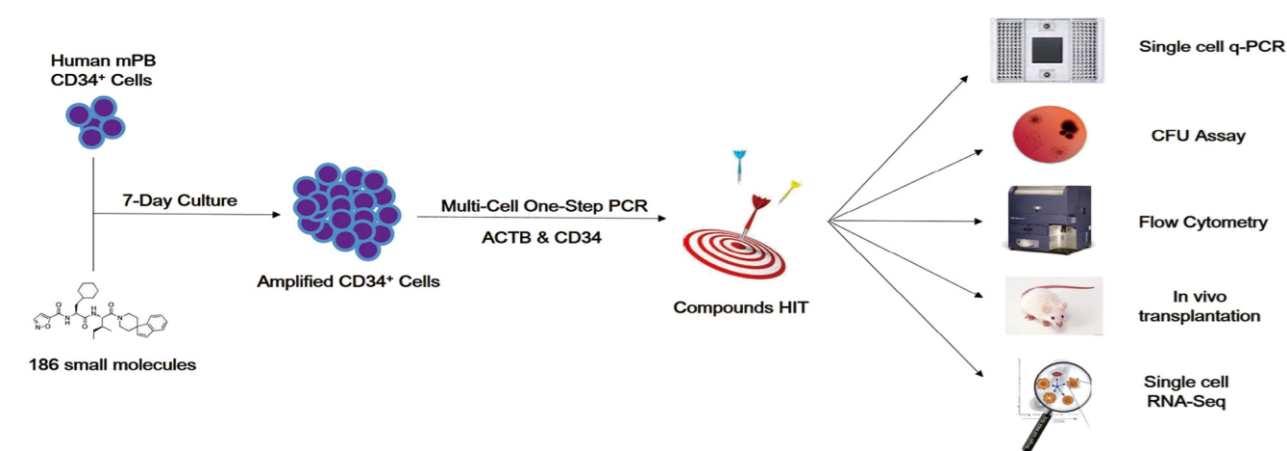


## APPLICATION CASE

Jiang M, et al. Maintenance of human haematopoietic stem and progenitor cells in vitro using a chemical cocktail. Cell Discov. 2018 Oct 30;4:59. **IF: 33.5**

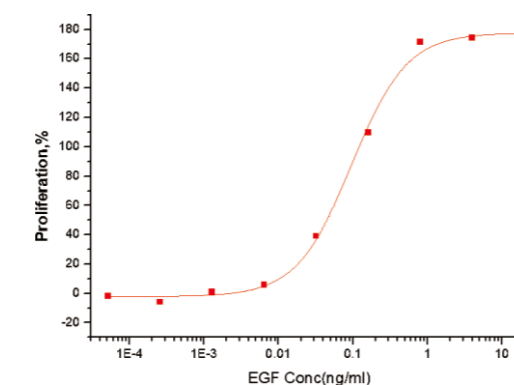
To identify small molecule compounds that help maintain the function of human CD34-positive cells, the research team designed a chemical screening platform to screen 150 compounds from the TargetMol stem cell compound library and 36 compounds from previous studies. After screening a total of 186 compounds, they found that the combination of CHIR-99021, Forskolin, and OAC1 (CFO) can maintain human CD34-positive cells in vitro.



## REFERENCES

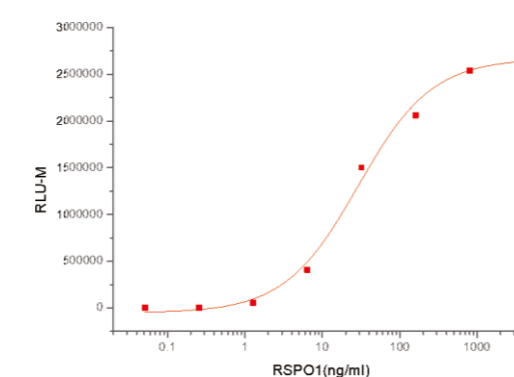
- Wu M, Zhang X, Zhang W, et al. Cancer Stem Cell Regulated Phenotypic Plasticity Protects Metastasized Cancer Cells from Ferroptosis. Nature Communications. 2022, 13(1): 1-16. **CHIR-99021**
- Chen X, Wang P, Qiu H, et al. Integrative epigenomic and transcriptomic analysis reveals the requirement of JUNB for hematopoietic fate induction. Nature Communications. 2022, 13(1): 1-16. **SB-431542**
- Ma X, Lu Y, Zhou Z, Human expandable pancreatic progenitor-derived  $\beta$  cells ameliorate diabetes. Science Advances. 2022, 8(8): eabk1826. **A 83-01 CHIR-99021 Forskolin**
- Tao Z, Cui Y, Xu X, et al. FGFR redundancy limits the efficacy of FGFR4-selective inhibitors in hepatocellular carcinoma. Proceedings of the National Academy of Sciences. 2022, 119(40): e2208844119. **Y-27632**
- Wang Z, Li W, Jing H, et al. Generation of hepatic spheroids using human hepatocyte-derived liver progenitor-like cells for hepatotoxicity screening. Theranostics. 2019, 9(22): 6690. **DAPT**
- Fu G B, Huang W J, Zeng M, et al. Expansion and differentiation of human hepatocyte-derived liver progenitor-like cells and their use for the study of hepatotropic pathogens. Cell Research. 2019, 29(1): 8-22. **A 83-01 Y-27632 dihydrochloride CHIR-99021**

## EXPERIMENTAL VALIDATION



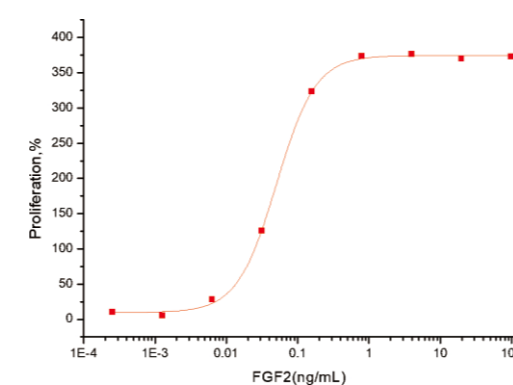
### TMPY-01560

Measured in a cell proliferation assay using Balb/C 3T3 mouse embryonic fibroblasts. The ED50 for this effect is typically 0.02-0.2ng/ml.



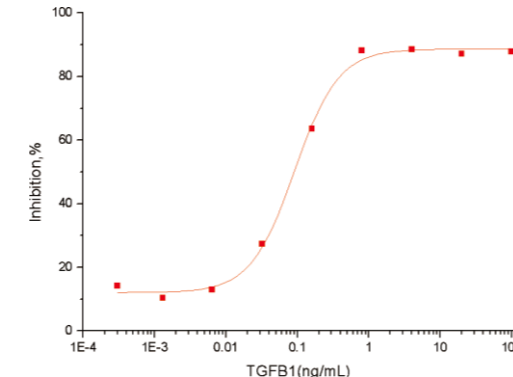
### TMPY-03626

Measured by its ability to induce activation of  $\beta$ catenin response in a Topflash Luciferase assay using HEK293T human embryonic kidney cells. The ED50 for this effect is typically 10-80 ng/mL in the presence of 5 ng/mL recombinant mouse Wnt3a.



### TMPY-00749

Measured in a cell proliferation assay using Balb/c 3T3 mouse embryonic fibroblasts. The ED50 for this effect is typically 0.01-0.1 ng/mL.



### TMPY-02638

Measured by its ability to inhibit cell proliferation of Mv-1-lu mink lung epithelial cells. The ED50 for this effect is typically 0.04-0.2 ng/mL.

### TargetMol US

www.targetmol.com sales@targetmol.com 1-781-999-5354  
36 Washington Street, Wellesley Hills, MA 02481 USA

### TargetMol EU

www.targetmol.com sales@targetmol.com +43(0)676/786025  
Hafenstraße 47-51, 4020 Linz, Austria



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# STEM CELLS & ORGANOIDS

INHIBITORS & AGONISTS

COMPOUND LIBRARIES

NATURAL PRODUCTS

RECOMBINANT PROTEINS

TECHNICAL SERVICE

## STEM CELLS & ORGANOIDS

Stem cells are a type of primitive cell that can self-renew and differentiate into various tissue cells. In specific environments, stem cells can be directed to multiple types of human cells, including cardiomyocytes, osteoblasts, and neurons.

Organoids are one of the key advancements in stem cell research. They are 3D cell clusters cultured in vitro, capable of self-renewal and self-organization, and possess the functions of the tissue or organ they originate from. They are generated from human pluripotent stem cells (hPSC) or adult stem cells (AdSC) derived from healthy individuals or patients. The advent of human 3D organoids allows us to observe stem cells' morphology, maintenance, and differentiation, which is similar to the original tissues. It accelerates the study in human physiology and developmental stages.

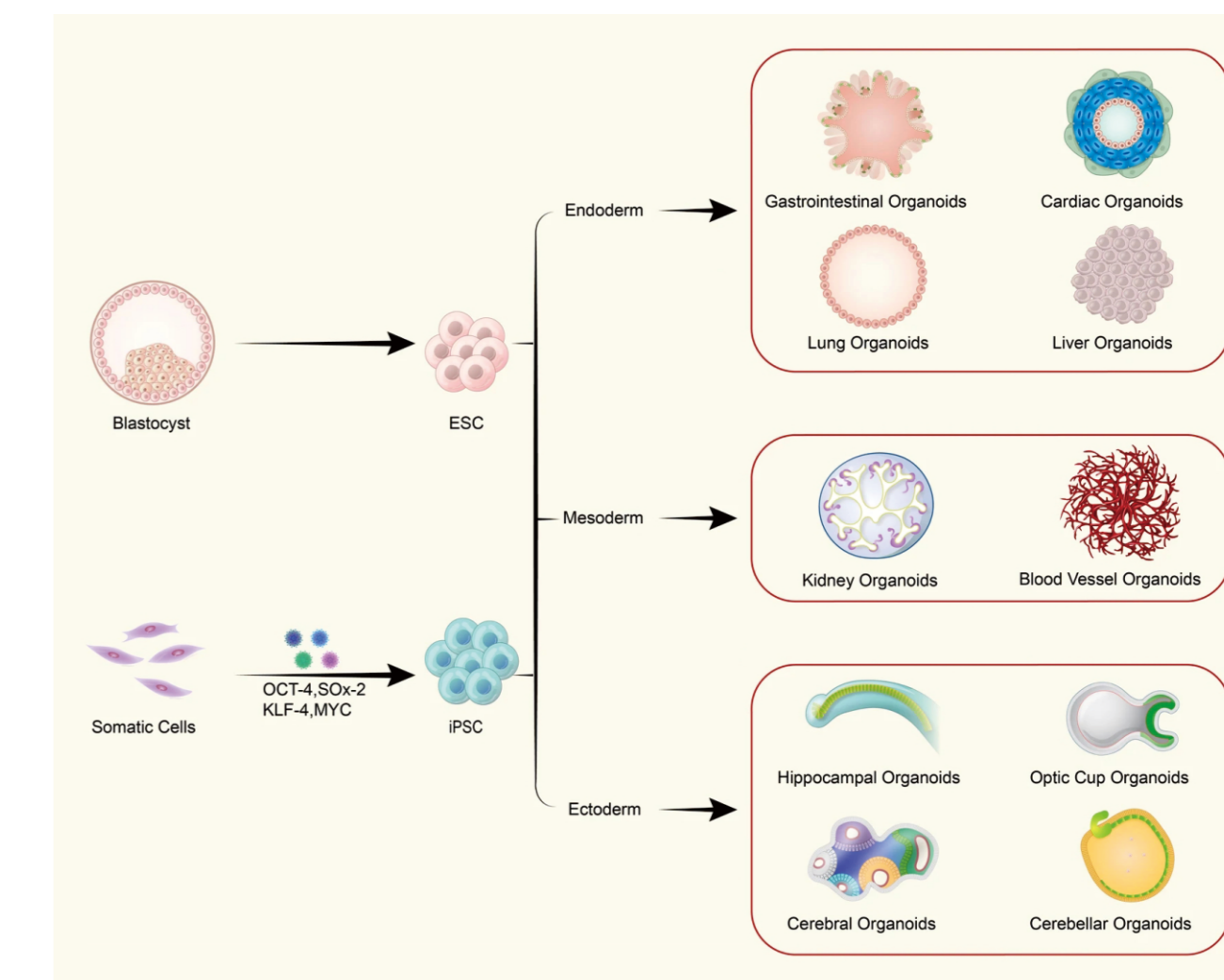


Fig. 1 Schematic of the different organoids that can be derived from PSCs.

Signal Transduct Target Ther. 2022 May 24;7(1):168.

## RELATED PRODUCTS

	Organoid	PSCs	AdSCs	Small Molecule Compounds	Recombinant Proteins
	Brain	✓		Y-27632, MK-2206 Dorsomorphin Ipatasertib	SHH, BDNF, GDNF FGF-2, TGF-β Insulin, FGF-8
	Thyroid	✓		A83-01, Forskolin	BMP-4, EGF, FGF-10 FGF-4, Noggin, RSPO1
	Lung	✓	✓	CHIR-99021 SB-431542	Noggin, RSPO1, FGF-2 FGF-10, FGF-7, FGF-4 Activin A, BMP-4
	Blood Vessel	✓		Y-27632 CHIR-99021 Forskolin	BMP-4, EGF, FGF-2 VEGFA
	Liver	✓	✓	Forskolin, Gastrin I Prostaglandin E2 Acetylcysteine, DAPT Y-27632, A 83-01	EGF, Noggin, RSPO1 Wnt3a, FGF-2, FGF-4 Activin A, BMP-4, HGF Insulin
	Stomach	✓	✓	Y-27632, SB 202190 Gastrin I, A 83-01	EGF, Noggin, RSPO1 Wnt3a, FGF-10, FGF-4 BMP-4, Activin A
	Kidney		✓	Gastrin I, A 83-01	FGF-10, EGF, Noggin RSPO1, Wnt3a
	Pancreas	✓		CHIR-99021 Retinoic Acid Acetylcysteine Dorsomorphin	BMP-2, BMP-4, FGF-2 FGF-9
	Intestine	✓	✓	A 83-01, Gastrin I SB 202190, Y-27632 Forskolin	EGF, Noggin, RSPO1 Activin A, IGF-1, FGF-2 Wnt3a, FGF-4, BMP-4
	Prostate		✓	Y-27632, A83-01 L-Glutamine, Acetylcysteine	Wnt3a, EGF, Noggin R-spondin 1 FGF-10, HGF
Endometrium	✓	✓	Prostaglandin E2 Y-27632, A 83-01 SB 202190	EGF, Activin A, FGF-10 FGF-2, Noggin, RSPO1	

## Inhibitors & Agonists

- [✓ Stem Cell Induced Differentiation](#)
- [✓ Organoid Stabilization](#)
- [✓ Professional Quality Inspection](#)
- [✓ High Cost Effectiveness](#)

ID	NAME	CAS	APPLICATION
T3031	A 83-01	909910-43-6	A 83-01 is an ALK4/5/7 inhibitor that can promote the reprogramming of mouse fibroblasts into iPSCs and is used for organoid culture.
T1870	Y-27632	146986-50-7	Y-27632 is an orally potent, ATP-competitive inhibitor of ROCK-I and ROCK-II. Y-27632 also inhibits isolation-induced apoptosis in mouse prostate stem or progenitor cells.
T6202	DAPT	208255-80-5	DAPT is a γ-secretase inhibitor and Notch inhibitor that can induce cell differentiation and is used for organoid differentiation culture.
T2310	CHIR-99021	252917-06-9	CHIR-99021 is an activator of the Wnt/β-catenin signaling pathway and a GSK-3α/β inhibitor with selective and oral activity. It induces cellular autophagy, which enhances self-renewal in human embryonic stem cells.
TP2030	Gastrin I, human	10047-33-3	TP2030 Gastrin I, human is an endogenous peptide produced in the stomach that increases pepsinogen and acid secretion via the CCK2 receptor in the rat. It can be used for the culture of gastrointestinal organoids.
T1726	SB-431542	301836-41-9	SB-431542 is an inhibitor of ALK5/TGF-β type I Receptor (IC50=94 nM) and is selective. SB 431542 also has inhibitory activity against ALK4 and ALK7 but not other proteins. SB 431542 can be used for induced differentiation of stem cells.
T2939	Forskolin	66575-29-9	Forskolin is an adenylate cyclase activator that induces cell differentiation and can induce the reprogramming of fibroblasts into iPSCs, commonly used for liver organoid culture.
T2301	SB 202190	152121-30-7	SB 202190 is a p38 MAPK inhibitor that can induce the differentiation of human embryonic stem cells into cardiomyocytes and promote the self-renewal of neural stem cells.
T1051	Retinoic acid	302-79-4	Retinoic acid is a natural agonist of the retinoic acid receptor (RAR) and plays an important role in cell growth, differentiation, and organogenesis.
T0875	Acetylcysteine	616-91-1	Acetylcysteine is a ROS inhibitor and mucolytic agent, and is a component of many organoid culture media.
T1977	Dorsomorphin	866405-64-3	Dorsomorphin inhibits BMP type I receptors ALK2, ALK3, and ALK6. It can be used for the culture of brain and kidney organoids.
T5014	Prostaglandin E2	363-24-6	Prostaglandin E2 is a natural hormone that mediates cell proliferation and differentiation by binding to specific receptors. It is required as an additive in liver and prostate organoid cultures.
T1952	MK-2206 dihydrochloride	1032350-13-2	MK-2206 dihydrochloride is a variant Akt inhibitor that inhibits Akt1, Akt2, and Akt3. It is widely used for organoid culture.

## Compound Libraries

- [✓ Clear Classification](#)
- [✓ Continuous Updates](#)
- [✓ Customized Libraries](#)
- [✓ High-throughput Screening](#)

ID	NAME	QUANTITY	APPLICATION
L8000	Stem Cell Differentiation Compound Library	1,200+	A unique collection of bioactive small molecule compounds related to stem cell differentiation signaling pathways. Suitable for 1. high-throughput and high-content screening; 2. research on mechanisms of stem cell regeneration and regenerative therapies.
L8110	Cell Reprogramming Compound Library	1,840+	A unique collection of bioactive small molecule compounds related to reprogramming signaling pathways. Small molecule-induced pluripotent stem cells have great potential in drug discovery, cell therapy, and disease modeling, opening new avenues for treating major diseases.
—	PI3K Targeted Compound Library	19,000+	A collection of drug-like compounds targeting PI3K, showing similar binding patterns to reported PI3K inhibitors. The PI3K/Akt signaling pathway is closely related to the self-renewal and multi-lineage differentiation potential of embryonic stem cells.
—	PI3K/Akt/mTOR Targeted Compound Library	4,400+	A collection of drug-like compounds targeting PI3K/Akt/mTOR, selected using a ligand-based approach, suitable for stem cell and organoid-related research.
—	Hh/Wnt Pathway Targeted Compound Library	2,000+	A collection of drug-like compounds targeting Proline Kinase. Wnt and Hedgehog (Hh) signaling pathways play crucial roles in maintaining the morphogenesis and functional maintenance of tissues and organs.

## Recombinant Proteins

- [✓ Comprehensive Ranges of Categories](#)
- [✓ Rich Selection of Species, Tags, and Expression Systems](#)
- [✓ Strict Bioactivity Verification](#)

ID	NAME	APPLICATION
TMPJ-01471	Activin A Protein, Human, Mouse, Rat, Cynomolgus, Rhesus	Activin A is a member of the TGF-β superfamily that regulates various functions such as neuron survival, embryonic axis development, or bone growth and can be used for organoid culture.
TMPJ-00135	BDNF Protein, Human/Murine/Rat	BDNF is a member of the neurotrophin family. BDNF promotes the survival, growth, and differentiation of neurons and can be used for brain organoid culture.

TMPY-00680	BMP-2 Protein, Human, Mouse, Rat, Rhesus, Canine	BMP-2 regulates the development of bones and cartilage and has been shown to effectively induce osteoblast differentiation in various cell types, significant for bone formation and repair.
TMPY-06842	BMP-4 Protein, Human	BMP-4 plays a crucial role in early embryonic development and postnatal tissue homeostasis and induces the differentiation of human embryonic stem cells (ESCs).
TMPY-01560	EGF Protein, Human	EGF is a growth factor that stimulates the growth of various epidermal and epithelial tissues in vivo and in vitro and induces cell proliferation in various organoid cultures.
TMPY-00749	FGF-2 Protein, Human	FGF and its receptors FGFRs mediate various physiological processes, including mitosis, differentiation, migration, angiogenesis, and wound healing. Recombinant FGFs are widely used in 3D organoid cultures, with FGF-2 being a key component of human embryonic stem cell culture medium.
TMPY-05004	FGF-4 Protein, Human	
TMPY-00403	FGF-7/KGF Protein, Human	
TMPY-00005	FGF-8a Protein, Human	
TMPY-06986	FGF-8b Protein, Human	
TMPJ-00090	FGF-9 Protein, Human	
TMPY-01061	FGF-10 Protein, Human	
TMPY-02792	GDNF Protein, Human	GDNF is a neurotrophic factor involved in cell survival, outgrowth, differentiation, and migration and can be used for brain organoid culture.
TMPY-02327	HGF Protein, Human	HGF, or hepatocyte growth factor, regulates cell growth, cell motility, and morphogenesis and can be used for liver organoid culture.
TMPY-00395	Insulin Protein, Human	Insulin is a peptide hormone essential for regulating carbohydrate and lipid metabolism and can be used for brain and liver organoid culture.
TMPY-05202	Noggin/NOG Protein, Human	Noggin binds to BMP proteins to coordinate Wnt signaling to activate stem cells and promote their proliferation, widely used for long-term culture of various organoids.
TMPY-03626	R-Spondin1/RSPO1 Protein, Human	RSPO1 is an agonist of the Wnt/β-catenin signaling pathway involved in regulating cell proliferation and differentiation, widely used to promote the growth and survival of organoids.
TMPY-02638	TGF beta 1 Protein, Human, Rhesus, Cynomolgus, Canine	TGF beta 1 regulates cell processes, including division, differentiation, movement, adhesion, and death, and can be used for brain organoid culture.
TMPJ-00865	VEGF 121 Protein, Human	VEGFA is a glycosylated mitogen that specifically acts on endothelial cells and has various functions. VEGFA can be used for vascular organoid culture.
TMPY-06987	Wnt3a Protein, Human	Wnt3a plays a crucial role in regulating cell renewal, proliferation, differentiation, and movement. Wnt3a is one of the most commonly used culture factors for constructing organoids and is used for the culture of various organoids.