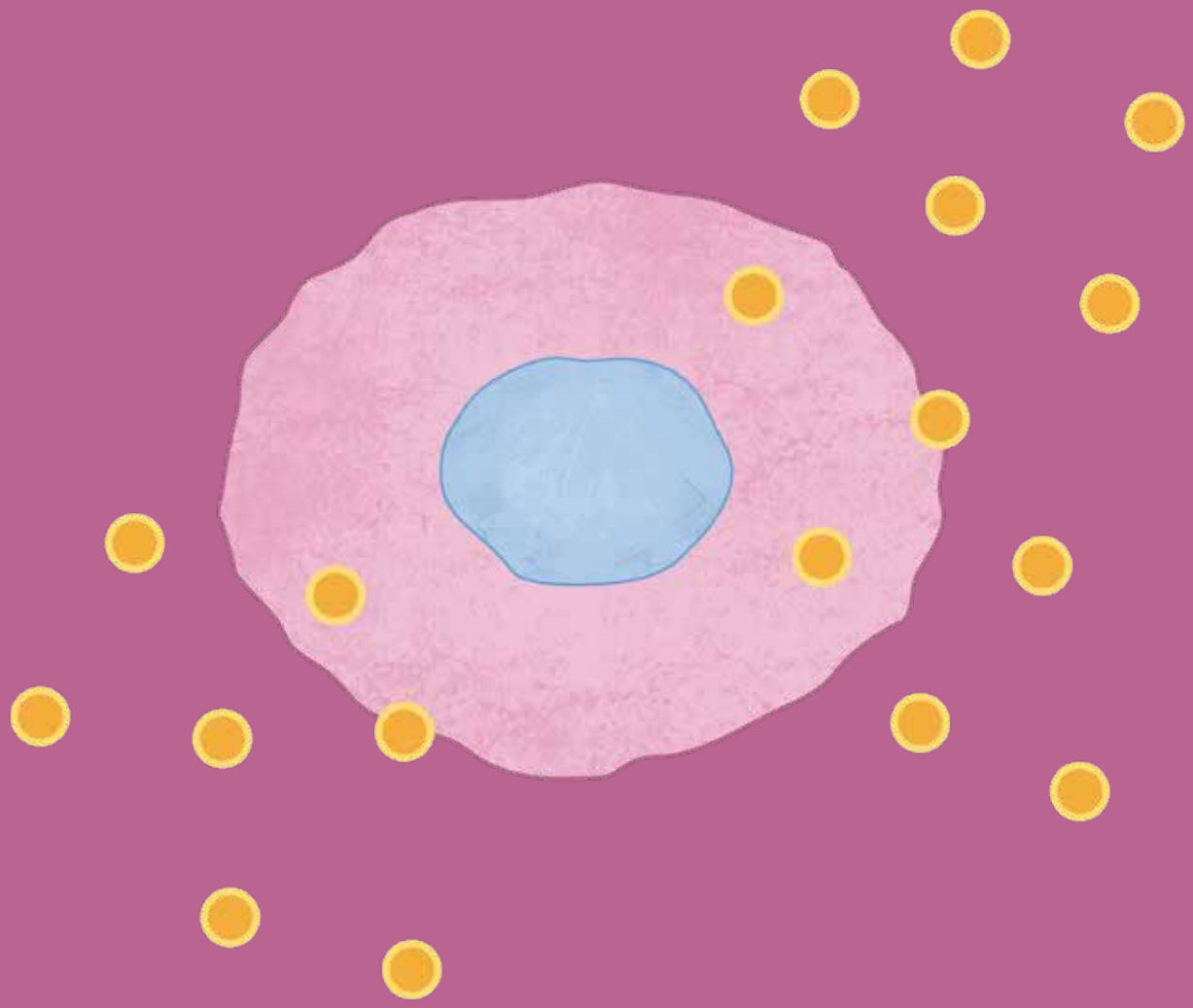
KACTUS

Cytokines for Cell Cutlure

GMP-Grade & Research-Grade



kactusbio.com
support@kactusbio.us

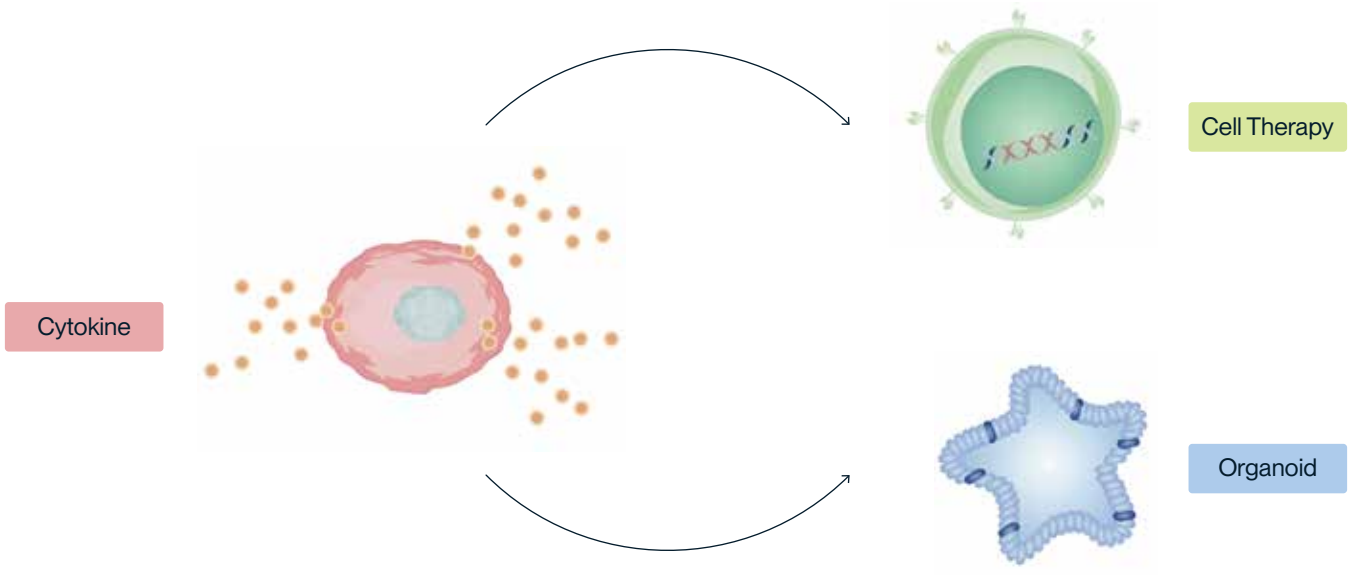
60 Hickory Drive
Waltham, MA 02451
United States

Recombinant Cytokines for Cell Culture

Cell culture is the cornerstone for advancements in cell therapy and organoid development. KACTUS has crafted an array of premium cytokines tailored for the cultivation of cells and organoids, creating a reliable foundation for research in these areas.

Cytokines are a class of low-molecular-weight soluble proteins with a wide range of biological activities that are synthesized and secreted by immune cells and certain non-immune cells upon stimulation. Their function is to regulate cell growth and differentiation, control immune responses, and repair damaged tissues by binding to corresponding receptors. Cytokines can generally be divided into several types such as interleukins, interferons, tumor necrosis factor superfamily, colony-stimulating factors, chemokines, growth factors, etc. They play an important role in the fields of cell therapy and organ-like structures.

KACTUS has successfully developed an extensive series of high-activity cytokines using its unique protein engineering and production platform, Structure Assisted Multiplex Screening (SAMSTM). All cytokines have passed strict quality inspections and can be applied in various scenarios such as immune cell culture, stem cell differentiation, and organ-like tissue culture in cell therapy.



Product Features

High Purity (≥95%)	Low endotoxin (<0.1 EU/μg)	Tag-Free or Small Tag
Verified cellular-level bioactivity	Various cell types & applications	Customization Services

Seamlessly Transition your Cell Culture Protein to GMP Production

With the rise of gene and cell therapy, cytokines and other key raw and auxiliary materials are increasingly valued, giving rise to a market demand for GMP-grade recombinant protein raw materials.

KACTUS possesses a mature and comprehensive GMP-grade recombinant protein production and quality management system. Tailoring to the specific requirements and applications of our clients, we can smoothly transition cell culture-related proteins to our large-scale GMP-grade production facility. This capability both simplifies and accelerates the transition from preclinical to clinical applications and eventual market approval for cell therapies.

We have established a quality management system in accordance with ISO13485:2016 and pharmaceutical GMP regulations. Our comprehensive documentation programs undergo continuous updates and improvements to ensure the effectiveness, appropriateness, and adequacy of our quality management system. Every production stage from transfection and cell culture through isolation and purification is rigorously checked to ensure the process is documented and the product quality is stable and reliable, meeting the stringent requirements of drug manufacturing.

Strict management of cell strains, segmented into Master Cell Banks (MCB) and Working Cell Banks (WCB), overseen with multi-tiered personnel oversight and layered security protocols.

Animal-origin free

Comprehensive quality control and release testing conducted on in-process samples, raw materials, intermediates, and finished products

Through inspection and quality approval of all raw materials, auxiliary ingredients, and packaging components utilized in the production process prior to release

Stringent control of key parameters ensures consistent batch-to-batch quality during production

Validation of product stability, including influencing factor testing, accelerated stability studies, and long-term stability studies

GMP-Grade Manufacturing Facility

Comprehensive Suite of Analytical Equipment

GMP-Grade Cytokines

Catalog #	Protein	Expression System	Endotoxin	Purity
GMP-CKS-HE021	GMP Human IL-21	E. Coli	≤ 0.01 EU per μg	≥ 95%
GMP-CKS-HE015	GMP Human IL-15	E. Coli	≤ 0.01 EU per μg	≥ 95%
GMP-CKS-HE007	GMP Human IL-7	E. Coli	≤ 0.01 EU per μg	≥ 95%

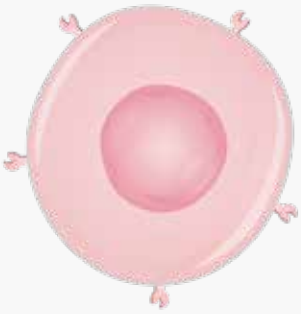
Cytokines for Cell Therapy: High-Quality Proteins for CAR-T, CAR-NK, & Stem Cells

Cell therapy refers to the process of specifically modifying certain immune cells or stem cells to enable them to kill tumors or repair and reconstruct normal cellular tissues, with the goal of treating diseases. During these cell culture processes, a variety of cytokines are needed to maintain cell growth and/or differentiation. These cytokines ensure normal cell function in CAR-T, CAR-NK, CAR-M cell therapies, differentiation of iPSCs into T cells or NK cells and other immune cells, as well as the cell culture of mesenchymal stem cells (MSC), hematopoietic stem cells (HSC), and other stem cells in stem cell transplantation therapies.

KACTUS provides a variety of high-quality cytokines that can be used for cell therapies, meeting the specific cell culture needs of CAR-T, CAR-NK, and stem cells.

T cell therapy

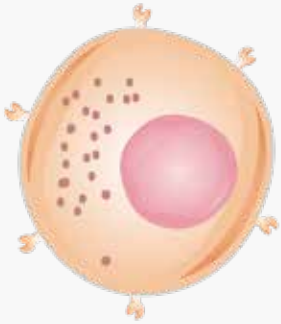
IL-7
IL-15
.....



CAR-T
UCAR-T
TCR-T
TIL
.....

NK cell therapy

IL-15
IL-21
IL-18
.....



CAR-NK
iPSC-CAR-NK
.....

M cell therapy

FGF-2
VEGF
GM-CSF
BMP-4
.....

CAR-M
iPSC-CAR-M
.....

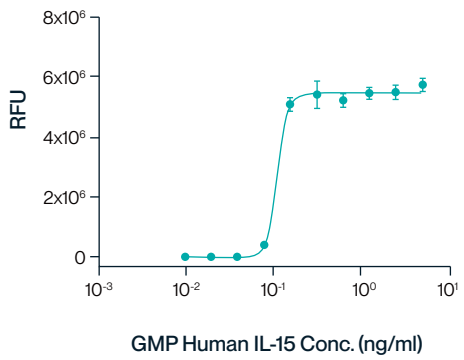
Stem cell therapy

HGF
SCF
LIF
Flt3L
.....

MSC
HSC
ADSC
.....

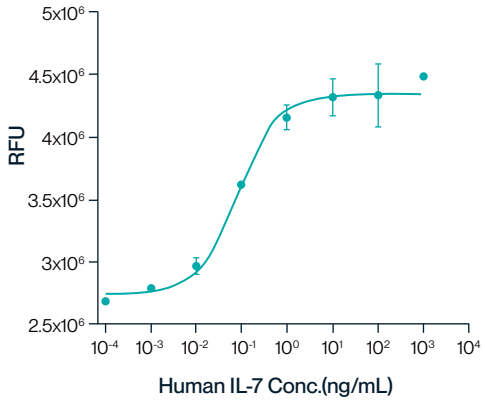
Product Validation Data

GMP Human IL-15 Bioactivity



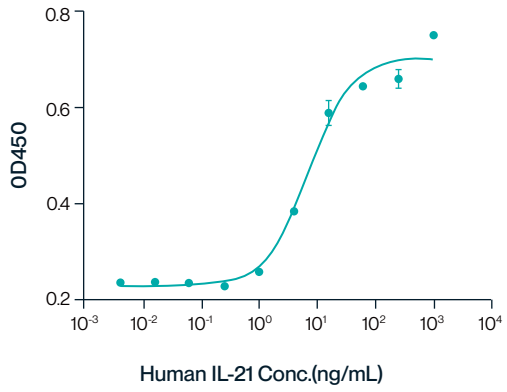
Measured in a cell proliferation assay using CTLL-2 cells. The ED50-for this effect is 0.1 - 0.3 ng/mL. The specific activity of GMP Human IL-15 is > 1 × 10^7-IU/mg, which is calibrated against the human IL-15 WHO reference standard (NIBSC code: 95/554) (QC Test).

Recombinant Human IL-7 Bioactivity



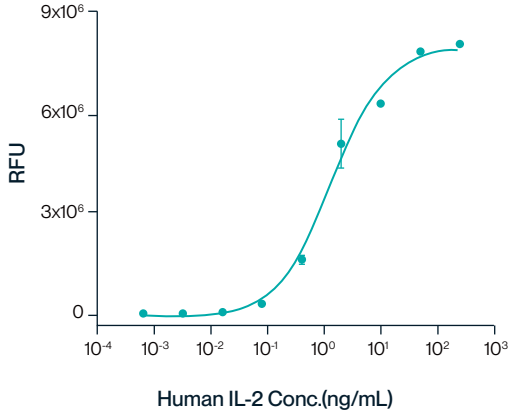
Measured in a cell proliferation assay using murine 2E8 cells. The ED50 for this effect is 0.1 - 0.5 ng/mL.

Recombinant Human IL-21 Bioactivity



Measured by its ability to enhance IFN-gamma secretion in NK-92 human natural killer lymphoma cells. The ED50 for this effect is < 8 ng/mL.

Recombinant Human IL-2 Bioactivity

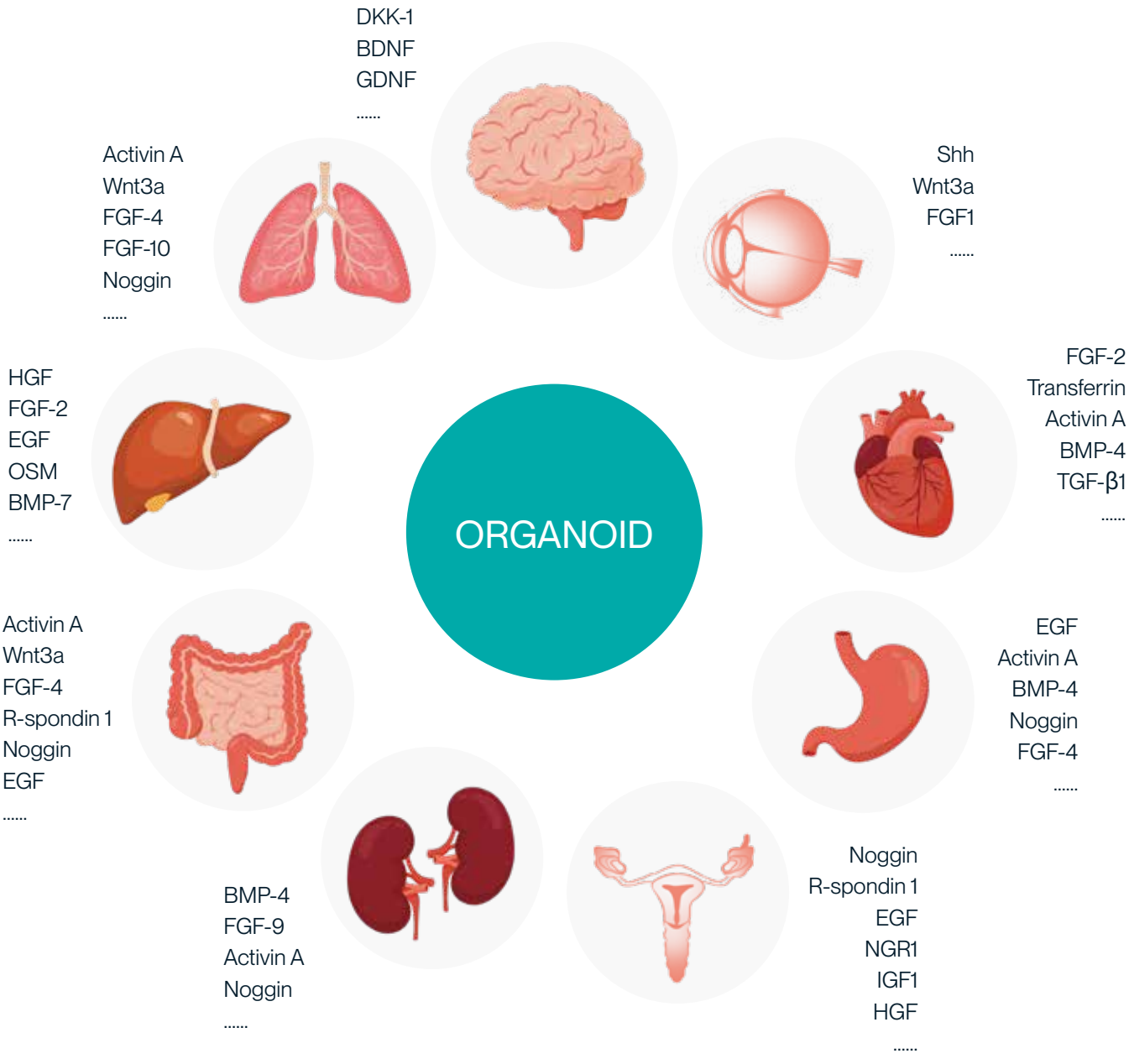


Measured in a cell proliferation assay using CTLL-2 mouse cytotoxic T cells. The ED50 for this effect is 0.5-2 ng/mL.

Cytokines for Organoid Culture: High Bioactivity & Low Endotoxin

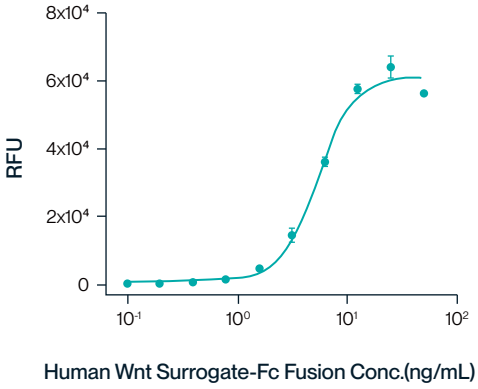
Organoids are three-dimensional (3D) cultures derived from stem cells that form structures resembling tissue. They are capable of self-renewal and self-organization, and their structure and function are similar to those of actual tissues or organs. Organoids play a significant role in fields such as developmental and disease modeling, drug screening, stem cell engineering, and regenerative medicine. They are a hot topic in both basic and clinical research.

The culture of organoids requires various cytokines to precisely and directionally induce the differentiation of stem cells (such as iPSCs), and the types and amounts of cytokines needed for different tissues or different stages of the same tissue culture can vary. KACTUS offers a series of cytokines for various organoids. Our cytokines feature low-endotoxin levels, high-bioactivity, and batch-to-batch consistency. This aids efficient and accurate research on organoids.



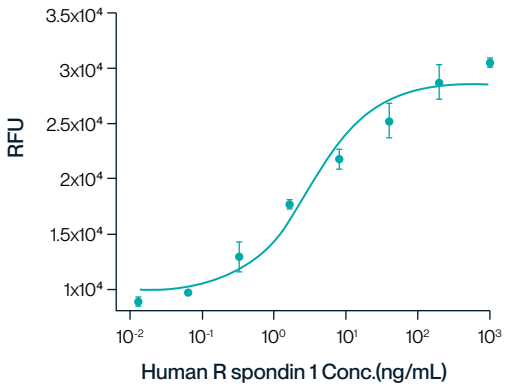
Product Validation Data

Recombinant Human Wnt Surrogate-Fc Fuison Bioactivity



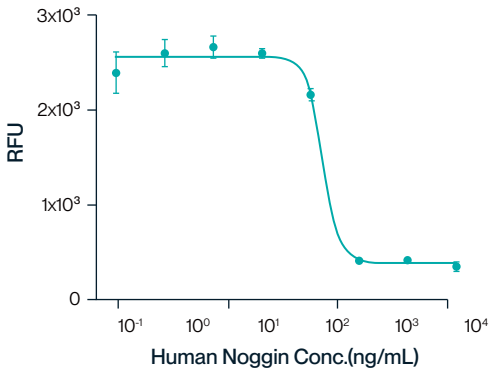
The ability of Human Wnt Surrogate-Fc Fusion to induce Topflash reporter activity in HEK293T cells was measured. The ED50 for this effect is 5.2 ng/mL.

Recombinant Human R spondin 1 Bioactivity



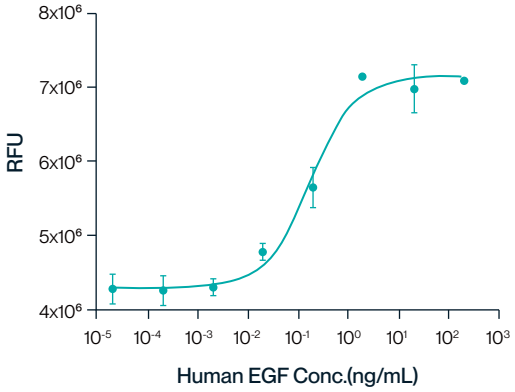
The ability of Human R Spondin 1 to induce Topflash reporter activity in HEK293T was measured. The ED50 for this effect is 1.0 - 10.0 ng/mL in the presence of 5 ng/mL recombinant Human Wnt Surrogate-Fc Fusion.

Recombinant Human Noggin Bioactivity



Human Noggin bioactivity was measured by its ability to inhibit BMP-4-induced alkaline phosphatase production by ATDC5 mouse chondrogenic cells. The ED50 for this effect is 4-80 ng/mL in the presence of 50 ng/mL of recombinant Human BMP 4.

Recombinant Human EGF Bioactivity



Human EGF bioactivity was measured in a cell proliferation assay using Balb/C 3T3 mouse embryonic fibroblast cells. The ED50 for this effect is 0.1-0.2ng/mL.

Catalog No.	Protein	Species	Tag	Expression System	Endotoxin	Purity
ACV-HM001	Activin A	Human	No Tag	HEK293	<0.1EU/μg	> 95%
NGF-HM00B	Beta-NGF	Human	No Tag	HEK293	<1EU/μg	> 95%
BTC-HE001	Betacellulin	Human	No Tag	E.coli	<0.1 EU/μg	> 95%
BMP-HE002	BMP2	Human/Rhesus macaque/Mouse/Rat/Canine	No Tag	E.coli	<0.5EU/μg	> 95%
FXI-CM101	Coagulation factor XI	Cynomolgus	C-His	HEK293	<1EU/μg	> 95%
EGF-HE001	EGF	Human	No Tag	E.coli	<0.2EU/μg	> 95%
EPO-HM001	EPO/Erythropoietin	Human	No Tag	HEK293	<0.1EU/μg	> 95%
FGF-HE001	FGF basic	Human	No Tag	E.coli	<0.02 EU/μg	> 95%
FGF-HE002	FGF basic (154aa)	Human	No Tag	E.coli	<0.1 EU/μg	> 95%
KGF-HE101	FGF-7/KGF	Human	N-His	E.coli	<0.1EU/μg	> 95%
FGF-HE00A	FGF1	Human	No Tag	E.coli	<0.1 EU/μg	> 95%
FGF-HE010	FGF10	Human	No Tag	E.coli	<0.1EU/μg	> 90%
FGF-HE004	FGF4	Human	No Tag	E.coli	<0.1 EU/μg	> 95%
FGF-HE08A	FGF8a	Human	No Tag	E.coli	<0.01 EU/μg	> 95%
FGF-HE08B	FGF8b	Human	No Tag	E.coli	<0.01 EU/μg	> 95%
FLT-HE03L	FLT3 Ligand	Human	No Tag	E.coli	<0.1 EU/μg	> 95%
GDF-HM002	GDF-2/BMP-9	Human	No Tag	HEK293	<1EU/μg	> 95%
GDF-HM008	GDF-8	Human/Mouse/Rat	No Tag	HEK293	<1 EU/μg	> 95%
GDF-HE001	GDNF	Human	No Tag	E.coli	<0.1 EU/μg	> 95%
GSF-ME001	GM-CSF	Mouse	No Tag	E.coli	<1EU/μg	> 95%
HGF-HM101	HGF	Human	C-His	HEK293	<0.1EU/μg	> 95%
IFN-HM10R	IFN alpha/beta R2	Human	C-His	HEK293	<1EU/μg	> 95%
IFN-HM00G	IFN gamma/IFNG	Human	No Tag	E.coli	<0.01 EU/μg	> 95%
IL1-HE00A	IL-1 alpha/IL1A	Human	No Tag	E.coli	<0.05 EU/μg	> 95%
IL1-HM010	IL-10	Human	No Tag	HEK293	<0.1EU/μg	> 95%
IL1-HM013	IL-13	Human	No Tag	HEK293	<1EU/μg	> 95%
IL5-HE015	IL-15	Human	No Tag	E.coli	<0.05 EU/μg	> 95%
IL1-HE018	IL-18	Human	No Tag	E.coli	<0.1 EU/μg	> 95%
IL8-HM1BP	IL-18BP	Human	C-His	HEK293	<1EU/μg	> 95%
IL8-MM1BP	IL-18BP	Mouse	C-His	HEK293	<1EU/μg	> 95%
IL2-HE001	IL-2	Human	No Tag	E.coli	<0.01 EU/μg	> 95%
IL2-HM001	IL-2	Human	No Tag	HEK293	<0.05 EU/μg	> 95%
IL2-MM001	IL-2	Mouse	No Tag	HEK293	<1EU/μg	> 95%
IL2-HE021	IL-21	Human	No Tag	E.coli	<1EU/μg	> 95%
ILR-HM121	IL-21R	Human	C-His	HEK293	<1EU/μg	> 95%
IL2-MM1AB	IL-23 alpha&IL-12 beta	Mouse	N-His	HEK293	<1EU/μg	> 95%
IL2-HM1AB	IL-23 alpha&IL-12 beta	Human	C-His	HEK293	<1 EU/μg	> 95%
IL3-HE003	IL-3	Human	No Tag	E.coli	<0.05EU/μg	> 95%
IL3-MM101	IL-3	Mouse	C-His	HEK293	<1EU/μg	> 95%
ILB-HE037	IL-37b	Human	No Tag	E.coli	<1EU/μg	> 95%
IL7-HE001	IL-7	Human	No Tag	E.coli	<0.01 EU/μg	> 95%
IL9-MM101	IL-9	Mouse	C-His	HEK293	<1EU/μg	> 95%
IL9-HM101	IL-9	Human	C-His	HEK293	<1EU/μg	> 95%
IFN-HM101	Interferon omega-1	Human	C-His	HEK293	<1EU/μg	> 95%
JAG-HM101	Jagged 1/JAG1	Human	C-His	HEK293	<1EU/μg	> 95%
LIF-HM001	LIF	Human	No Tag	HEK293	<0.1EU/μg	> 95%
LIF-HE001	LIF	Human	No Tag	E.coli	<0.1EU/μg	> 95%
TG1-HM00M	Mature TGF beta 1	Human	No Tag	HEK293	<1EU/μg	> 95%
TG2-HM00M	Mature TGF beta 2	Human	No Tag	HEK293	<1EU/μg	> 95%
TG3-HM00M	Mature TGF beta 3	Human	No Tag	HEK293	<1EU/μg	> 95%
NOG-MM201	Noggin	Mouse	C-hFc	HEK293	<1EU/μg	> 90%
NOG-MM601	Noggin	Mouse	N-His-Flag	HEK293	<1EU/μg	> 95%
NOG-MM001	Noggin	Mouse	No Tag	HEK293	<0.1EU/μg	> 95%
RS1-HM101	R spondin 1/RSPO1	Human	C-His	CHO	<0.05EU/μg	> 95%
SCF-HE001	SCF	Human	No Tag	E.coli	<0.02EU/μg	> 95%
TPO-HM102	TPO/Thrombopoietin	Human	N-His	HEK293	<1EU/μg	> 95%
TPO-MM102	TPO/Thrombopoietin	Mouse	C-His	HEK293	<1EU/μg	> 95%
VEG-HM065	VEGF165	Human	No Tag	HEK293	<0.05EU/μg	> 95%
WNT-HM23A	Wnt Surrogate-Fc Fusion	Human	C-hFc	HEK293	<1 EU/μg	> 95%