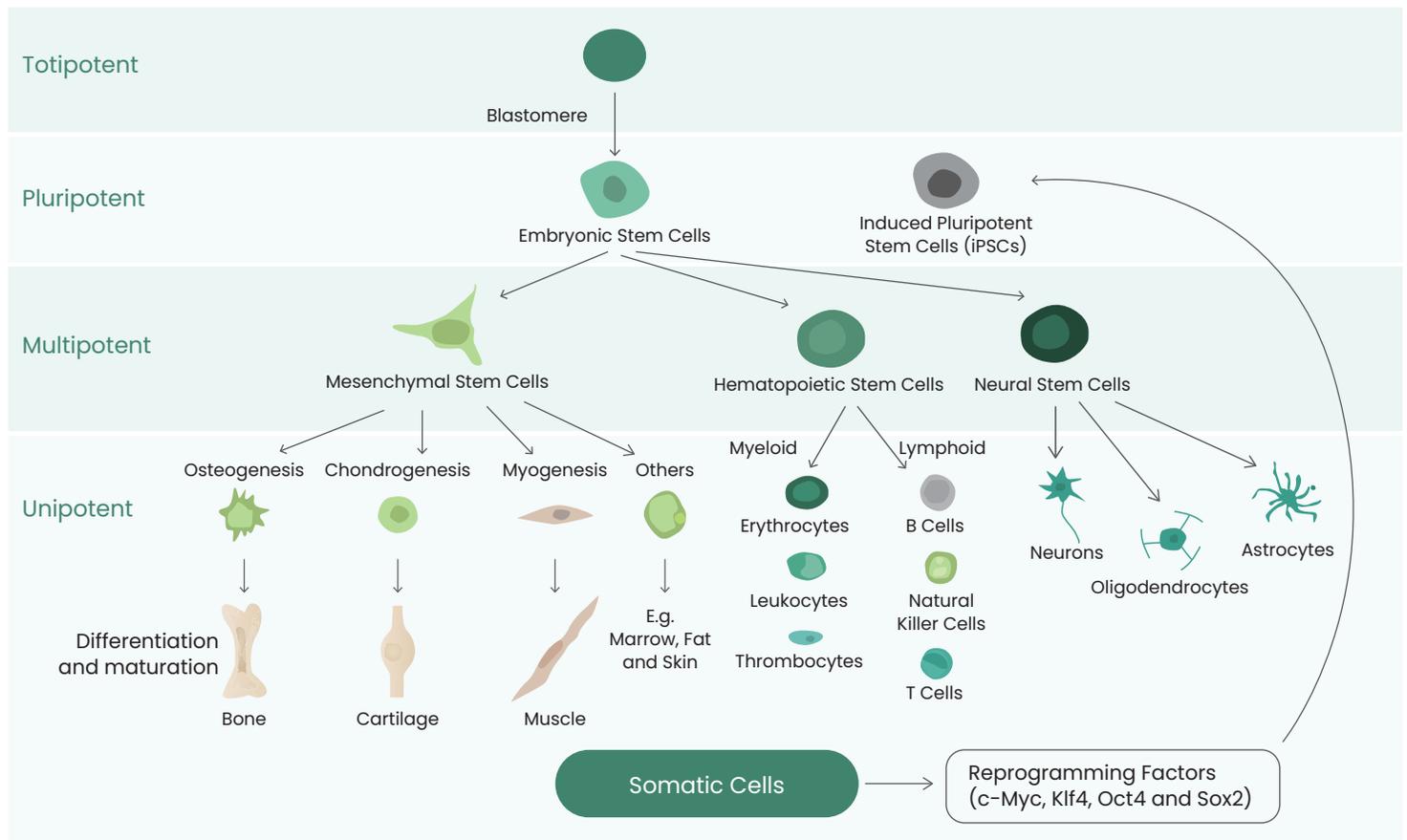


Handbook for Stem Cell Research

High-quality Products for Stem Cell Research

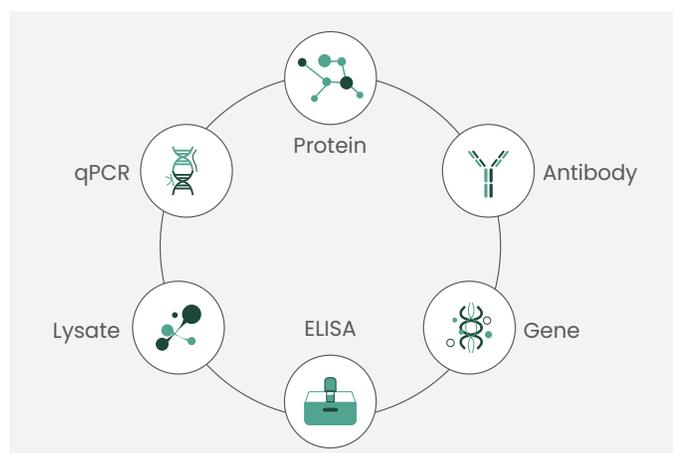
Introduction

Stem cells provide researchers with new opportunities to study targets and pathways that are more relevant to disease processes. They offer a more realistic model to identify and confirm new drug targets and generate pharmacology and toxicology data earlier, with stronger translation to the clinical setting. Additionally, the application of stem cells in drug development creates a new path to personalized medicine, while at the same time reducing, or even potentially replacing, animal testing.



Sino Biological offers comprehensive solutions for stem cell research:

Advantages of Sino Biological products:

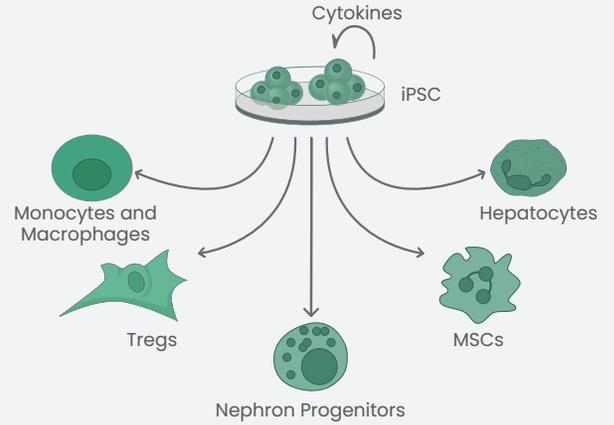


For all stem cell-related reagents, click [HERE](#)

Embryonic Stem Cells (ESCs) and Induced Pluripotent Stem Cells (iPSCs) - Culture and Characterization

Embryonic stem cells (ESCs) and induced pluripotent stem cells (iPSCs) have the remarkable ability to differentiate into various cell types. The process of differentiation can be directed through supplementation with specific cytokines and growth factors.

Cytokines and growth factors are signaling molecules that play crucial roles in regulating cell behavior and development. By adding these factors to the culture media, researchers can direct the differentiation of ESCs and iPSCs toward specific lineages or cell types.



GMP-grade and Research-grade Cytokines for Stem Cell Culture

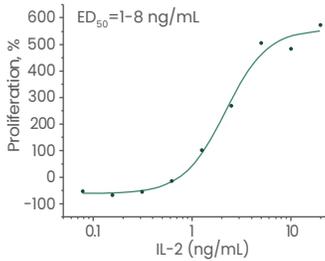
High Purity

High Bioactivity

High Batch-to-batch Consistency

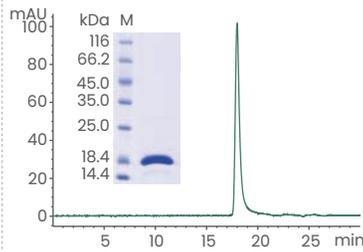
High Stability

Human Interleukin-2 / IL-2 Protein
Cat#: GMP-11848-HNAE **9 Citations**



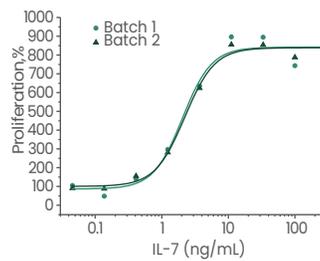
Cell proliferation assay using CTLL2. The specific activity of recombinant human IL-2 is approximately 20,000 IU/μg.

Human Interleukin-21 / IL-21 Protein
Cat#: GMP-10584-HNAE



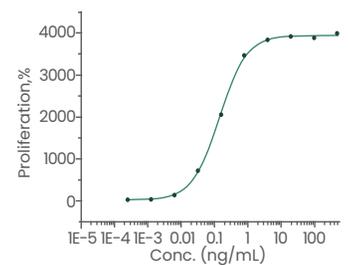
Purity: ≥ 95 % as determined by SDS-PAGE & SEC-HPLC.

Human IL7 / Interleukin 7 Protein
Cat#: GMP-11821-HNAE **1 Citation**



Cell proliferation assay using anti-CD3 antibody activated human peripheral blood mononuclear cell (PBMC).

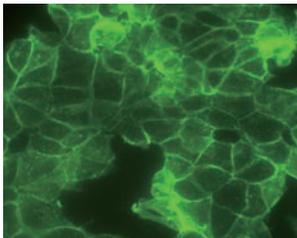
Human GM-CSF/CSF2 Protein
Cat#: GMP-10015-HNAH **1 Citation**



Cell proliferation assay using TF-1 human erythroleukemic cells.

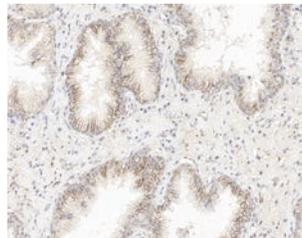
Featured Antibodies for Characterization

Anti-E-cadherin Antibody
Cat#: 11725-R003 **2 Citations**



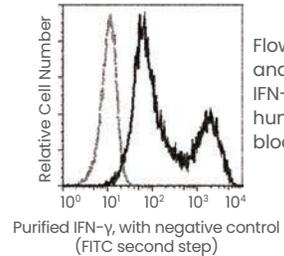
IF staining of human E-cadherin in MCF-7 cells.

Anti-CD9 Antibody
Cat#: 310258-T40



Immunohistochemical staining of human CD9 in human prostate.

Anti-IFN gamma Antibody
Cat#: 11725-R003 **2 Citations**



Flow cytometric analysis of Human IFN-γ expression on human peripheral blood lymphocytes.

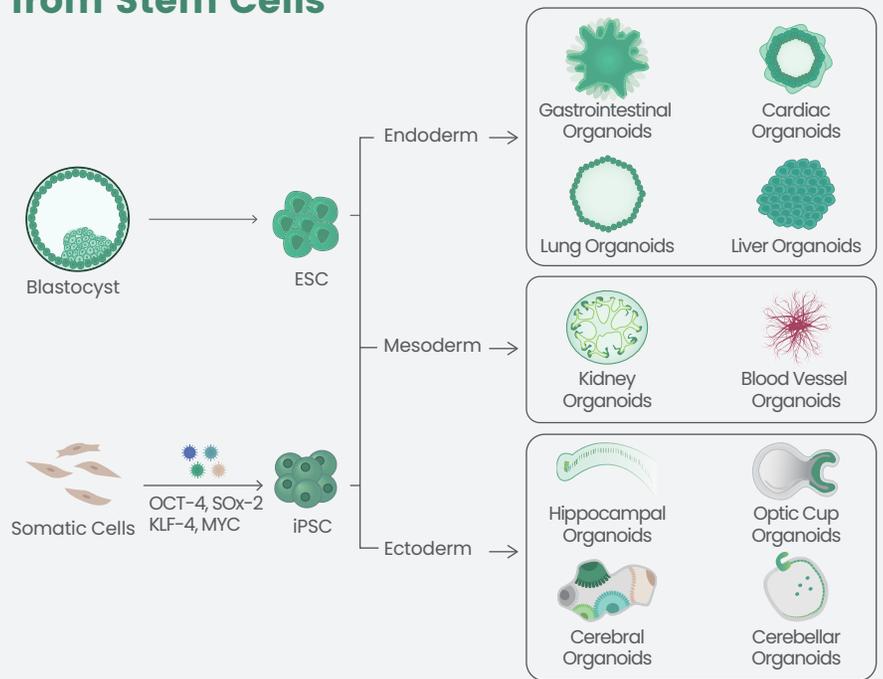
For all cytokines, click [HERE](#)

For more ESC and iPSC-related products, click [HERE](#)

For GMP-grade cytokines, click [HERE](#)

Development of Organoids from Stem Cells

Organoids, derived from stem cells, can be developed using specific growth factors such as Wnt, BMP, and FGF. Activation of the Wnt signaling pathway helps initiate organoid formation, while BMP signaling promotes organoid patterning. FGF signaling supports the growth and proliferation of stem cells within the organoid. By carefully manipulating the administration of growth factors, researchers can guide stem cell differentiation and architect organoids that closely resemble specific organs. This approach enables the study of organ development, disease modeling, and drug testing in a more physiologically relevant and scalable manner.



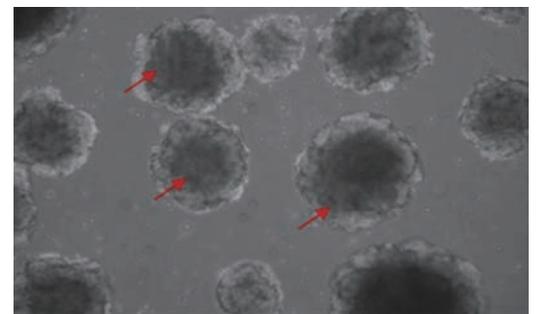
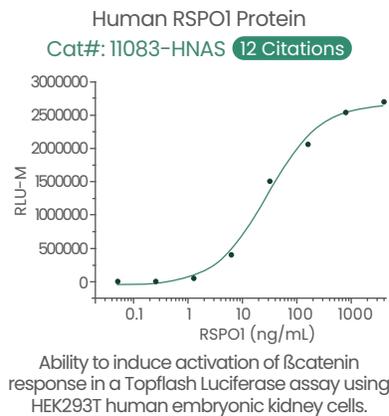
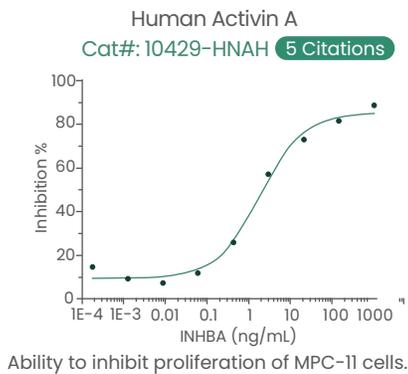
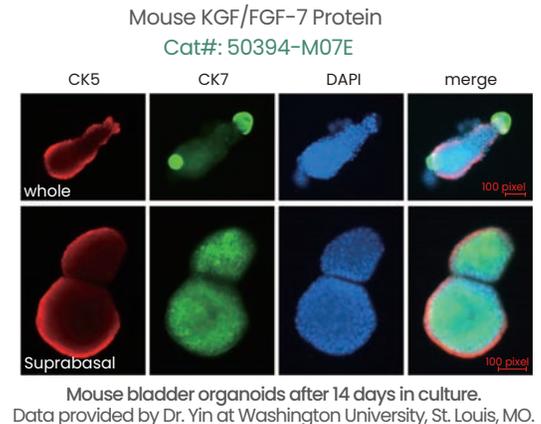
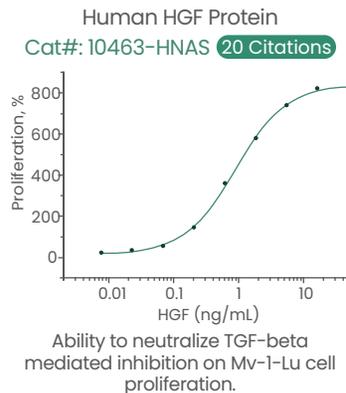
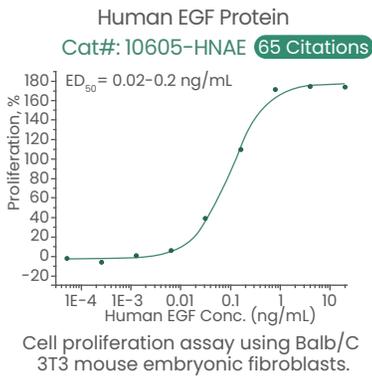
Various Species

High Purity

HPLC Verified

Low Endotoxin

High Activity

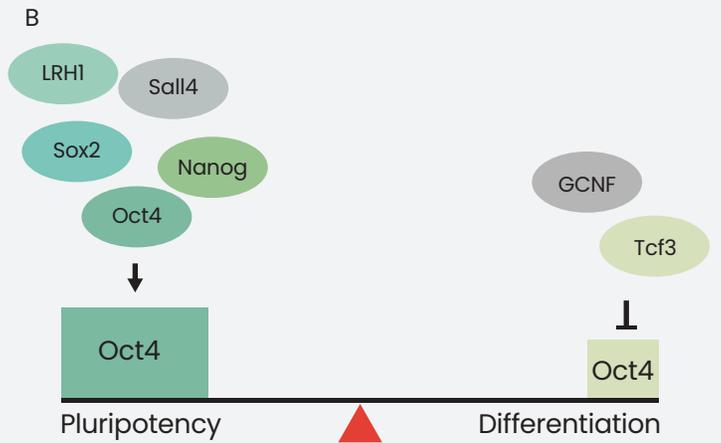
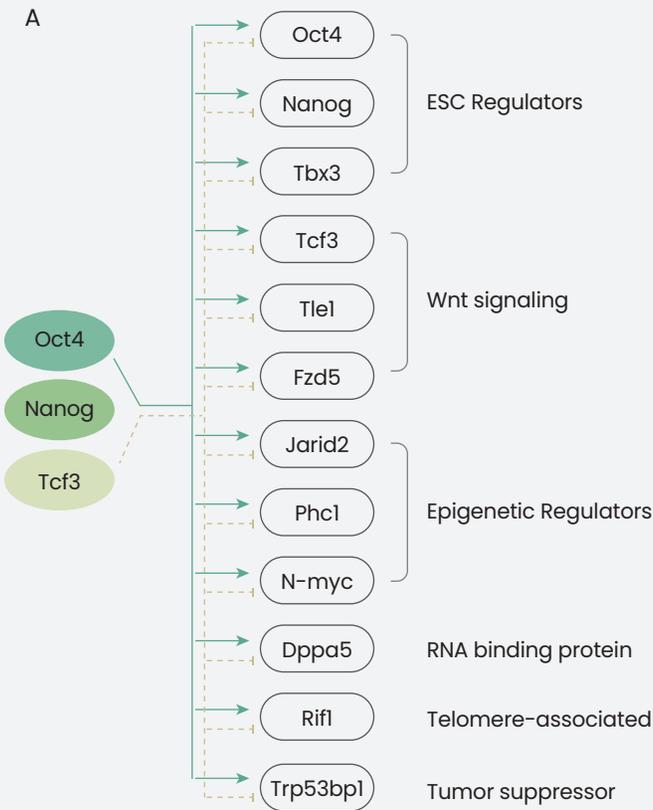


iPSC-derived human vascular organoids were cultured with FGF2 (Cat#: 10014-HNAE), VEGFA (Cat#: 11066-HNAH), EGF (Cat#: 10605-HNAE). Red arrows represent vascular organoids.

For all organoid development reagents, click [HERE](#)

Stem Cell Transcription Factors

Transcription factors play a crucial role in regulating stem cell fate decisions by controlling gene expression. In embryonic stem cells (ESCs), Oct4, Sox2, and Nanog are key transcription factors that maintain pluripotency and self-renewal. In adult stem cells, such as hematopoietic stem cells (HSCs), GATA2 and RUNX1 are important for HSC differentiation into blood cells. Similarly, in neural stem cells (NSCs), Sox2 and Pax6 regulate neural differentiation. Other transcription factors, such as Myc and Klf4, are involved in reprogramming somatic cells into induced pluripotent stem cells (iPSCs). A more comprehensive understanding of the impact individual transcription factors can have on stem cell fate is imperative to the advancement of stem cell-based therapies.

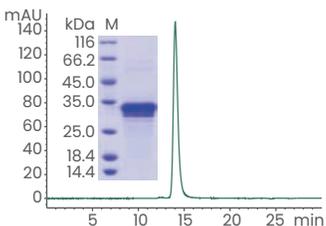


Sino Biological offers proteins, antibodies, cDNA clones, qPCR primers and more for the following classes of transcription factors:

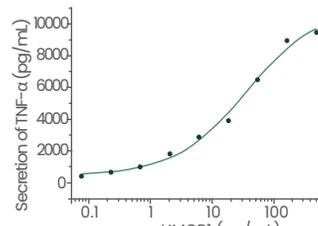
- Cancer Stem Cell
- Hemangioblast
- Hepatic and Pancreatic Progenitor Cell
- Mesenchymal Stem Cell
- Neural Stem Cell
- Pluripotent Stem Cell
- Epithelial Stem Cell
- Hematopoietic Stem Cell

Featured Protein for Cell Culture

Human HMGB1 Protein
Cat #: 10326-H08H **8 Citations**



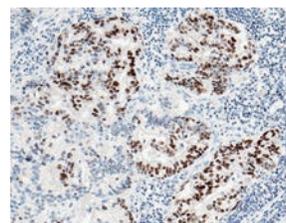
>97 % as determined by SDS-PAGE.
>85 % as determined by SEC-HPLC.



Induces TNF- α secretion by RAW 264.7 mouse monocyte/macrophage cells.

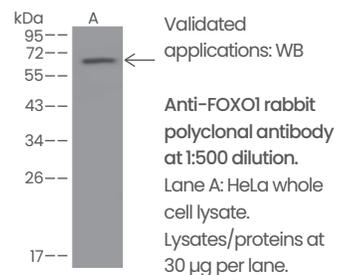
Featured Antibodies for Characterization

Anti-p53 Antibody
Cat#: 90001-R002



Immunochemical staining of p53 in human gastric cancer.

Anti-FOXO1 Antibody
Cat #: 200239-T32



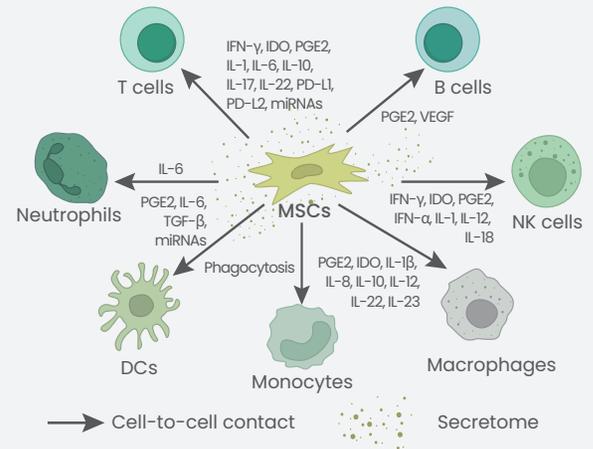
Validated applications: WB
Anti-FOXO1 rabbit polyclonal antibody at 1:500 dilution. Lane A: HeLa whole cell lysate. Lysates/proteins at 30 μ g per lane.

For more stem cell transcription factors, click [HERE](#)

Stem Cell Differentiation Factors and Markers

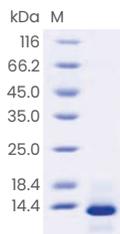
1. Mesenchymal Stem Cells

Mesenchymal stem cells (MSCs) differentiate into various cell types including bone, cartilage, and adipose tissue. Their differentiation is regulated by growth factors (TGF- β , BMPs, IGF), transcription factors (RUNX2, Sox9, PPAR γ), and cell surface markers (CD73, CD90, CD105). These surface markers are also used to identify and isolate MSCs from other cell types. The study of these molecules is key to developing regenerative therapies for bone, cartilage, and other tissue disorders.

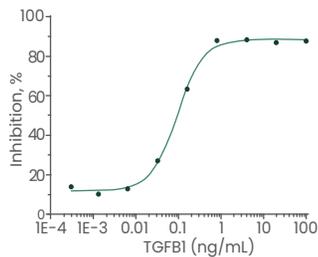


Featured Proteins for Cell Culture

TGF beta 1 Protein
Cat#: 10804-HNAC **24 Citations**



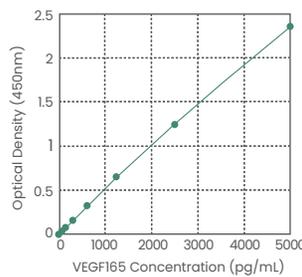
Purity: >95% by SDS-PAGE.



Inhibits cell proliferation of Mv-1-lu mink lung epithelial cells.

Featured Antibodies for Characterization

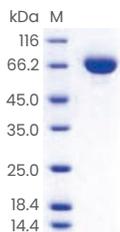
Human VEGF165 ELISA Kit
Cat#: KIT11066 **1 Citation**



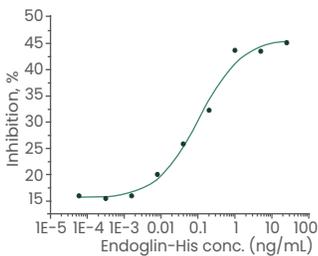
Concentration (pg/mL)	Zero standard subtracted OD
0	0
78.13	0.034
156.25	0.072
312.5	0.156
625	0.320
1250	0.649
2500	1.245
5000	2.354

Standard curve for VEGF165 ELISA kit.
This assay recognizes both recombinant and natural Human VEGF165.

Mouse Endoglin/CD105 Protein
Cat#: 50407-M08H

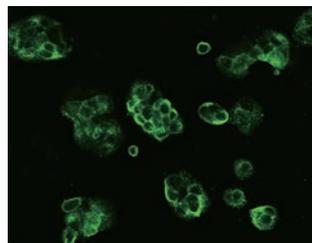


Purity: >97% by SDS-PAGE.



Inhibits BMP9-induced ALP production by MC3T3E1 mouse chondrogenic cells.

Anti-CD73 Antibody
Cat#: 10904-R102



Immunofluorescence staining of NT5E-3 in MCF7 cells.

Anti-CD44 Antibody
Cat#: 12211-MM01 **4 Citations**



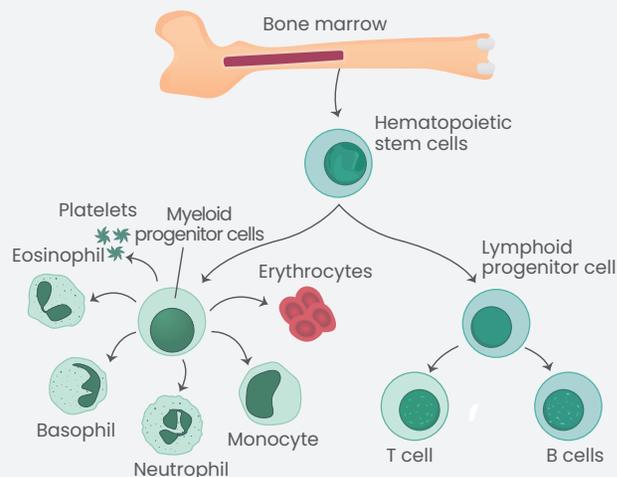
Immunochemical staining of human CD44 in human esophagus.

For all MSCs-related reagents, click [HERE](#)

Stem Cell Differentiation Factors and Markers

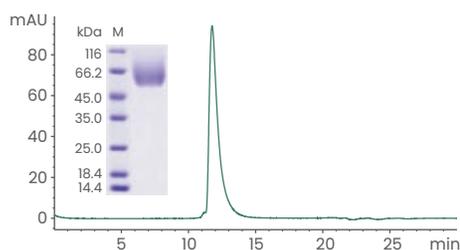
2. Hematopoietic Stem Cells

Hematopoietic stem cells (HSCs) have the remarkable ability to transform into various types of blood cells, a process controlled by an interplay of cytokines, signaling molecules (SCF, IL-3, G-CSF), transcription factors (GATA2, RUNX1), and cell markers (CD34, CD133). Investigating these factors can facilitate the development of targeted therapies, improve stem cell transplantation procedures, aid in disease diagnosis and monitoring, and contribute to the development of innovative drugs. By leveraging CD34 and CD133, HSCs can be effectively isolated and characterized.

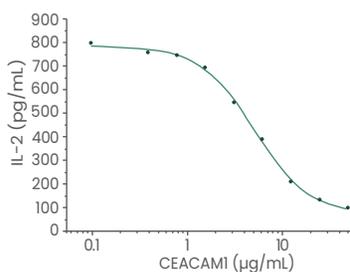


Featured Proteins for Cell Culture

Human CEACAMI Protein
Cat#: 10822-H08H **4 Citations**

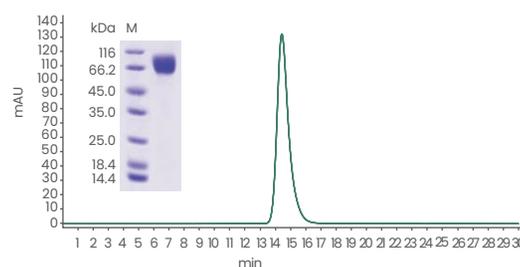


≥ 95 % as determined by SDS-PAGE.
≥ 90 % as determined by SEC-HPLC.



Inhibits IL2 secretion by HuT 78 human cutaneous T cell lymphoma cells.

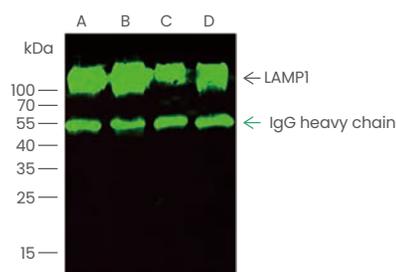
Human c-Kit Protein
Cat#: 11996-H08H **3 Citations**



Purity: ≥97 % by SDS-PAGE, ≥90 % by SEC-HPLC.

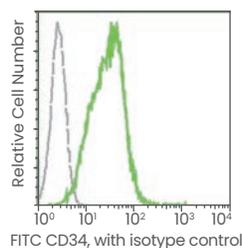
Featured Antibodies for Characterization

Anti-LAMP1 Antibody
Cat#: 11215-RP02 **1 Citation**



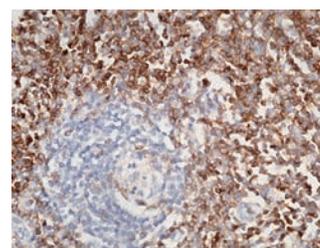
LAMP1 immunoprecipitation.

Recombinant Anti-CD34 Antibody (APC)
Cat#: 50589-R013-A **1 Citation**



Flow cytometric analysis of anti-mouse CD34 on M1 cells.

Recombinant Anti-CD4 Antibody
Cat#: 10400-R113



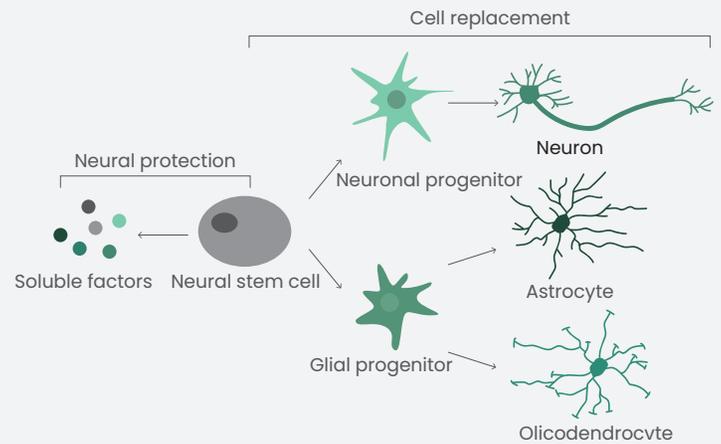
Immunohistochemical staining of CD4 in human lymph node.

For all HSCs-related reagents, click [HERE](#)

Stem Cell Differentiation Factors and Markers

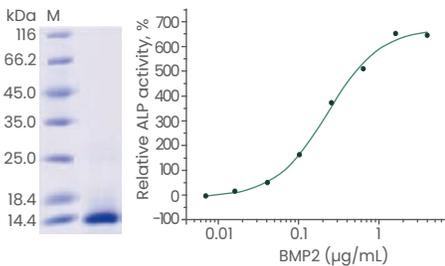
3. Neural Stem Cells

Neural Stem Cells' (NSCs) differentiation into neurons, astrocytes, and oligodendrocytes is regulated by growth factors (EGF, FGF, BMP) and transcription factors (Sox2, Pax6, Ngn1). CD133 and nestin are cell surface markers that are commonly used to isolate and characterize NSCs. Together, these molecules regulate cell fate, proliferation, self-renewal, and the complex signaling processes behind neural development that can be targeted in novel therapeutic approaches.



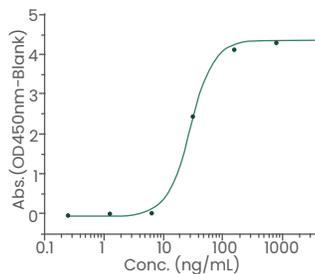
Featured Proteins for Cell Culture

Human BMP-2 Protein
Cat#: 10426-HNAE **11 Citations**



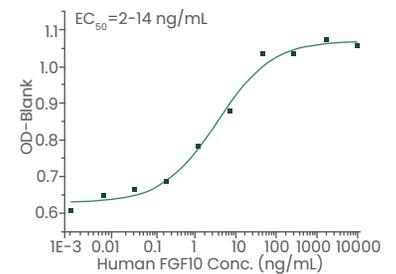
Purity: > 95% by SDS-PAGE. Induces ALP production by MC3T3-E1 mouse osteoblastic cells.

Human IGF1 Protein
Cat#: 10598-HNAE **3 Citations**



Immobilized Human IGF1 can bind Human IGFBP4. Measured by its binding ability in a functional ELISA.

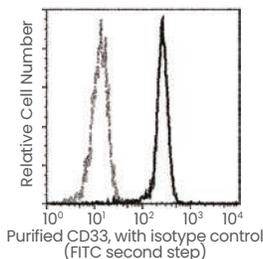
Human FGF10 Protein
Cat#: 10573-HNAE **3 Citations**



Cell proliferation assay using BaF3 mouse proB cells transfected with human FGFR2b.

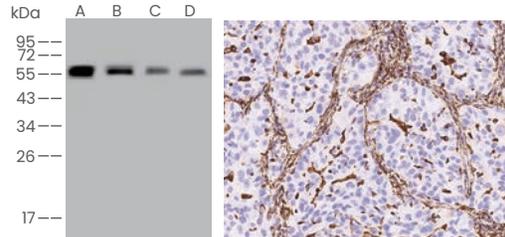
Featured Antibodies for Characterization

Anti-CD33 Antibody
Cat#: 12238-R001



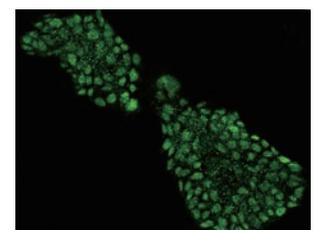
Flow cytometric analysis of Human CD33 expression on human whole blood monocytes.

Anti-Vimentin Antibody
Cat#: 100254-R001



WB Anti-VIM rabbit monoclonal antibody. Immunohistochemical staining of human Vimentin in human lung cancer.

Anti-Neurogenin-2 Antibody
Cat#: 101258-T38



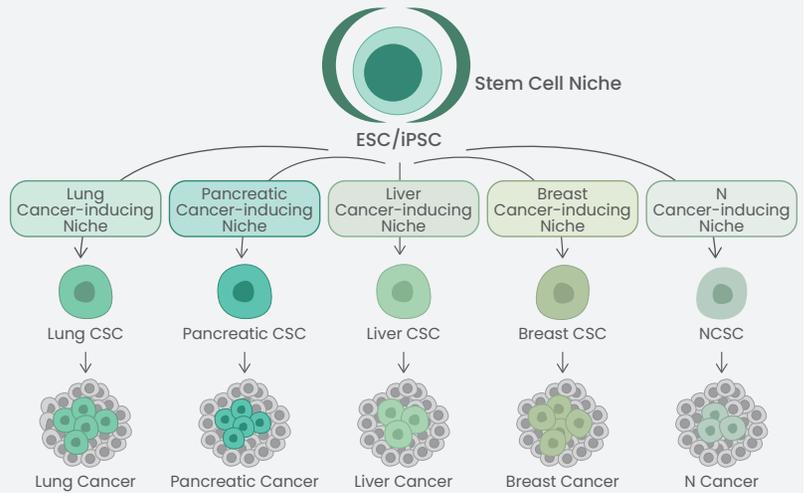
Immunofluorescence staining of NEUROG2 in HESS9 cells.

For all NSCs-related reagents, click [HERE](#)

Stem Cell Differentiation Factors and Markers

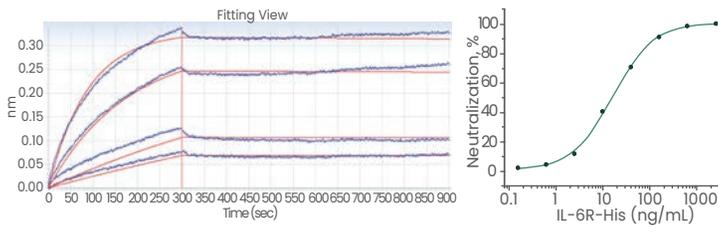
4. Cancer Stem Cells

Cancer stem cells (CSCs) exhibit stem cell-like properties, regulating tumor progression and therapy resistance. Known related factors include growth factors (EGF, FGF, TGF- β), while implicated signaling pathways include Wnt, Notch, and Hedgehog. CSCs express surface markers (CD44, CD133, ALDH) commonly used for characterization. Understanding the interactions of these factors and markers will facilitate the development of CSC-targeted therapies and the inhibition of tumor progression.



Featured Proteins for Cell Culture

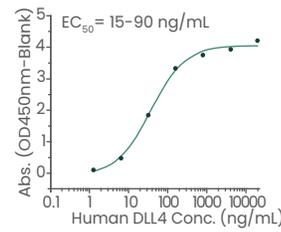
Human IL-6R Protein
Cat#: 10398-H08H 1 Citation



Affinity assay using Octet RED.

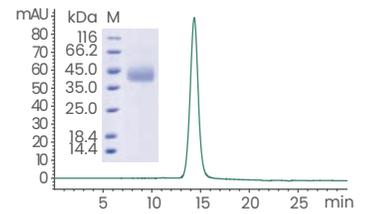
Enhances the IL6 activity on M1 mouse myeloid leukemia cells.

Human DLL4 Protein
Cat#: 10171-H02H 11 Citations



Immobilized mouse NOTCH1 (Cat#:50654-M08B) can bind human DLL4.

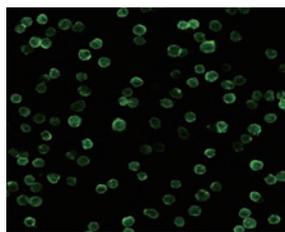
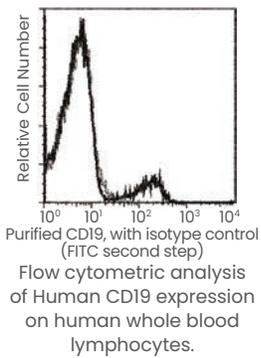
Human CD44 Protein
Cat#: 12211-HNAH



Purity: > 90 % by SDS-PAGE.
> 95 % by SEC-HPLC.

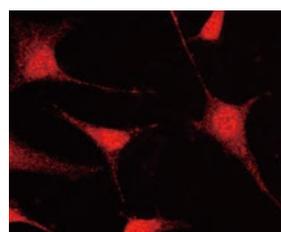
Featured Antibodies for Characterization

Anti-CD19 Antibody
Cat#: 11880-MM17

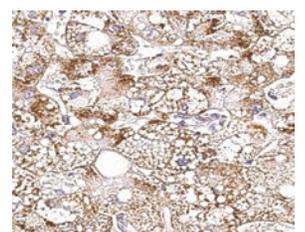


IF staining of CD19 in Raji cells.

Anti-Musashi 1 Antibody
Cat#: 100587-T10



IF staining of MS1 in HeLa cells.



IF staining of MS1 in human hepatoma.

For all CSCs-related reagents, click [HERE](#)

"Stem cells hold the promise of personalized medicine, tailoring treatments to individual patients for maximum effectiveness."



Sino Biological US Inc. (U.S.A.)

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Fax: +49(0)6196 9678657

Email: order_eu@sinobiologicaeu.com

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ご注文: order@sinobiological.co.jp

受託サービス: cro-service@sinobiological.co.jp

電話番号: 044-400-1330

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Email: order@sinobiological.com

www.sinobiological.com



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