Chimerigen Laboratories

The Experts for High Quality Fusion Proteins

Our Speciality:

Unique Immunoglobulin-based Chimeric (non-lytic) Fusion Proteins

- Long Circulating Half-Life
- High Performance & Quality
- Full Biological Activity

Since many years Chimerigen Laboratories, LLC (Chimerigen) develops, manufactures and markets high quality and leading edge proteins for biomedical and immunology research. One of Chimerigen's specialty is the production of unique immunoglobulin based chimeric fusion proteins using advanced cellular and molecular biological techniques. These reagents are used successfully in basic and applied research. AdipoGen has now become a trusted and reliable marketing and sales partner for Chimerigen's product panel. Because of the high performance characteristics and quality the Chimerigen fusion proteins are widely recognized reagents and are cited in many scientific publications.

FUSION PROTEINS

Chimerigen

HIGHLIGHTS

Killing and Modulation – Two Forms of Mouse CD152 [CTLA-4] Fusion Proteins for *in vivo* Studies

CD152 [CTLA-4] (mouse):Fc (mouse) (rec.)

CHI-MF-110A4-C100	100 µg
CHI-MF-110A4-C500	500 µg
CHI-MF-110A4-M001	1 mg

BIOLOGICAL ACTIVITY: Binds both CD80 (B7-1) and CD86 (B7-2) with high affinity and inhibits CD28 signaling competitively. Kills the target cell completely.

LIT: Improved immunological tolerance following combination therapy with CTLA-4/Ig and AAV-mediated PD-L1/2 muscle gene transfer: S. Adriouch, et al.; Front. Microbiol. **2,** 199 (2011)
• Many more references!

CD152 [CTLA-4] (mouse):Fc (mouse) (rec.) (non-lytic)

CHI-MF-120A4-C100	100 µg
CHI-MF-120A4-C500	500 µg
CHI-MF-120A4-M001	1 mg

BIOLOGICAL ACTIVITY: Blocks the binding of mouse CD80 (B7-1) and CD86 (B7-2) to their receptors (by binding CD80 and CD86 with high affinity) and thereby prevents their T cell regulatory actions by inhibiting the CD28 signaling competitively. Shows the biological functions of the CD152 moiety and exerts a prolonged circulating half-life caused by the modified Fc domain. Useful for investigating the T cell co-stimulation.

LIT: Selective CD28 Blockade Attenuates Acute and Chronic Rejection of Murine Cardiac Allografts in a CTLA-4-Dependent Manner: T. Zhang, et al.; Am. J. Transplant. **11,** 1599 (2011)
• Many more references!

BULK available!

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.

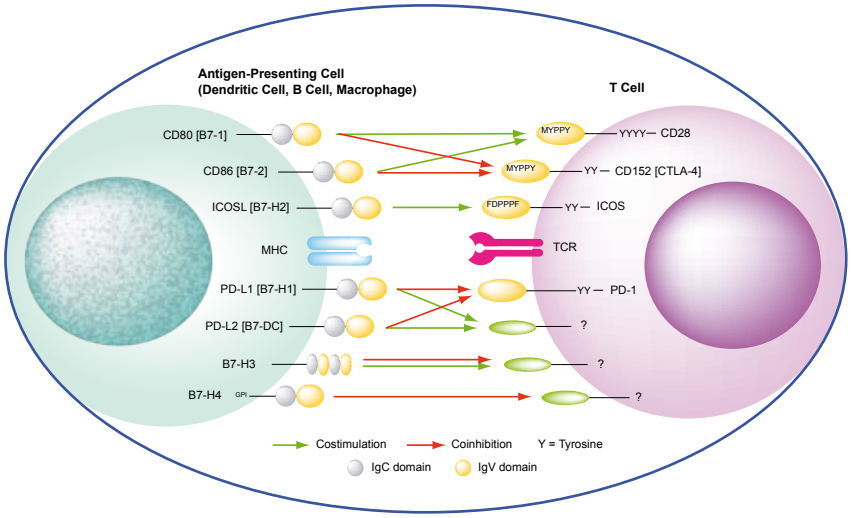


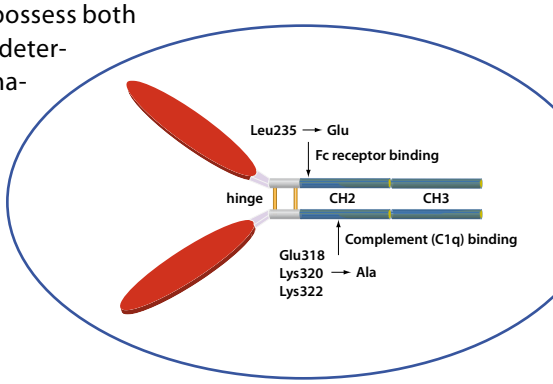
FIGURE: Overview of the B7-CD28 Superfamily.

There are currently seven known members of the B7 family: B7.1 (CD80), B7.2 (CD86), 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 Receptors							
CHI-HF-210A4	CD152 [CTLA-4] (human):Fc (human) (rec.)	100 µg 500 µg 1 mg	NS1 cells	≥98%	<0.06EU/µg	✓	
CHI-MF-110A4	CD152 [CTLA-4] (mouse):Fc (mouse) (rec.)	100 µg 500 µg 1 mg	NS1 cells	≥98%	<0.06EU/µg	✓	
CHI-MF-120A4	CD152 [CTLA-4] (mouse):Fc (mouse) (rec.) (non-lytic)	100 µg 500 µg 1 mg	NS1 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		✓
B7-CD28 Ligands							
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		✓
CHI-MF-120PDL1	CD274 [B7-H1/PD-L1] (mouse):Fc (mouse) (rec.) (non-lytic)	100 µg	CHO cells	≥98%	<0.06EU/µg	✓	✓
CHI-MF-110B7H2	CD275 [B7-H2] (mouse):Fc (mouse) (rec.)	100 µg	CHO cells	≥98%	<0.06EU/µg		
CHI-HF-220PDL2	CD273 [PD-L2] (human):Fc (human) (rec.) (non-lytic)	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		
Other Costimulation Markers							
CHI-HF-210CD40L	CD40L [CD154] (human):Fc (human) (rec.)	50 µg	CHO cells	≥98%	<0.06EU/µg		
CHI-HF-220ICAM1	CD54 [ICAM-1] (human):Fc (human) (rec.) (non-lytic)	100 µg	CHO cells	≥98%	<0.06EU/µg		✓
CHI-MF-120ICAM1	CD54 [ICAM-1] (mouse):Fc (mouse) (rec.) (non-lytic)	50 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		✓
CHI-HF-220CD200	CD200 (human):Fc (human) (rec.) (non-lytic)	100 µg	CHO cells	≥98%	<0.06EU/µg		✓
CHI-MF-120CD200	CD200 (mouse):Fc (mouse) (rec.) (non-lytic)	50 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.



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 Fusion Proteins							
CHI-HF-21002	IL-2 (human):Fc (human) (rec.) MultiPack	50 µg 3 x 50 µg	CHO cells	≥98%	<0.06EU/µg		
CHI-HF-22002	IL-2 (human):Fc (human) (rec.) (non-lytic) MultiPack	50 µg 3 x 50 µg	NS1 cells	≥98%	<0.06EU/µg	✓	✓
CHI-MF-12002	IL-2 (mouse):Fc (mouse) (rec.) (non-lytic) MultiPack	10 µg 5 x 10 µg	NS1 cells	≥98%	<0.06EU/µg	✓	✓
CHI-HF-22004	IL-4 (human):Fc (human) (rec.) (non-lytic) MultiPack	10 µg 5 x 10 µg	NS1 cells	≥98%	<0.06EU/µg	✓	✓
CHI-MF-12004	IL-4 (mouse):Fc (mouse) (rec.) (non-lytic) MultiPack	10 µg 5 x 10 µg	NS1 cells	≥98%	<0.06EU/µg	✓	✓
CHI-HF-21006	IL-6 (human):Fc (human) (rec.) MultiPack	50 µg 3 x 50 µg	CHO cells	≥98%	<0.06EU/µg		
CHI-HF-22006	IL-6 (human):Fc (human) (rec.) (non-lytic) MultiPack	50 µg 3 x 50 µg	CHO cells	≥98%	<0.06EU/µg		✓
CHI-MF-12006	IL-6 (mouse):Fc (mouse) (rec.) (non-lytic) MultiPack	50 µg 3 x 50 µg	CHO cells	≥98%	<0.06EU/µg		✓
CHI-HF-21006R	IL-6R (human):Fc (human) (rec.)	50 µg	CHO cells	≥98%	<0.06EU/µg		
CHI-HF-22010	IL-10 (human):Fc (human) (rec.) (non-lytic) MultiPack	10 µg 5 x 10 µg	NS1 cells	≥98%	<0.06EU/µg	✓	✓
CHI-MF-12010	IL-10 (mouse):Fc (mouse) (rec.) (non-lytic) MultiPack	10 µg 5 x 10 µg	NS1 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	✓	
CHI-HF-21115MBI	IL-15 (mutant) (human):Fc (mouse) (rec.) (Biotin)	1 Vial	CHO cells	≥98%	<0.06EU/µg	✓	
CHI-HF-22021	IL-21 (human):Fc (human) (rec.) (non-lytic)	50 µg	CHO cells	≥98%	<0.06EU/µg		✓
CHI-MF-12021	IL-21 (mouse):Fc (mouse) (rec.) (non-lytic)	50 µg	CHO cells	≥98%	<0.06EU/µg		✓
CHI-HF-21021R	IL-21R (human):Fc (human) (rec.)	100 µg	CHO cells	≥98%	<0.06EU/µg		
CHI-HF-21022	IL-22 (human):Fc (human) (rec.)	25 µg	CHO cells	≥98%	<0.06EU/µg		
CHI-HF-22022	IL-22 (human):Fc (human) (rec.) (non-lytic)	25 µg	CHO cells	≥98%	<0.06EU/µg		✓
CHI-MF-11022	IL-22 (mouse):Fc (mouse) (rec.)	25 µg	CHO cells	≥98%	<0.06EU/µg		
CHI-MF-11123	IL-23 (mouse):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		✓
CHI-MF-11127	IL-27 (mouse):Fc (human) (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.)	25 µg	CHO cells	≥98%	<0.06EU/µg		

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	✓	
CHI-HF-210T3	Tim-3 (human):Fc (human) (rec.)	100 µg	CHO cells	≥98%	<0.06EU/µg	✓	
CHI-HF-210T4	Tim-4 (human):Fc (human) (rec.)	100 µg	CHO cells	≥98%	<0.06EU/µg	✓	

Other Immunomodulating Fusion Proteins

PID	PRODUCT NAME	SIZE	SOURCE	PURITY (SDS-PAGE)	ENDOTOXIN (LAL TEST)	LIT	NON-LYTIC
CHI-HF-220BMP2	BMP-2 (human):Fc (human) (rec.) (non-lytic)	50 µg	CHO cells	≥98%	<0.06EU/µg		✓
CHI-RF-311HMGB1	HMGB1 (rat):Fc (human) (rec.)	50 µg	CHO cells	≥98%	<0.06EU/µg		
CHI-HF-220LTBR	LTβR (human):Fc (human) (rec.) (non-lytic)	100 µg	CHO cells	≥98%	<0.06EU/µg		✓
CHI-MF-111SEMA4	Semaphorin-4A (mouse):Fc (human) (rec.)	100 µg	CHO cells	≥98%	<0.06EU/µg		
CHI-HF-211SCF	SCF (human):Fc (mouse) (rec.)	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		✓
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		✓

Transplant Tolerance Induction

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

CHI-HF-210TGFBM-C100 — 100 µg

BIOLOGICAL ACTIVITY: Shows the biological functions of TGFβ1 and exerts a prolonged circulation half-live caused by the modified Fc domain.

Produced in CHO cells. The extracellular domain of a mutant human TGFβ1 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 TGFβ precursor at amino acid positions 33, 223 and 225. **PURITY:** ≥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-15Rα Antagonist

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

CHI-HF-21015M-C050 — 50 µg
CHI-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 possesses 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-15Rα expressing cells within mixed cell populations.

For more Product Information see Page 3.

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 γc expression differentially affects signaling via the interleukin (IL)-7 and IL-15 receptors: C.M. Smyth, et al.; Blood **110,** 91 (2007)

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