

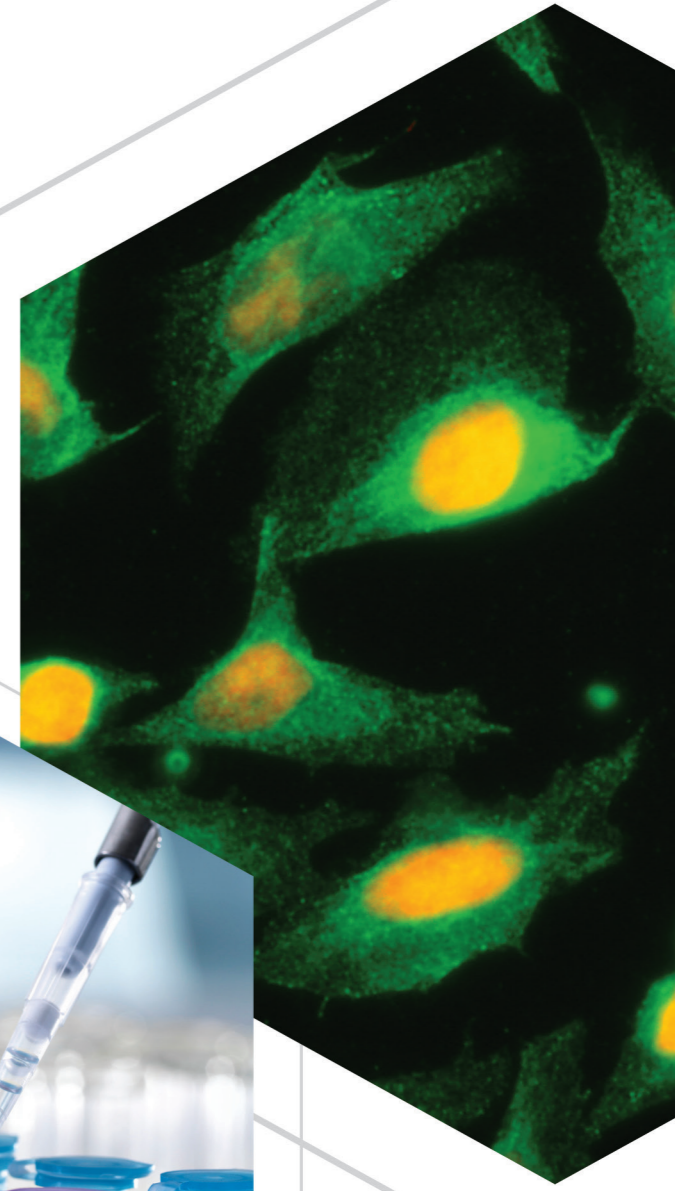


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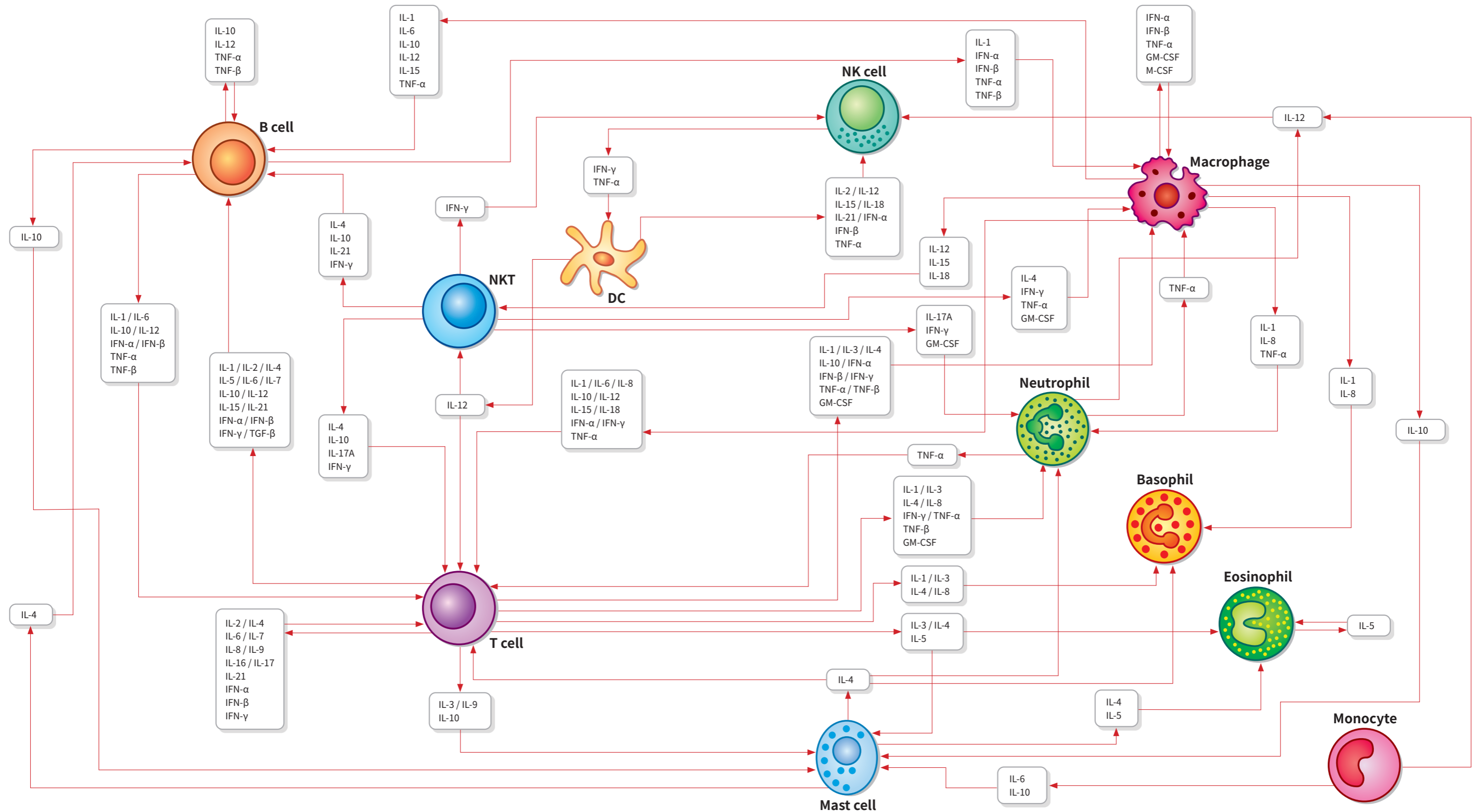
Cytokine Network

Cytokines are a broad and loose category of small proteins important in cell signaling. Cytokines are peptides and cannot cross the lipid bilayer of cells to enter the cytoplasm. Cytokines have been shown to be involved in autocrine, paracrine and endocrine signaling as immunomodulating agents.

Cytokines include chemokines, interferons, interleukins, lymphokines, and tumor necrosis factors, but generally not hormones or growth factors. Cytokines are important in health and disease, specifically in host immune responses to infection, inflammation, trauma, sepsis, cancer, and reproduction.

Cytokines are produced by a broad range of cells, including immune cells like macrophages, B lymphocytes, T lymphocytes and mast cells, as well as endothelial cells, fibroblasts, and various stromal cells; a given cytokine may be produced by more than one type of cell.

Cytokines are important in health and disease, specifically in host immune responses to infection, inflammation, trauma, sepsis, cancer, and reproduction.



Interleukins & Interleukin Receptors

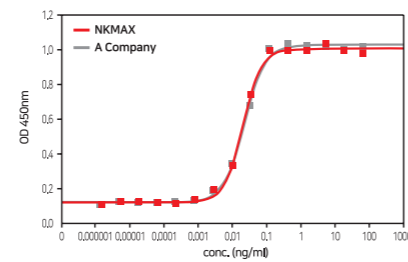
Interleukins (ILs) are a group of cytokines (secreted proteins and signal molecules) that were first seen to be expressed by white blood cells (leukocytes). ILs can be divided into four major groups based on distinguishing structural features. However, their amino acid sequence similarity is rather weak (typically 15–25% identity). The human genome encodes more than 50 interleukins and related proteins. The function of the immune system depends in a large part on interleukins, and rare deficiencies of a number of them have been described, all featuring autoimmune diseases or immune deficiency.

• Interleukin related products

Product name	Species	Expression system	Cat No.
IL-1 alpha	H	<i>E.coli</i>	ILA0801
	H	<i>E.coli</i>	ATGP3864
	M	<i>E.coli</i>	ATGP2863(D)
	M	Baculovirus	ATGP3932
	R	<i>E.coli</i>	ATGP3192
	R	<i>E.coli</i>	ATGP3846
IL-1 beta	C	Baculovirus	ATGP3976
	H	<i>E.coli</i>	ILB0701
	M	<i>E.coli</i>	ILB0801
	M	<i>E.coli</i>	ATGP3398
IL-2(C145S)	H	<i>E.coli</i>	ILB0501
	M	<i>E.coli</i>	ATGP2987
IL-2(C160S)	M	<i>E.coli</i>	ATGP2987
IL-2	R	<i>E.coli</i>	ATGP3889
IL-2(C147S)	C	<i>E.coli</i>	ATGP3544
IL-2(C146S)	F	<i>E.coli</i>	ATGP3611
IL-3	H	<i>E.coli</i>	ILC0702
	H	<i>E.coli</i>	ATGP3365
	M	Baculovirus	ATGP3211
IL-4	H	HEK293	ATGP3983
	H	<i>E.coli</i>	ILD0905
IL-5	H	<i>E.coli</i>	ATGP3421
	H	Baculovirus	ATGP3510
	M	HEK293	ATGP4028
IL-6	M	Baculovirus	ATGP4029
	C	Baculovirus	ATGP3985
	H	<i>E.coli</i>	ATGP3256
	H	<i>E.coli</i>	ATGP0352
IL-7	H	Baculovirus	ATGP3278
	M	<i>E.coli</i>	ATGP2828(D)
	M	Baculovirus	ATGP3154
	R	Baculovirus	ATGP3711
IL-8 / CXCL8	C	Baculovirus	ATGP3543
	H	Baculovirus	ATGP3442
IL-9	H	<i>E.coli</i>	ILH0501
	C	HEK293	ATGP4043
IL-10	H	Baculovirus	ATGP2965
	H	Baculovirus	ATGP3912

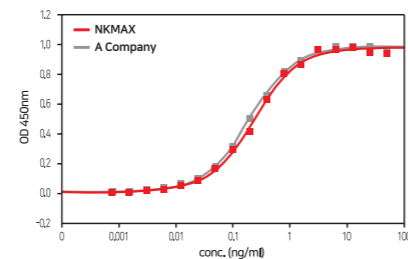
H : Human M : Mouse R : Rat C : Canine F : Feline D : Denature form

Human IL-1 beta (ILB0701)



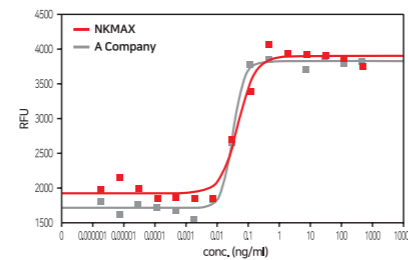
Measured in a cell proliferation assay using D10.G4.1 mouse helper T cells.

Mouse IL-2 (ATGP2987)



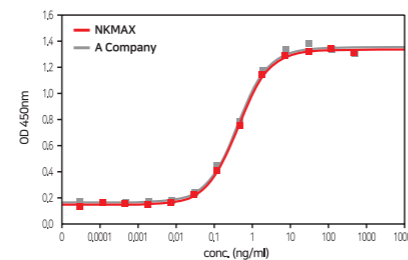
Measured in a cell proliferation assay using CTLL-2 mouse T lymphocyte.

Human IL-3 (ATGP3365)



Measured in a cell proliferation assay TF-1 human erythroleukemic cells.

Human IL-6 (ATGP0352)



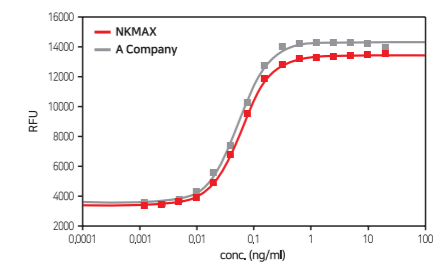
Measured in a cell proliferation assay TF-1 human erythroleukemic cells.

• Interleukin related products(continued)

Product name	Species	Expression system	Cat No.
IL-10	H	Baculovirus	ATGP3920
IL-12	H	Baculovirus	ATGP2843
	M	Baculovirus	ATGP3739
IL-12 p40	H	Baculovirus	ATGP1483
IL-15	H	<i>E.coli</i>	ATGP3844
	M	<i>E.coli</i>	ATGP3883
IL-16	H	<i>E.coli</i>	ILP0801
	H	<i>E.coli</i>	ATGP3017
IL-17A	H	Baculovirus	ATGP3083
	M	Baculovirus	ATGP3280
IL-17B	C	HEK293	ATGP4068
	H	<i>E.coli</i>	ATGP2077(D)
IL-17E / IL-25	H	Baculovirus	ATGP3535
	H	HEK293	ATGP4018
IL-17F	H	<i>E.coli</i>	ATGP2215(D)
	H	Baculovirus	ATGP3605
IL-18	M	<i>E.coli</i>	ATGP0271
	M	<i>E.coli</i>	ATGP3006
IL-19	H	HEK293	ATGP4024
IL-21	H	<i>E.coli</i>	ATGP3861
	H	Baculovirus	ATGP3802
	M	<i>E.coli</i>	ATGP4049
	C	<i>E.coli</i>	ATGP3974
IL-22	H	Baculovirus	ATGP3842
IL-23	H	Baculovirus	ATGP3598
IL-28A / IFNL2	H	<i>E.coli</i>	ATGP2563(D)
IL-28B / IFNL3	H	Baculovirus	ATGP3080
IL-29 / IFNL1	H	<i>E.coli</i>	ATGP2955(D)
	H	Baculovirus	ATGP3419
IL-31	C	HEK293	ATGP4105
	C	Baculovirus	ATGP3570
	C	Baculovirus	ATGP3888
IL-32	H	<i>E.coli</i>	ATGP0266
	H	<i>E.coli</i>	ILC0701
IL-33	M	<i>E.coli</i>	ATGP2860
	R	<i>E.coli</i>	ATGP3167
IL-34	H	<i>E.coli</i>	ATGP1990(D)
	H	Baculovirus	ATGP3796
IL-36 alpha / IL-1F6	M	<i>E.coli</i>	ATGP2951(D)
	M	<i>E.coli</i>	ATGP3166
IL-36 gamma / IL-1F9	H	<i>E.coli</i>	ATGP2236
IL-38 / IL-1F10	H	<i>E.coli</i>	ATGP2240
	H	<i>E.coli</i>	ATGP3044

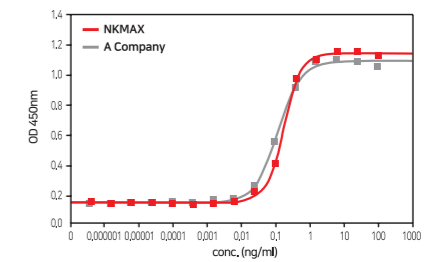
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Human IL-9 (ATGP3912)



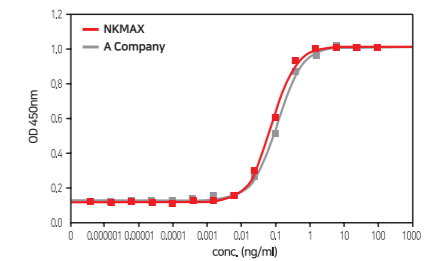
Human IL-9 stimulates cell proliferation of the MO7e human megakaryocytic leukemic cells.

Human IL-33 (ILC0701)



Measured in a cell proliferation assay using D10.G4.1 mouse helper T cells.

Mouse IL-33 (ATGP2860)



Measured in a cell proliferation assay using D10.G4.1 mouse helper T cells.

Published

Kim HR. et al. Anti-cancer activity and mechanistic features of a NK cell activating molecule. *Cancer Immunol Immunother.* 2009 58(10): 1257-69. [PMID 19259669] **Recombinant IL-2 (C145S), Recombinant IL-8 / CXCL8, Recombinant IL-12 p70, Recombinant IL-15, Recombinant IL-18.**

Lee HM. et al. A Comparative Study of the Effects of Inhibitory Cytokines on Human Natural Killer Cells and the Mechanistic Features of Transforming growth factor-beta. *Cell Immunol.* 2014 290(1): 52-61. [PMID 24879062] **Recombinant IL-2 (C145S), Recombinant IL-4, Recombinant IL-10.**

Choi DY. et al. Molecularly imprinted polymer-based electrochemical impedimetric sensors on screen-printed carbon electrodes for the detection of trace cytokine IL-1β. *Biosens Bioelectron.* 2022 204:114073. [PMID 35144170] **Recombinant IL-1 beta/IL1B.**

Lee Y. et al. In vivo Anti-Cancer Effects of Resveratrol Mediated by NK Cell Activation. *J Innate Immun.* 2021 13(2): 94-106. [PMID 32937636] **Recombinant IL-2 (C145S).**

Lee YJ. et al. Resveratrol Activates Natural Killer Cells through Akt- and mTORC2-Mediated c-Myb Upregulation. *Int J Mol Sci.* 2020 21(24): 9575. [PMID 33339133] **Recombinant IL-2 (C145S).**

Shin HW. et al. Role of c-Myb in the regulation of natural killer cell activity. *IBiochem Biophys Res Commun.* 2018 503(4): 2807-2813. [PMID 30103947] **Recombinant IL-2 (C145S).**

J Koh. et al. Susceptibility of CD24+ ovarian cancer cells to anti-cancer drugs and natural killer cells. *Biochemical and Biophysical Research Communications.* 2012 427(2): 373-8. [PMID 22995296] **Recombinant IL-2 (C145S).**

Yoon JC. et al. Cell-to-Cell Contact with Hepatitis C Virus-Infected Cells Reduces Functional Capacity of Natural Killer Cells. *J Virol.* 2011 85(23): 12557-69. [PMID 21937646] **Recombinant IL-15.**

Park SJ. et al. A general toxicity and biodistribution study of human natural killer cells by single or repeated intravenous dose in severe combined immune deficient mice. *Toxicol Res.* 2022 38(4): 545-555. [PMID 36277368] **Recombinant IL-21.**

Ito R. et al. A humanized mouse model to study asthmatic airway inflammation via the human IL-33/IL-13 axis. *JCI Insight.* 2018 3(21): e121580. [PMID 30385714] **Recombinant IL-33.**

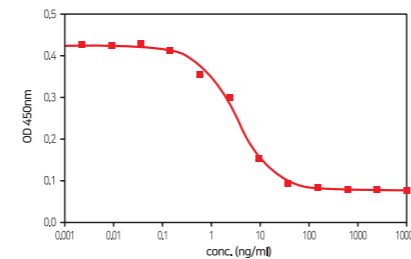
Interleukin receptors are a family of cytokine receptors for interleukins. They belong to the immunoglobulin superfamily. There are two main families of interleukin receptors: Type 1, Type 2 and other types cytokine receptors.

• Interleukin Receptor related products

Product name	Species	Expression system	Cat No.
IL-1Ra / IL1RN	H	<i>E.coli</i>	ILA0501
	H	<i>E.coli</i>	ATGP3934
	M	<i>E.coli</i>	ATGP3884
	R	<i>E.coli</i>	ATGP3127
IL-1R alpha	H	Baculovirus	ATGP3213
IL-1R beta	H	Baculovirus	ATGP3733
IL-2R alpha	H	Baculovirus	ATGP3616
IL-2R beta	H	Baculovirus	ATGP3822
IL-2R gamma	H	Baculovirus	ATGP3069
IL-3R alpha	H	Baculovirus	ATGP3712
	M	Baculovirus	ATGP4091
IL-4R alpha	H	Baculovirus	ATGP3710
IL-5R alpha	H	Baculovirus	ATGP3781
	M	Baculovirus	ATGP3344
IL-6R alpha	H	Baculovirus	ATGP3919
IL-7R alpha	H	Baculovirus	ATGP3703
IL-10 alpha	H	Baculovirus	ATGP3074
	H	Baculovirus	ATGP3910
IL-10R beta	H	Baculovirus	ATGP3664
IL-11R alpha	R	Baculovirus	ATGP3422
IL-12R beta	H	<i>E.coli</i>	ATGP2945(D)
	H	Baculovirus	ATGP3082
IL-13R alpha 1	H	Baculovirus	ATGP3068
IL-13R alpha 2	H	<i>E.coli</i>	ATGP2139(D)
	H	Baculovirus	ATGP3640
IL-15R alpha	H	Baculovirus	ATGP3672
IL-17R alpha	H	Baculovirus	ATGP3632
IL-17R beta	H	Baculovirus	ATGP4039
	M	Baculovirus	ATGP3472
IL-18R alpha	H	Baculovirus	ATGP3821
IL-18R beta	H	Baculovirus	ATGP4073
IL-21R	H	Baculovirus	ATGP3182
	M	HEK293	ATGP4056
IL-23R	H	Baculovirus	ATGP3424
IL-36Ra / IL36RN	H	<i>E.coli</i>	ATGP2819

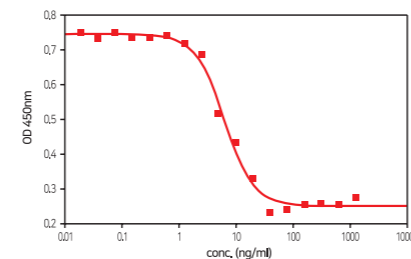
H : Human M : Mouse R : Rat D : Denature form

Human IL-1Ra / IL1RN (ATGP3934)



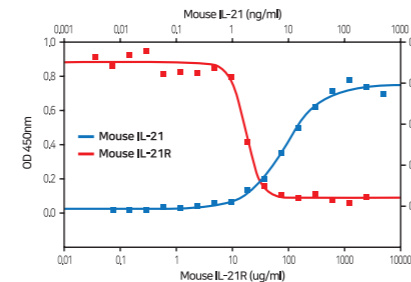
Human IL-1Ra/IL1RN stimulates IFN- γ secretion of the NK-92 human natural killer cells.

Human IL-6R alpha (ATGP3919)



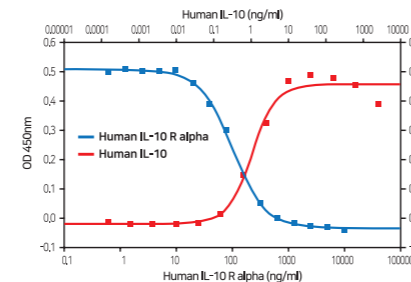
Human IL-6R alpha/IL6R inhibits Human IL-6 induced cell proliferation in the M1 mouse myeloid leukemia cells.

Mouse IL-21R (ATGP4056)



Mouse IL-21R in inhibit the IFN- γ secretion of the NK-92 human natural killer cells in the presence of mouse IL-21.

Human IL-10R (ATGP3910)



Human IL-10 R alpha inhibits Human IL-10 induced cell proliferation in the MC/9 mouse mast cells.

Published

Hiramoto K. et al. Gp91phox NADPH oxidase modulates litter size by regulating mucin1 in the uterus of mice. *Syst Biol Reprod Med*. 2017 63(2): 130-139. [PMID 28301257] **Recombinant IL-1Ra/IL1RN.**

Hiramoto K. et al. The Role of gp91phox and the Effect of Tranexamic Acid Administration on Hair Color in Mice. *Int J Mol Sci*. 2019 20(11): 2665. [PMID 31151207] **Recombinant IL-1Ra/IL1RN.**

Interferons (IFNs) are a group of signaling proteins made and released by host cells in response to the presence of several pathogens, such as viruses, bacteria, parasites, and also tumor cells. In a typical scenario, a virus-infected cell will release interferons causing nearby cells to heighten their anti-viral defenses.

IFNs belong to the large class of proteins known as cytokines, molecules used for communication between cells to trigger the protective defenses of the immune system that help eradicate pathogens. Interferons are named for their ability to "interfere" with viral replication by protecting cells from virus infections.

• Interferon related products

Product name	Species	Expression system	Cat No.
IFN-alpha 1	H	<i>E.coli</i>	IFN0501
	P	HEK293	ATGP4031
IFN-alpha 2	H	<i>E.coli</i>	IFN0502
IFN-alpha 7	H	<i>E.coli</i>	ATGP1873(D)
	H	Baculovirus	ATGP3810
IFN-alpha 14	H	<i>E.coli</i>	ATGP1500
IFN-beta 1	M	<i>E.coli</i>	ATGP0317
IFN-gamma	H	<i>E.coli</i>	IFG4001
	H	<i>E.coli</i>	ATGP2808
	H	<i>E.coli</i>	ATGP3723
	M	<i>E.coli</i>	ATGP3513
	C	<i>E.coli</i>	ATGP3626
	C	<i>E.coli</i>	ATGP3453
IFNL1 / IL-29	H	<i>E.coli</i>	ATGP2955(D)
	H	Baculovirus	ATGP3419
IFNL2 / IL-28A	H	<i>E.coli</i>	ATGP2563(D)
IFNL3 / IL-28B	H	Baculovirus	ATGP3080
IFN-alpha/beta R1	H	Baculovirus	ATGP3894
IFN-alpha/beta R2	M	Baculovirus	ATGP3450
	H	Baculovirus	ATGP3952
IFN-gamma R1	H	Baculovirus	ATGP3807

H : Human M : Mouse C : Canine F : Feline P : Porcine D : Denature form

Published

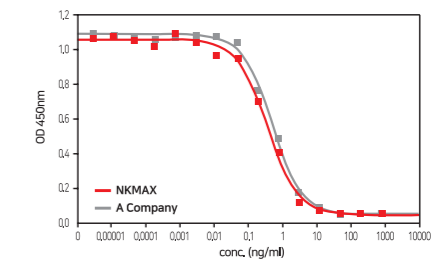
Kim HR. et al. Anti-cancer activity and mechanistic features of a NK cell activating molecule. *Cancer Immunol Immunother*. 2009 58(10): 1691-700. [PMID 19259669] **Recombinant IFN-alpha 1/IFNA1. Recombinant IFN-alpha 2/IFNA2.**

Fumihiko O. et al. Activation of double-stranded RNA-activated protein kinase (PKR) by interferon-stimulated gene 15 (ISG15) modification down-regulates protein translation. *J Biol Chem*. 2013 288(4): 2839-47. [PMID 23229543] **Recombinant IFN-beta 1/IFNB1.**

Nguyen PT. et al. NF- κ B inhibitory activity of polyoxygenated steroids from the Vietnamese soft coral *Sarcophyton pauciplicatum*. *Bioorg Med Chem Lett*. 2014 24(13): 2834-8. [PMID 24852121] **Recombinant IFN-gamma/IFNG.**

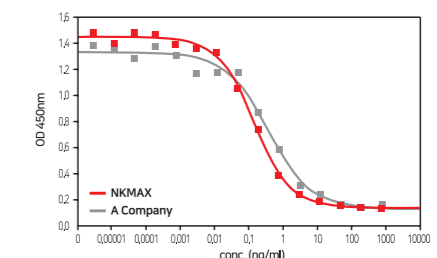
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Human IFN-gamma (IFG4001)



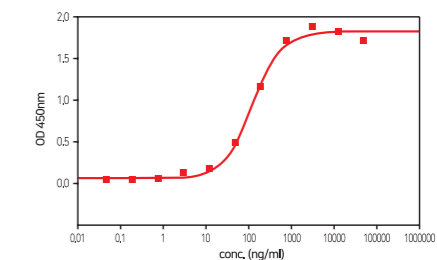
Measured in a cytotoxicity assay using WiDr human colon adenocarcinoma cells.

Human IFN-gamma (ATGP2808)



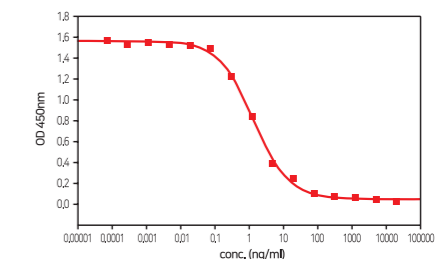
Measured in a cytotoxicity assay using WiDr human colon adenocarcinoma cells.

Human IFN-alpha/beta R2 (ATGP3952)



Human IFN-alpha 2 is coated at 10 μ g/ml (100 μ l/well) can bind Human IFN-alpha/beta R2 in the presence of Human IFN-alpha/beta R1.

Human IFN-gamma (ATGP3723)



Human IFN-gamma stimulates cytotoxicity of the WiDr human colon colorectal adenocarcinoma cells.

TNF Superfamily Pathway

Tumor necrosis factor (TNF) superfamily is a protein superfamily of type II transmembrane proteins containing TNF homology domain and forming trimers. Members of this superfamily can be released from the cell membrane by extracellular proteolytic cleavage and function as a cytokine.

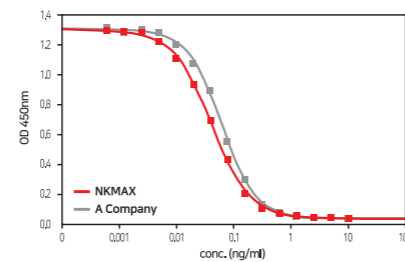
These proteins are expressed predominantly by immune cells and they regulate diverse cell functions, including immune response and inflammation, but also proliferation, differentiation, apoptosis and embryogenesis

• TNF superfamily pathway related products

Product name	Species	Expression system	Cat No.
TNF-alpha	H	<i>E.coli</i>	TNF0501
	H	Baculovirus	ATGP3152
	M	<i>E.coli</i>	ATGP1475
	M	<i>E.coli</i>	ATGP3651
	M	Baculovirus	ATGP3184
	R	<i>E.coli</i>	ATGP3736
	R	<i>E.coli</i>	ATGP3128
TNF-beta / LTA	H	<i>E.coli</i>	ATGP0517
	H	Baculovirus	ATGP3420
OX40 Ligand / TNFSF4	M	Baculovirus	ATGP4022
CD40 Ligand / CD40LG	H	<i>E.coli</i>	ATGP1017
	M	Baculovirus	ATGP3200
Fas Ligand / FASLG	H	<i>E.coli</i>	ATGP1890(D)
CD27 Ligand / CD70	H	<i>E.coli</i>	ATGP2998(D)
	H	Baculovirus	ATGP3336
CD30 Ligand / TNFSF8	H	Baculovirus	ATGP3343
4-1BB Ligand / TNFSF9	H	<i>E.coli</i>	ATGP0308
TRAIL / TNFSF10	H	<i>E.coli</i>	TRA0801
	H	<i>E.coli</i>	ATGP3588
TRANCE / RANKL / TNFSF11	H	<i>E.coli</i>	ATGP1093
	M	<i>E.coli</i>	ATGP3851
	M	<i>E.coli</i>	ATGP3915
APRIL / TNFSF13	H	<i>E.coli</i>	ATGP2602(D)
BAFF / TNFSF13B	H	<i>E.coli</i>	BLS0801
TL1A / TNFSF15	H	<i>E.coli</i>	ATGP1049
	H	<i>E.coli</i>	ATGP4084
GITR Ligand / TNFSF18	H	<i>E.coli</i>	ATGP1249
	H	<i>E.coli</i>	ATGP3088
TNFR1 / TNFRSF1A	H	<i>E.coli</i>	ATGP2883(D)
	H	Baculovirus	ATGP3326
TNFR2 / TNFRSF1B	H	Baculovirus	ATGP3179
TNFRSF3 / LTBR	H	<i>E.coli</i>	ATGP2897
OX40 / TNFRSF4	H	Baculovirus	ATGP3686
	M	HEK293	ATGP3971

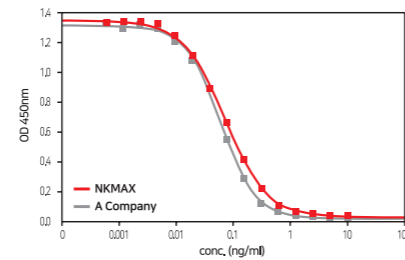
H : Human M : Mouse R : Rat B : Bovine D : Denature form

Human TNF-alpha (TNF0501)



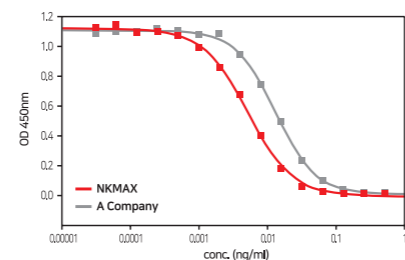
Measured in a cytotoxicity assay using L-929 mouse fibrosarcoma cells in the presence of the metabolic inhibitor actinomycin D.

Human TNF-alpha (ATGP3152)



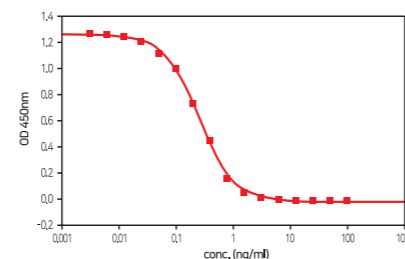
Measured in a cytotoxicity assay using L-929 mouse fibrosarcoma cells in the presence of the metabolic inhibitor actinomycin D.

Mouse TNF-alpha (ATGP3184)



Measured in a cytotoxicity assay using L-929 mouse fibrosarcoma cells in the presence of the metabolic inhibitor actinomycin D.

Human TRAIL / TNFSF10 (ATGP3588)



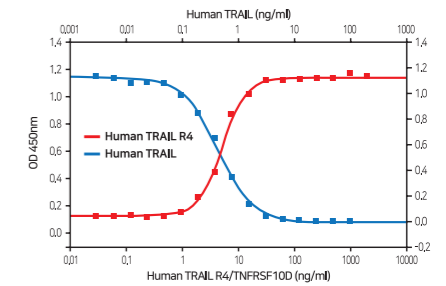
Human TRAIL/TNFSF10 stimulates cell cytotoxicity in the Jurkat human acute T cell leukemia cells.

• TNF superfamily pathway related products (continued)

Product name	Species	Expression system	Cat No.
CD40 / TNFRSF5	H	HEK293	ATGP4007
	H	<i>E.coli</i>	ATGP2615
	M	Baculovirus	ATGP3198
CD95 / FAS	H	Baculovirus	ATGP3267
DcR3 / TNFRSF6B	H	<i>E.coli</i>	ATGP2416(D)
CD27 / TNFRSF7	H	HEK293	ATGP4060
	H	<i>E.coli</i>	ATGP1710(D)
	H	Baculovirus	ATGP3416
CD30 / TNFRSF8	H	<i>E.coli</i>	ATGP1976
	H	Baculovirus	ATGP3222
	H	Baculovirus	ATGP3389
	M	Baculovirus	ATGP3949
	H	<i>E.coli</i>	ATGP1522
4-1BB / CD137 / TNFRSF9	H	Baculovirus	ATGP3303
	M	Baculovirus	ATGP3199
	H	Baculovirus	ATGP3695
TRAILR1 / TNFRSF10A	H	Baculovirus	ATGP3732
TRAILR2 / TNFRSF10B	H	Baculovirus	ATGP3055
TRAILR3 / TNFRSF10C	H	<i>E.coli</i>	ATGP3702
TRAILR4 / TNFRSF10D	H	Baculovirus	ATGP3304
RANK / TNFRSF11A	H	Baculovirus	ATGP3939
	M	Baculovirus	OPG0905
OPG / TNFRSF11B	H	Baculovirus	ATGP3350
TWEAKR / TNFRSF12	H	Baculovirus	ATGP3624
TAC1 / TNFRSF13B	H	<i>E.coli</i>	ATGP1989(D)
	H	Baculovirus	ATGP3386
HVEM / TNFRSF14	H	<i>E.coli</i>	ATGP2443
	H	Baculovirus	ATGP3379
	M	Baculovirus	ATGP3916
TNFRSF16 / NGFR	H	Baculovirus	ATGP3197
BCMA / TNFRSF17	H	<i>E.coli</i>	ATGP1842
	H	Baculovirus	ATGP3270
GITR / TNFRSF18	H	Baculovirus	ATGP3215
	H	Baculovirus	ATGP3319
RELT / TNFRSF19L	H	Baculovirus	ATGP3847
DR6 / TNFRSF21	H	Baculovirus	ATGP3803
DR3 / TNFRSF25	H	Baculovirus	ATGP4017
EDA2R / TNFRSF27	H	<i>E.coli</i>	ATGP2397(D)
	H	Baculovirus	ATGP3531

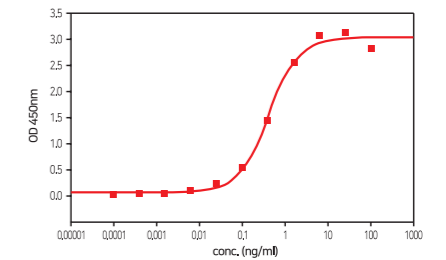
H : Human M : Mouse R : Rat B : Bovine P : Porcine

Mouse IL-21R (ATGP4056)



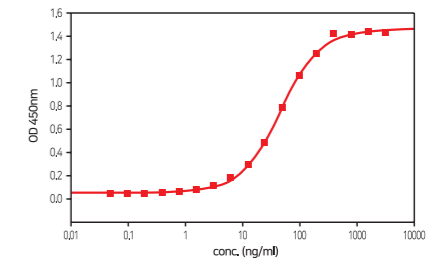
Mouse IL-21R in inhibit the IFN-γ secretion of the NK-92 human natural killer cells in the presence of mouse IL-21.

Human CD27 (ATGP4060) & CD27 Ligand (ATGP3336)



Human CD27 Ligand/TNFSF7 is coated at 10 μg/ml (100 μl/well) can bind Human CD27/TNFRSF7.

Human CD30 (ATGP3389) & CD30 Ligand (ATGP3343)



Human CD30 Ligand/TNFSF8 is coated at 2 μg/ml (100 μl/well) can bind Human CD30/TNFRSF8 in a Functional ELISA assay.

Published

Kim EO. et al. CCR4-NOT transcription complex subunit 2 regulates TRAIL sensitivity in non-small-cell lung cancer cells via the STAT3 pathway. *Int J Mol Med.* 2020 45(2): 324-332. [PMID 31894259] **Recombinant TRAIL/TNFSF10.**

Kim J. et al. Decursin enhances TRAIL-induced apoptosis through oxidative stress mediated-endoplasmic reticulum stress signalling in non-small cell lung cancers. *Br J Pharmacol.* 2016 173(6): 1033-44. [PMID 26661339] **Recombinant TRAIL/TNFSF10.**

Park D. et al. Morusin Induces TRAIL Sensitization by Regulating EGFR and DR5 in Human Glioblastoma Cells. *Journal of Natural Products.* 2016 79(2): 317-323. [PMID 26829656] **Recombinant TRAIL/TNFSF10.**

Park KH. et al. Zinc inhibits osteoclast differentiation by suppression of Ca2+-Calcineurin-NFATc1 signaling pathway. *Cell Commun Signal.* 2013 11: 74. [PMID 24088289] **Recombinant TRANCE/RANK L/TNFSF11.**

Kim JA. et al. A new lupane-type triterpene from the seeds of Panax ginseng with its inhibition of NF-κB. *Arch Pharm Res.* 2012 35(4): 647-51. [PMID 2253057] **Recombinant TNF-alpha.**

Sun YN. et al. A new phenolic derivative with soluble epoxide hydrolase and nuclear factor-kappaB inhibitory activity from the aqueous extract of Acacia catechu. *Nat Prod Res.* 2016 30(18): 2085-92. [PMID 26647286] **Recombinant TNF-alpha.**

Li W. et al. Anti-inflammatory and PPAR Transactivational Effects of Oleanane-Type Triterpenoid Saponins from the Roots of Pulsatilla koreana. *Biomol Ther (Seoul).* 2014 22(4): 334-40. [PMID 25143813] **Recombinant TNF-alpha.**

He F. et al. Antitumor effects of dammarane-type saponins from steamed Notoginseng. *Pharmacogn Mag.* 2014 10(39): 314-7. [PMID 25210319] **Recombinant TNF-alpha.**

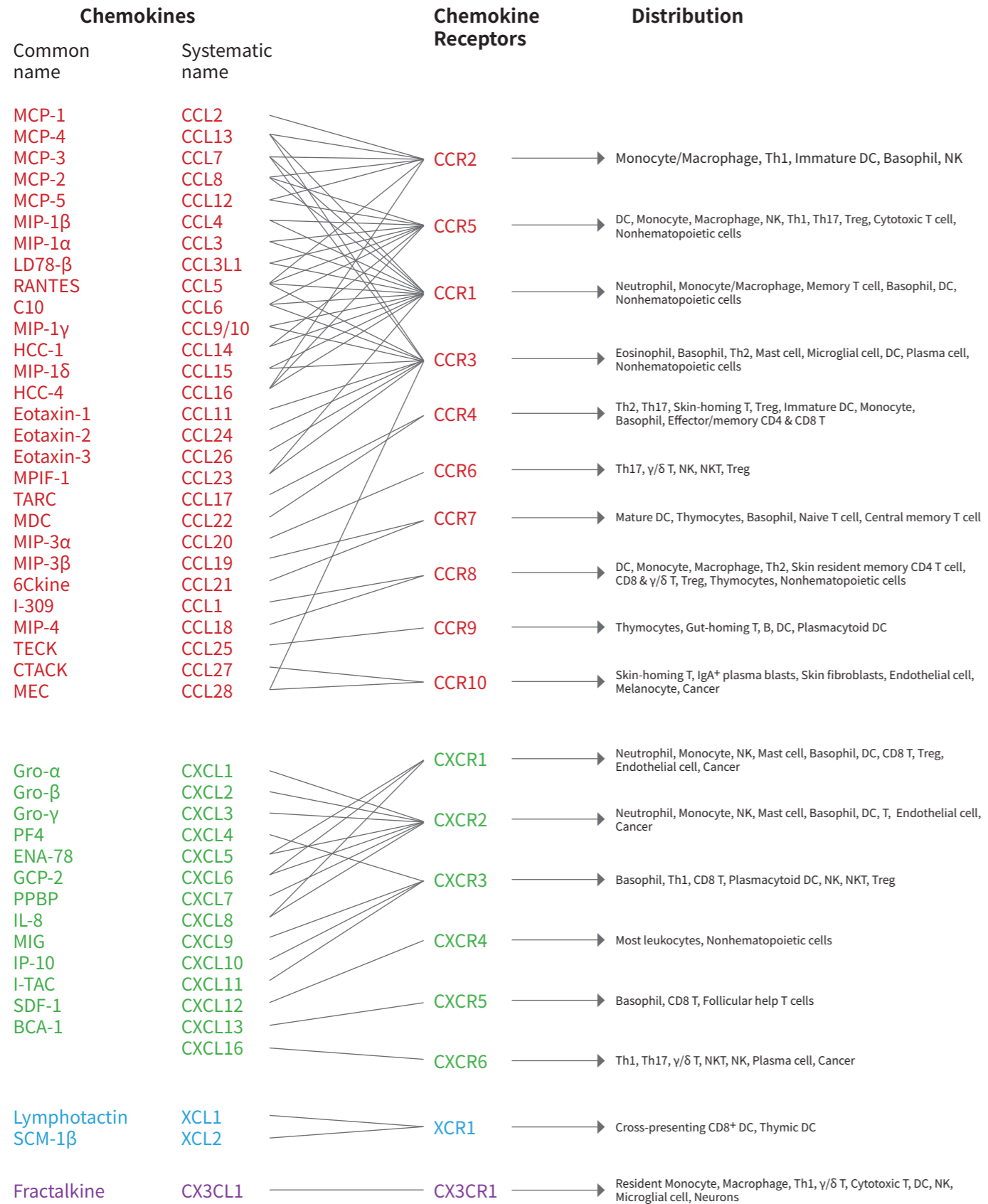
Kim JA. et al. Effects of impressic acid from Acanthopanax koreanum on NF-κB and PPARγ activities. *Arch Pharm Res.* 2011 34(8): 1347-51. [PMID 21910057] **Recombinant TNF-alpha.**

Thao NP. et al. Inhibition of NF-κB transcriptional activation in HepG2 cells by diterpenoids from the soft coral *Sinularia maxima*. *Arch Pharm Res.* 2014 37(6): 706-12. [PMID 23934574] **Recombinant TNF-alpha.**

Nhiem NX. et al. Inhibition of nuclear transcription factor-κB and activation of peroxisome proliferator-activated receptors in HepG2 cells by cucurbitane-type triterpene glycosides from *Momordica charantia*. *J Med Food.* 2012 15(4): 369-77. [PMID 22248180] **Recombinant TNF-alpha.**

Chemokines

Chemokines are a large family of chemoattractant proteins with a central role in leukocyte migration, and the chemokines secreted by activated macrophages attract neutrophils and other immune-system cells to the site of infection.



Pharmacol Rev, 2014.

• Interleukin related products(continued)

Product name	Species	Expression system	Cat No.	Primary Immunoregulatory Functions
CCL1	H	<i>E.coli</i>	ATGP0947	Th2 cell and regulatory T cell trafficking
CCL2 / MCP-1	H	HEK293	ATGP4067	Inflammatory monocyte trafficking
	H	<i>E.coli</i>	CCL0905	
	M	<i>E.coli</i>	ATGP2074	
	R	Baculovirus	ATGP4002	
CCL3 / MIP-1 alpha	H	<i>E.coli</i>	ATGP1019	Monocyte, macrophage, natural killer cell migration; Dendritic cell - T cell interactions
	M	<i>E.coli</i>	ATGP1765	
CCL3L1 / LD78-beta	H	<i>E.coli</i>	ATGP0916	Chemotactic for lymphocytes and monocytes
CCL4L1 / MIP-1 beta	H	<i>E.coli</i>	ATGP1042	Inhibits HIV replication in PBMC that express CCR5.
CCL5 / RANTES	H	<i>E.coli</i>	ATGP0374	Monocyte, macrophage, natural killer cell migration; Dendritic cell - T cell interactions
CCL11 / Eotaxin-1	H	<i>E.coli</i>	ATGP0447	Basophil and eosinophil migration
CCL13 / MCP-4	H	<i>E.coli</i>	ATGP0696	Th2 immune response
CCL14 / HCC-1	H	<i>E.coli</i>	ATGP0930	Unknown
CCL15 / MIP-1 delta	H	<i>E.coli</i>	ATGP1012	Unknown
CCL17 / TARC	H	<i>E.coli</i>	ATGP0367	Th2 immune response; Th2 cell migration; regulatory T cell trafficking
CCL18 / MIP-4	H	<i>E.coli</i>	ATGP0853	Th2 immune response; Hematopoiesis; Dendritic cell recruitment of T and B cells for antigen presentation
CCL19 / MIP-3 beta	H	<i>E.coli</i>	ATGP0580	Dendritic cell and T cell homing to the lymph nodes
CCL20 / MIP-3 alpha	H	<i>E.coli</i>	ATGP0917	Th17 immune response; Homing of B cells and dendritic cells to gut-associated lymphoid tissue
CCL21 / 6CKine	M	Baculovirus	ATGP3900	Dendritic cell and T cell homing to the lymph nodes
CCL22 / MDC	H	<i>E.coli</i>	ATGP0397	Th2 immune response; Th2 cell and regulatory T cell migration
CCL25 / TECK	H	<i>E.coli</i>	ATGP2997(D)	Thymocyte migration; Homing of memory T cell to the gut
CCL26 / Eotaxin-3	H	<i>E.coli</i>	ATGP0378	Basophil and eosinophil migration
CCL27 / CTACK	H	<i>E.coli</i>	ATGP0520	Homing of T cells to the skin
CCL28 / MEC	H	<i>E.coli</i>	ATGP0387	Homing of T cells and IgA plasma cells to mucosal surfaces
CXCL1 / GRO alpha	H	<i>E.coli</i>	CXC0901	Neutrophil trafficking
	M	<i>E.coli</i>	ATGP1525	
CXCL2 / GRO beta	H	<i>E.coli</i>	ATGP0299	Neutrophil trafficking
CXCL3 / GRO gamma	H	<i>E.coli</i>	CXC0902	Neutrophil trafficking
	M	<i>E.coli</i>	ATGP1621	
CXCL4 / PF4	H	<i>E.coli</i>	ATGP2105	Procoagulant
CXCL4L1 / PF4V1	H	<i>E.coli</i>	ATGP2655	CXCR3
CXCL7 / PPBP	H	<i>E.coli</i>	ATGP1109	Neutrophil trafficking
CXCL8 / IL-8	H	<i>E.coli</i>	ILH0501	Neutrophil trafficking
	C	HEK293	ATGP4043	
CXCL9	H	<i>E.coli</i>	ATGP2164	Th1 immune response; Natural killer cell, CD8+ T cell, and Th1 cell trafficking
CXCL11 / I-TAC	H	<i>E.coli</i>	ATGP1296	Th1 immune response; Natural killer cell, CD8+ T cell, and Th1 cell trafficking
CXCL12 / SDF-1	H	<i>E.coli</i>	ATGP0322	Bone marrow homing; Myelopoiesis; B lymphopoiesis
	M	<i>E.coli</i>	ATGP3159	
CXCL13 / BLC / BCA-1	H	<i>E.coli</i>	ATGP2437(D)	B cell and follicular helper T (Tfh) cell positioning in lymphoid tissue
CXCL17 / VCC-1	H	<i>E.coli</i>	ATGP2591(D)	Dendritic cell and monocyte chemotaxis
XCL1 / Lymphotactin	H	<i>E.coli</i>	ATGP0316	Antigen cross-presentation by CD8+ dendritic cells
CX3CL1 / Fractalkine	H	<i>E.coli</i>	ATGP0380	Monocyte, macrophage, natural killer cell, and Th1 cell migration
	H	Baculovirus	ATGP3885	

H : Human M : Mouse R : Rat C : Canine D : Denature form

Allergies refer to a number of conditions caused by the hypersensitivity of the immune system to typically harmless substances in the environment. These diseases include hay fever, food allergies, atopic dermatitis, allergic asthma, and anaphylaxis.

Asthma is a long-term inflammatory disease of the airways of the lungs. It is characterized by variable and recurring symptoms, reversible airflow obstruction, and easily triggered bronchospasms.

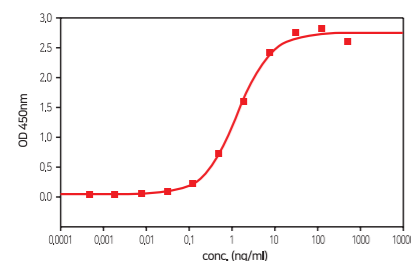
There is a growing interest in investigating the role of genetic and environmental factors in the development of allergies and asthma, and research on the cellular-level immune response mechanisms is also receiving much attention.

• Adhesion molecules

Product name	Species	Expression system	Cat No.
Integrin beta 1 / CD29	H	<i>E.coli</i>	ATGP2484(D)
	H	Baculovirus	ATGP3549
Integrin beta 2 / CD18	H	Baculovirus	ATGP3351
PECAM1 / CD31	H	Baculovirus	ATGP3214
	M	HEK293	ATGP4092
CD44	H	Baculovirus	ATGP3785
SLAMF2 / CD48	H	Baculovirus	ATGP3642
ICAM-1 / CD54	H	Baculovirus	ATGP3030
	M	Baculovirus	ATGP3268
L-Selectin / CD62L	H	Baculovirus	ATGP3674
CD147 / BSG	H	Baculovirus	ATGP3737
PSGL-1 / CD162	H	HEK293	ATGP3999
VCAM-1 / CD106	H	<i>E.coli</i>	ATGP1573
	H	Baculovirus	ATGP3468
	M	Baculovirus	ATGP3246
Fucosyltransferase 3	H	<i>E.coli</i>	ATGP2322(D)
Fucosyltransferase 7	H	<i>E.coli</i>	ATGP2624(D)
JAM-A / F11R	H	<i>E.coli</i>	ATGP1556

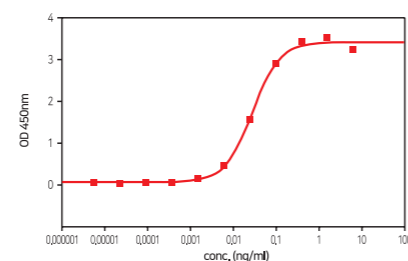
H : Human M : Mouse D : Denature form

Human CD16a / FCGR3A (ATGP4098)



Human CD16a/FCGR3A is coated at 10 µg/ml (100 µl/well) can bind Human IgG1 Fc in a functional ELISA assay.

Human SLAMF2 / CD48 (ATGP3642)



Human SLAMF2/CD48 is coated at 2 µg/ml (100 µl/well) can bind Human CD244 in a functional ELISA assay.

• Ig-receptors and related family members

Product name	Species	Expression system	Cat No.
CD3 epsilon / CD3E	H	<i>E.coli</i>	ATGP1853
CD4	H	<i>E.coli</i>	ATGP3020(D)
	H	Baculovirus	ATGP3374
CD9	H	HEK293	ATGP4064
	H	<i>E.coli</i>	ATGP4006
CD14	H	<i>E.coli</i>	ATGP2697
	H	HEK293	ATGP4095
	M	Baculovirus	ATGP3175
CD28	H	Baculovirus	ATGP3603
CD40 / TNFRSF5	H	HEK293	ATGP4007
	H	<i>E.coli</i>	ATGP2615
MIF	M	Baculovirus	ATGP3198
	H	Baculovirus	ATGP3298
CD80 / B7-1	H	Baculovirus	ATGP3663
	M	Baculovirus	ATGP3353
CD89 / FCAR	H	Baculovirus	ATGP3660
CD32a / FCGR2A	H	<i>E.coli</i>	ATGP1936
CD32b / FCGR2B	H	<i>E.coli</i>	ATGP1822
CD16a / FCGR3A	H	HEK293	ATGP4098
	H	<i>E.coli</i>	ATGP1623(D)
MIF	M	Baculovirus	ATGP3101
	M	<i>E.coli</i>	ATGP3091
Oncostatin M	H	<i>E.coli</i>	ATGP1123
Osteopontin	H	<i>E.coli</i>	ATGP3951
	M	HEK293	ATGP4052
CD16b / FCGR3B	H	Baculovirus	ATGP3673
	H	<i>E.coli</i>	ATGP2394
Fc epsilon RI alpha / FCER1A	H	<i>E.coli</i>	ATGP2394
CD23 / FCER2	H	Baculovirus	ATGP3705
4-1BB / TNFRSF9	H	<i>E.coli</i>	ATGP1522
	H	Baculovirus	ATGP3303
MIF	M	Baculovirus	ATGP3199
	M	Baculovirus	ATGP3199

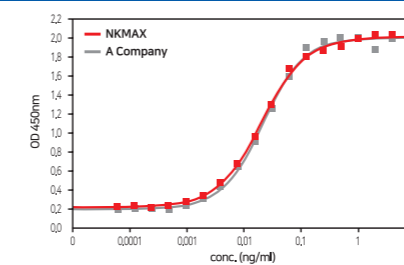
• Other Immunology pathway related protein

Product name	Species	Expression system	Cat No.
IRF1	H	<i>E.coli</i>	IRF0702
IRF2	H	<i>E.coli</i>	IRF0703
IRF3	H	<i>E.coli</i>	IRF0701
IRF5	H	<i>E.coli</i>	ATGP2617
	H	<i>E.coli</i>	MIF0501
MIF	H	<i>E.coli</i>	MIF0801
	H	<i>E.coli</i>	ATGP3101
	M	<i>E.coli</i>	ATGP3091
Oncostatin M	H	<i>E.coli</i>	ATGP1123
Osteopontin	H	<i>E.coli</i>	ATGP3951
	M	HEK293	ATGP4052

Product name	Species	Expression system	Cat No.
M-CSF	H	<i>E.coli</i>	ATGP0432
	H	Baculovirus	ATGP3565
	M	Baculovirus	ATGP3904
G-CSF	H	<i>E.coli</i>	CSF4001
GM-CSF	H	<i>E.coli</i>	MSF0501
	M	<i>E.coli</i>	MSF0801
	Pr	<i>E.coli</i>	ATGP3935
M-CSF R / CD115	H	Baculovirus	ATGP3794
GM-CSF R alpha	H	<i>E.coli</i>	ATGP2363(D)
	H	Baculovirus	ATGP3697

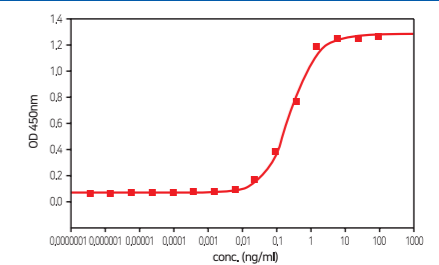
H : Human M : Mouse Pr : Porcine D : Denature form

Human GM-CSF (MSF0501)



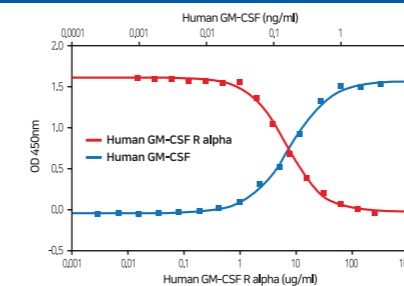
Measured in a cell proliferation assay using TF-1 human erythroleukemic cells.

Human G-CSF (CSF4001)



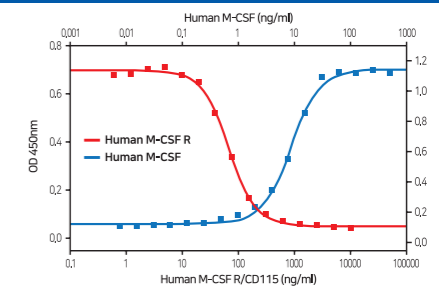
Human G-CSF stimulates cell proliferation of the M-NFS-60 mouse myelogenous leukemia lymphoblast cells.

Human GM-CSF R alpha (ATGP3697)



Measured by its ability to inhibit proliferation using TF-1 human erythroleukemic cells.

Human M-CSF R / CD115 (ATGP3794)



Measured by its ability to inhibit proliferation using M-NFS-60 mouse myelogenous leukemia lymphoblast cells.

Published

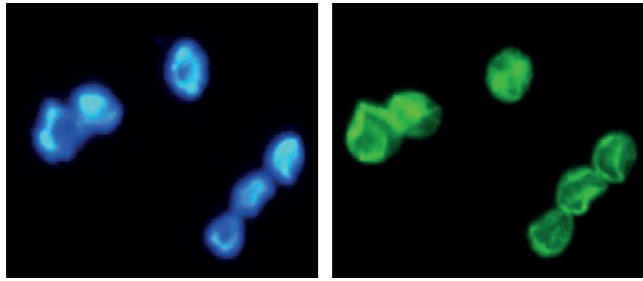
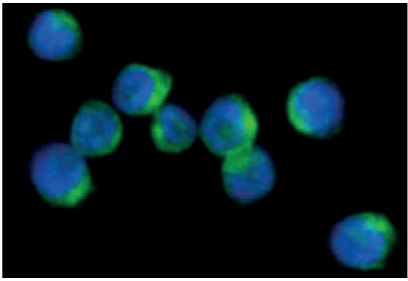
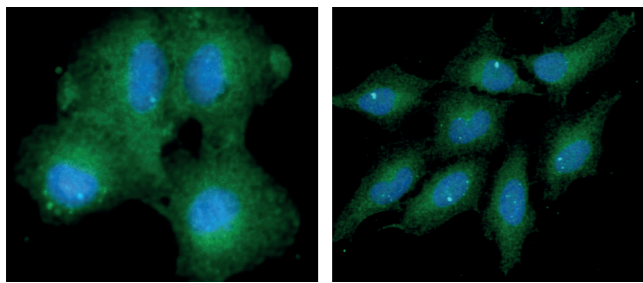
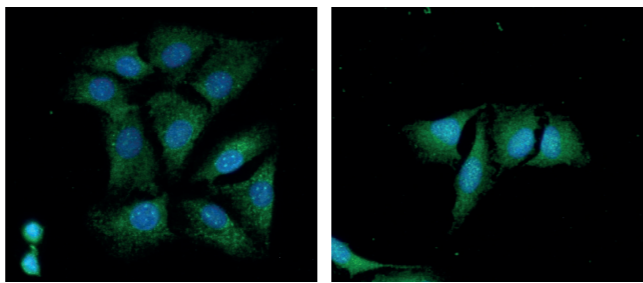
- Janos G. et al. Tetralone derivatives are MIF tautomerase inhibitors and attenuate macrophage activation and amplify the hypothermic response in endotoxemic mice. *J Enzyme Inhib Med Chem.* 2021 36(1): 1357-1369. [PMID 22843993] **Recombinant MIF, Recombinant Osteopontin.**
- Kusakabe Y. et al. A standardized blood test for the routine clinical diagnosis of impaired GM-CSF signaling using flow cytometry. *J Immunol Methods.* 2014 413: 1-11. [PMID 25068538] **Recombinant GM-CSF.**
- Barun P. et al. Collagen I enhances functional activities of human monocyte-derived dendritic cells via discoidin domain receptor 2. *Cell Immunol.* 2012 278(1-2): 95-102. [PMID 23121981] **Recombinant GM-CSF.**
- Masaaki H. et al. GM-CSF therapy inhibits chronic graft-versus-host disease via expansion of regulatory T cells. *Eur J Immunol.* 2019 49(1): 179-191. [PMID 30457669] **Recombinant GM-CSF.**
- Shoutaro T. et al. Effective isolation of RNA aptamer through suppression of PCR bias. *Biochem Biophys Res Commun.* 2009 386(1): 223-6. [PMID 19520057] **Recombinant MIF.**
- Shoutaro T. et al. RNA aptamer binding to polyhistidine-tag. *Biochem Biophys Res Commun.* 2009 386(1): 227-31. [PMID 19520059] **Recombinant MIF.**
- Jung SH. et al. Identification of transglutaminase 2 kinase substrates using a novel on-chip activity assay. *Biosens Bioelectron.* 2016 82: 40-8. [PMID 27040940] **Recombinant Osteopontin.**
- Jung SH. et al. On-chip dual enzyme activity assay to investigate regulation of the transamidase and kinase activities of transglutaminase 2. *Anal Chim Acta.* 2018 1027: 92-100. [PMID 29866275] **Recombinant Osteopontin.**
- Il-Doo Kim. et al. Osteopontin Peptide Icosamer Containing RGD and SLAYGLR Motifs Enhances the Motility and Phagocytic Activity of Microglia. *Exp Neurobiol.* 2017 26(6): 339-349. [PMID 29302201] **Recombinant Osteopontin.**
- Jung SH. et al. Systematic investigation of protein kinase A substrate proteins using on-chip protein kinase kinetic profiling. *Analyst.* 2017 142(12): 2239-2246. [PMID 28536714] **Recombinant Osteopontin.**

Monoclonal Antibodies

• Cytokine related Monoclonal Antibodies

Product name	Clone No.	Applications	Isotype	Host	Cat No.
IL-6	AT1H6	ELISA, WB, Flow cytometry, ICC/IF	IgG _{2a,k}	M	ATGA0123
	AT1F10	ELISA, WB	IgG _{1,k}	M	ATGA0313
IL-32	AT2F9	ELISA, WB, ICC/IF	IgG _{1,k}	M	ATGA0170
IL-33	4E9	ELISA, WB, Flow cytometry, ICC/IF	IgG _{2b,k}	M	A1L0824
	4E9	ELISA, WB, Flow cytometry	IgG _{2b,k}	M	ATGA0555*
IFN-beta 1	AT4F8	ELISA, WB, ICC/IF	IgG _{1,k}	M	ATGA0587
MIF	4E4	ELISA, WB, ICC/IF	IgG _{1,k}	M	AMF0608
IRF3	3F10	ELISA, WB, Flow cytometry, ICC/IF	IgG _{1,k}	M	AIR0718
	3F10	ELISA, WB, Flow cytometry, ICC/IF	IgG _{1,k}	M	ATGA0560*
IRF5	10T1	ELISA, WB, Flow cytometry, ICC/IF, IHC	IgG _{1,k}	M	AIR0611
	10T1	ELISA, WB, Flow cytometry, ICC/IF	IgG _{1,k}	M	ATGA0518*
IRF7	3D9	ELISA, WB	IgG _{1,k}	M	AIR0814
BAFF / TNFSF13B	H4-C7	ELISA, Flow cytometry, ICC/IF	IgG _{3,k}	M	ABL0813
TRAILR3 / TNFRSF10C	AT1E12	ELISA, WB, ICC/IF	IgG _{1,k}	M	ATGA0509

* This product was produced from tissue culture supernatant

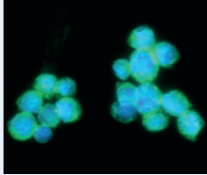
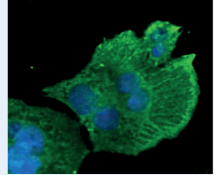
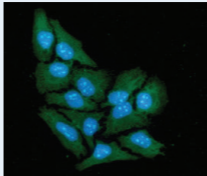
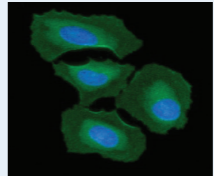
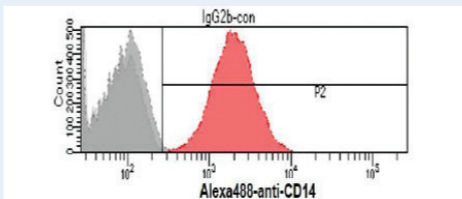
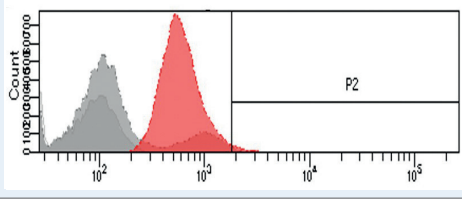
Human IL-33 antibody (A1L0824)	Human IL-32 antibody (ATGA0170)
 <p>ICC/IF analysis of IL-33 in Jurkat cell line, stained with DAPI(Blue) for nucleus staining and monoclonal anti-human IL-33 antibody (1:100) with goat anti-mouse IgG-alex fluor 488 conjugate (Green).</p>	 <p>ICC/IF analysis of IL-32 in Jurkat cell line, stained with DAPI(Blue) for nucleus staining and monoclonal anti-human IL-32 antibody (1:100) with goat anti-mouse IgG-alex fluor 488 conjugate (Green).</p>
Human IL-6 antibody (ATGA0123)	Human MIF antibody (AMF0608)
 <p>ICC/IF analysis of IL-6 in A549(Left) and HeLa(Right) cell line, stained with DAPI(Blue) for nucleus staining and monoclonal anti-human IL-6 antibody (1:100) with goat anti-mouse IgG-alex fluor 488 conjugate (Green).</p>	 <p>ICC/IF analysis of MIF in Balb/3T3(Left) and HeLa(Right) cell line, stained with DAPI(Blue) for nucleus staining and monoclonal anti-human MIF antibody (1:100) with goat anti-mouse IgG-alex fluor 488 conjugate (Green).</p>

Published

Motoya K. et al. Positive correlations of age and parity with plasma concentration of macrophage migration inhibitory factor in Japanese black cows. *J Reprod Dev.* 2016 62(3): 257-63. [PMID 26853787] **WB; MIF.**
 Wang Y. et al. Exposure to cigarette smoke impacts myeloid-derived regulatory cell function and exacerbates airway hyper-responsiveness. *J Lab Invest.* 2014 94(12): 1312-25. [PMID 25365203] **WB; IL-33.**

• Allergy and Asthma related Monoclonal Antibodies

Product name	Clone No.	Applications	Isotype	Host	Cat No.
CD3 epsilon / CD3E	AT3H3	ELISA, WB, Flow cytometry, ICC/IF	IgG _{1,k}	M	ATGA0331
CD14	AT87H7	ELISA, WB, Flow cytometry	IgG _{2b,k}	M	ATGA0339
CD44	5C10	ELISA, WB, Flow cytometry, ICC/IF	IgG _{2b,k}	M	ACD0826
Integrin beta 1 / CD29	k2D5	ELISA, Flow cytometry, ICC/IF	IgG _{1,k}	M	ACD0823
	AT47E2	ELISA, WB, ICC/IF	IgG _{1,k}	M	ATGA0485
CRLF2	AT4E7	ELISA, WB, Flow cytometry	IgG _{2a,k}	M	ATGA0271
CD64 / Fc gamma R1	AT37F7	ELISA, WB, Flow cytometry, ICC/IF	IgG _{2b,k}	M	ATGA0324

Human CD3 epsilon/CD3E antibody (ATGA0331)	Human Integrin beta 1/CD29 antibody (ACD0823)
 <p>ICC/IF analysis of CD3 epsilon/CD3E in Jurkat cells line, stained with DAPI (Blue) for nucleus staining and monoclonal anti-human CD3E antibody (1:100) with goat anti-mouse IgG-alex fluor 488 conjugate (Green).</p>	 <p>ICC/IF analysis of Integrin beta 1/CD29 in HepG2 cells line, stained with DAPI (Blue) for nucleus staining and monoclonal anti-human Integrin beta 1/CD29 antibody (1:100) with goat anti-mouse IgG-alex fluor 488 conjugate (Green).</p>
Human CD44 antibody (ACD0826)	Human Integrin beta 1/CD29 antibody (ATGA0485)
 <p>ICC/IF analysis of CD44 in HeLa cells. The cell was stained with CD44 (1:100). The secondary antibody was used goat anti-mouse IgG-alex fluor 488 conjugate (Green). DAPI was stained the cell nucleus (blue).</p>	 <p>ICC/IF analysis of Integrin beta 1/CD29 in HeLa cells. The cell was stained with Integrin beta 1/CD29 (1:100). The secondary antibody (green) was used alexa fluor 488. DAPI was stained the cell nucleus (blue).</p>
Human CD14 antibody (ATGA0339)	
 <p>Flow cytometry analysis of CD14 in THP-1 cells. The cell was stained with CD14 at 2-5 µg for 1x10⁶ cells (red). A goat anti-mouse IgG-alex fluor 488 conjugate was used as the secondary antibody. Mouse monoclonal IgG was used as the isotype control (dark gray), cells without incubation with primary and secondary antibody was used as the negative control (light gray)</p>	
Human CRLF2 antibody (ATGA0271)	
 <p>Flow cytometry analysis of CRLF2 in PBMC(Peripheral blood mononuclear cell). The cell was stained with CRLF2 antibody at 2-5µg for 1x10⁶ cells (Red). A goat anti-mouse IgG-alex fluor 488 was used as the secondary antibody. Mouse monoclonal IgG was used as the isotype control (Dark gray), cells without incubation with primary and secondary antibody was used as the negative control (Light gray).</p>	

• Why Choose NKMAX

						
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