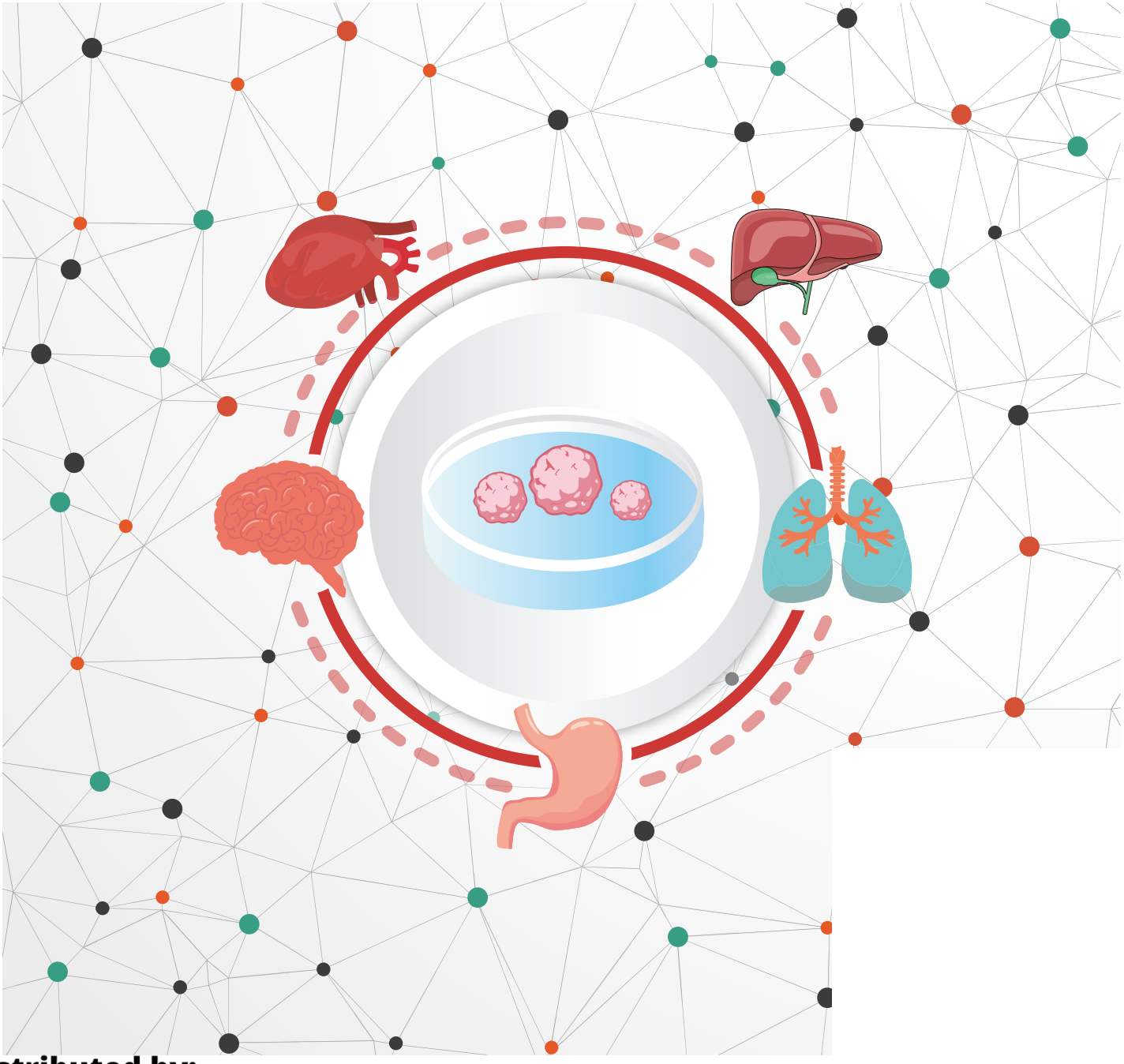
BIOSYSTEMS Acro

Empowering Organoid Research with Comprehensive Solutions

A Comprehensive Guide to the Organoid Toolbox



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CliniSciences Group

About ACROBiosystems

ACROBiosystems Group (Stock code: 301080) founded in 2010 and listed in 2021, is a biotechnology company aimed at being a cornerstone of the global biopharmaceutical and health industries by providing products and business models innovation. The company spans across the globe and maintains offices, R&D centers, and production bases in 12 different cities within the United States, Switzerland, England and Germany. ACROBiosystems Group has established numerous long-term and stable partnerships with the world's top pharmaceutical enterprises, including Pfizer, Novartis, and Johnson & Johnson, and numerous well-known academic institutes. The company comprises of several subsidiaries such as **A**CROBiosystems, **b**ioSeedin, **C**ondense Capital, and ACRO**D**iagnostics.

Our Customers

Pharma | Biotech | Diagnostics | Vaccine | CRO/CDMO | Academia

> 9,000 Customers

> 70 Countries

>100,000 Scientists

Our Advantages

Better Design

Application-oriented development strategies

- Over 95% of proteins are produced from HEK293 to ensure native conformation of our proteins
- Six guaranteed technology platforms including multi-pass transmembrane proteins, next-generation fluorescent site-directed labeling, and enzymology
- Dedicated research & development brands including ActiveMax, GENPower, ViruStop, etc.
- Custom products according to customer application requirements

Better Quality

Strict quality control systems

- Strict quality and production process control
- Validated analytical methodologies
- DMF (FDA) filings for recombinant protein products
- ISO9001 and ISO13485 certified
- GMP quality management system
- CNAS-accredited SPR testing services available

Better Support

24h Technical support and free resources

- 24-hour technical support on weekdays
- Free protocols on bioactivity validation
- Open-access marketing information & training resources
- Resources for monitoring clinical progress and market dynamics
- Comprehensive regulatory support documentation
- Extensive collaborations with our partners

Better Customer Experience

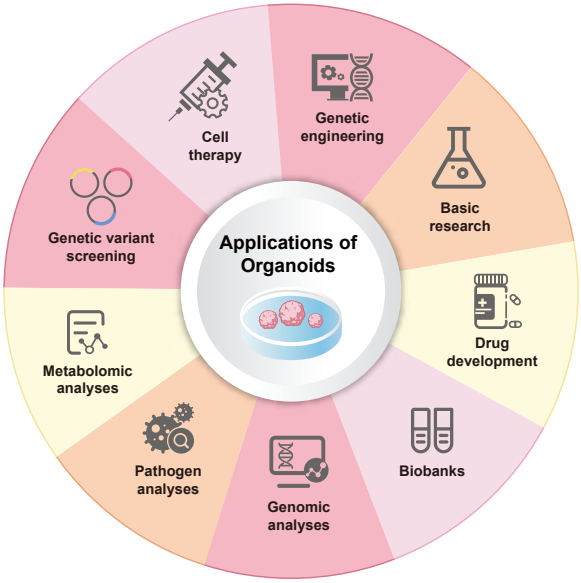
Customers come first

- 1 to 5-day global shipping
- Real-time, online support or local customer support available
- Custom services available according to customer demands
- Inventory reservation system to reserve the same batch or lot

Content

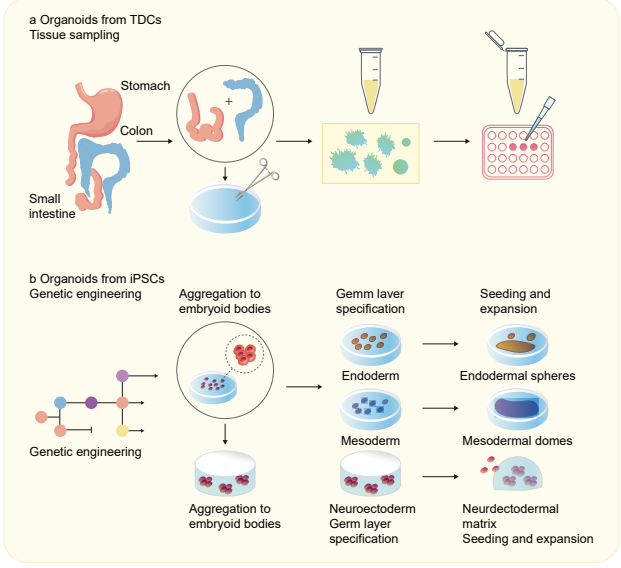
1 Organoids Introduction

Organoids are simplified, lab-grown models that mimic various aspects of the complex structure and function found in living tissues. They serve as valuable tools for studying the mechanisms involved in tissue development, regeneration, and repair in humans. Additionally, they have applications in diagnostics, disease modeling, drug discovery, and personalized medicine.



Applications of organoids

There are two primary methods for creating organoids: one involves using tissue-derived cells (TDCs), and the other uses induced pluripotent stem cells (iPSCs). When generating organoids from TDCs, tissue samples are collected from either humans or animals, typically from organs like the gut and stomach. These tissue samples are processed by cutting them into small fragments (usually 2–4 mm). This facilitates enzymatic digestion or mechanical dissociation to isolate individual intestinal stem cells or crypts. After several rounds of purification, the isolated stem cells or crypts are used to seed and cultivate organoid cultures, allowing them to grow and expand.

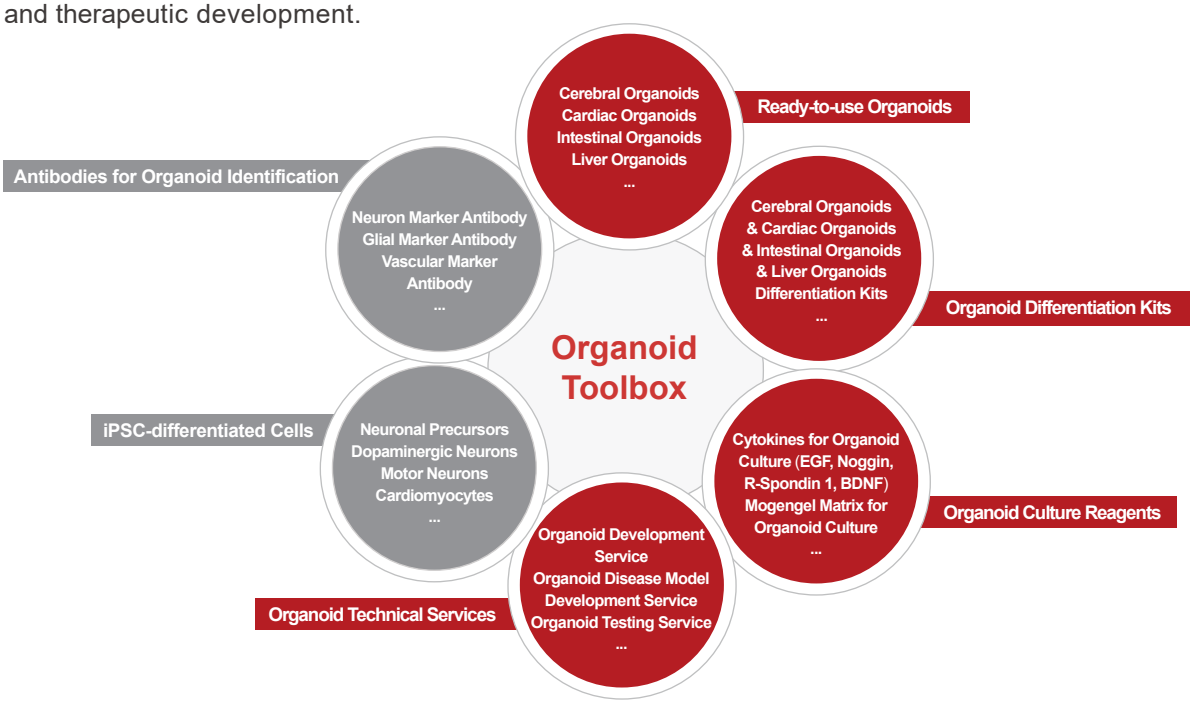


Two primary methods for developing organoids
(Modified from Zao et al., 2022)

Organoids can also be generated from iPSCs. iPSCs are grown and expanded as undifferentiated clonal populations on substrates like feeder cells or defined extracellular matrices (ECM). Afterwards, the stem cells are then induced to form cell aggregates, which maintain cell-to-cell contact and exhibit higher viability. These aggregates are further guided through germ layer specification to create endodermal spheres, mesodermal domes, and neuroectodermal matrices, enabling a wide range of applications in research and medical science.

2 Overview of ACROBiosystems' Comprehensive Organoid Solutions

In recent years, organoids have made significant progress, bringing exciting advancement and opportunities to various research and medicine fields. ACROBiosystems' Organoid Toolbox includes a range of products and services that contribute to facilitate the utilization and development of organoids across various domains, unlocking their potential. This comprehensive solution aims to support research, drug discovery, and therapeutic development.



The Organoid Toolbox provides a comprehensive set of solutions for researchers interested in studying organoids. Here's a detailed overview of the solutions included:

- ★ Differentiation Kits: These kits are designed to simplify the process of differentiating iPSCs into specific types of organoids. They contain all the necessary reagents and protocols to efficiently guide the differentiation process, ensuring consistent and reliable results.
- ★ Ready-to-use iPSC-Derived Organoids: If you prefer not to go through the differentiation process yourself, the Organoid Toolbox also offers Ready-to-use iPSC-derived organoids. These are pre-formed organoids that are delivered in a condition suitable for immediate use in experiments, saving you time and effort.
- ★ Cytokines for Organoid Culture: Cytokines are critical for maintaining the health and growth of organoids in culture. The Organoid Toolbox provides a range of cytokines that are optimized for organoid culture, ensuring that your organoids receive the necessary signals to proliferate and differentiate properly.
- ★ Mogengel Matrix for Organoid Culture: Mogengel Matrix is a three-dimensional culture substrate that provides a supportive environment for organoid growth. It mimics the extracellular matrix found in vivo, promoting cell-cell and cell-matrix interactions that are crucial for organoid formation and function.
- ★ Organoid Technical Services: In addition to the physical products, the Organoid Toolbox also offers technical services to support your organoid research. These services include organoid development service, organoid disease modeling service, and organoid testing service, among others. By leveraging the technical services of the Organoid Toolbox, you can focus more on the scientific aspects of your research, rather than being bogged down by the specifics of experimental procedures and analysis.

The Organoid Toolbox provides a one-stop shop for all the necessary tools and reagents, enabling researchers to focus on the scientific questions at hand rather than spending time and effort on setting up and optimizing experiments. Whether you're interested in studying organoid biology, modeling human diseases, or screening drugs for therapeutic potential, the Organoid Toolbox has the solutions you need to take your research to the next level.

Ready-to-use Organoids and Organoid Differentiation Kits

Organoids mimic the characteristics of human organs and are widely used in oncology research, disease modelling, drug screening and regenerative medicine. ACROBiosystems helps you develop "out-of-the-box" organoids and deliver iPSC-derived ready-to-use organoid products.

Key Features

- Matrigel-free in organoid differentiation and culture.
- Traceable iPSC cell source and authorized for commercial use.
- Multi-modal functional verification (Immunostaining, RNAseq, electrophysiology).
- Exclusive cryopreservation technology for improved storage and transportation.
- Experienced logistics team: fast delivery and supply worldwide.

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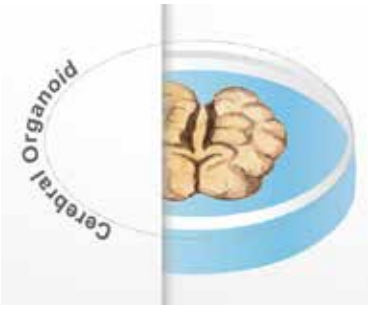
Cerebral Organoids & Differentiation Kits

Cerebral organoids are complex three-dimensional structures formed by culturing stem cells (usually iPSCs) in a specific medium, which resemble brain tissue during embryonic development and are capable of gradually differentiating into neural cells. Cerebral organoids model offers a powerful tool for studying central nervous system (CNS) diseases. Researchers can utilize these brain organoid models to explore various cerebral functions including neural development, formation and function of neural networks, disease pathogenesis, and more.



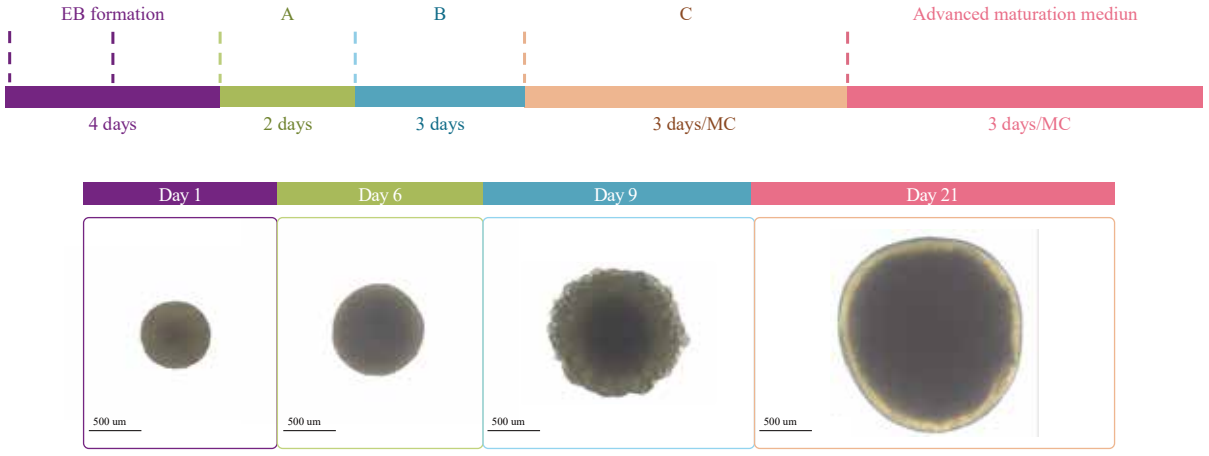
- ★ iPSC-based differentiation kits to culture cerebral organoids.
- ★ Neural cell types mimic the human brain.
- ★ Spontaneous electrophysiological activity.
- ★ Responsive to toxic reactions induced by Alpha-synuclein PFFs.

Product List

Product Type	Cat. No.	Product Description
Cerebral Organoid	CIPO-BWL001K	Ready-to-use Human iPSC-Derived Cerebral Organoids
	RIPO-BWM001K	Human iPSC-Derived Cerebral Organoid Differentiation Kit
	RIPO-BWM003	Human iPSC-Derived Cerebral Organoid Maturation and Maintenance Kit
	RIPO-BWM006	Cerebral Organoid Cryopreservation Kit

Verification Data

Differentiation Timeline of Cerebral Organoids



When using our cerebral organoid differentiation kit, no Matrigel is needed to differentiate iPSCs into cerebral organoids and takes about three months to have rich cell lineage including various neuron types, astrocytes, oligodendrocyte and microglia.

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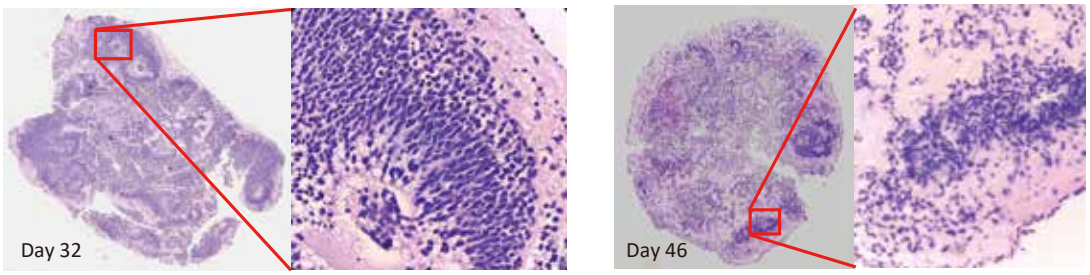
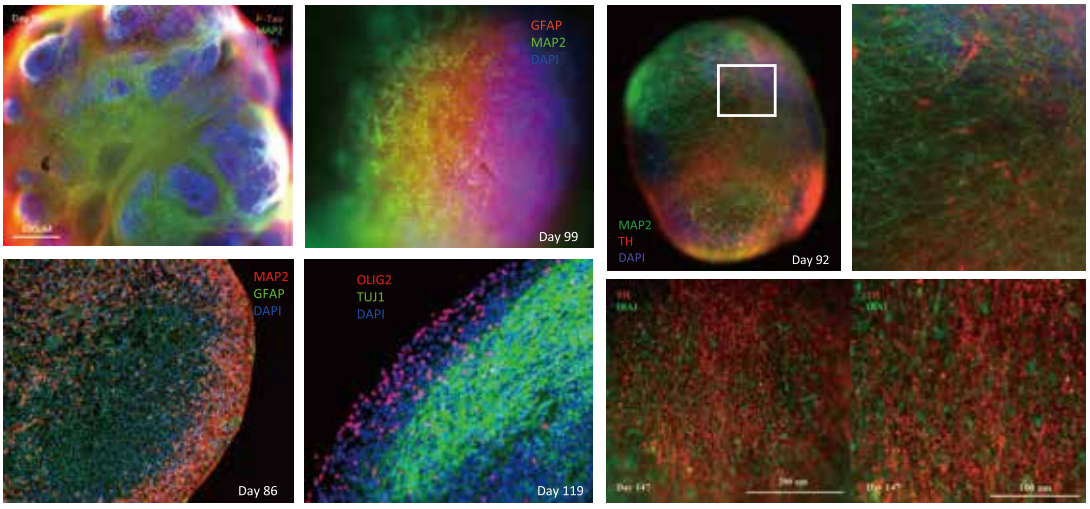
Cerebral Organoids Morphology



Paraffin sectioning and hematoxylin and Eosin (H&E) staining of 32-day, and 46-day-old Cerebral Organoids (Cat. No. CIPO-BWL001K) differentiated using the Human iPSC-Derived Cerebral Organoid Differentiation Kit (Cat. No. RIPO-BWM001K) revealed the presence of rosette-like structures of neural stem cells within the cerebral organoids. As cerebral organoids develop, the cortex thickens and the rosette-like structures become smaller, suggesting migration and differentiation of neural stem cells.

Cerebral organoids cultured in this system maintained good cellular activity after 100 days, with no "dead nuclei" inside.

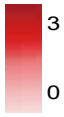
Immunostaining of Cerebral Organoids



The Cerebral Organoids (Cat. No. CIPO-BWL001K) differentiated using the Human iPSC-Derived Cerebral Organoid Differentiation Kit (Cat. No. RIPO-BWM001K) stained with relevant cell markers. Early-stage cerebral organoid (~36 days) expresses cell markers of neurons (TUJ1) and neuron progenitor cells (NESTIN), and long-term cultured cerebral organoid (~90-120 days) expresses cell markers of dopaminergic neurons (TH), mature neurons (MAP2), astrocytes (GFAP), oligodendrocytes (OLIG2) and microglia (IBA1).

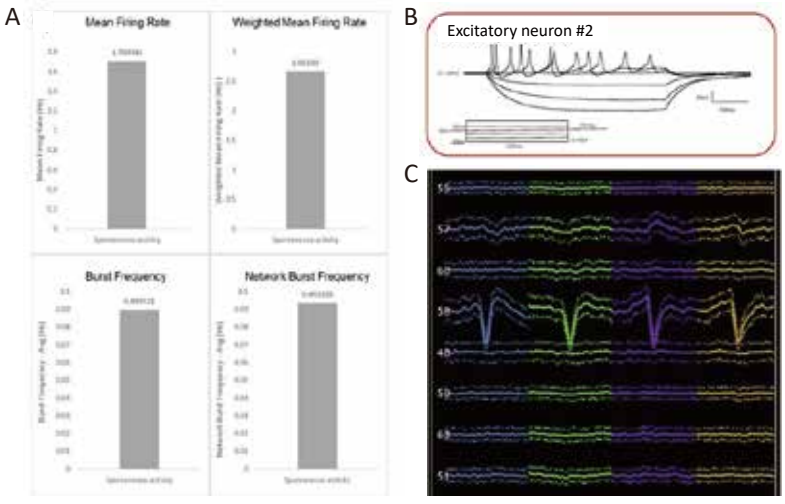
Transcriptomic Analysis of Cerebral Organoids

Cell	Function	Genes	Day 13	Day 44	Day 100
Neuron	Immature	TUBB3			
		NES			
		PAX6			
	Mature	MAP2			
		RBFOX3/NEUN			
		DLG4/PSD95			
		SYP			
	Gluta	SLC17A7/GLUT1			
		SLC17A6/VGLUT2			
	Dopa	SLC6A3/DAT			
		FOXA2			
		TH			
	Chol	ACHE			
		CHAT			
	Sero	TPH1			
		TPH2			
	GABA	SLC6A1/GABA			
		GAD2			
		GAD1			
		PVALB			
		SST			
Glia	Astro	ALDH1L1			
		GFAP			
		AQP4			
	Oligo	MBP			
		OLIG1			
		OLIG2			
		OLIG3			
	Micro	AIF1/IBA1			
		TMEM119			



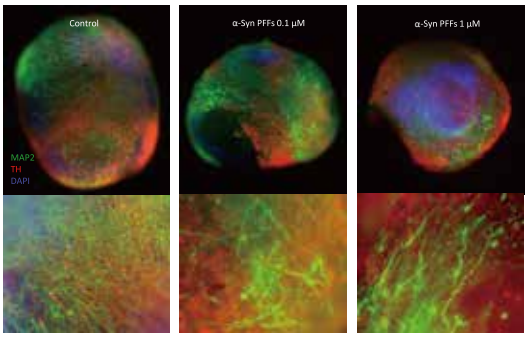
Bulk RNA sequencing of the Cerebral Organoids (Cat. No. CIPO-BWL001K) differentiated using the Human iPSC-Derived Cerebral Organoid Differentiation Kit (Cat. No. RIPO-BWM001K) was performed on organoids grown for different amounts of days (13 days, 44 days, and 100 days). Various gene markers of different neurons and astrocytes are expressed in the cerebral organoids, including markers of glutaminergic, dopaminergic, cholinergic, serotonergic, GABAnergic neurons, astrocytes, and oligodendrocytes.

Cerebral Organoids Electrophysiological Activity



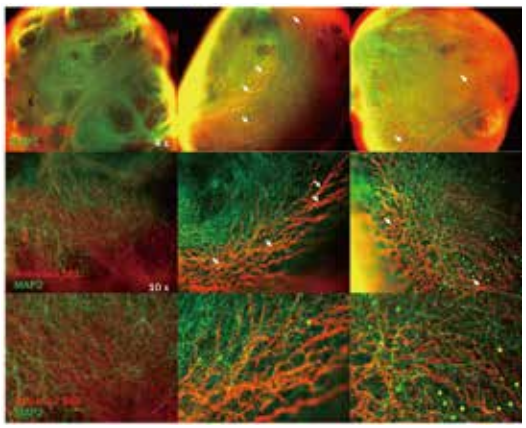
Electrophysiological activity of cerebral organoid was recorded using multiple electrophysiological recording means, A: MEA, B: Patch clamp, C: In vivo silicon electrodes. The beating frequency and amplitude of neurons with stable spontaneous discharges in cerebral organoid with near-physiological waveforms.

Cerebral Organoids Used for Parkinson's Disease Modeling



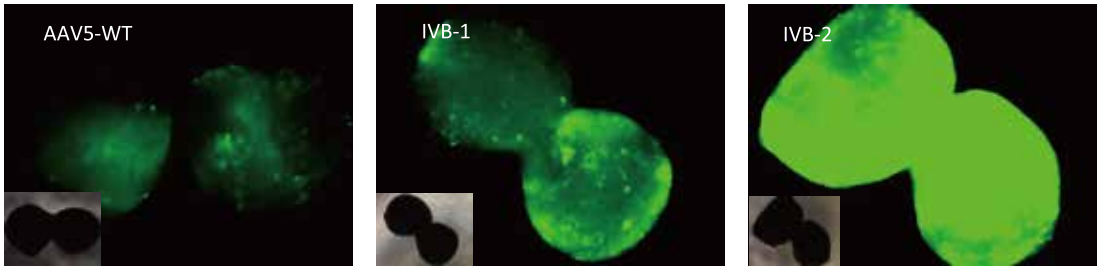
The Cerebral Organoids (Cat. No. CIPO-BWL001K) differentiated using the Human iPSC-Derived Cerebral Organoid Differentiation Kit (Cat. No. RIPO-BWM001K) grew for 92 days and were treated with α-synuclein preformed fibrils (Cat. No. ALN-H5115) for 12 days. Immunostaining results showed the expression of MAP2, and TH was disrupted after the PFFs treatment, indicating the mature neurons (MAP2) and dopaminergic neurons (TH) were damaged by α-Syn PFFs.

Cerebral Organoids Used for Alzheimer's Disease Modeling



The Cerebral Organoids (Cat. No. CIPO-BWL001K) differentiated using the Human iPSC-Derived Cerebral Organoid Differentiation kit (Cat. No. RIPO-BWM00lK) grew for 55 days and were treated with Tau-441 K18 (P301L) pre-formed fibrils (Cat. No.TAU-H5113) at concentrations of 100 ug/ml and 500 ug/ml for 5 days. This treatment was used to generate an Alzheimer's Disease (AD) model. A key pathological feature of AD is the accumulation of phosphorylated tau (pTau). Upon treatment with Tau PFFs, immunostaining revealed an increased accumulation of p-Tau181, indicating the induction of an AD phenotype.

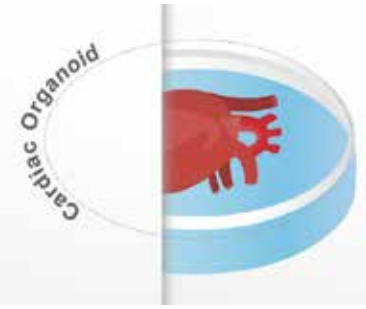
Cerebral Organoids Used for AAV Screening



The Cerebral Organoids (Cat. No. CIPO-BWL001K) differentiated using the Human iPSC-Derived Cerebral Organoid Differentiation Kit (Cat. No. RIPO-BWM001K) cultured for 101 days were infected with different adeno-associated virus (AAV) serotypes for 124 hours. The tested AAV serotype showed a significantly higher transgene delivery efficacy than AAV5-WT.

Cardiac Organoids & Differentiation Kits

Cardiac organoids are three-dimensional, self-organized structures that spontaneously adopt the shape or function of heart tissue, encompassing major cardiac cell types such as cardiomyocytes, cardiac fibroblasts, and endothelial cells. They mimic some characteristics and functions of a real heart. Cardiac organoid models provide a more physiologically relevant and reliable research tool to explore cardiac development, the mechanisms of cardiac diseases, and drug development. These models can be used to assess drug toxicity and efficacy, study the physiological properties and pathophysiological changes of cardiac cells, and test novel therapeutic approaches for cardiac diseases. The ongoing advancements in human cardiac organoid models offer new opportunities and hope for the research and treatment of cardiac diseases.



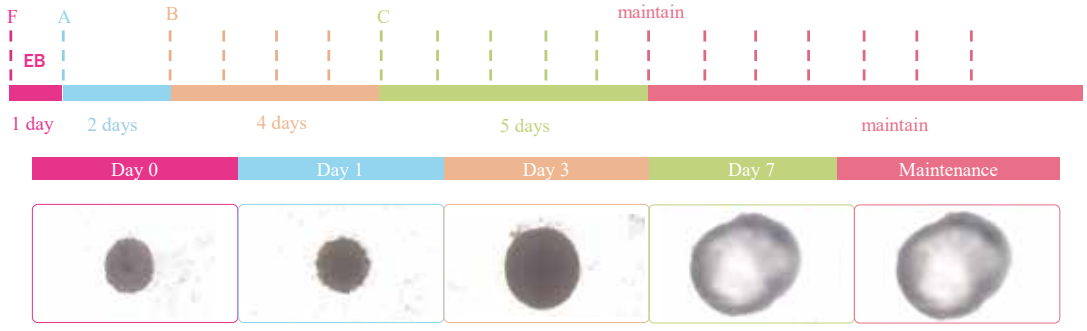
- ★ Resembles the human heart with cardiac cell progenitors.
- ★ Displays regular, cardiac-like contractions.
- ★ Suitable for studying electrical signaling and compound effects.
- ★ Facilitating drug efficacy and safety assessment with high responsiveness.

Product List

Product Type	Cat. No.	Product Description
Cardiac Organoid	CIPO-HWL002K	Ready-to-use Human iPSC-Derived Cardiac Organoids
	RIPO-HWM002K	Human iPSC-Derived Cardiac Organoid Differentiation Kit
	RIPO-HWM004	Human iPSC-Derived Cardiac Organoid Maintenance Kit
	RIPO-HWM005	Cardiac Organoid Cryopreservation Kit

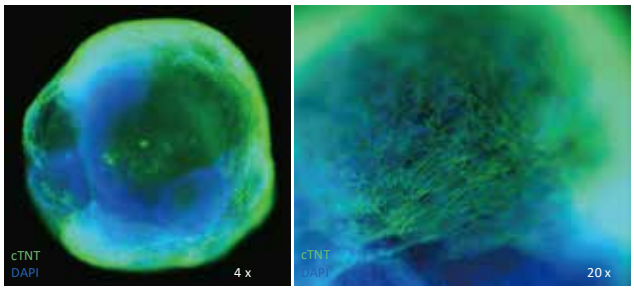
Verification Data

Differentiation Timeline of Cardiac Organoids



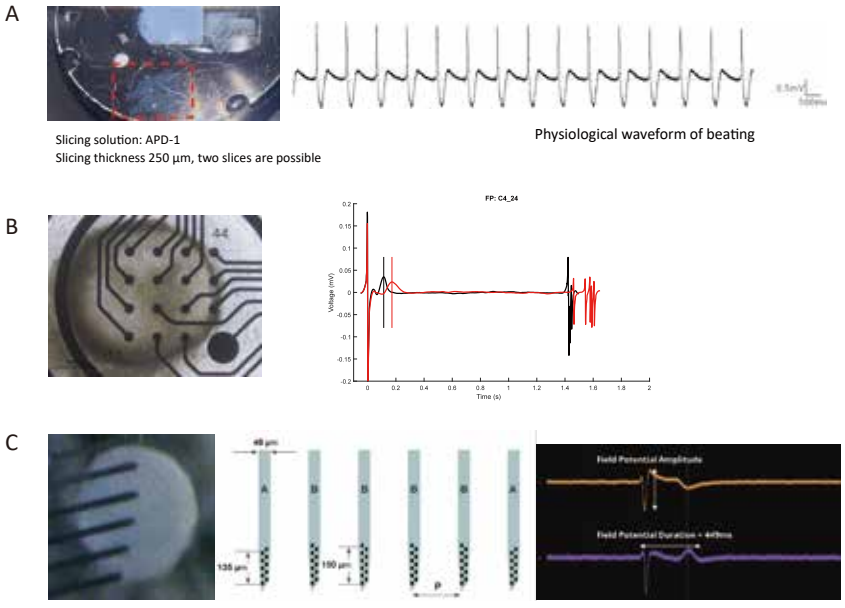
Using our cardiac organoid differentiation kit, no Matrigel needed and iPSCs can be differentiated into cardiac organoid in about 9-15 days, depends on cell lines.

Immunostaining of Cardiac Organoids



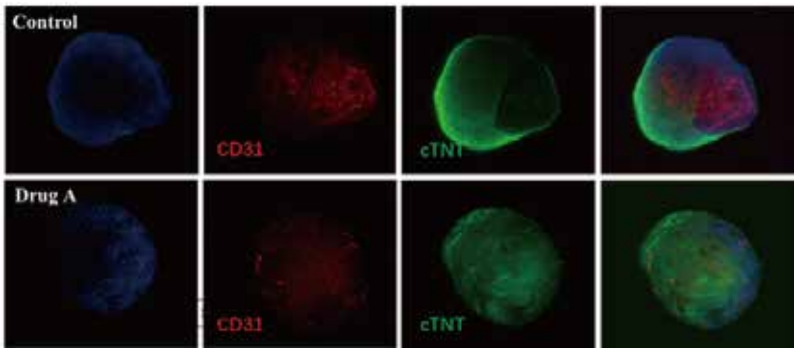
The Cardiac Organoids (Cat. No. CIPO-HWL002K) differentiated using the Human iPSC-Derived Cardiac Organoid Differentiation Kit (Cat. No. RIPO-HWM002K) showed the expression of cardiomyocyte markers (cTNT, green) cross-stained with DAPI (blue).

Cardiac Organoids Electrophysiological Activity



The electrophysiological activity of cardiac organoids was recorded using a variety of electrophysiological recording methods. A. Physiological waveform of heart beating was recorded on cardiac organoid slices with patch clamp. B. Inhibition of human ether-a-go-go-related gene (hERG) potassium channels caused QTc interval prolongation was recorded in cardiac organoids with MEA. C. Field potentials were recorded in cardiac organoids with in vivo silicon electrodes.

Cardiac Organoids Used for Drug Screening



The Cardiac Organoids (Cat. No. CIPO-HWL002K) differentiated using the Human iPSC-Derived Cardiac Organoid Differentiation Kit (Cat. No. RIPO-HWM002K) cultured for 20 days were used in screening for heart injury drugs. Drug A caused damage to the vascular structure of the cardiac organoids.

Intestinal Organoids & Differentiation Kits

Intestinal organoids are cultured tissue models that mimic the structure and function of human intestine. They are derived from intestinal stem cells or iPSCs and can self-renew and differentiate into various intestinal cell types, such as epithelial cells, goblet cells, endocrine cells, and immune cells.

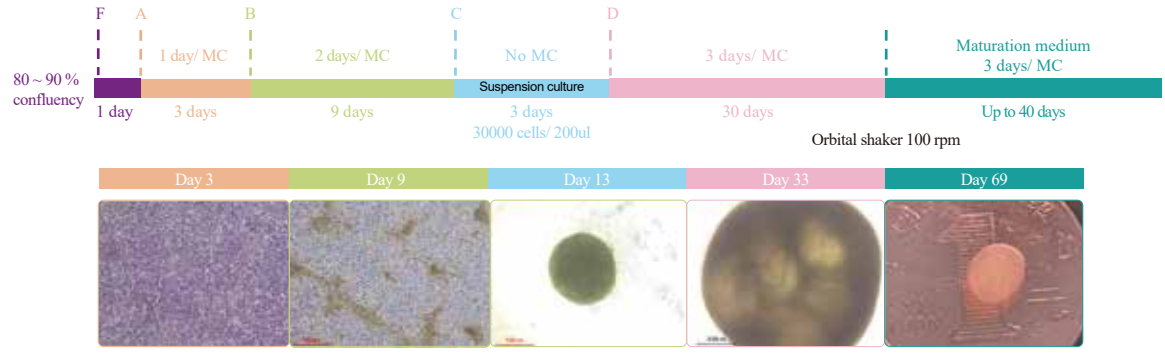
Intestinal organoids have applications in various research areas, including digestive system development, modeling intestinal diseases, studying pathogen infections, and drug screening for personalized medicine. By using intestinal organoids, researchers can investigate the mechanisms of intestinal diseases, assess the effects of drugs on intestinal cells, and develop personalized treatment approaches.

Product List

Product Type	Cat. No.	Product Description
Intestinal Organoid	CIPO-IWL003K	Ready-to-use Human iPSC-Derived Intestine Organoids
	RIPO-IWM005K	Human iPSC-Derived Intestinal Organoid Differentiation Kit
	RIPO-IWM006	Human iPSC-Derived Intestinal Organoid Maintenance Kit

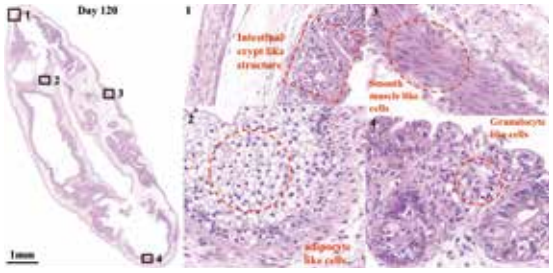
Verification Data

Differentiation Timeline of Intestinal Organoids

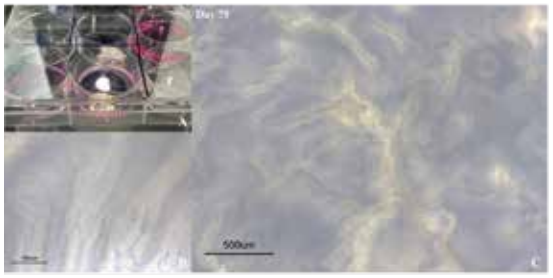


The Intestinal Organoid Differentiation Kit allows the differentiation of intestinal organoids larger than 0.5 cm in diameter in a Matrigel-free system.

Staining of Intestinal Organoids sections

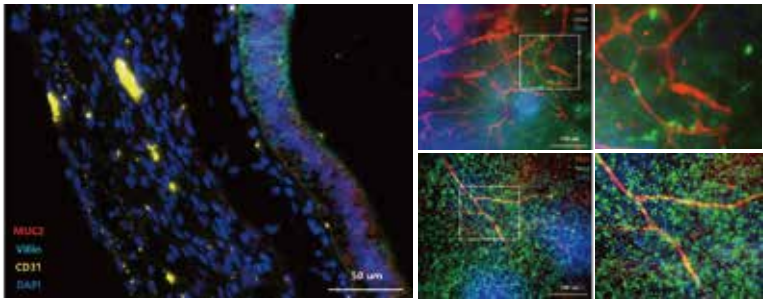


Staining of sections observed the presence of intestinal crypt like structure, smooth muscle like cells, granulocyte-like cells and adipocyte like cells.



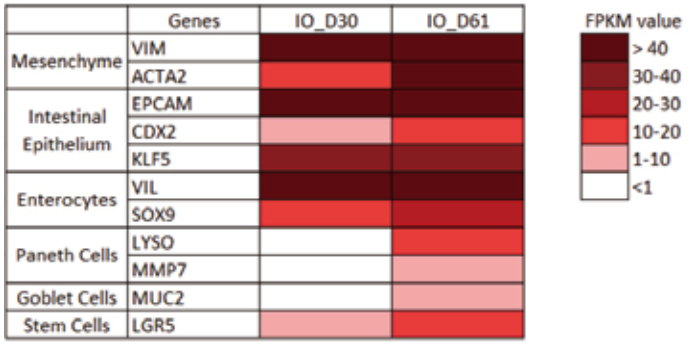
A: Intestinal organoid at day 75 was cut and unfolded at a six well plate. B-C: The plicae circulares like structures could be observed under microscope.

Immunostaining of Intestinal Organoids



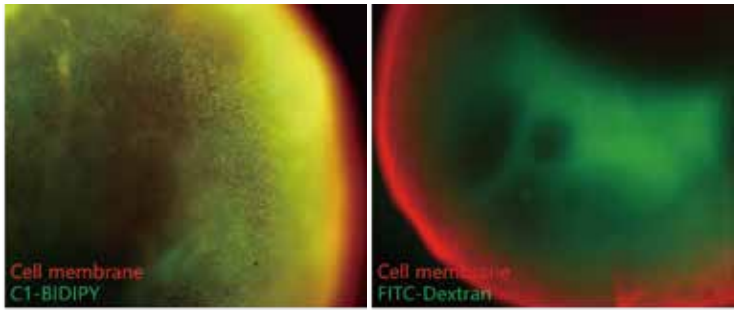
The Intestinal Organoids (Cat. No. CIPO-IWL003K) differentiated using the Human iPSC-Derived Intestinal Organoid Differentiation Kit (Cat. No. RIPO-IWM005K) results in the expression of various markers for different intestinal cell types. These markers include cuprocytes (MUC2), brush border (Vilin), intestinal chromophobe (CHGA) and endothelial cell (CD31).

Transcriptomic Analysis of Intestinal Organoids



The Intestinal Organoids (Cat. No. CIPO-IWL003K) differentiated using the Human iPSC-Derived Intestinal Organoid Differentiation Kit (Cat. No. RIPO-IWM005K) expressing markers for different intestinal cell types. Such as markers of intestinal epithelium, enterocytes, Paneth cells, and goblet cells. And the expression of these marker genes remained stable in the second passage.

Functions of Intestinal Organoids



The Intestinal Organoids (Cat. No. CIPO-IWL003K) differentiated using the Human iPSC-Derived Intestinal Organoid Differentiation Kit (Cat. No. RIPO-IWM005K) can absorb fatty acids and glucose.

Liver Organoids & Differentiation Kits

The differentiation of liver organoids is achieved through the utilization of human induced pluripotent stem cells (iPSCs). By employing specific culture conditions and differentiation factors, iPSCs can be directed to differentiate into liver cells, resulting in the formation of liver organoids. During the process of liver organoid differentiation, cells express a range of liver-specific markers, including hepatocyte-specific proteins, liver cell nuclear transcription factors, and others.

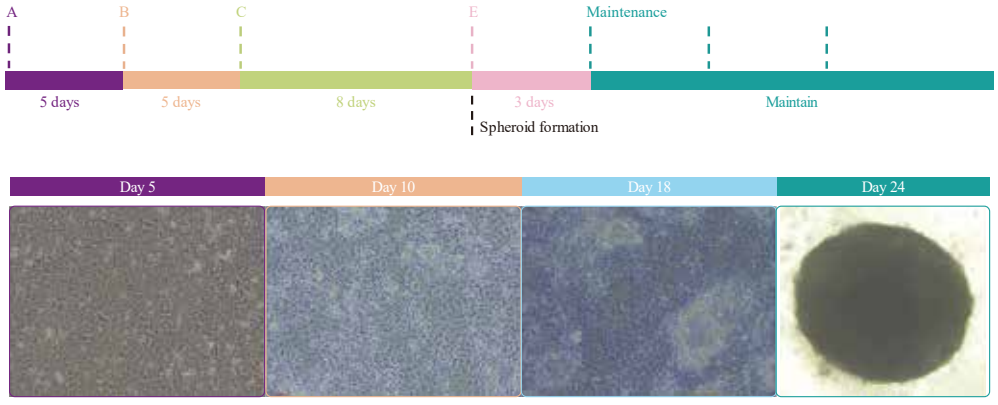
This approach to liver organoid differentiation holds potential for studying liver development, drug metabolism, liver disease modeling, and personalized drug therapies, among other applications. Thus, a better understanding of liver physiology and pathology can be achieved, providing more reliable models for drug screening and therapeutic research.

Product List

Product Type	Cat. No.	Product Description
Liver Organoid	CIPO-RWL005K	Ready-to-use Human iPSC-Derived Liver Organoids
	RIPO-RWM009K	Human iPSC-Derived Liver Organoid Differentiation Kit
	RIPO-RWM010	Human iPSC-Derived Liver Organoid Maintenance Kit

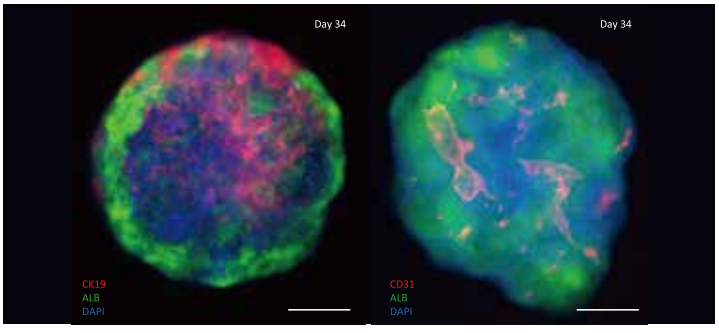
Verification Data

Differentiation Timeline of Liver Organoids



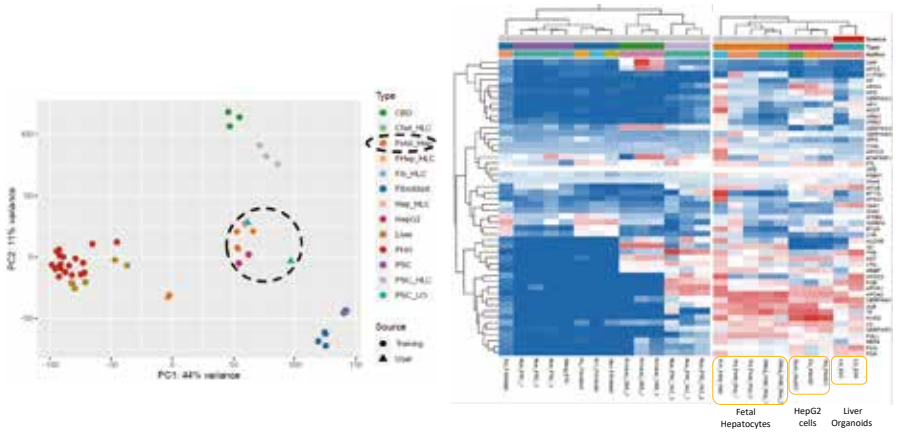
Using liver organoid differentiation kit, no Matrigel needed, iPSC can be induced to differentiate into liver organoid in about 24 days.

Immunostaining of Liver Organoids



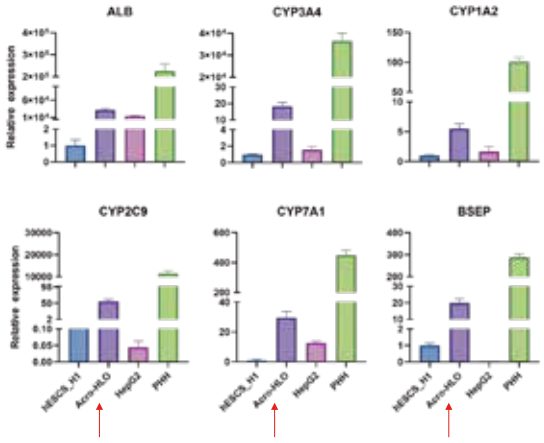
The Liver Organoids (Cat. No. CIPO-RWL005K) differentiated by using the Human iPSC-Derived Liver Organoid Differentiation Kit (Cat. No. RIPO-RWM009K) expressed hepatic marker (ALB), cholangiocyte marker (CK19) and endothelial marker (CD31) at day 34. (Scale bar: 250 μm)

Transcriptomic Analysis of Liver Organoids

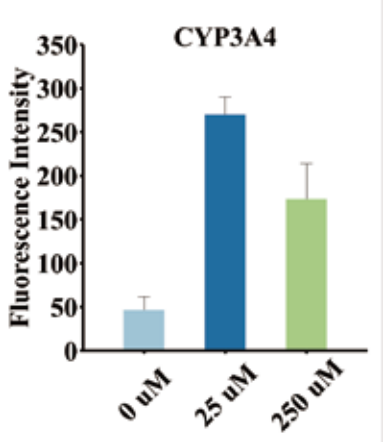


The transcriptome results showed that cells from liver-like organs were closer to fetal liver characteristics in the transcriptome analysis, while 2D liver cells were closer to iPSC characteristics in the transcriptome analysis.

Functions of Liver Organoids



The liver organoids were superior to the 2D hepatocyte line in all functional indicators such as albumin and CYPase expression.



Liver organoids respond to toxic substances: administration of rifampicin at different concentrations induces increased CYP3A4 expression in liver organoids.

Organoid Culture Reagents

Cytokines for Organoid Culture

With *in vitro* 3D culture, organoids can be expanded *in vitro* for long periods of time and retain key organ properties. Cell culture is an important part of obtaining high-quality organoids. Currently, 3D culture system based on cell growth factors and matrix is the mainstream technology for organoid culture.

To support research related to organoid 3D cell culture, ACROBiosystems has developed a range of high-quality cytokines including EGF, Noggin, R-Spondin 1, BDNF, GDNF, FGF10, HGF, FGF basic, TGF-β, etc. The high bioactivity of these cytokines has been verified by organoid growth and are suitable for organoid culture.

Product Features

- Sterile
- Carrier Free
- High bioactivity Verified by Cell-based Assay
- Low Endotoxin≤0.1 EU/μg
- High Purity≥95%
- Consistent between Batches
- Animal-origin Free
- Similar to Natural Conformation and Modifications
- Premium and GMP Grades Available

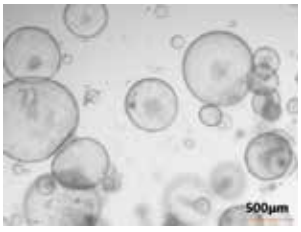
Product List

Product Type	Cat. No.	Product Description
EGF	EGF-H52H3	Human EGF Protein, His Tag, premium grade
Noggin	NON-H5257	Human Noggin Protein, Fc Tag, premium grade
R-Spondin 1	RS6-H4220	Human R-Spondin 1 / RSPO1 (21-146) Protein, His Tag, premium grade
BDNF	BDF-H5219	Human BDNF / Abrineurin Protein, premium grade
GDNF	GDF-H5219	Human GDNF / ATF / hGDNF Protein, premium grade
HGF	HGF-H52H3	Human HGF Protein, His Tag, premium grade
FGF-2	BFF-H4117	Human FGF basic Protein, premium grade
FGF-7	FG7-H52H5	Human FGF-7 / HBGF-7 / KGF Protein, His Tag, premium grade
FGF-10	FG0-H5145	Human FGF-10 / KGF 2 Protein, His Tag
Activin A	ACA-H421b	Human Activin A / INHBA Protein, premium grade
IGF-I	IG1-H5245	Human IGF-I Protein, His Tag, premium grade
NRG1	NR1-H5268	Human NRG1 Beta 1 Protein, Fc Tag, premium grade
VEGF121	VE1-H4213	Human VEGF121 Protein, premium grade
TGF-beta 1	TG1-H4212	Human TGF-Beta 1 / TGFB1 Protein, premium grade
BMP-2	BM2-H4117	Human BMP-2 Protein, premium grade
Shh	SH7-H5229	Human Sonic Hedgehog / Shh Protein, His Tag, premium grade

Validated in Multi Organoids Culture, with Excellent Performance, Superior to Competing Products

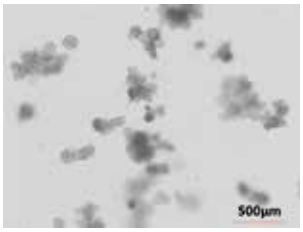
★ The organoid culture cytokines provided by ACROBiosystems have been validated on several organoid models, such as gastric organoids, small intestine organoids, colon organoids, liver and bile duct organoids, brain organoids, vascular organoids, and other *in vitro* organoid models, and all of them can well maintain organoid growth with excellent performance.

gastric organoids



Human EGF (Cat. No. EGF-H52H3), Noggin (Cat. No. NON-H5257), R-spondin1 (Cat. No. RS6-H4220), FGF10(Cat. No. FG0-H5145). These cytokines are highly active to maintain gastric organoids growth and passaging with excellent performance.

small intestine organoids

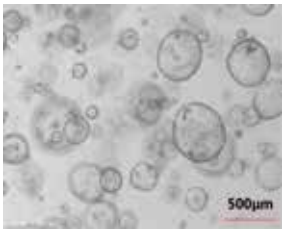


Human EGF (Cat. No. EGF-H52H3), Noggin (Cat. No. NON-H5257), R-spondin1 (Cat. No. RS6-H4220). These cytokines are highly active to maintain small intestine organoids growth and passaging with excellent performance.

colon organoids

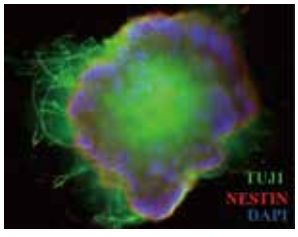
EGF (Cat. No. EGF-H52H3), Noggin (Cat. No. NON-H5257), R-spondin1(Cat. No. RS6-H4220). These cytokines are highly active to maintain colon organoids growth and passaging with excellent performance.

liver and bile duct organoids



Human EGF (Cat. No. EGF-H52H3), Noggin (Cat. No. NON-H5257), R-spondin1 (Cat. No. RS6-H4220), FGF7 (Cat. No. FG7-H52H5), FGF10 (Cat. No. FG0-H5145), HGF (Cat. No. HGF-H52H3). These cytokines are highly active in maintaining liver and bile duct organoids growth and passaging with excellent performance.

brain organoids

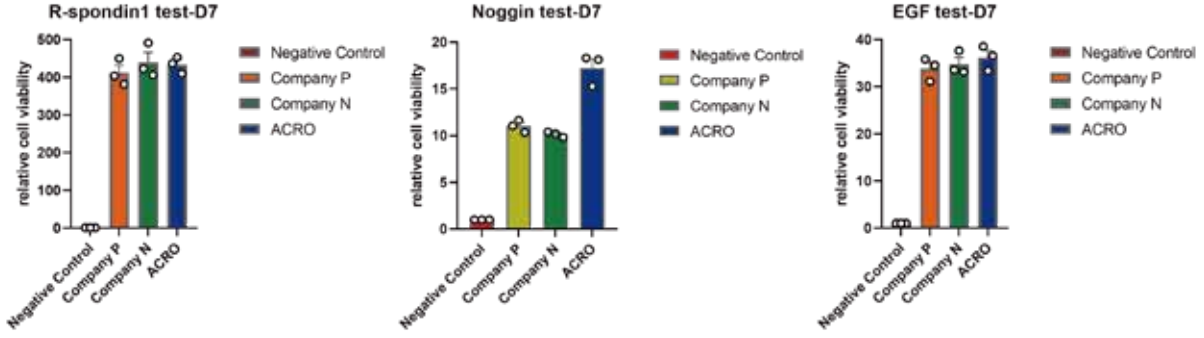


BDNF (Cat. No. BDF-H5219), GDNF (Cat. No. GDF-H5219). These cytokines induced iPSC-derived brain organoids growth with high activity, as well as high expression of TUJ1 (neural cell marker gene) and NESTIN (neural stem cell marker gene).

vascular organoids

VEGF110 (Cat. No. VE0-H5212). These cytokines are highly active in promoting the growth of iPSC-derived vascular organoids with typical vascular morphology.

★ EGF (Cat. No. EGF-H52H3), Noggin (Cat. No. NON-H5257), R-spondin1 (Cat. No. RS6-H4220), developed by ACROBiosystems have been validated by multi organoids culture. The cell viability (CTG method) of these organoids is better than that of competing products.



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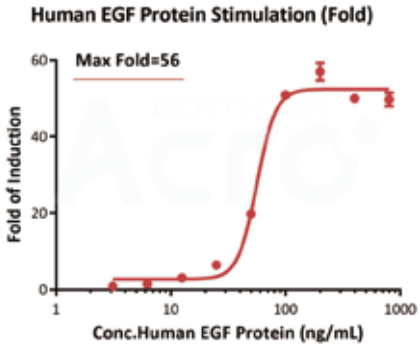
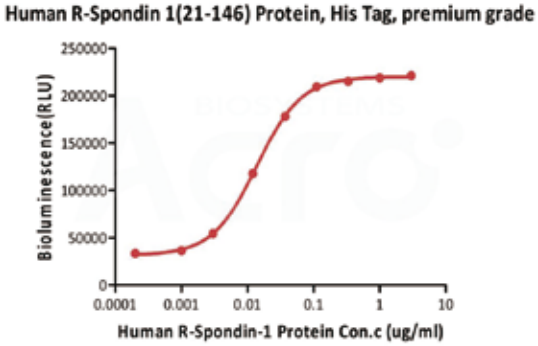
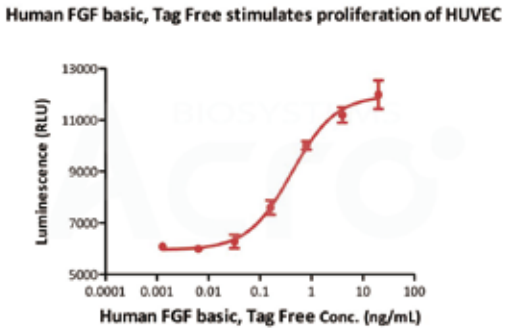


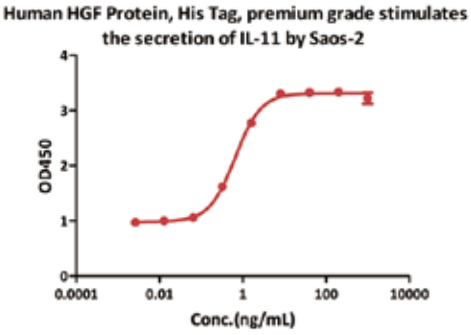
The EGFR (Luc) HEK293 Reporter Cell was stimulated with serial dilutions of Human EGF Protein, His Tag, premium grade (Cat. No. EGF-H52H3). The max induction fold was approximately 56 (Routinely tested).



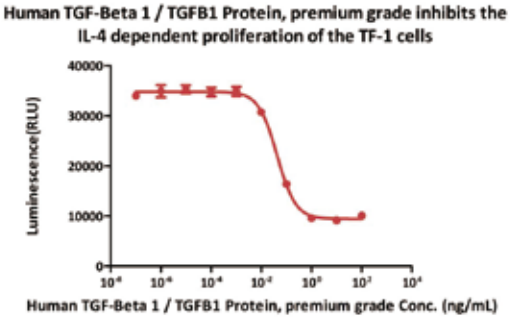
Human R-Spondin 1 (21-146), His Tag, premium grade (Cat. No. RS6-H4220) induced TCF reporter activity in HEK293 cells. The EC50 for this effect is 0.0138-0.0163 μg/mL (Routinely tested).



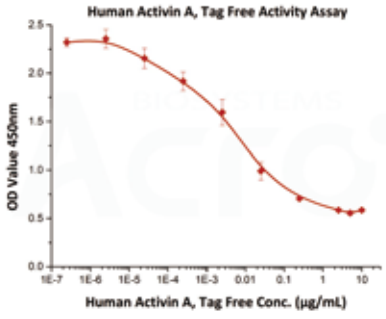
Human FGF basic (Cat. No. BFF-H4117) stimulates proliferation of HUVEC in the range of 0-20 ng/mL. The EC50 for this effect is 0.416-0.630 ng/mL (Routinely tested).



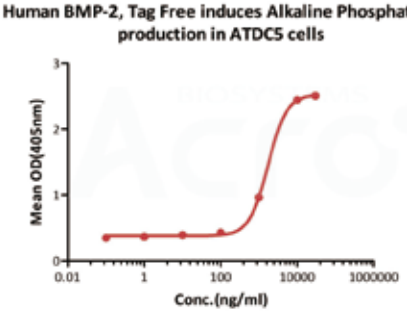
Human HGF Protein, His Tag, premium grade(Cat. No. HGF-H52H3) stimulates the secretion of IL-11 by Saos-2 cells. The EC50 for this effect is 0.654 ng/mL (Routinely tested).



Human TGFB1, premium grade (Cat. No. TG1-H4212) inhibits the IL-4-dependent proliferation of TF-1 cells. The ED50 for this effect is 0.43-0.91 ng/mL (Routinely tested).



The bio-activity of Human Activin A (Cat. No. ACA-H421b) was determined by dose-dependent inhibition of the proliferation of MPC-11 cells. The EC50 for this effect is typically ⩽ 9.5 ng/mL (Routinely tested).



Human BMP-2, Tag Free (Cat. No. BM2-H4117) induces alkaline phosphatase production in ATDC5 cells. The EC50 for this effect is 1684-1736 ng/ml (Routinely tested).

Mogengel Matrix for Organoid Culture

Mogengel Matrix is a basement membrane extract (BME) used for cell culture and structure formation. It provides a three-dimensional environment that supports and mimics the extracellular matrix (ECM). As an essential component of organoid culture, Mogengel Matrix can be used as a scaffold or template to construct organoids for culturing and guiding cell growth and differentiation. Mogengel Matrix is widely used to study physiological and pathological processes such as cell migration, invasion, and tumour metastasis, to assess drug efficacy and toxicity, and to screen and optimise drug candidates.

Mogengel Matrix for Organoid Cultures Product Description

Parametric	Instructions
Source	gene-edited mouse
Protein concentrations	8 to 13 mg/mL as determined by BCA
Endotoxin levels	< 4.5 EU/mL, measured by LAL
sterility	Bacteria, fungi, and mycoplasmas can be detected through cell culture and observation of bacterial growth over a 14-day period.
virus detection	ELISA, bacterial culture, and microscopic observation were used to test 19 bacterial and viral species, as well as other murine infectious agents, including LDEV.
stability	The product is stored at ⩽ -20°C and is stable for at least two years from the date of manufacture
Conditions of transport	Products shipped with dry ice
Storage conditions	Store at -20°C and avoid repeated freezing and thawing. Do not store in a frost-free refrigerator. Keep frozen.
Angiogenesis assay	Observation of blood vessel formation was tested by HUVEC angiogenesis assay. *Matrix gel: medium = 1:0, 2:1, 1:1 (v/v)
Organoid culture	Observe the growth of mouse intestinal organoids, mouse hepatic ductal organoids and mouse airway organoids under matrix gel. *Matrix gel:medium= 7:3 (v/v)

Product Features

Validated by Cellular Function Assays

Strict application-oriented quality control assays established for every produced lot, including tumorigenesis, angiogenesis, and tumor cell invasion.

Lot-to-Lot Consistency

Strict manufacturing controls and management systems including endotoxin, viral, and bacterial tests to ensure product consistency and quality.

Stable, Long-term Supply

Large-scale manufacturing capacity paired with ACRO-Biosystems' global supply chain to stabilize supply across the globe.

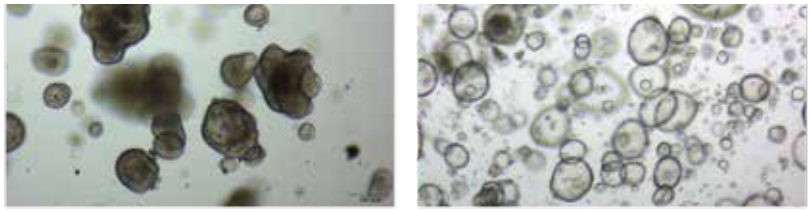
Cost Effective Reagents

Bulk pricing and growth factor bundle discounts to meet your research needs.

Distributed by:

Suitable for Multiple Organoid Culturing

★ Acro Certify's organoid culture Mogengel Matrix have been validated for the culture of many types of normal tissue and tumour organoids. Both Mogengel Matrix (GFR Phenol Red Free) (Acro Certified) (Cat. No.AC-M082703) and Mogengel Matrix Organoid Culture (Acro Certified) (Cat. No. AC-M082755) supported good organoid growth.



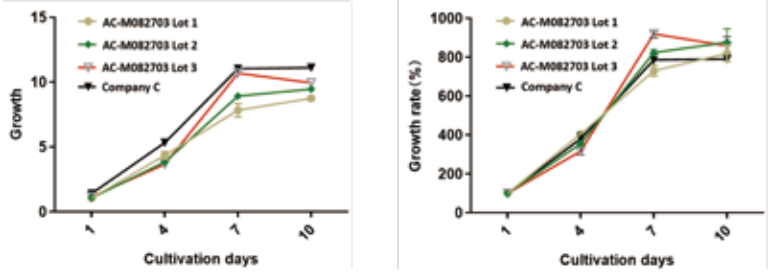
Human tumor organoids, including colorectal cancer organoids, gastric cancer organoids, are cultured using 70% Mogengel Matrix Organoid Culture (Cat. No. AC-M082755).

Mouse-derived organoids like mouse intestinal organoid, liver ductal organoid, airway organoid are cultured in 70% Mogengel Matrix (GFR Phenol Red Free) (Cat. No. AC-M082703).

High Lot-to-lot Consistency

★ In disease research and drug discovery, it is crucial to ensure reproducibility of results. ACROBiosystems places particular emphasis on the consistency of products. To avoid any interference with drug discovery, we have validated Acro Certify's organoid culture Mogengel Matrix for '**high lot-to-lot consistency**'.

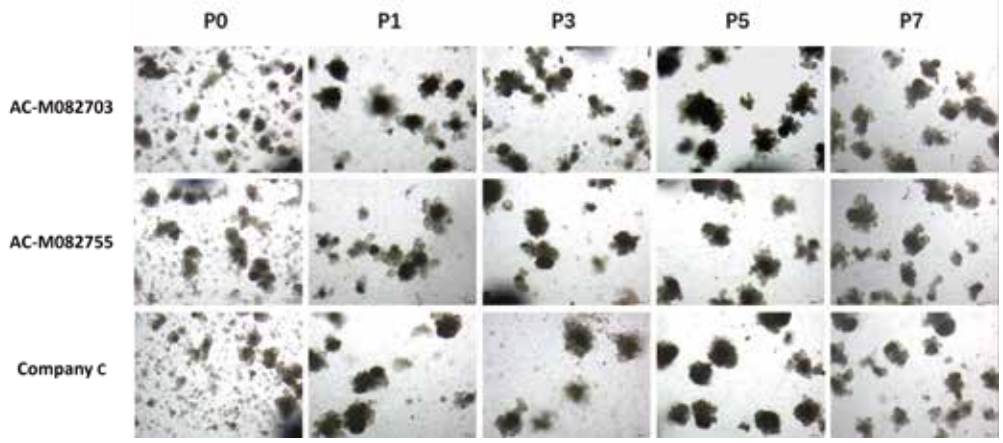
Three separate lots of Mogengel Matrix (GFR Phenol Red Free) (Cat. No. AC-M082703) and two lots from Company C were used for primary culture of mouse small intestinal organoids. Results between batches and between products were similar with good inter-batch stability. The evaluated between-batch variation in organoid density and size was less than 10%.



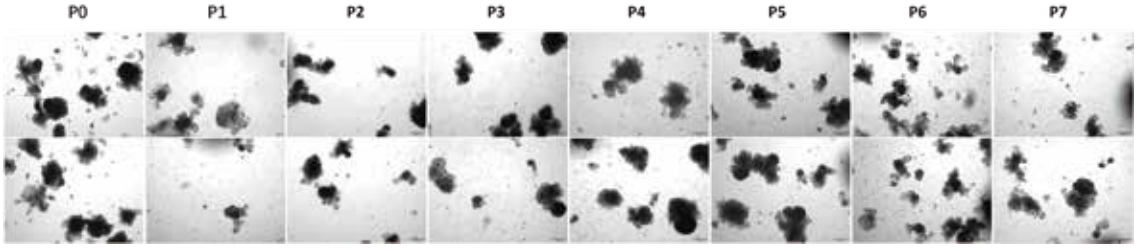
Different batches of Mogengel Matrix (GFR Phenol Red Free) (Cat. No. AC-M082703) and a similar product from Company C supported the growth of human colon cancer organoids at similar growth rates.

Stable Passaging to Support Long-term Organoid Culture

★ Unlike 2D cell culture systems, the organoid culture process is complex and long-term, and culture longevity is one of the challenges in organoid culture technology. Acro Certify's organoid culture matrices have been proven to maintain stable organoid passages.



Mogengel Matrix (GFR Phenol Red Free) (Cat. No. AC-M082703) and Mogengel Matrix Organoid Culture (Cat. No. AC-M082755) both maintain stable passage of organoids comparable to our main competitor, labeled as Company C. Again, mouse small intestinal organoids expanded for more than 7 generations, and maintained typical organoid sprouting morphology.



Mogengel Matrix Organoid Culture (Cat. No. AC-M082755) supports over 7 stable passages of organoids. Mouse small intestinal organoids were expanded for more than 7 generations, and maintained typical organoid sprouting morphology.

Maintenance of Organoid Morphology

Compared with a similar product from Company C, the organoids cultured with Mogengel Matrix Organoid Culture (Cat. No. AC-M082755) were less likely to adhere to the wall which helps with maintaining the morphology of organoids.

Organoid Technical Services

Organoid Toolbox is dedicated to facilitating advances in research, drug discovery and therapeutics in organoid-related fields, providing expert support and assistance to our customers. We offer a series of products to help you develop organoids from iPSCs, provide key reagents for organoid culture, and deliver iPSC-derived ready-to-use organoid products. Meanwhile, to meet your diverse needs, we provide more comprehensive and integrated services based on our technology platform, included: organoid development service, organoid disease model development service and organoid testing service.

Organoid Development Service: You can provide tissue samples or iPSC cell lines, and we will deliver the organoids you need as the final product. In addition to our successful service cases in developing vascular organoids from tissue sources, we also offer organoid development services for other types of organoids including cerebral, cardiac, intestinal, retinal, and liver organoids.

Organoid Disease Model Development Service: We can develop organoid disease models induced by reagents or pathogenic proteins (such as PFFs) as well as gene edited. Currently, we are developing disease models including Alzheimer's disease, Parkinson's disease, inflammatory bowel disease, neuroinflammation, and the blood-brain barrier.

Organoid Testing Service: We provide comprehensive toxicity and efficacy testing services based on cells and organoids. Our established platforms based on electrophysiology and immunodetection techniques, enable the assessment of functional properties, and cellular responses within organoids.

Service Advantages

BIOSYSTEMS Acro | Where Proteins and Innovation Advance Biomedicine

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