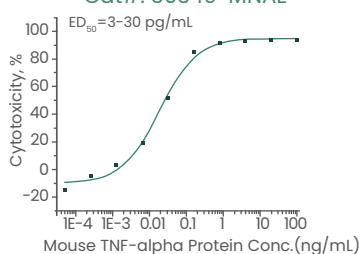


Batch-to-batch Consistency



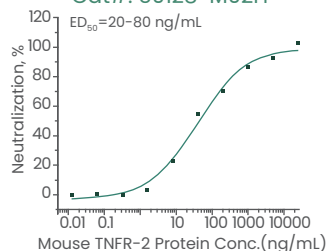
> 95% as determined by SEC-HPLC

Mouse TNF- α Protein Cat#: 50349-MNAE



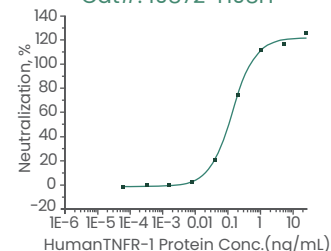
Cytotoxicity assay using L929 mouse fibrosarcoma cells in the presence of the metabolic inhibitor actinomycin D

Mouse TNFR-2 / CD120b Protein Cat#: 50128-M02H



Cytotoxicity assay using L929 mouse fibrosarcoma cells in the presence of the metabolic inhibitor actinomycin D

Human TNFR-1 / CD120a Protein Cat#: 10872-H08H



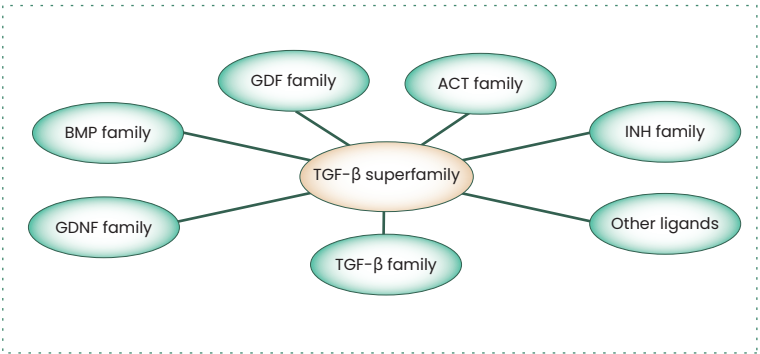
Ability to inhibit TNF α -mediated cytotoxicity in the L929 mouse fibrosarcoma cells in the presence of metabolic inhibitor actinomycin D

Hot Selling products (Partial)

Cat#	Molecule	Species	Bioactivity	Purity
15693-H01H	4-1BBL/TNFSF9	Human	Active	> 85%
90267-C01H	BAFF/BLyS	Cynomolgus	Active	> 95%
10620-H08H	BCMA	Human	Active	> 95%
10620-H03H-P (PE conjugated)	BCMA	Human		
10620-H15H	BCMA	Human	Active	> 95%
10620-H02H	BCMA	Human		> 95%
90847-K08H-B	CD137	Rhesus		> 95%
10041-H08H-B	CD137	Human	Active	> 95%
90091-C07H	CD30L	Cynomolgus	Active	> 95%
10481-H08H	OX40	Human	Active	> 90%
13127-H01H	OX40L/TNFSF4	Human		> 95%
11682-HNCH	RANKL	Human	Active	> 85%
10602-HNAE	TNF- α	Human	Active	> 95%
10602-HNAE-B	TNF- α	Human		> 90%
50349-MNAE	TNF- α	Mouse	Active	> 98%
10417-H03H	TNFR-2/CD120b	Human	Active	> 95%
10417-H08H	TNFR-2/CD120b	Human	Active	> 97%
90102-C08H	TNFR-2/CD120b	Cynomolgus, Rhesus		> 95%
50128-M08H	TNFR-2/CD120b	Mouse	Active	> 97%

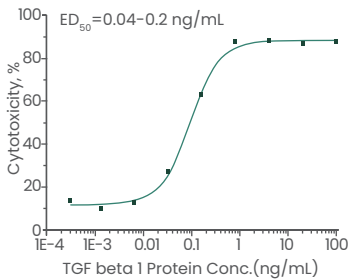
Transforming growth factor beta family

The Transforming Growth Factor Beta (TGF-beta) superfamily is composed of several subfamilies, including the TGF-beta proteins (comprising TGF-beta1, TGF-beta2, and TGF-beta3), Bone Morphogenetic Proteins (BMPs), Glial-derived Neurotrophic Factors (GDNFs), Growth Differentiation Factors (GDFs), activins (including activin A, B, and AB) and inhibins (inhibin alpha and beta), Nodal, Lefty, and Müllerian Inhibiting Substance (MIS). Members in this family are involved in initiating and controlling the proliferation and differentiation of many cell types in animals, thus playing essential roles in embryonal development and adult tissue homeostasis.



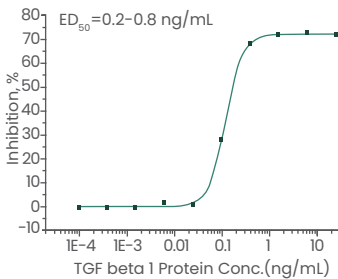
Featured TGF-beta Superfamily Proteins and Receptors

Human/Rhesus/Cynomolgus/Canine
TGF beta 1 Protein
Cat#: 10804-HNAC



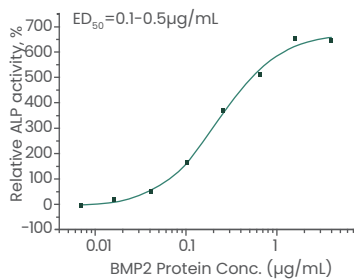
Ability to inhibit cell proliferation of Mv-1-lu mink lung epithelial cells

Rat/Mouse TGF beta 1 Protein
Cat#: 80116-RNAH



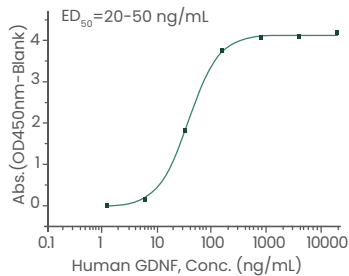
Ability to inhibit cell proliferation of Mv-1-lu mink lung epithelial cells

Human/Mouse/Rat/Rhesus/Canine
BMP-2 Protein
Cat#: 10426-HNAE



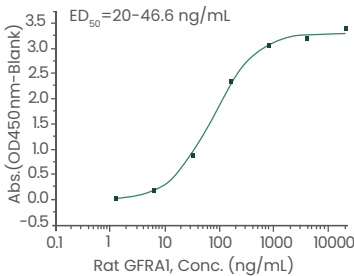
Ability to induce alkaline phosphatase production by MC3T3-E1 mouse osteoblastic cells

Human GDNF Protein
Cat#: 10561-HNAC



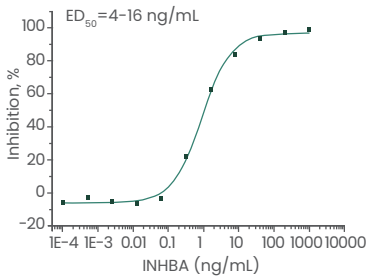
Binding ability by ELISA. Immobilized human GFRA1 (Cat:#10330-H02H) at 10 μg/mL (100μL/well) can bind GDNF

Rat GFRA1 Protein
Cat#: 80021-R02H



Binding ability by ELISA. Immobilized rat GDNF (Cat:#80050-R07B) at 10 μg/mL (100μL/well) can bind rat GFRA1

Human/Mouse/Rat/Cynomolgus/Rhesus
Activin A Protein
Cat#: 10429-HNAH



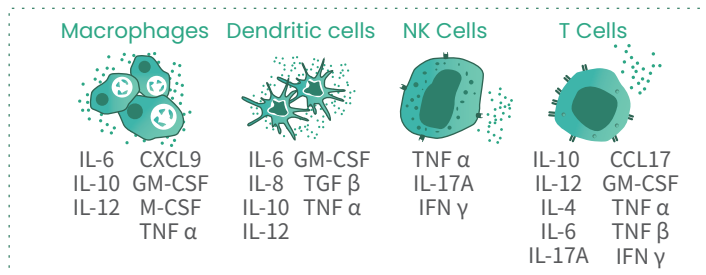
Ability to inhibit proliferation of MPC-11 cells

Hot Selling products (Partial)

Cat#	Molecule	Species	Bioactivity	Purity
10561-HNCH	GDNF	Human	Active	> 97%
10804-H08H	TGF beta 1	Human	Active	> 95%
10804-HNAC	TGF beta 1	Human, Rhesus, Cynomolgus, Canine	Active	> 95%
80116-RNAH	TGF beta 1	Mouse, Rat	Active	> 90%
90294-C08H	TGF beta 1	Cynomolgus	Active	> 95%
50698-M08H-B	TGF beta 1	Mouse		> 95%
10804-H08H-B	TGF beta 1	Human		> 95%
50153-M08H	TGF beta 2	Mouse		> 90%
10426-H01H	BMP-2	Human		> 95%
10358-H08B	TGFBR2	Human	Active	> 90%
10358-H02H	TGFBR2	Human	Active	> 95%

High-quality ELISA Kits for The Detection of Cytokines

Based on the well-established recombinant protein platform, antibody technology platform, and QC platform, Sino Biological Inc. has developed a variety of ELISA Kits for the quantitative detection of cytokines, which can be used to accurately quantify cytokines in plasma, serum, cell culture supernatant, and other biological samples, helping researchers to reveal the physiological mechanism of disease and explore the treatments.



8 International QC Test Indicators for High-quality ELISA Kits



Facts are More Eloquent Than Words: IL 4 ELISA Kit Comparison Among Different Brands

IL 4 target	ELISA Kit from Sino Biological Inc.	A high-end brand	A middle-end brand	A low-end brand
Standard curve	10.9-700 pg/mL	31.2-2,000 pg/mL	10.24-400 pg/mL	3.12-200 ng/mL
The limit of detection	2.5 pg/mL	10 pg/mL	2 pg/mL	0.78 ng/mL
Precision	CV < 15%	CV < 15%	CV < 15%	--
Recovery	80-120%	80-120%	80-120%	--
Linearity test	80-120%	80-120%	80-120%	--
Natural sample test	cell culture supernatant	cell culture supernatant	--	--
Cross reactivity	37 targets tested	32 targets tested	7 targets tested	--
Interference test	37 targets tested	32 targets tested	7 targets tested	--
Price	\$\$\$	\$\$\$\$\$	\$\$\$	\$\$\$

CV: coefficient of variation

ELISA Kits—Ready to Use

Species	Target	Cat#	Linear range (pg/mL)	Sample
Mouse	IL1A	KIT50114	6.56-420	S, C
Human	IL2	KIT11848	18.75-1200	S, C, P
Human	IL4	KIT11846	10.94-700	C
Human	IL5	KIT15673	4.69-300	C
Human	IL6	KIT10395A	5.47-350	S, C
Human	IL8	KIT10098	2.5-160	C
Human	IL10	KIT10947A	18.75-1200	C
Human	IL17A	KIT12047	1.88-120	C
Mouse	IL17A	KIT51065	23.44-1500	C
Human	IL18	KIT10119	46.88-3000	S
Mouse	IL18	KIT50073	46.88-3000	S
Human	TNFα	KIT10602	31.25-2000	C
Human	IFNγ	KIT11725A	23.44-1500	C
Human	CCL2	KIT10134	3.44-220	S, U
Mouse	CCL2	KIT50368	13.28-850	C
Human	CCL17	KIT10233	18.75-1200	S
Human	GM-CSF	KIT10015	7.81-500	C
Mouse	GM-CSF	KIT51048	1.88-120	S, C
Human	M-CSF	KIT11792	11.72-750	S, C, U
Human	NGF	KIT11050	3.13-200	C

Notes: S (Serum); C (Cell culture supernatant); P (Plasma); U (Urine)

ELISA Pair Sets—Cost-effective

Species	Target	Cat#	Linear range (pg/mL)
Mouse	IL1A	SEK50114	6.25-400
Human	IL5	SEKA15673	3.91-250
Human	IL6	SEKB10395	9.38-600
Human	IL8	SEK10098	11.72-750
Human	IL10	SEKA10947	14.06-900
Human	IL17A	SEK12047	1.17-75
Mouse	IL17A	SEK51065	15.62-1000
Human	IL18	SEK10119	31.25-2000
Mouse	IL18	SEK50073	31.25-2000
Human	IL33	SEK10368	1.56-100
Human	TNFα	SEKA10602	39.06-2500
Mouse	TNFα	SEK50349	31.25-2000
Ferret	TNFα	SEK60002	78.13-5000
Human	IFNγ	SEKA11725	21.88-1400
Human	CCL2	SEK10134	3.91-250
Mouse	CCL2	SEK50368	7-450
Human	CCL17	SEK10233	15.625-1000
Human	G-CSF	SEK10007	93.75-6000
Human	GM-CSF	SEK10015	6.25-400
Mouse	GM-CSF	SEK51048	1.88-120
Human	M-CSF	SEK11792	23.44-1500
Human	NGF	SEK11050	1.56-100



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