



# **Chimerigen Laboratories**

The Experts for High Quality Fusion Proteins

# **NEW** Butyrophilin-like 2 [BTNL2]

Butyrophilin-like 2 (BTNL2) is a butyrophilin family member with homology to the B7 costimulatory molecules. BTNL2-Ig fusion proteins were shown to recognize a putative receptor whose expression on B and T cells was significantly enhanced after activation. It inhibited T cell proliferation and TCR activation of NFAT, NF- $\kappa$ B and AP-1 signaling pathways. BTNL2 is the first member of the butyrophilin family that regulates T cell activation, which has implications in immune diseases and immunotherapy.

PID	PRODUCT NAME	SIZE
CHI-MF-110BTNL2	BTNL2 (mouse):Fc (mouse) (rec.)	100 µg

# NEW mlL-35/Fc – An Inhibitory Cytokine

#### Biological activity tested in vivo.

IL-35 suppresses T cell proliferation and converts naïve T cells into IL-35-producing induced regulatory T cells (iTr35). iTr35 cells can mediate self tolerance and prevent autoimmunity in an IL-35-dependent manner. IL-35 is considered to have a potential therapeutic effect against immune diseases and could promote the development of different kinds of vaccines for immunotherapy against cancer and be promising to cure autoimmune and inflammatory diseases.

I	PID	PRODUCT NAME	SIZE
	CHI-HF-21035	IL-35 (human):Fc (human) (rec.)	25 µg
	CHI-MF-11135	IL-35 (mouse):Fc (human) (rec.)	5 μg 25 μg

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# 2014

# Biologically Active BULK Proteins

CD152 [CTLA-4] (mouse):Fc (mouse) (rec.) CHI-MF-110A4

CD152 [CTLA-4] (mouse):Fc (mouse) (rec.) (non-lytic) CHI-MF-120A4

CD274 [B7-H1/PD-L1] (human):Fc (human) (rec.) CHI-HF-210PDL1

CD274 [B7-H1/PD-L1] (human):Fc (human) (rec.) (non-lytic) CHI-HF-220PDL1

CD274 [B7-H1/PD-L1] (mouse):Fc (mouse) (rec.) CHI-MF-110PDL1

CD274 [B7-H1/PD-L1] (mouse):Fc (mouse) (rec.) (non-lytic) CHI-MF-120PDL1

CD279 [PD-1] (human):Fc (human) (rec.) CHI-HF-210PD1

IL-21 (mouse):Fc (mouse) (rec.) (non-lytic) CHI-MF-12021

IL-21R (mouse):Fc (mouse) (rec.) (non-lytic) CHI-MF-12021R

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For all proteins – see inside !

#### Immune Checkpoint Proteins – The B7-CD28 Superfamily

The B7 family consists of structurally related, cell-surface protein ligands, which bind to receptors on lymphocytes that regulate immune responses. Activation of T and B lymphocytes is initiated by engagement of cell-surface, antigen-specific T cell or B cell receptors, but additional signals delivered simultaneously by B7 ligands determine the ultimate immune response. These "costimulatory" or "coinhibitory" signals are delivered by B7 ligands through the CD28 family of receptors on lymphocytes, resulting also in the modulation of interleukin production. Interaction of B7-family members with costimulatory receptors augments immune responses and interaction with coinhibitory receptors attenuates immune responses.





inducible costimulator ligand (ICOS-L), programmed death-1 ligand (PD-L1), programmed death-2 ligand (PD-L2), B7-H3, and B7-H4 and four known members of the CD28 family: CD28, CTLA-4 (CD152), ICOS, PD-1. The importance of the family in regulating immune responses is shown by the development of immunodeficiency and autoimmune diseases. Manipulation of the signals delivered by B7 ligands has shown potential in the treatment of autoimmunity, inflammatory diseases and cancer.

PID	PRODUCT NAME	SIZE	SOURCE	PURITY (SDS-PAGE)	ENDOTOXIN (LAL TEST)	LIT	NON- LYTIC
B7-CD28 Recept	ors						
CHI-HF-210CD28	CD28 (human):Fc (human) (rec.)	200 µg	CHO cells	≥98%	<0.06EU/µg		
CHI-MF-110CD28	CD28 (mouse):Fc (mouse) (rec.)	200 µg	CHO cells	≥98%	<0.06EU/µg		
CHI-HF-210A4	CD152 [CTLA-4] (human):Fc (human) (rec.)	100 µg 500 µg 1 mg	CHO cells	≥98%	<0.06EU/µg	1	
CHI-HF-220A4	CD152 [CTLA-4] (human):Fc (human) (rec.) (non-lytic)	100 µg 500 µg 1 mg	CHO cells	≥98%	<0.06EU/µg		1
CHI-HF-211A4	CD152 [CTLA-4] (human):Fc (mouse) (rec.)	100 µg	CHO cells	≥98%	<0.06EU/µg	1	
CHI-MF-110A4	CD152 [CTLA-4] (mouse):Fc (mouse) (rec.)	100 μg 500 μg 1 mg	NS1 cells	≥98%	<0.06EU/µg	1	
CHI-MF-120A4	CD152 [CTLA-4] (mouse):Fc (mouse) (rec.) (non-lytic)	100 μg 500 μg 1 mg	NS1 cells	≥98%	<0.06EU/µg	1	1
CHI-HF-210ICOS	CD278 [ICOS] (human):Fc (human) (rec.)	25 μg 100 μg	CHO cells	≥98%	<0.06EU/µg		
CHI-HF-220ICOS	CD278 [ICOS] (human):Fc (human) (rec.) (non-lytic)	25 μg 100 μg	CHO cells	≥98%	<0.06EU/µg		1
CHI-HF-211ICOS	CD278 [ICOS] (human):Fc (mouse) (rec.)	100 µg	CHO cells	≥98%	<0.06EU/µg		
CHI-MF-110ICOS	CD278 [ICOS] (mouse):Fc (mouse) (rec.)	100 µg	CHO cells	≥98%	<0.06EU/µg		
CHI-HF-210PD1	CD279 [PD-1] (human):Fc (human) (rec.)	100 µg	CHO cells	≥98%	<0.06EU/µg		
CHI-HF-220PD1	CD279 [PD-1] (human):Fc (human) (rec.) (non-lytic)	200 µg	CHO cells	≥98%	<0.06EU/µg		1
CHI-MF-110PD1	CD279 [PD-1] (mouse):Fc (mouse) (rec.)	100 µg	CHO cells	≥98%	<0.06EU/µg		



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PID	PRODUCT NAME	SIZE	SOURCE	PURITY (SDS-PAGE)	ENDOTOXIN (LAL TEST)	LIT	NON- LYTIC
B7-CD28 Ligand	s						
CHI-HF-210CD80	CD80 [B7-1] (human):Fc (human) (rec.)	100 µg	CHO cells	≥98%	<0.06EU/µg		
CHI-HF-211CD80	CD80 [B7-1] (human):Fc (mouse) (rec.)	100 µg	CHO cells	≥98%	<0.06EU/µg		
CHI-MF-110CD80	CD80 [B7-1] (mouse):Fc (mouse) (rec.)	100 µg	CHO cells	≥98%	<0.06EU/µg		
CHI-HF-210CD86	CD86 [B7-2] (human):Fc (human) (rec.)	100 µg	CHO cells	≥98%	<0.06EU/µg		
CHI-MF-110CD86	CD86 [B7-2] (mouse):Fc (mouse) (rec.)	100 µg	CHO cells	≥98%	<0.06EU/µg		
CHI-HF-210PDL2	CD273 [B7-DC/PD-L2] (human):Fc (human) (rec.)	100 µg	CHO cells	≥98%	<0.06EU/µg		
CHI-HF-220PDL2	CD273 [B7-DC/PD-L2] (human):Fc (human) (rec.) (non-lytic)	100 µg	CHO cells	≥98%	<0.06EU/µg		1
CHI-HF-211PDL2	CD273 [B7-DC/PD-L2] (human):Fc (mouse) (rec.)	100 µg	CHO cells	≥98%	<0.06EU/µg		
CHI-MF-110PDL2	CD273 [B7-DC/PD-L2] (mouse):Fc (mouse) (rec.)	100 µg	CHO cells	≥98%	<0.06EU/µg		
CHI-HF-210PDL1	CD274 [B7-H1/PD-L1] (human):Fc (human) (rec.)	100 µg	CHO cells	≥98%	<0.06EU/µg		
CHI-HF-220PDL1	CD274 [B7-H1/PD-L1] (human):Fc (human) (rec.) (non-lytic)	100 µg	CHO cells	≥98%	<0.06EU/µg		1
CHI-MF-110PDL1	CD274 [B7-H1/PD-L1] (mouse):Fc (mouse) (rec.)	100 µg	CHO cells	≥98%	<0.06EU/µg		
CHI-MF-120PDL1	CD274 [B7-H1/PD-L1] (mouse):Fc (mouse) (rec.) (non-lytic)	100 µg	CHO cells	≥98%	<0.06EU/µg	1	1
CHI-HF-210B7H2	CD275 [B7-H2/ICOSL] (human):Fc (human) (rec.)	100 µg	CHO cells	≥98%	<0.06EU/µg		
CHI-HF-220B7H2	CD275 [B7-H2/ICOSL] (human):Fc (human) (rec.) (non-lytic)	100 µg	CHO cells	≥98%	<0.06EU/µg		1
CHI-HF-211B7H2	CD275 [B7-H2/ICOSL] (human):Fc (mouse) (rec.)	100 µg	CHO cells	≥98%	<0.06EU/µg		
CHI-MF-110B7H2	CD275 [B7-H2/ICOSL] (mouse):Fc (mouse) (rec.)	100 µg	CHO cells	≥98%	<0.06EU/µg		
CHI-MF-120B7H2	CD275 [B7-H2/ICOSL] (mouse):Fc (mouse) (rec.) (non-lytic)	100 µg	CHO cells	≥98%	<0.06EU/µg		1
CHI-HF-210B7H3	CD276 [B7-H3] (human):Fc (human) (rec.)	100 µg	CHO cells	≥98%	<0.06EU/µg		
CHI-HF-211B7H3	CD276 [B7-H3] (human):Fc (mouse) (rec.)	100 µg	CHO cells	≥98%	<0.06EU/ug		
CHI-MF-110B7H3	CD276 [B7-H3] (mouse):Fc (mouse) (rec.)	100 µg	CHO cells	≥98%	<0.06EU/µg		
CHI-HF-210B7H4	B7-H4 (human):Fc (human) (rec.)	100 µg	CHO cells	≥98%	<0.06EU/µg		
CHI-HF-211B7H4	B7-H4 (human):Fc (mouse) (rec.)	100 µg	CHO cells	≥98%	<0.06EU/µg		
CHI-MF-110B7H4	B7-H4 (mouse):Fc (mouse) (rec.)	100 µg	CHO cells	≥98%	<0.06EU/µg		
Other Immune C	heckpoint Proteins						
CHI-HR-200CD27	CD27 (human) (rec.) (His)	50 µg	E. coli	≥97%	<0.1EU/µg		
CHI-HF-210CD27	CD27 (human):Fc (human) (rec.)	100 µg	CHO cells	≥98%	<0.06EU/µg		
CHI-HF-210CD40	CD40 (human):Fc (human) (rec.)	100 µg	CHO cells	≥98%	<0.06EU/µg		
CHI-HF-210CD40L	CD40L [CD154] (human):Fc (human) (rec.)	50 μg	CHO cells	≥98%	<0.06EU/µg		
CHI-HR-200CD134	CD134 [OX40] (human) (rec.) (His)	25 µg	E. coli	≥97%	<0.1EU/µg		
CHI-HF-210CD134	CD134 [OX40] (human):Fc (human) (rec.)	50 µg	CHO cells	≥98%	<0.06EU/µg		
CHI-HR-200CD137	CD137 [4-1BB] (human) (rec.) (His)	25 µg	E. coli	≥95%	<0.1EU/µg		
CHI-HF-210CD137	CD137 [4-1BB] (human):Fc (human) (rec.)	100 µg	CHO cells	≥98%	<0.06EU/µg		
CHI-HF-210CD272	CD272 [BTLA] (human):Fc (human) (rec.)	100 µg	CHO cells	≥98%	<0.06EU/µg		
CHI-HF-211CD272	CD272 [BTLA] (human):Fc (mouse) (rec.)	100 µg	CHO cells	≥98%	<0.06EU/µg		
Other Costimula	tion Markers						
CHI-HF-220ICAM1	CD54 [ICAM-1] (human):Fc (human) (rec.) (non-lytic)	100 µg	CHO cells	≥98%	<0.06EU/µg		1
CHI-MF-120ICAM1	CD54 [ICAM-1] (mouse):Fc (mouse) (rec.) (non-lytic)	50 µg	CHO cells	≥98%	<0.06EU/µg		1
CHI-HF-210CD68	CD68 (human):Fc (human) (rec.)	100 µg	CHO cells	≥98%	<0.06EU/µg		
CHI-HF-210CD83	CD83 (human):Fc (human) (rec.)	50 µg	CHO cells	≥98%	<0.06EU/µg		
CHI-HF-220CD83	CD83 (human):Fc (human) (rec.) (non-lytic)	100 µg	CHO cells	≥98%	<0.06EU/µg		1
CHI-MF-110CD83	CD83 (mouse):Fc (mouse) (rec.)	50 µg	CHO cells	≥98%	<0.06EU/µg		
CHI-HF-210CD160	CD160 (human):Fc (human) (rec.)	100 µg	CHO cells	≥98%	<0.06EU/µg		
CHI-HF-220CD200	CD200 (human):Fc (human) (rec.) (non-lytic)	100 µg	CHO cells	≥98%	<0.06EU/µg		1
CHI-MF-120CD200	CD200 (mouse):Fc (mouse) (rec.) (non-lytic)	50 µg	CHO cells	≥98%	<0.06EU/µg		1
CHI-HF-220LTBR	LTβR (human):Fc (human) (rec.) (non-lytic)	100 µg	CHO cells	≥98%	<0.06EU/µg		1

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#### **Targeting Immune Checkpoints – Overview**



Regulation and activation of T lymphocytes depend on signaling by the T cell receptor (TCR) and also by cosignaling receptors that deliver negative ( $\neg \bullet \rightarrow$ ) or positive ( $\neg \bullet \rightarrow$ ) signals. The amplitude and quality of the immune response of T cells is controlled by an equilibrium between costimulatory and inhibitory signals, called immune checkpoints. Under normal physiological conditions, immune checkpoints are crucial for the maintenance of self-tolerance and to protect tissues from damage during pathogenic infection. Manipulations of the inhibitory immune checkpoints using monoclonal antibodies or soluble receptors may provide therapeutic strategies for autoimmune diseases, tumor growth, infectious diseases and transplantation by enhancing T cell activity.

Some immune checkpoints have been actively studied for clinical immunotherapies:

- CTLA-4 (Cytotoxic T Lymphocyte Antigen-4) shares sequence homology and ligands (CD80/B7-1 or CD86/B7-2) with the costimulatory molecule CD28, but differs by delivering inhibitory signals to the T cells on which it is expressed as a receptor.
- PD-1 (Programmed Cell Death Protein-1) is a negative costimulatory molecule with two ligands, PD-L1 (also known as B7-H1; CD274) and PD-L2 (B7-DC; CD273).

Antagonistic monoclonal antibodies to CTLA-4 or PD-1 and soluble CTLA-4 or PD-1 receptors fused to the Fc region of immunoglobulin (Ig) are used for the enhancement of T cell cytotoxicity against tumor cells.

 LAG-3 (Lymphocyte Activation Gene-3 Protein) is a CD4-like negative regulatory protein with a high affinity binding to MHC Class II that leads to tolerance of T cell proliferation and homeostasis.

Blockade of the LAG-3/Class II interaction using a LAG-3-Ig fusion protein enhances antitumor immune responses. Combinatorial blockade of PD-1 and LAG-3 synergistically reduces the growth of established tumors.

In addition, blockade of other inhibitory receptors, such as **BTLA** (B- and T-lymphocyte attenuator), **KIR** (killer immunoglobulin-like receptors), **TIM-3** (T cell immunoglobulin and mucin domain-containing protein 3), **A2aR** (adenosine 2A receptor), **B7-H3 or H4** (B7 family members) either alone or in combination with a second immune checkpoint inhibitor has also been shown to enhance antitumor immunity.

Costimulatory signaling proteins such as ICOS (inducible T cell costimulator), CD28 or the TNF family members 4-1BB (CD137), OX40, CD27 or CD40, have been shown to be involved in allergy, autoimmune or inflammatory diseases.

#### REFERENCES

The blockade of immune checkpoints in cancer immunotherapy: D.M. Pardoll; Nat. Rev. Canc. **12**, 252 (2012) • Immunotherapies: The Blockade of Inhibitory Signals: Y.L. Wu, et al.; Int. J. Biol. Sci. **8**, 1420 (2012) • CTLA-4 blockade in tumor models: an overview of preclinical and translational research: J.F. Grosso & M.N. Jure-Kunkel; Cancer Immun. **13**, 5 (2013) • Combinatorial immunotherapy: PD-1 may not be LAG-ing behind any more: M.E. Turnis, et al.; Oncolmmunology **1**, 1172 (2012)





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## The TIM Family of Co-signaling Receptors

The TIM (T cell/transmembrane, immunoglobulin and mucin) family plays a critical role in regulating immune responses, including allergy, asthma, transplant tolerance, autoimmunity and the response to viral infections. The unique structure of TIM immunoglobulin variable region domains allows highly specific recognition of phosphatidylserine (PtdSer), exposed on the surface of apoptotic cells. TIM-1, important for asthma and allergy, is preferentially expressed on T-helper 2 (Th2) cells and functions as a potent costimulatory molecule for T cell activation. TIM-3 is preferentially expressed on Th1 and Tc1 cells and generates an inhibitory signal resulting in apoptosis of Th1 and Tc1 cells. TIM-3 is also expressed on some dendritic cells and can mediate phagocytosis of apoptotic cells and cross-presentation of antigen. TIM-4 is exclusively expressed on antigen-presenting cells, where it mediates phagocytosis of apoptotic cells and plays an important role in maintaining tolerance.

PID	PRODUCT NAME	SIZE	SOURCE	PURITY (SDS-PAGE)	ENDOTOXIN (LAL TEST)	LIT	NON- LYTIC
CHI-HF-210T1	Tim-1 (human):Fc (human) (rec.)	100 µg	CHO cells	≥98%	<0.06EU/µg	1	
CHI-MF-111T1	Tim-1 (mouse):Fc (human) (rec.)	100 µg	CHO cells	≥98%	<0.06EU/µg	1	
CHI-HF-210T3	Tim-3 (human):Fc (human) (rec.)	100 µg	CHO cells	≥98%	<0.06EU/µg	1	
CHI-HF-211T3	Tim-3 (human):Fc (mouse) (rec.)	100 µg	CHO cells	≥98%	<0.06EU/µg	1	
CHI-MF-111T3	Tim-3 (mouse):Fc (human) (rec.)	100 µg	CHO cells	≥98%	<0.06EU/µg	1	
CHI-HF-210T4	Tim-4 (human):Fc (human) (rec.)	100 µg	CHO cells	≥98%	<0.06EU/µg	1	
CHI-MF-111T4	Tim-4 (mouse):Fc (human) (rec.)	100 µg	CHO cells	≥98%	<0.06EU/µg		

#### **Other Immunomodulating Fusion Proteins**

CHI-HR-200BMP2	BMP-2 (human) (rec.) (His)	10 µg 50 µg	E. coli	≥95%	<0.1EU/µg	
CHI-HF-220BMP2	BMP-2 (human):Fc (human) (rec.) (non-lytic)	50 µg	CHO cells	≥98%	<0.06EU/µg	1
CHI-MF-110CSF3	CSF3 (mouse):Fc (mouse) (rec.)	10 µg 50 µg	CHO cells	≥98%	<0.06EU/µg	
CHI-HF-210DcR3	DcR3 (human):Fc (human) (rec.)	100 µg	CHO cells	≥98%	<0.06EU/µg	
CHI-HF-210EGF	EGF (human):Fc (human) (rec.)	100 µg	CHO cells	≥98%	<0.06EU/µg	
CHI-HF-220EPO	EPO (human):Fc (human) (rec.) (non-lytic)	50 µg	CHO cells	≥98%	<0.06EU/µg	1
CHI-HR-200HMGB1	HMGB1 (human) (rec.) (His)	25 µg	E. coli	≥90%	<0.1EU/µg	
CHI-RR-300HMGB1	HMGB1 (rat) (rec.) (His)	25 µg	E. coli	≥90%	<0.1EU/µg	
CHI-RF-311HMGB1	HMGB1 (rat):Fc (human) (rec.)	50 µg	CHO cells	≥98%	<0.06EU/µg	
CHI-MF-111SEMA4	Semaphorin-4A (mouse):Fc (human) (rec.)	100 µg	CHO cells	≥98%	<0.06EU/µg	

### **Inflammatory Chemokines**

CHI-HF-210CCL2	CCL2 (human):Fc (human) (rec.)	10 μg 50 μg	CHO cells	≥98%	<0.06EU/µg	
CHI-MF-110CCL2	CCL2 (mouse):Fc (mouse) (rec.)	10 µg 50 µg	CHO cells	≥98%	<0.06EU/µg	
CHI-HF-210CCL4	CCL4 (human):Fc (human) (rec.)	10 µg 50 µg	CHO cells	≥98%	<0.06EU/µg	
CHI-HR-200CCL5	CCL5 (human) (rec.) (His)	10 µg 50 µg	E. coli	≥98%	<0.1EU/µg	
CHI-HF-210CCL22	CCL22 (human):Fc (human) (rec.)	10 μg 50 μg	CHO cells	≥98%	<0.06EU/µg	
CHI-MF-110CCL22	CCL22 (mouse):Fc (mouse) (rec.)	10 μg 50 μg	CHO cells	≥98%	<0.06EU/µg	
CHI-HF-210CCL24	CCL24 (human):Fc (human) (rec.)	10 µg 50 µg	CHO cells	≥98%	<0.06EU/µg	
CHI-HF-210CX3C	CX3CL1 (human):Fc (human) (rec.)	25 μg 100 μg	CHO cells	≥98%	<0.06EU/µg	





### Non-lytic Ig-based Chimeric Fusion Cytokines with Long Circulating Half-life

The potential clinical application of cytokines to modulate immune responses is very high. Unfortunately, most cytokines have short circulating half-lives. Therefore, to facilitate the study of cytokine effects *in vivo*, a variety of non-lytic immunoglobulin-based chimeric cytokine fusion proteins have been created, in which a cytokine sequence had been genetically fused to the

hinge, CH2 and CH3 regions of an immunoglobulin. These non-lytic fusion proteins possess both the biological functions of the cytokine moiety and a prolonged circulating half-life determined by the Fc domain. They retain the potential to direct immune cytolytic mechanisms, antibody-dependent cell-mediated cytotoxicity (ADCC) and complement-dependent cytotoxicity (CDC) against cellular targets bound by the amino terminal binding moiety. These fusion molecules also have the promise of being minimally to negligibly immunogenic since they are made entirely from elements derived from the species to be treated.

Leu235 → Glu Fc receptor binding hinge CH2 CH3 Complement (C1q) binding Lys320 → Ala Lys322

LIT: Localization of the binding site for the human high-affinity Fc receptor on IgG: A.R. Duncan, et al.; Nature 332, 563 (1988) • The binding site for Clq on IgG: A.R. Duncan & G. Winter; Nature 332, 738 (1988) • Administration of noncytolytic IL-10/Fc in murine models of lipopolysaccharide-induced septic shock and allogeneic islet transplantation: X.X. Zheng, et al.; J. Immunol. 154, 5590 (1995)

FIGURE: General structure of mouse non-lytic fusion proteins.

PID	PRODUCT NAME	SIZE	SOURCE	PURITY (SDS-PAGE)	ENDOTOXIN (LAL TEST)	LIT	NON- LYTIC
Interleukin Fusio	on Proteins						
CHI-HR-20001A	IL-1α (human) (rec.) (His)	10 µg 50 µg	E. coli	≥98%	<0.1EU/µg		
CHI-HR-20001B	IL-1β (human) (rec.) (His)	10 µg 50 µg	E. coli	≥98%	<0.1EU/µg		
CHI-HF-21002	IL-2 (human):Fc (human) (rec.)	50 μg 3 x 50 μg	CHO cells	≥98%	<0.06EU/µg		
CHI-HF-22002	IL-2 (human):Fc (human) (rec.) (non-lytic)	50 μg 3 x 50 μg	NS1 cells	≥98%	<0.06EU/µg	1	1
CHI-MF-11002	IL-2 (mouse):Fc (mouse) (rec.)	10 μg 50 μg 5 x 10 μg	CHO cells	≥98%	<0.06EU/µg		
CHI-MF-12002	IL-2 (mouse):Fc (mouse) (rec.) (non-lytic)	10 μg 50 μg 5 x 10 μg	NS1 cells	≥98%	<0.06EU/µg	1	1
CHI-RR-30002	IL-2 (rat) (rec.) (His)	10 µg 50 µg	E. coli	≥95%	<1EU/µg		
CHI-HR-20004	IL-4 (human) (rec.) (His)	10 µg 50 µg	E. coli	≥98%	<0.1EU/µg		
CHI-HF-21004	IL-4 (human):Fc (human) (rec.)	10 μg 50 μg 5 x 10 μg	CHO cells	≥98%	<0.06EU/µg		
CHI-HF-22004	IL-4 (human):Fc (human) (rec.) (non-lytic)	10 μg 50 μg 5 x 10 μg	CHO cells	≥98%	<0.06EU/µg	1	1
CHI-MR-10004	IL-4 (mouse) (rec.) (His)	10 µg 50 µg	E. coli	≥98%	<0.1EU/µg		
CHI-MF-12004	IL-4 (mouse):Fc (mouse) (rec.) (non-lytic)	10 μg 50 μg 5 x 10 μg	CHO cells	≥98%	<0.06EU/µg	1	1
CHI-HR-20006	IL-6 (human) (rec.) (His)	10 µg 50 µg	E. coli	≥95%	<1EU/µg		
CHI-HF-21006	IL-6 (human):Fc (human) (rec.)	50 μg 3 x 50 μg	CHO cells	≥98%	<0.06EU/µg		
CHI-HF-22006	IL-6 (human):Fc (human) (rec.) (non-lytic)	50 μg 3 x 50 μg	CHO cells	≥98%	<0.06EU/µg		1
CHI-MF-12006	IL-6 (mouse):Fc (mouse) (rec.) (non-lytic)	50 μg 3 x 50 μg	CHO cells	≥98%	<0.06EU/µg		1
CHI-HF-21006R	IL-6R (human):Fc (human) (rec.)	50 µg	CHO cells	≥98%	<0.06EU/µg		
CHI-MF-11006R	IL-6R (mouse):Fc (mouse) (rec.)	50 µg	CHO cells	≥98%	<0.06EU/µg		



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PID	PRODUCT NAME	SIZE	SOURCE	PURITY (SDS-PAGE)	ENDOTOXIN (LAL TEST)	LIT	NON- LYTIC
CHI-HF-22007	IL-7 (human):Fc (human) (rec.) (non-lytic)	50 µg	CHO cells	≥98%	<0.06EU/µg		1
CHI-HR-20008	IL-8 (human) (rec.) (His)	10 µg 50 µg	E. coli	≥97%	<0.1EU/µg		
CHI-HF-22008	IL-8 (human):Fc (human) (rec.) (non-lytic)	10 µg 50 µg	CHO cells	≥98%	<0.06EU/µg		1
CHI-HR-20010	IL-10 (human) (rec.) (His)	10 µg 50 µg	E. coli	≥95%	<0.1EU/µg		
CHI-HF-21010	IL-10 (human):Fc (human) (rec.)	10 μg 50 μg 5 x 10 μg	CHO cells	≥98%	<0.06EU/µg		
CHI-HF-22010	IL-10 (human):Fc (human) (rec.) (non-lytic)	10 μg 50 μg 5 x 10 μg	CHO cells	≥98%	<0.06EU/µg	1	1
CHI-MF-12010	IL-10 (mouse):Fc (mouse) (rec.) (non-lytic)	10 μg 50 μg 5 x 10 μg	CHO cells	≥98%	<0.06EU/µg	1	1
CHI-HF-21012	IL-12 (human):Fc (human) (rec.)	25 µg	CHO cells	≥98%	<0.06EU/µg		
CHI-MF-11112	IL-12 (mouse):Fc (human) (rec.)	25 µg	CHO cells	≥98%	<0.06EU/µg		
CHI-HF-21015M	IL-15 (mutant) (human):Fc (human) (rec.)	50 µg	CHO cells	≥98%	<0.06EU/µg	1	
CHI-HF-21115MBI	IL-15 (mutant) (human):Fc (mouse) (rec.) (Biotin)	1 Vial	CHO cells	≥98%	<0.06EU/µg	1	
CHI-HR-20018	IL-18 (human) (rec.) (His)	10 µg 50 µg	E. coli	≥97%	<1EU/µg		
CHI-HF-22021	IL-21 (human):Fc (human) (rec.) (non-lytic)	50 µg	CHO cells	≥98%	<0.06EU/µg		1
CHI-MF-12021	IL-21 (mouse):Fc (mouse) (rec.) (non-lytic)	50 µg	CHO cells	≥98%	<0.06EU/µg		1
CHI-HR-20021M	IL-21 (mutant) (human) (rec.) (His)	10 µg 50 µg	E. coli	≥90%	<1EU/µg		
CHI-HF-21021R	IL-21R (human):Fc (human) (rec.)	100 µg	CHO cells	≥98%	<0.06EU/µg		
CHI-MF-12021R	IL-21R (mouse):Fc (mouse) (rec.) (non-lytic)	25 μg 100 μg	CHO cells	≥98%	<0.06EU/µg		1
CHI-HF-21022	IL-22 (human):Fc (human) (rec.)	25 μg 50 μg	CHO cells	≥98%	<0.06EU/µg		
CHI-HF-22022	IL-22 (human):Fc (human) (rec.) (non-lytic)	25 μg 50 μg	CHO cells	≥98%	<0.06EU/µg		1
CHI-MR-10022	IL-22 (mouse) (rec.) (His)	10 µg 50 µg	E. coli	≥95%	<1EU/µg		
CHI-MF-11022	IL-22 (mouse):Fc (mouse) (rec.)	25 μg 50 μg	CHO cells	≥98%	<0.06EU/µg		
CHI-MF-12022	IL-22 (mouse):Fc (mouse) (rec.) (non-lytic)	25 μg 50 μg	CHO cells	≥98%	<0.1EU/µg		1
CHI-MF-11123	IL-23 (mouse):Fc (human) (rec.)	50 µg	CHO cells	≥98%	<0.06EU/µg		
CHI-HF-21023R	IL-23R (human):Fc (human) (rec.)	100 µg	CHO cells	≥98%	<0.06EU/µg		
CHI-HF-21024	IL-24 (human):Fc (human) (rec.)	25 µg	CHO cells	≥98%	<0.06EU/µg		
CHI-HF-21027	IL-27 (human):Fc (human) (rec.)	50 µg	CHO cells	≥98%	<0.06EU/µg		
CHI-HF-22027	IL-27 (human):Fc (human) (rec.) (non-lytic)	50 µg	CHO cells	≥98%	<0.06EU/µg		1
CHI-MF-11127	IL-27 (mouse):Fc (human) (rec.)	50 µg	CHO cells	≥98%	<0.06EU/µg		
CHI-HR-20033	IL-33 (human) (rec.) (His)	20 μg 50 μg	E. coli	≥98%	<1EU/µg		
CHI-HF-21033R	IL-33R (human):Fc (human) (rec.)	50 µg	CHO cells	≥98%	<0.06EU/µg		
CHI-MF-11033R	IL-33R (mouse):Fc (mouse) (rec.)	50 µg	CHO cells	≥98%	<0.06EU/µg		
CHI-HF-21035	IL-35 (human):Fc (human) (rec.)	25 µg	CHO cells	≥98%	<0.06EU/µg		
CHI-MF-11135	IL-35 (mouse):Fc (human) (rec.)	5 μg 25 μg	CHO cells	≥98%	<0.06EU/µg		

Chimerigen



# Stem Cell Factor (SCF)

SCF plays an essential role in the regulation of cell survival and proliferation, hematopoiesis, stem cell maintenance (binding to haemapoietic stem cells), gametogenesis, mast cell development, migration and function, and in melanogenesis by activating several signaling pathways.

PID	PRODUCT NAME	SIZE	SOURCE	PURITY (SDS-PAGE)	ENDOTOXIN (LAL TEST)	LIT	NON- LYTIC
CHI-HF-210SCF	SCF (human):Fc (human) (rec.)	10 µg 50 µg	CHO cells	≥98%	<0.06EU/µg		
CHI-HF-220SCF	SCF (human):Fc (human) (rec.) (non-lytic)	50 µg	CHO cells	≥98%	<0.06EU/µg		1
CHI-HF-211SCF	SCF (human):Fc (mouse) (rec.)	50 µg	CHO cells	≥98%	<0.06EU/µg		
CHI-MF-110SCF	SCF (mouse):Fc (mouse) (rec.)	50 µg	CHO cells	≥98%	<0.06EU/µg		
CHI-MF-120SCF	SCF (mouse):Fc (mouse) (rec.) (non-lytic)	50 µg	CHO cells	≥98%	<0.06EU/µg		1
CHI-RF-311SCF	SCF (rat):Fc (mouse) (rec.)	10 µg 50 µg	CHO cells	≥98%	<0.06EU/µg		

#### **Transplant Tolerance Induction**

#### TGFβ1 (mutant) (human):Fc (human) (rec.)

CHI-HF-210TGFBM-C100

100 µg

**BIOLOGICAL ACTIVITY:** Shows the biological functions of TGF $\beta$ 1 and exerts a prolonged circulation half-live caused by the modified Fc domain.

Produced in CHO cells. The extracellular domain of a mutant human TGF $\beta$ 1 is fused at the C-terminus to the Fc portion of human IgG4. Site-directed mutagenesis was used to change three cysteine codons into a serine codon that are located in the pro region of the TGF $\beta$  precursor at amino acid positions 33, 223 and 225. **PURITY:**  $\geq$ 98% (SDS-PAGE). **ENDOTOXIN CONTENT:** <0.06EU/µg protein (LAL test; Lonza).

LIT: Combined administration of a mutant TGF-beta1/Fc and rapamycin promotes induction of regulatory T cells and islet allograft tolerance: W. Zhang, et al.; J. Immunol. 185, 4750 (2010)

#### Specific IL-15R $\alpha$ Antagonist

#### IL-15 (mutant) (human):Fc (mouse) (rec.)

HI-HF-21015M-C050		50 µg
:HI-HF-21115MBI-1	Biotin	1 Vial

**BIOLOGICAL ACTIVITY:** Competitively inhibits IL-15-triggered cell proliferation, promotes transplant tolerance, does not activate the STAT-signaling pathway and posseses a prolonged circulating half-life determined by the Fc domain. **APPLICATION (BIOTIN):** Useful for immunofluorescent staining and flow cytometric analysis to identify and enumerate IL-15R $\alpha$  expressing cells within mixed cell populations.

For more Product Information see Page 7.

LIT: Targeting the IL-15 receptor with an antagonist IL-15 mutant/Fc gamma2a protein blocks delayed-type hypersensitivity: Y.S. Kim, et al.; J. Immunol. **160**, 5742 (1998) • Limiting  $\gamma$ c expression differentially affects signaling via the interleukin (IL)-7 and IL-15 receptors: C.M. Smyth, et al.; Blood **110**, 91 (2007)

#### **Negative Control Fusion Proteins**

PID	PRODUCT NAME	SIZE	SOURCE	PURITY (SDS-PAGE)	ENDOTOXIN (LAL TEST)	LIT	NON- LYTIC
CHI-HF-210IG1	Fc (human) lgG1 Control (rec.)	100 µg	HEK 293 cells	≥98%	<0.06EU/µg		
CHI-HF-220IG1	Fc (human) lgG1 Control (rec.) (non-lytic)	100 µg	HEK 293 cells	≥98%	<0.06EU/µg		1
CHI-MF-110IG2A	Fc (mouse) IgG2a Control (rec.)	100 µg	HEK 293 cells	≥98%	<0.06EU/µg		
CHI-MF-120IG2A	Fc (mouse) IgG2a Control (rec.) (non-lytic)	100 µg	HEK 293 cells	≥98%	<0.06EU/µg		1

CONTACT

Chimerigen 🔘 М

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