Ginrei Lab

Cell culture innovation

https://ginreilab.jp/
（Company site in Japanese ）

https://nico-1.info/
（Product information in Japanese）

https://ginreilab.com/
（Company site in English）

https://i-coculture.com/
(Product information in English）

Innovative Cell-Culture technique for innovative Research, Co-culture, 3D cell culture , Micro Physiological System

2025 version

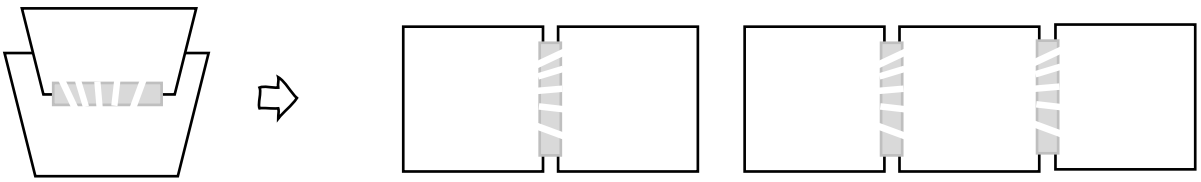
New Co-Culture Vessel

Redesigning the vertical-type into a horizontal type

Conventional vertical co-culture vessels have been redesigned with a mechanism that allows horizontal connection.

Vertical co-culture vessel(VTCP)
(Vertical type co-culture plate)

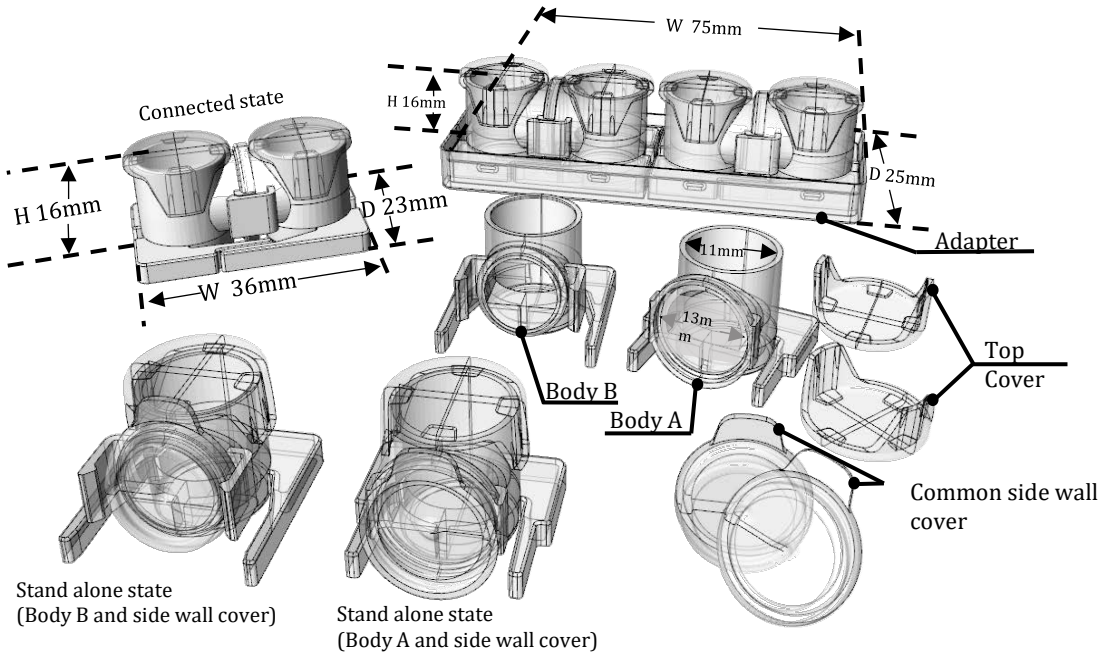
Horizontal type co-culture vessel (HTCP)
(Horizontal type co-culture plate)



Capable of multiple connections in horizontal direction

Micromachines **2021**, *12*(11), 1431; https://doi.org/10.3390/mi12111431

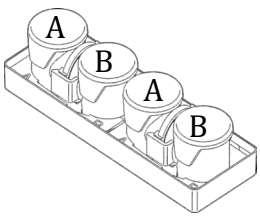
ICCP size information and part names



Pack information

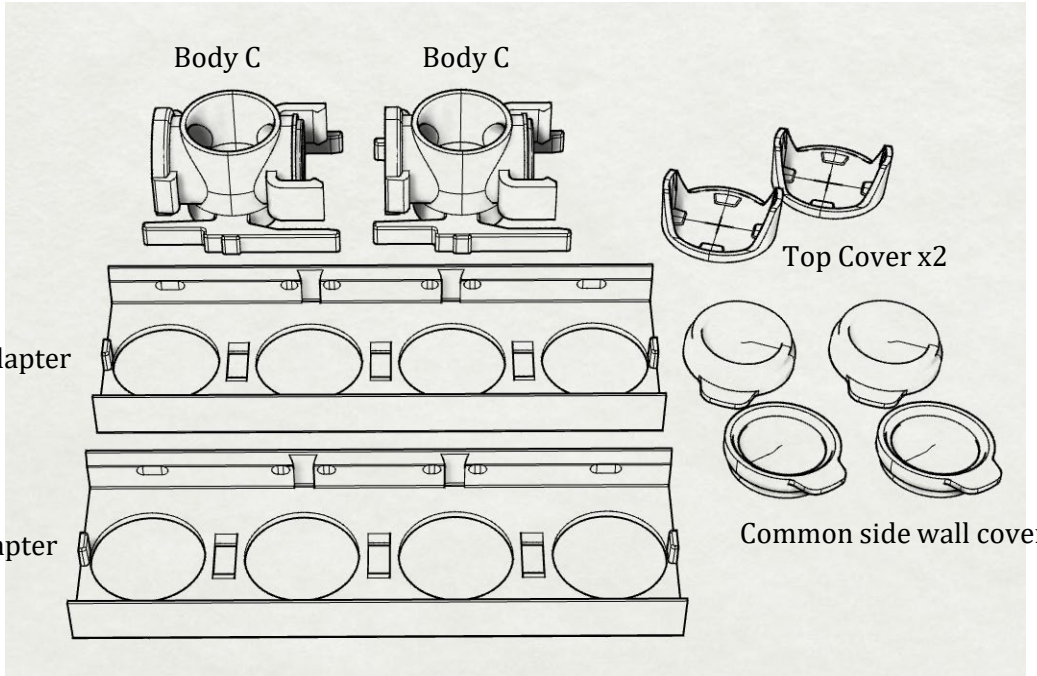
1 blister pack includes

- Body A×2
- Body B×2
- Top Cover ×4
- Sidewall cover×4
- Adapter ×1
- O-ring ×2



Cautions: Filter is not included. Selling separately.
Any round filter of 13mm size is available.

ICCP Connecting Container Unit



Pack information

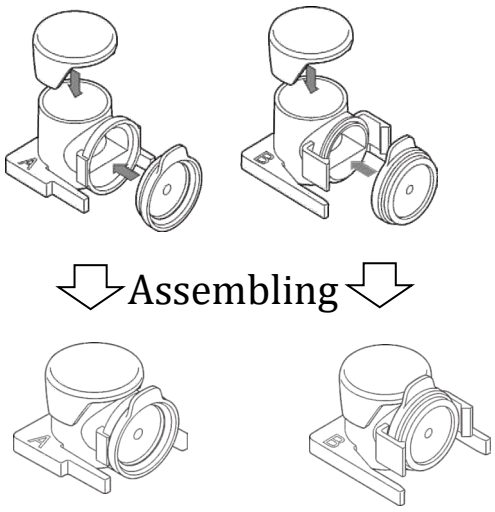
1 blister pack includes (Connector)

- Body C×2
- Top Cover ×2
- Sidewall cover×4
- Adapter for 4 connecting ×2
- O-ring ×2

Cautions: Filter is not included. Selling separately.
Any round filter of 13mm size is available.
To make 3 or 4 connections, the adapter included in this set is required.

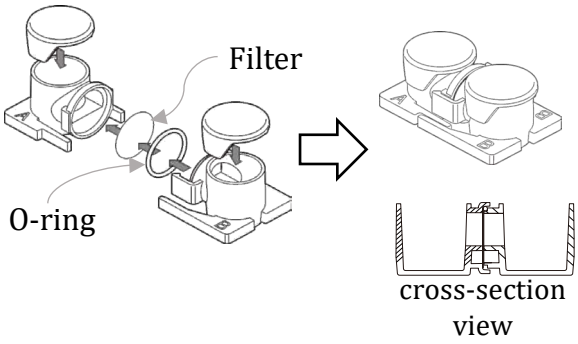
Design and description

A. Stand alone mode

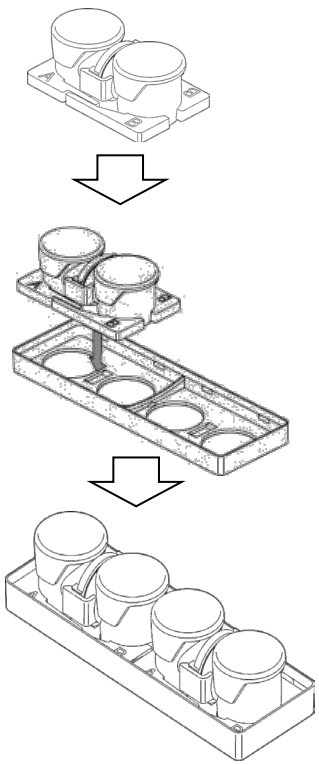


B. Connected state

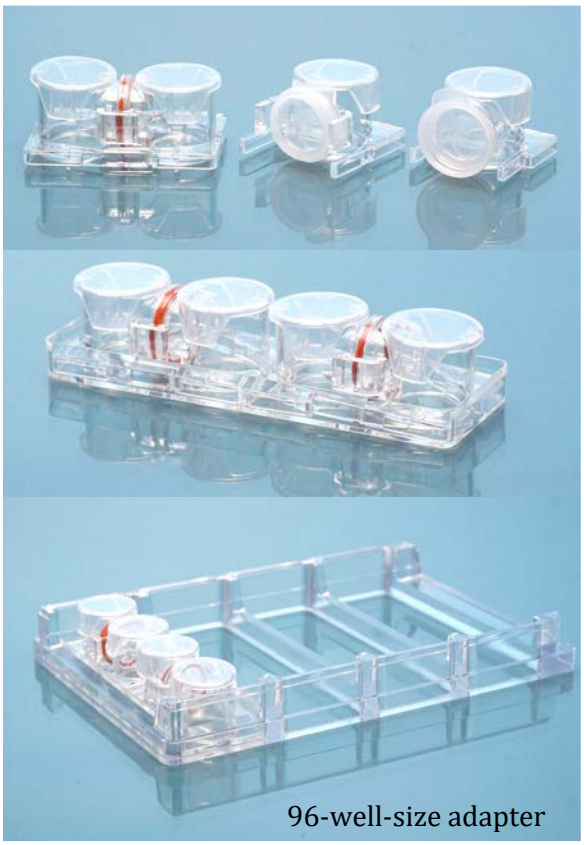
horizontal connection



C. Fits into a Preparation Slide adapter.

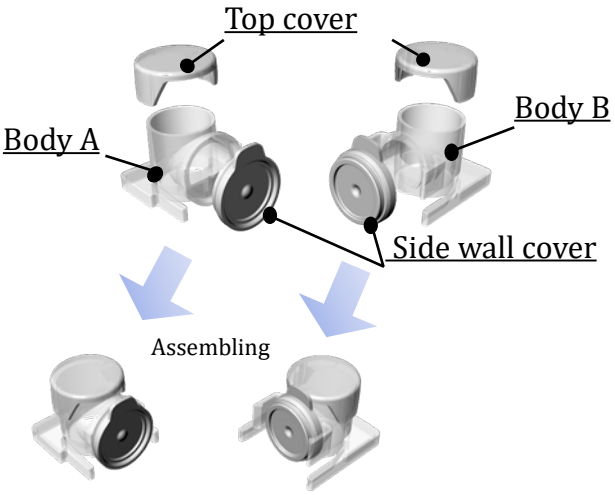


D. Actual pictures

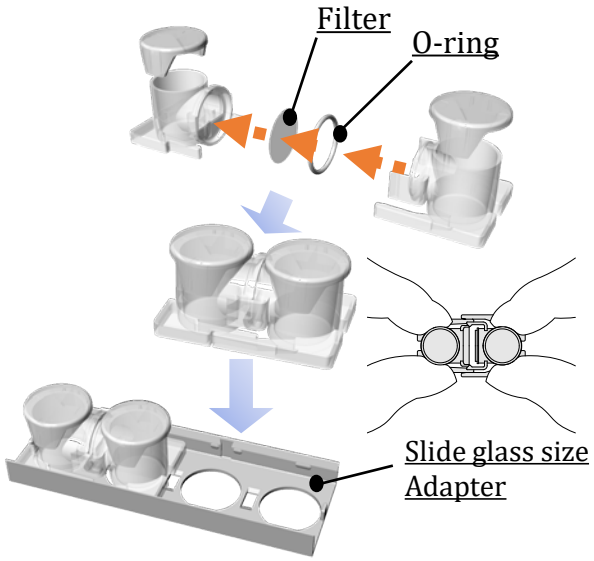


How to use

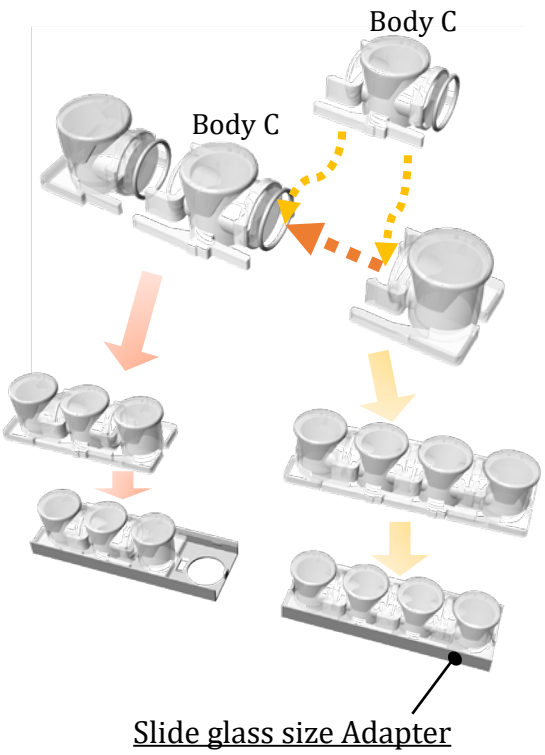
a. Stand-alone state

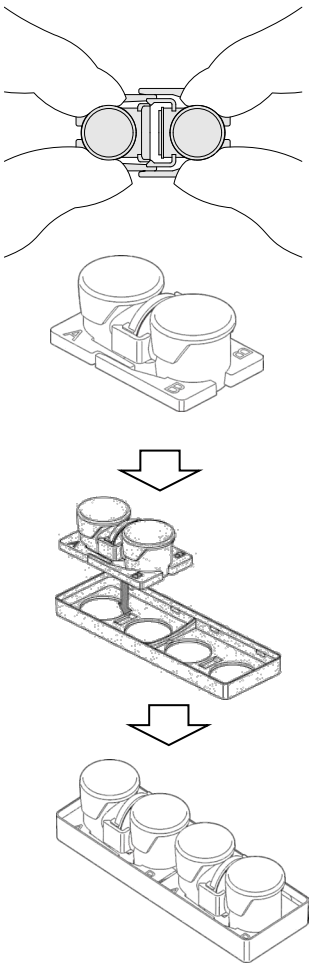


b. Connected state

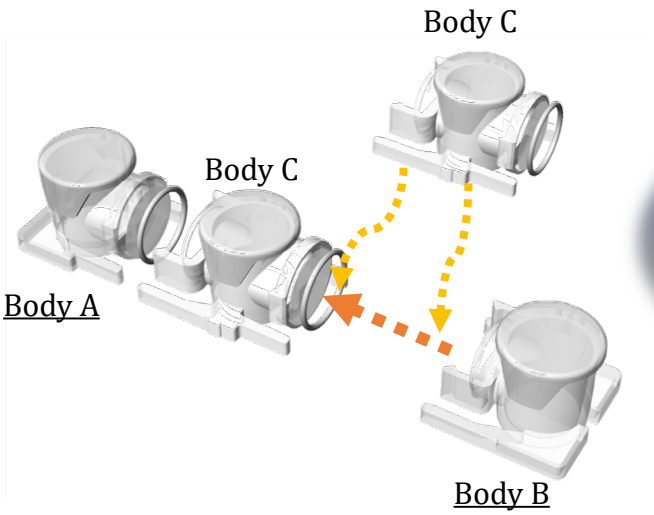


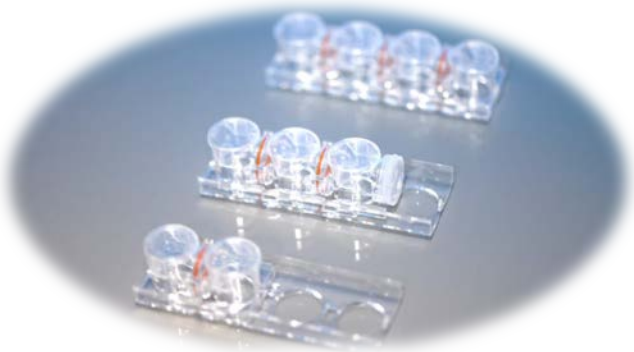
c. Multi-connection state





Instructions



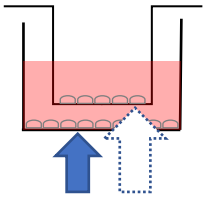


Please pay close attention to the following handling instructions and use the device carefully. This product is for research and is not meant for use in either treatment or diagnosis. This product is not medical equipment. This product has been used by the corona discharge to hydrophilize it, but the effect varies according to cells and is not permanent. Please add coating as needed. The product is placed in a blister tray, packed with a seal, and sterilized by electron beam. Because it is under continual evaluation for the antibacterial terms of a guarantee, the germfree term of the guarantee is provisionally 2 years. Upon opening this article, please confirm that the status of the entering seal of the Blister tray and 10 sets case does not show abnormalities, such as sign of dropping. If an abnormality is observed, please contact the sales agency. Tear off the seal slowly so that the product does not protrude upon opening blister tray. The germ-free guarantee is invalidated after opening this product. The main body material is polystyrene (PS) and the common cover material is low-density polyethylene (LDPE), both of which have low heat resistance, do not use the devise for culture at temperature higher than 50 degree. PS used for the main bodies is rigid but could be damaged by shock and stress. Use caution in handling the parts without the thickness of the adapter and prevent you from adding impossible power. Please do not reuse this product. Other than the case of the defective article, returned goods and the exchange are not accepted.

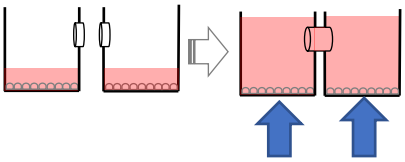
Problems with cell culture inserts: Part 1

There was a problem where both cells were invisible.

Existing cell culture inserts do not allow simultaneous observation of both cell lines.
Our horizontal co-culture container (HTCP) solves this problem.By changing from the conventional vertical connection to a horizontal connection, the HTCP allows simultaneous observation of the state of both cell cultures. Cells located at the bottom of both containers can be observed simultaneously.

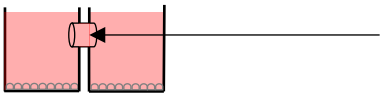


cell culture insert



our products

The structure of HTCP is ideal for observing both cells simultaneously and for time-lapse photography.



In addition, you can freely select commercially available 13 mm diameter round filters to control the transmission of substances, molecules, and factors in the liquid culture medium. HTCP is designed to enable the simultaneous culture of two or more cell types and share the liquid culture medium. HTCP is an innovative new type of cell co-culture container, making it an ideal product for various biotechnology, medical, and cell research applications.

•Shimasaki et al. Exosome Research and Co-culture Study Biol. Pharm. Bull. 41, 1311–1321 (2018)

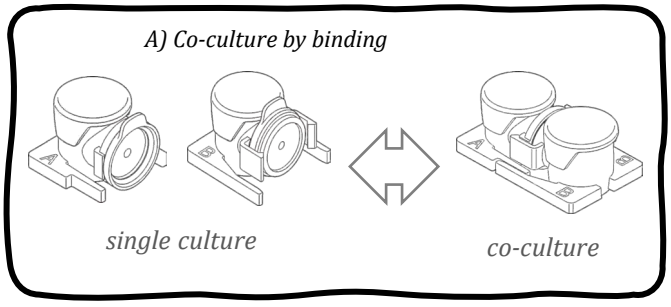
Issues with Cell Culture Inserts: Part 2
Issues with Material Surfaces

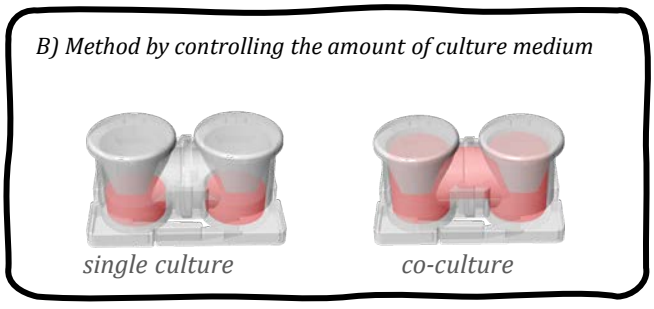
Cell culture inserts are made from different materials depending on the container. This may affect cell behavior and, consequently, experimental results. In HTCP, the containers are made from the same material, so there are no differences in cell behavior.

Issues with Cell Culture Inserts: Part 3
Inability to co-culture after confirming cell status

Cells begin to form colonies after seeding, so there is an optimal time for them to exhibit their normal functions. Researchers must determine whether the cells are in a suitable state for experimentation before co-culturing or administering drugs. The condition of cells cultured within the insert cannot be observed under a microscope. This means that basic information, such as whether the experiment resulted from poor cell culture conditions or was conducted correctly, cannot be obtained. This is a critical point for researchers. With HTCP, it is possible to easily transition from “single-cell culture” to “co-culture” after observing the state of the cells. There are two methods available.

A) “Single culture” is effective when culturing cells in an independent environment, such as low-oxygen culture. Connecting containers for transition to co-culture is simple and does not damage the cells.B) The containers have a step between them and the co-culture passageway. This allows the co-culture state to be controlled by adjusting the culture medium volume while the containers are assembled. Co-culture can be controlled simply by adding culture medium.





Problems with cell culture inserts: Part 3

Problem with inability to co-culture after confirming cell status

This product allows microscopic observation from the bottom surface, enabling you to check the condition of cells at any time and easily transition to co-culture once you have confirmed that they are in the appropriate state.

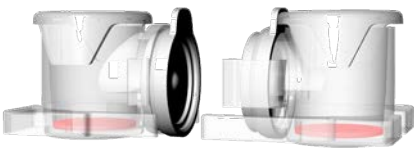
Method A

Use them as separate containers and combine them later.

Add medium.

In this state, it can be cultured alone.It can be cultured in separate environments.

Reduce the amount of medium to remove the side cover.

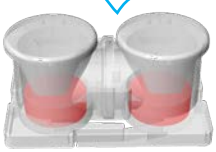


Let's assemble them.

Method B

Combine from the start and control by culture medium volume

If the height of the culture medium is 6 mm (400 µl) or less, co-culture will not occur and the cells will be cultured individually.



single culture

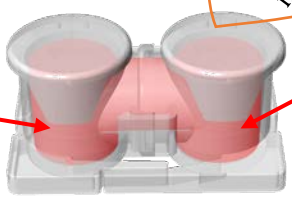
addition of culture medium

400 µl

There are steps in the internal passageway, and the capacity is 400 µl.。

addition of culture medium

1.8 ml



1.8 ml

co-culture state

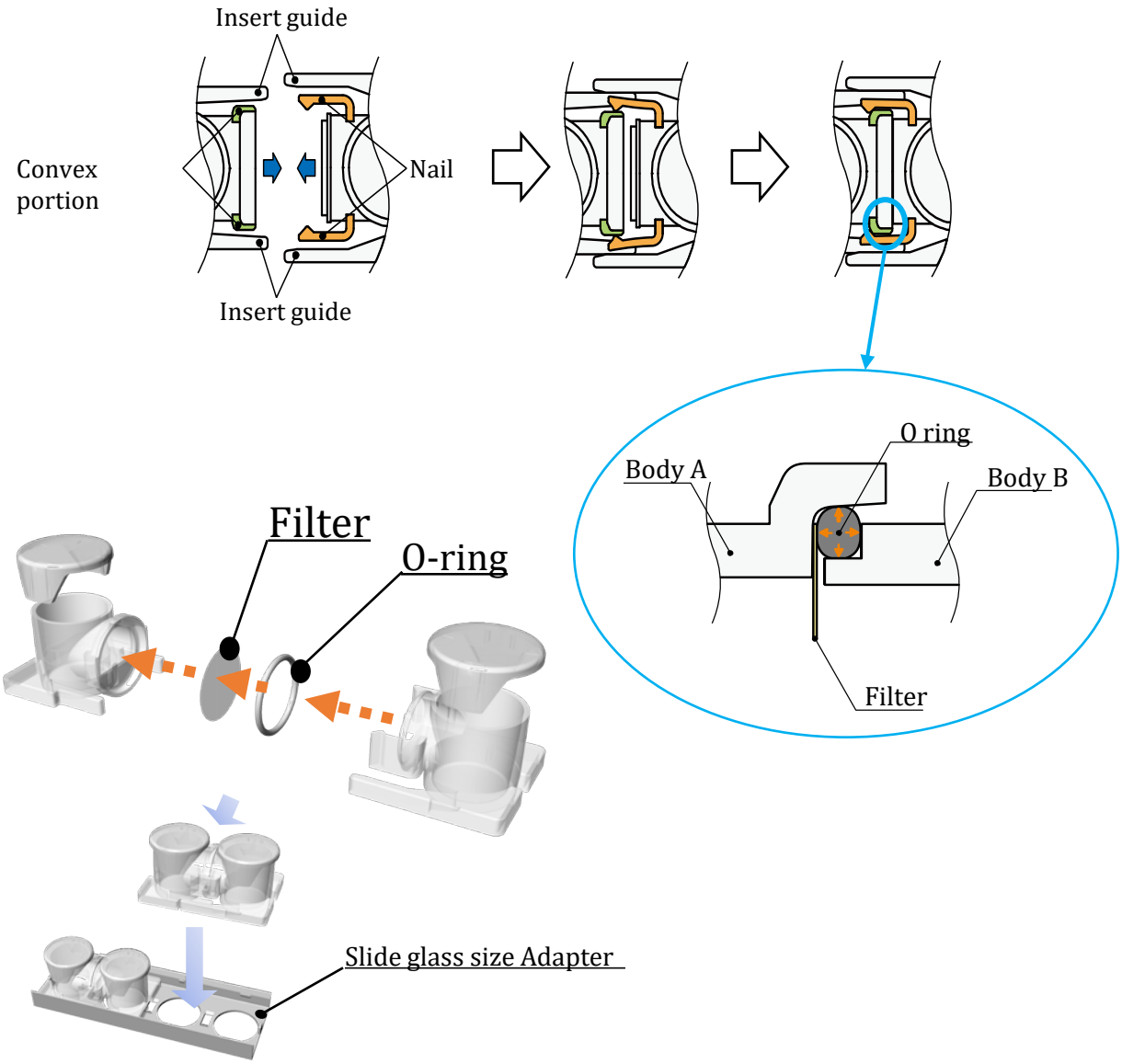
Micromachines **2021**, *12*(11), 1431; https://doi.org/10.3390/mi12111431

Problems with cell culture inserts: Part 4

Is it possible to choose the filter freely?

The filters for cell culture inserts are limited in type because they are molded integrally with the container. Our horizontal co-culture containers use a mechanism that holds the filter in place with an O-ring, so any filter with a diameter of 13 mm can be used. This allows you to control various co-cultures according to the pore size of the filter.

combination mechanism



product portfolio

Horizontal co-culture container series

The horizontal co-culture plate is an ideal co-culture device that connects two wells horizontally. By connecting them horizontally, it is easy to observe cells in both wells simultaneously using various types of microscopes. It is a versatile tool for studying cell-cell interactions such as transport, migration, and invasion.

Product name	Product Number	Product details	
Horizontal co-culture container (ICCP, UniWells, NICO-1)	2501-02	10 packages	
Multi-connection parts (ICCP-C, UniWells-C, NICO-C)	2504-02	5 packages	
96-well size adapter, 4-row type	2596-02	Adapter 96 (4x4)	
96-well size adapter, 3-row type	2596-18	Adapter 96 (6x3)	

Product information

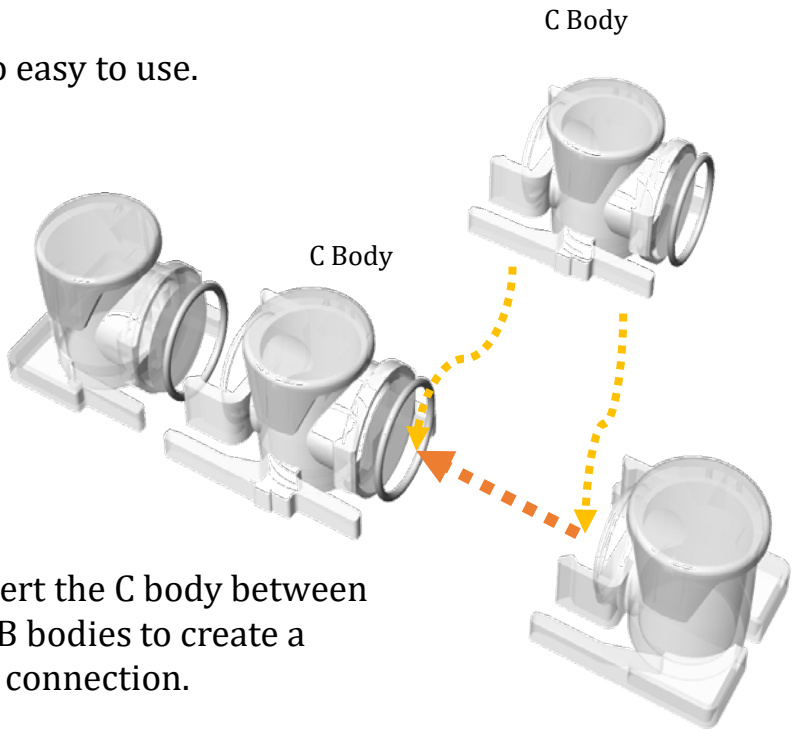
Product information site ： https://i-coculture.com/

Video information

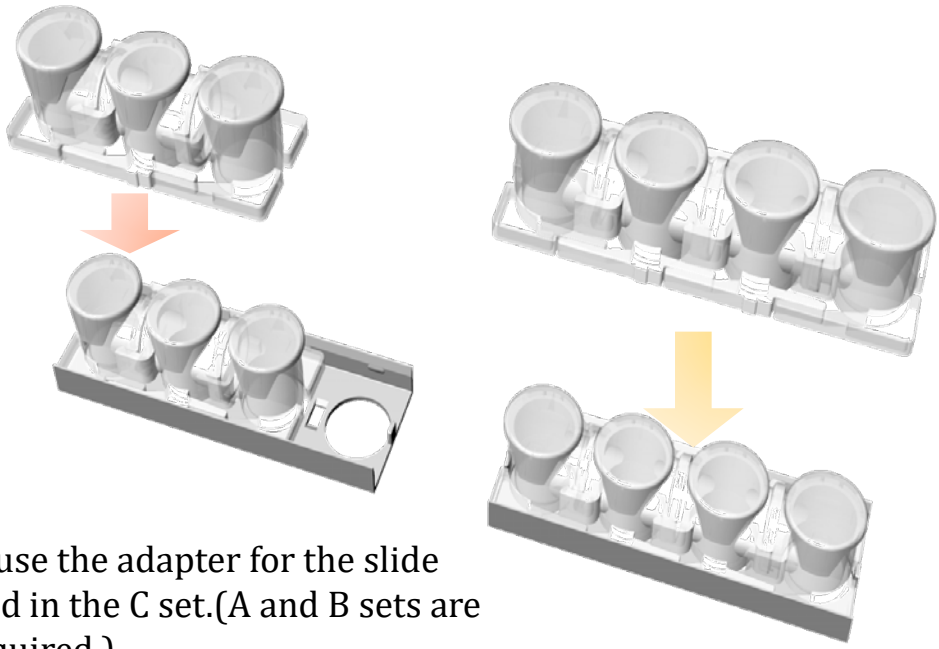
https://www.youtube.com/watch?v=KbzXKoWpxAQ

This product can be connected not only in pairs, but also in groups of three, four, or more.

It is also easy to use.

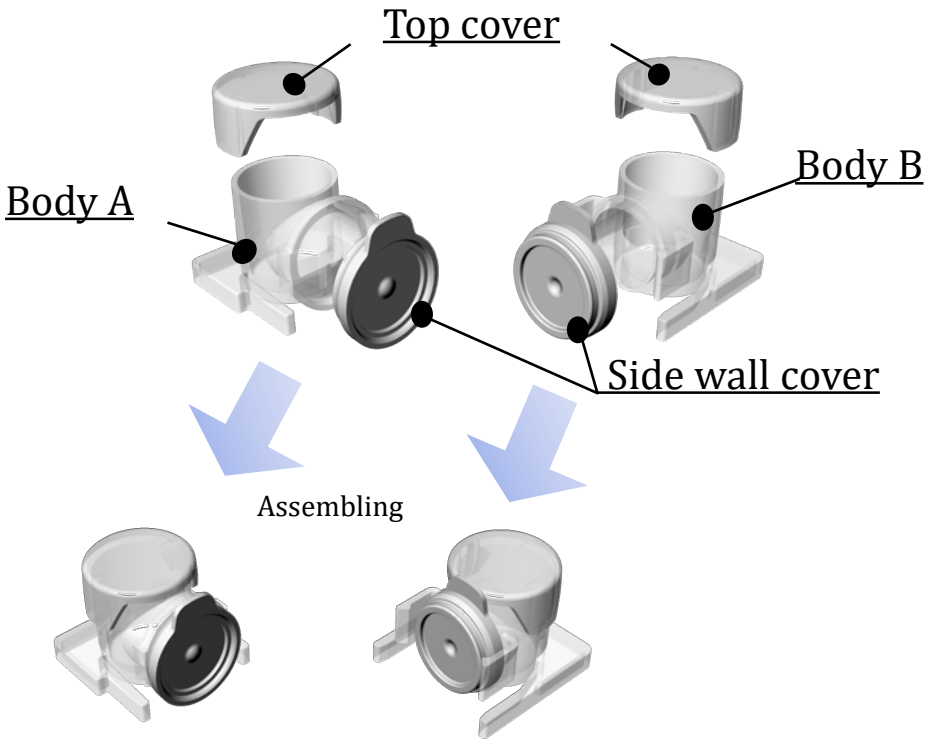


Simply insert the C body between the A and B bodies to create a three-way connection.

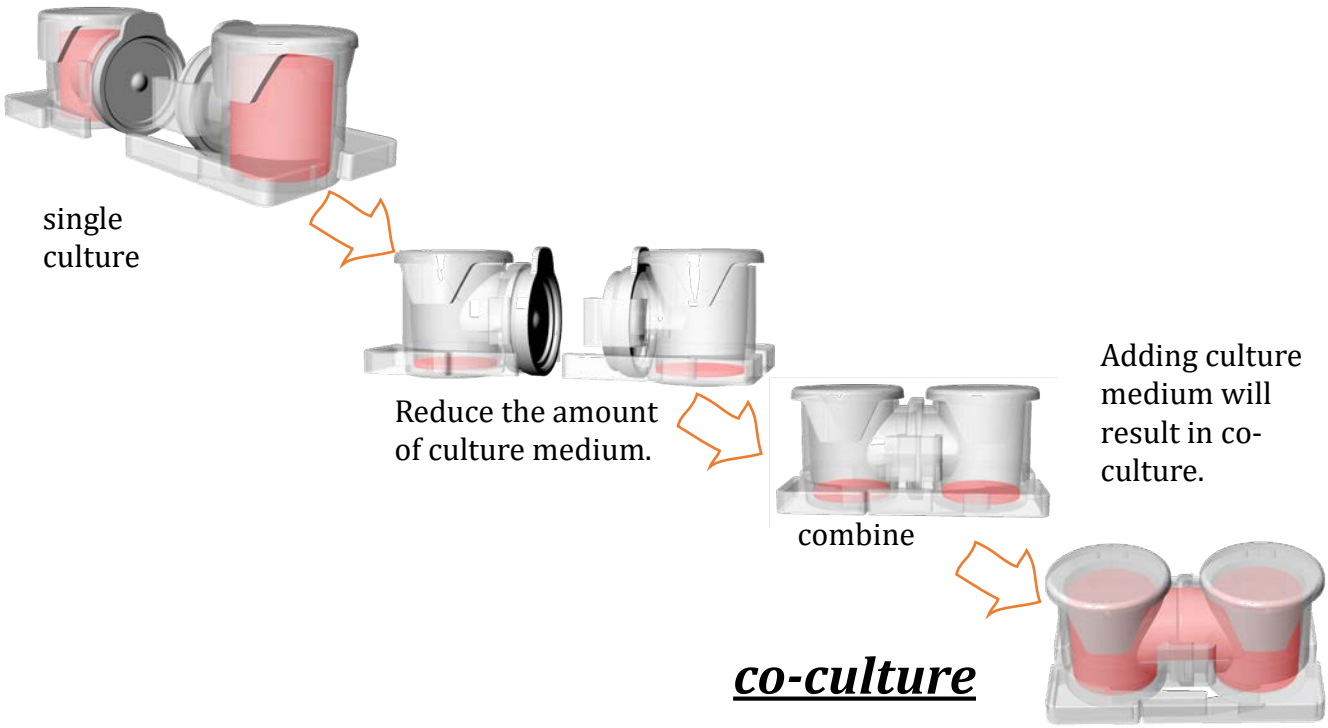


Please use the adapter for the slide included in the C set.(A and B sets are also required.)

This product can be cultured on its own.

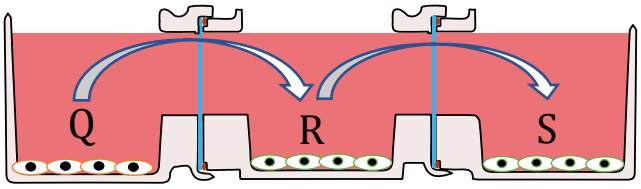


Switching from single culture to co-culture



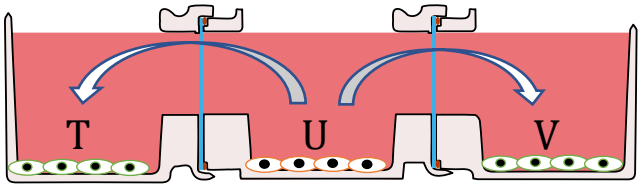
With horizontal co-culture containers, you can evaluate differences in the effects of cells.

a.



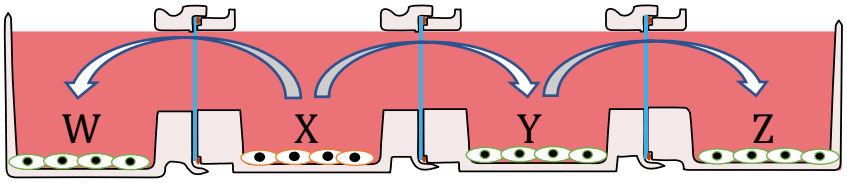
The effect of Q is R > S

b.



The effect of U is T=V

c.



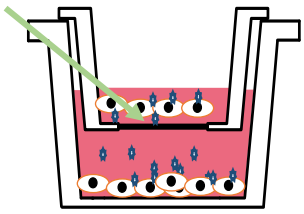
The impact of X is W > Y > Z

Micromachines **2021**, *12*(11), 1431; https://doi.org/10.3390/mi12111431

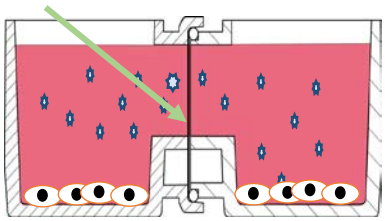
The bottom surface of the cell culture insert is a filter and cannot be coated.

With horizontal co-culture containers, the filter is separated, so the bottom surface can be coated.

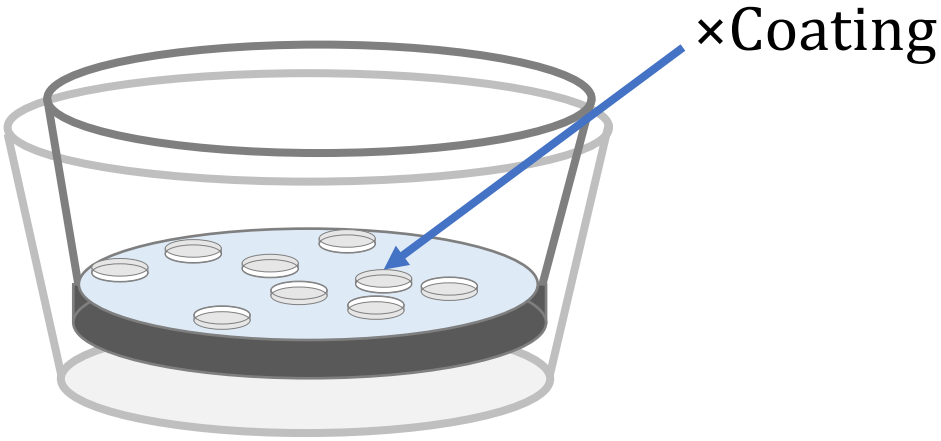
Filter



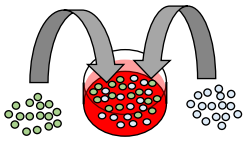
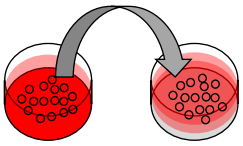
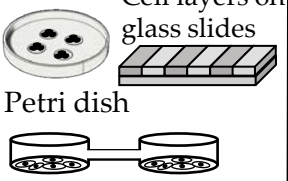
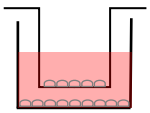
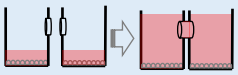
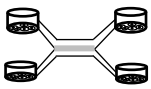
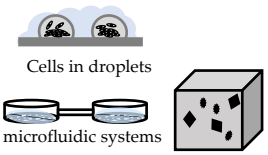
Filter



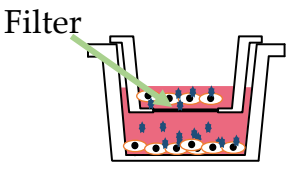
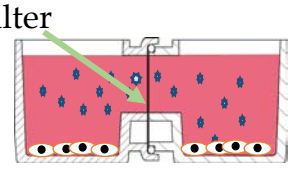
Cell culture inserts cannot be coated because they block the filter pores



Comparison of co-culture

How to co-culture	Direction	Separating Agent	Method and name of interaction		Feature
Contact	Both Direction	None	Mix cells		Direct impact can be observed. Since cells are mixed, it becomes difficult to distinguish cells. Whether it is an action by secretion or an action by contact is unknown. Notice that action by humoral factors is also added
Non-Contact	One Way	None	Add supernatant to the other		Standard method of adding cell supernatant. We can examine the effect at the time of attachment, but it is impossible to observe sustained effects.
	Both Direction	None	Structure specific type separation		There is no guarantee that cells will not be mixed, but co-culture is carried out by utilizing structural features.
		Filter	Vertical Type Co-Culture Plate		Although interaction by secretion can be continuously seen, both living cells can not be observed simultaneously with a time lapse microscope.
		Filter	Horizontal Type Co-Culture Plate		After incubating each living cell with different conditions and drugs, it is possible to observe sustained interaction with a time lapse microscope together. A filter can also be used between them.
		Filter	Micro-Flow Type		Co-cultivate using microchannel. Some have filters or some make microstructures similar to filters.
		Gels	Solid separate type		Co-culture is performed utilizing the characteristics of solid substances such as gel.

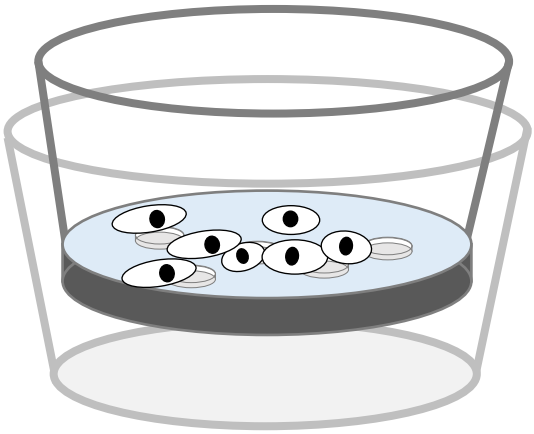
Differences in Co-culture Vessels by Vertical and Horizontal Binding Directions.

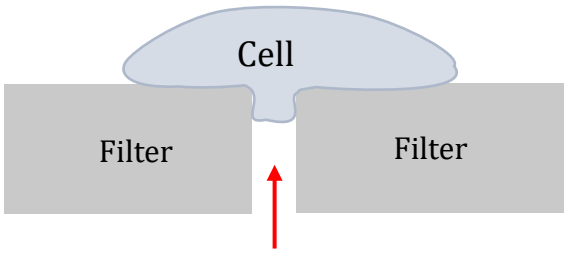
Type of vessels Connection type	VTCP Vertical connection	HTCP Horizontal connection
Image		
The morphology of the cells in the two chambers can be easily visualized by microscope	X morphology of the cells in upper chamber can not be visualized.	O Time-lapse video can be taken of the growing cell cultures in both chamber.
Both cell cultures grow on same type of plastic surface.	X	O
A variety of different filter pore sizes can be used; changing the maximum size of molecules shared between the two culture vessels.	△	O
Growth of cells do not prevent the exchange of liquid materials such as EVs by blocking the pore of filter	△	O
Multi connection	X	O

Examples of papers using this product

- Aquaporin 1 elicits cell motility and coordinates vascular bed formation by downregulating thrombospondin type-1 domain-containing 7A in glioblastoma(Cancer Medicine. 2020;00:1–14)
- Evaluating the Angiogenetic Properties of Ovarian Cancer Stem-like Cells using the Three-dimensional Co-culture System, NICO-1
- Disabled Homolog 2 (DAB2) Protein in Tumor Microenvironment Correlates with Aggressive Phenotype in Human Urothelial Carcinoma of the Bladder
- Control of osteoblast arrangement by osteocyte mechanoresponse through prostaglandin E2 signaling under oscillatory fluid flow stimuli
- Sonic Hedgehog acts as a macrophage chemoattractant during regeneration of the gastric epithelium
- Osteoblast-derived extracellular vesicles exert osteoblastic and tumor-suppressive functions via SERPINA3 and LCN2 in prostate cancer
- PSC-derived megakaryocytes and platelets accelerate wound healing and angiogenesis

In vertical culture, there is a problem where cells block the pores of the filter. In fact, in cell culture inserts, the cells are located on top of the filter. Very few researchers actually check the actual condition before use.





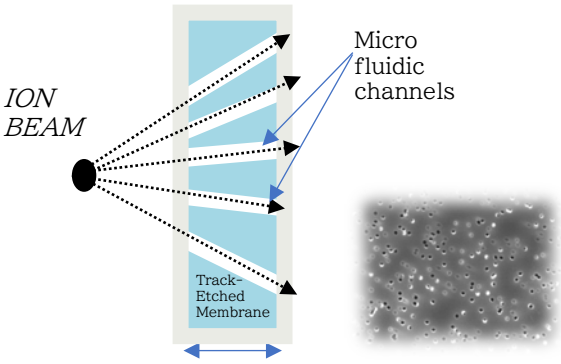
In reality, the cells block the pores of the filter

electron microscope image

In fact, the co-culture effect decreases over time.

Product Lineup

Track-Etched-Membrane

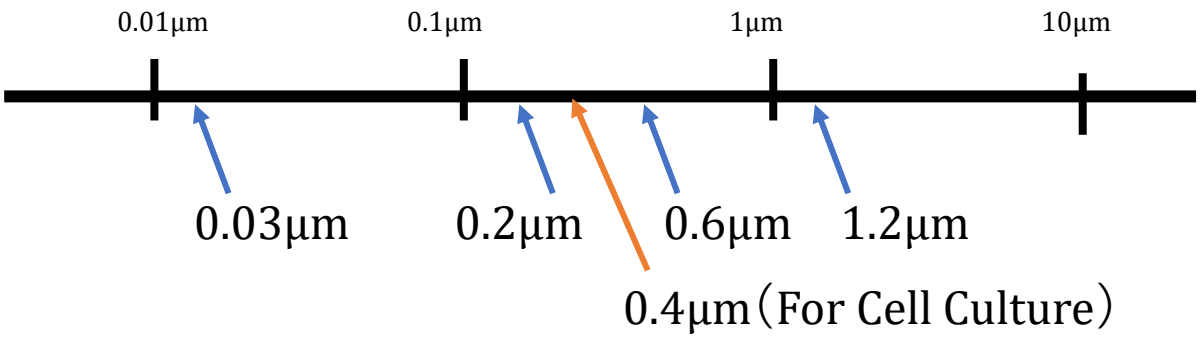


The filters sold by Ginrei Lab are precision-pore filters. These filters are manufactured by being perforated with ion beams emitted radially, so although the entrances appear the same, the interiors have separate pathways. For this reason, track etching membranes are used in applications where the pore size of the filter is extremely important.

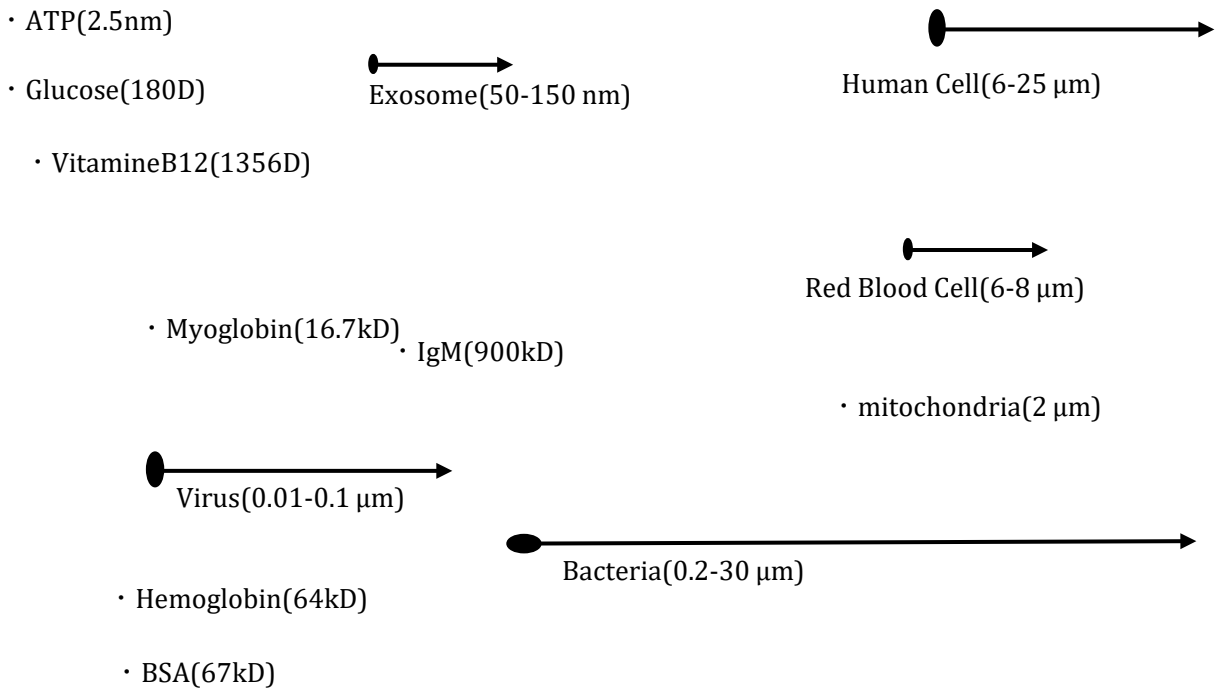
Product name	Product Number	Product Details
Filter 1.2 μm	2525-12	1.2 μm pore size, 13 mm diameter
Filter 0.6 μm	2525-06	0.6 μm pore size, 13 mm diameter
Filter 0.2 μm	2525-02	0.2 μm pore size, 13 mm diameter
Filter 0.03 μm	2525-003	0.03 μm pore size, 13 mm diameter
Filter_Cell_ Culturable 0.4μm	2525-04C	Filter for cell culture0.4 μm pore size, diameter 13 mm

*The 0.4 μm pore size filter is for cell culture. Cells are cultured on top of the filter for observation, so the pores are not arranged in a radial pattern but in parallel lines. As a result, the number of pores is different from other filters and is smaller. This filter is often used in cell culture inserts.

Track-Etched Membrane sold by Ginrei Lab



Reference information on hole diameter



(Note: There is no direct correlation or conversion between Dalton, which is used to indicate 3-dimensional molecular size, and meters, which is used to indicate 2-dimensional size.Therefore, this table is provided for reference purposes only and does not guarantee accuracy. The filters we sell are gamma-irradiated and sterilized for use in biological research. After sterilization, we have confirmed that there are no abnormalities in the filter structure using an electron microscope. Many commercially available filters are manufactured in clean environments, but the filters themselves are not sterilized after manufacturing.

Substance transfer characteristics are clear? We clarified substance transfer characteristics based on filter pore size.

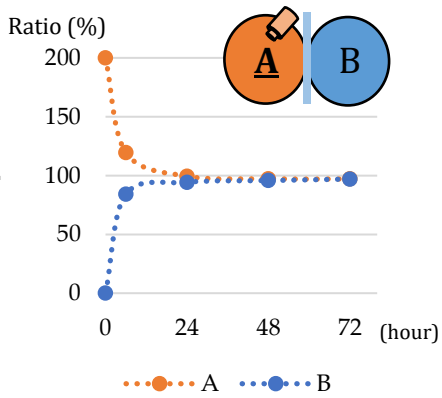
Citation from a paper

Glucose

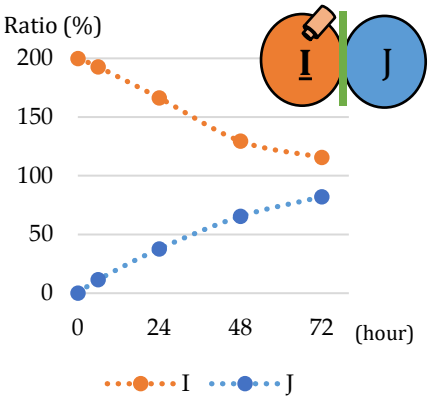
Filter: 0.6 μm

Filter: 0.03 μm

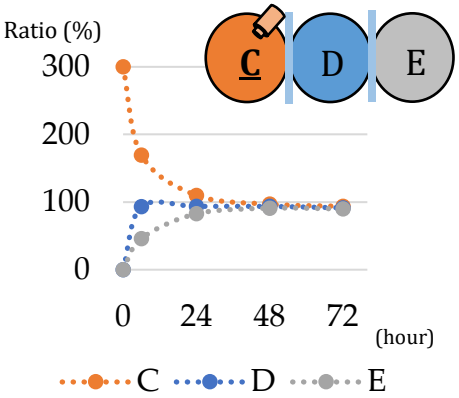
a.



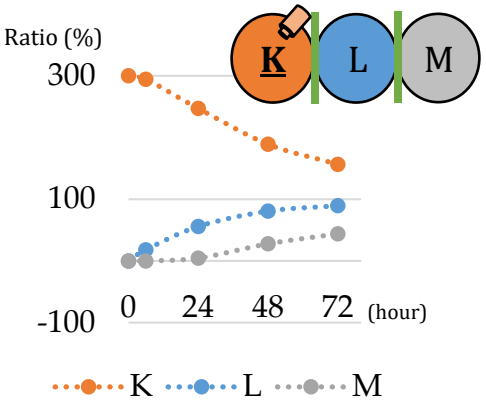
d.



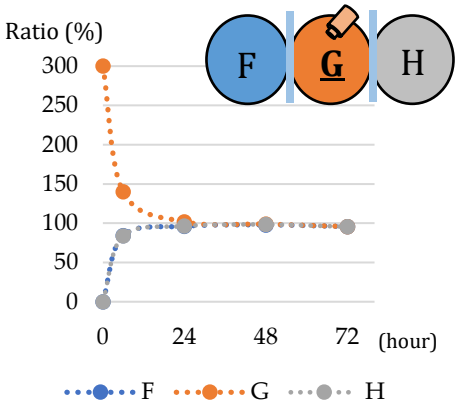
b.



e.



c.



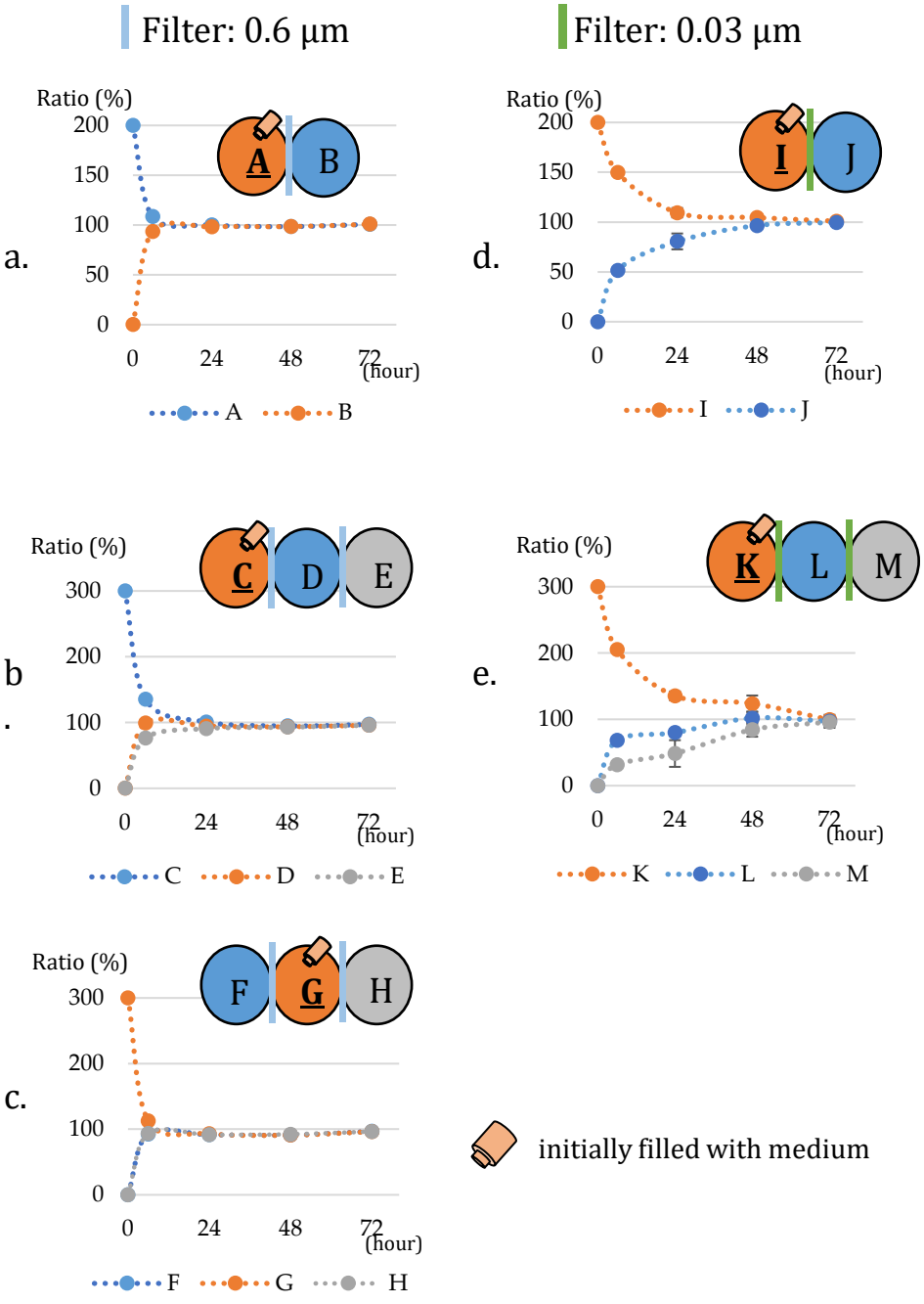
initially filled with medium

Micromachines **2021**, *12*(11), 1431; https://doi.org/10.3390/mi12111431

Substance transfer characteristics are clear?
We clarified substance transfer characteristics based on filter pore size.

Citation from a paper

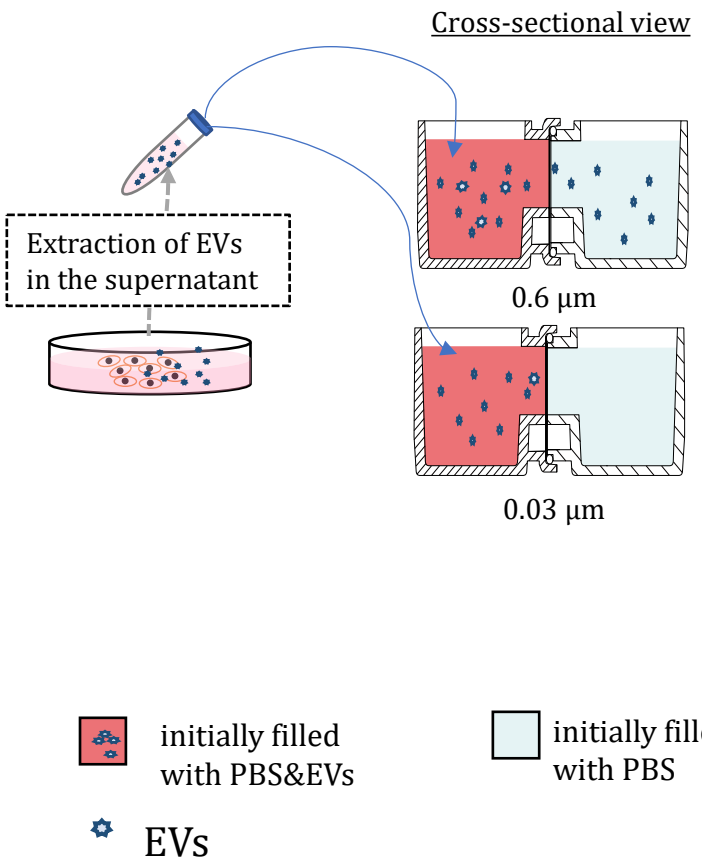
NH4+



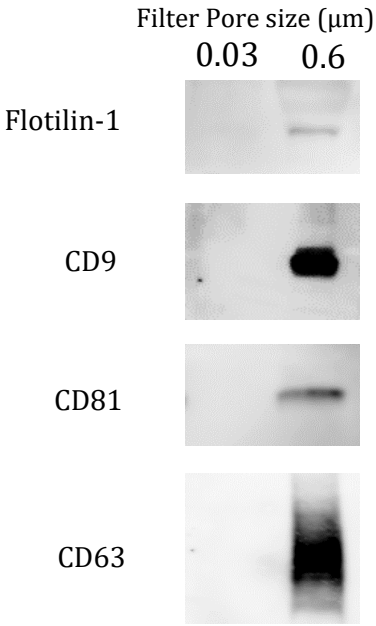
Micromachines **2021**, *12*(11), 1431; https://doi.org/10.3390/mi12111431

Are the transport properties of the substance clear? Using exosomes as an example, we have investigated the permeability of different filter pore sizes.

a.



b.

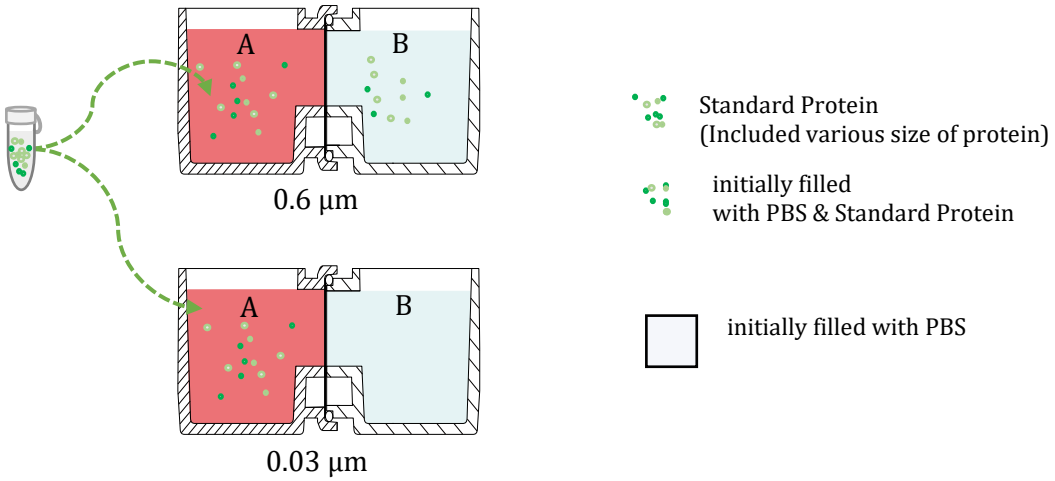


The movement characteristics of substances can be controlled by changing the pore size of the filter.

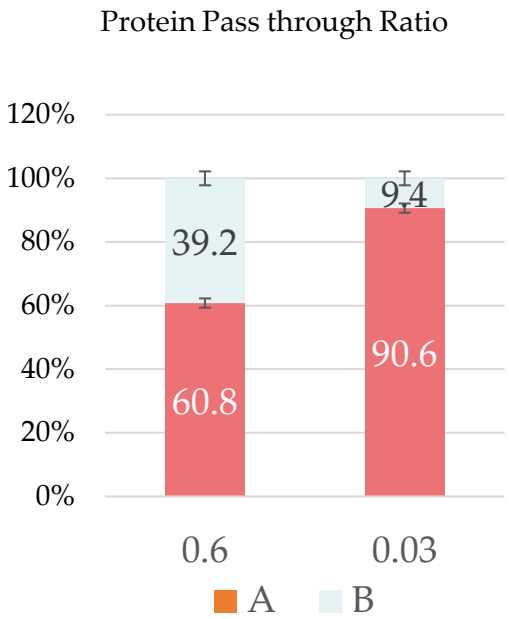
Micromachines **2021**, *12*(11), 1431; https://doi.org/10.3390/mi12111431

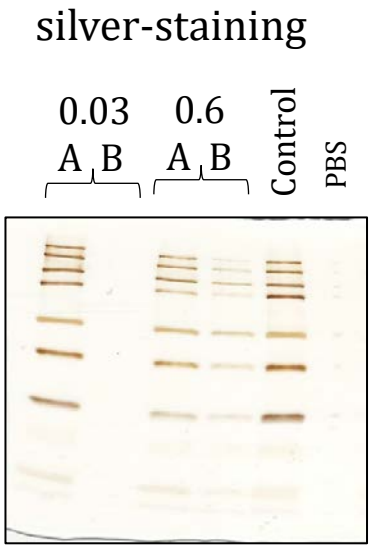
Are the transport properties of the substance clear? Using standard protein markers as an example, we investigated the permeability of the filter based on differences in pore size.

a.



b.





Protein permeability can be controlled by using different filters.

Micromachines **2021**, *12*(11), 1431; https://doi.org/10.3390/mi12111431

CuPS™ (Culture Plate for Spheroids)

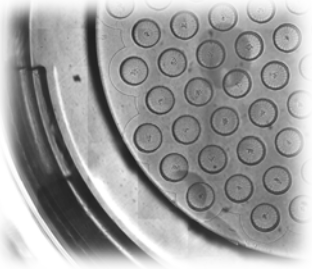
Φ1.0mm×31 wells

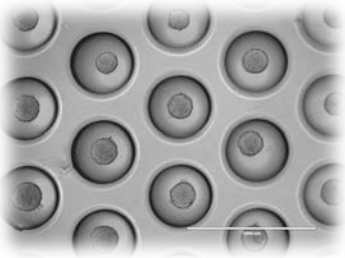
1.0mm type
GL_No.2520-100

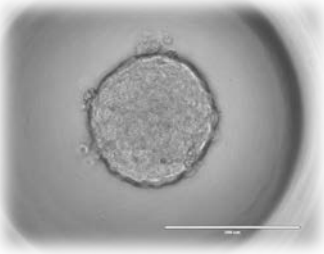
Actual Image

Φ0.5mm×109 wells

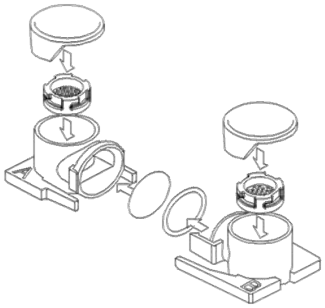
0.5mm type
GL_No.2520-050

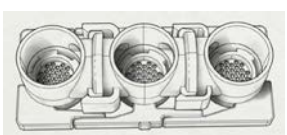




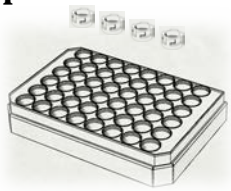


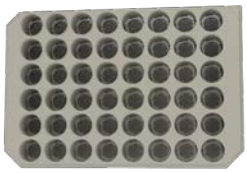
Spheroid co-culture is possible using our co-culture products.。





Screening and large-scale production are possible using commercially available 48-well plates.

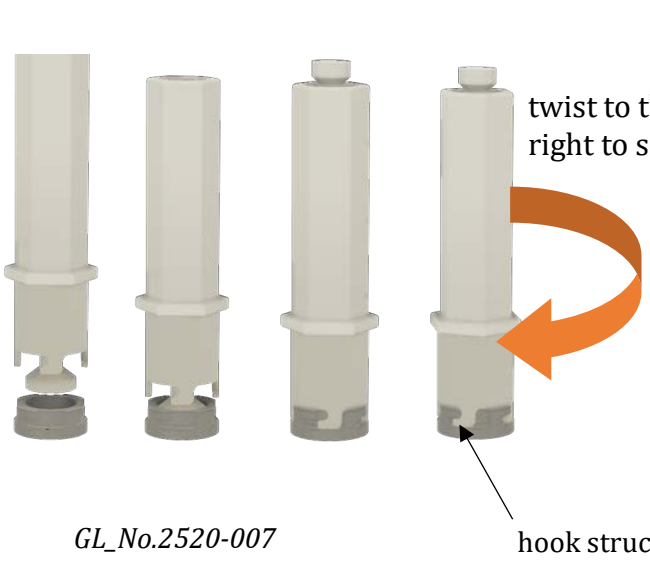




Thermoscientific 48-well plate Nanoclon Delta Surface No. 150687 is the compatible plate.(Note) CuPS is not compatible with 48-well plates other than the specified ones due to slight differences in size.

Fitting rod

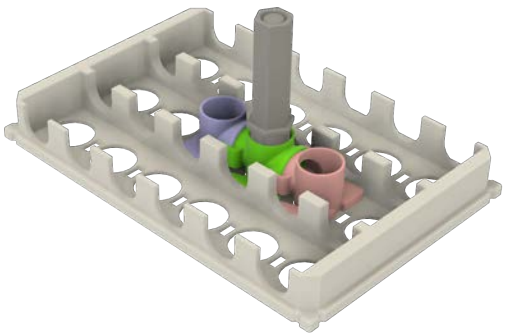
Insert the core and tip of the fitting rod into the CuPS and screw it to the right to set it in place. To remove, press down on the core from above.



GL_No.2520-007

Press the top to push out the CuPS.

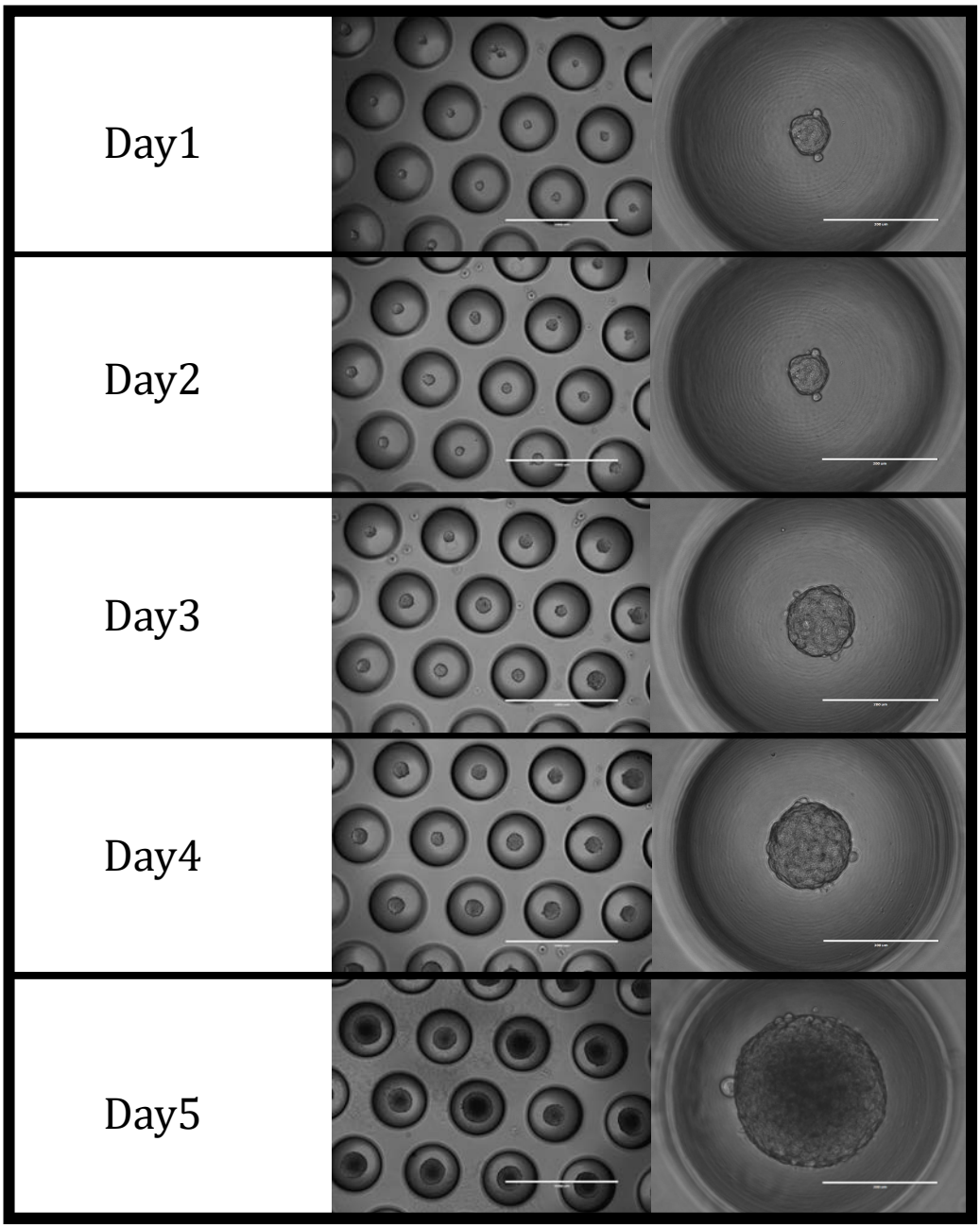
Insert the CuPS into our co-culture container or prescribed 48-well plate. When removing the CuPS from the container, lift it by hooking the hook portion in the same manner.



NICO Series with adaptor/Fitting rod

Thermo Scientific 48 Well Plate
Nunclon Delta Surface at.No.150687

Growth of spheroids



Note: CuPS is a concave cell culture plate coated with a low-adhesion material that promotes spheroid formation. Spheroid formation depends on the type and condition of the cells, so this product does not guarantee spheroid formation.

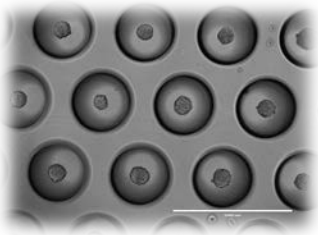
Culture Plate for Spheroids (CuPS) Series

CuPS is a container that facilitates the creation of spheroids and organoids. The bottom surface is coated with a low-adhesive material, enabling the formation of spheroids and organoids while maintaining cellular characteristics (design registered). For ease of use, we also provide a fitting rod (patent pending).

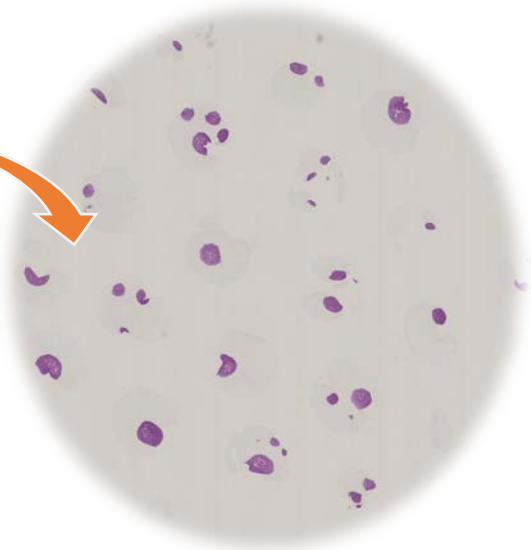
Product name	Product Number	Product Details
CuPS Standard Set	2520-159	Spheroid Creation Standard Set (10 x Φ1.0mm, 10 x Φ0.5mm, 1 x fitting rod RESIN)
CuPS Φ1.0 Set	2520-109	20 CuPS with a diameter of 1.0 mm, 1 x fitting rod RESIN
CuPS Φ0.5 Set	2520-059	20 CuPS with a diameter of 0.5 mm, 1 x fitting rod RESIN
fitting rod Stainless	2520-007STL	Fitting rod, 1piece, Stainless steel
fitting rod RESIN	2520-009RES	Fitting rod, 1 piece, RESIN

New Product Information

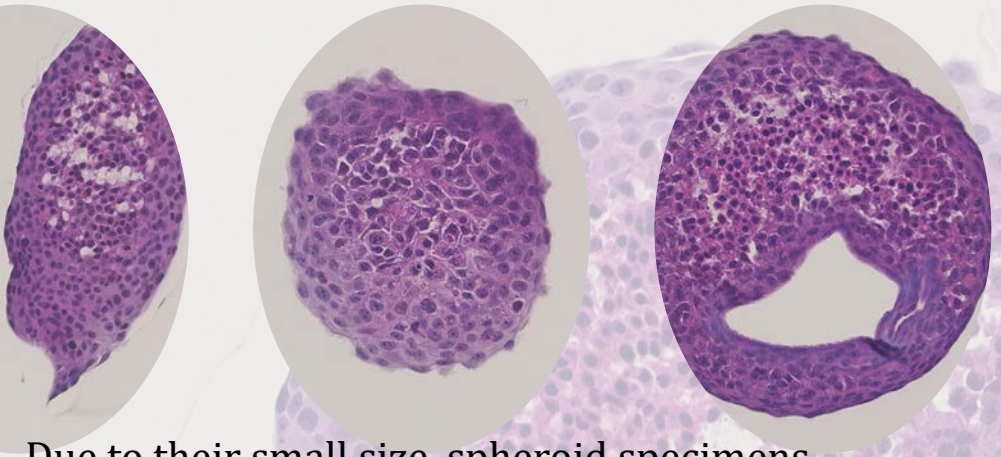
Spheroid array preparation kits



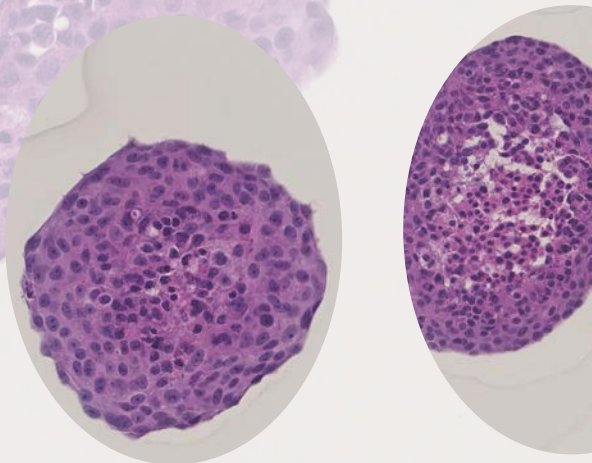
Spheroid Sample Preparation Kit (Paraffin Embedding Kits)



Spheroid Array



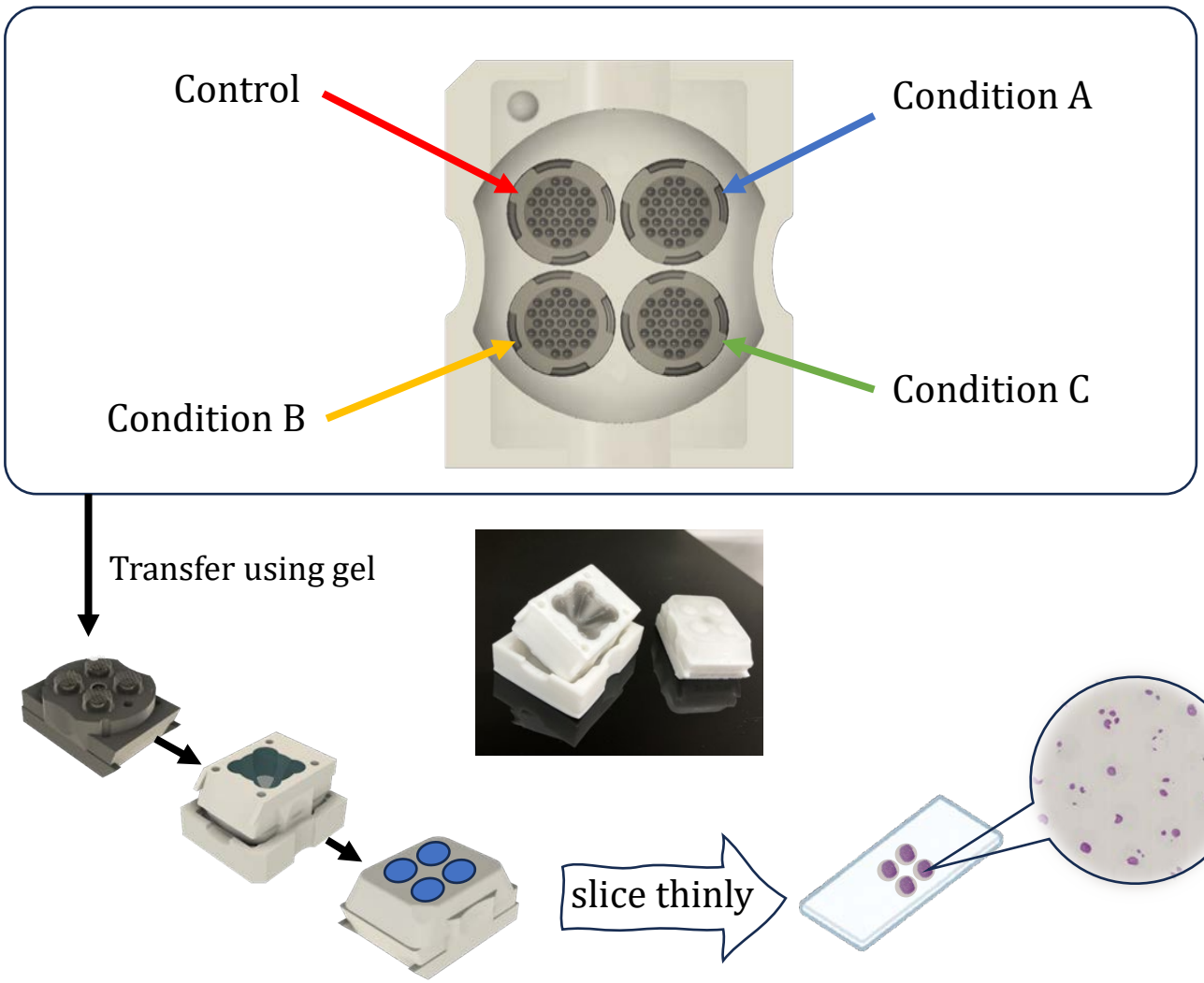
Due to their small size, spheroid specimens were difficult to prepare and could not be easily created. In response to requests from our customers, we have created a tool that allows for the evaluation of multiple spheroids. By processing multiple spheroids under the same conditions, it is now possible to obtain more accurate information.



Spheroid array preparation kits

Spheroids can be created under four conditions and processed together on the same slide. This means immunostaining and other procedures can be performed under identical conditions. Furthermore, processing multiple spheroids together under a single condition enables more accurate assessment.

Preparation Kit



Up to four spheroid populations under different experimental conditions can be combined into a single slide specimen.

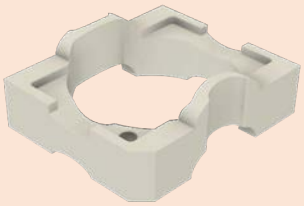
Product Lineup

CuPS Array kit (Spheroid array preparation kits)

This kit is designed to easily collect and prepare spheroid organoids cultured in CuPS for histological analysis. By embedding spheroids in CuPS units and processing them collectively, histological evaluation under the same conditions is now possible.

CuPS Base Cassettes

Paraffin Base Cassettes



Chemical Treatment Base Cassette

Embedding Cassette

Gel Minimizer

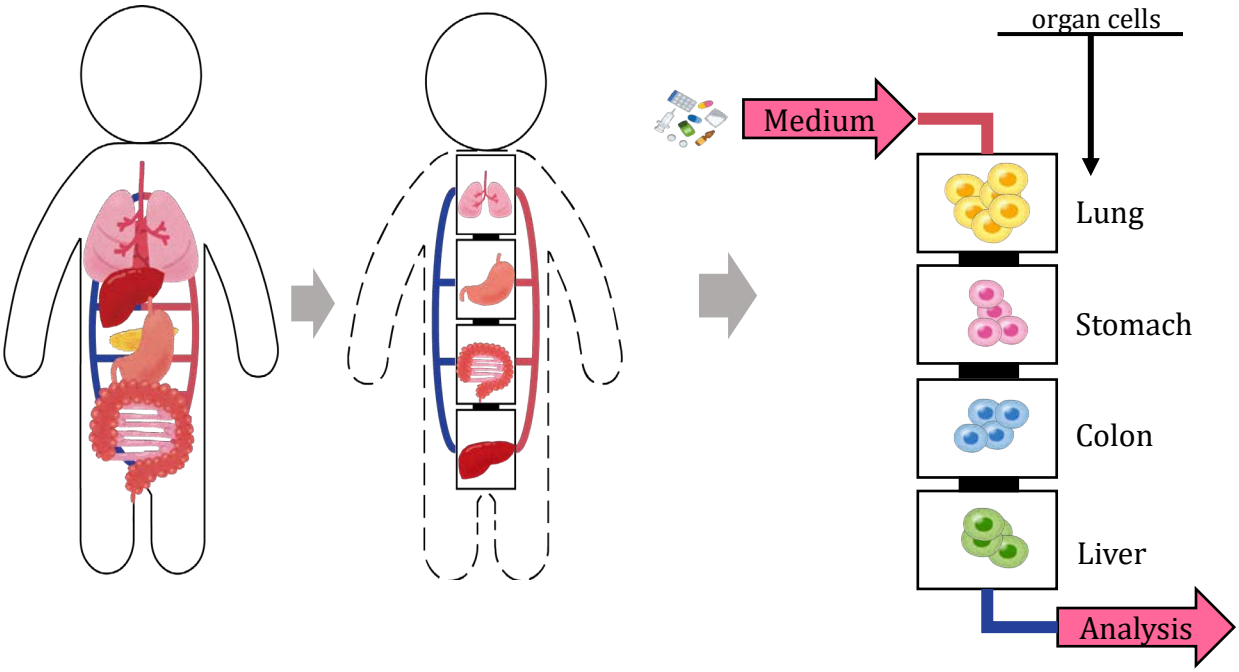
Product name	Product Number	Product Details
CuPS Array kit All in one kit	2520-02	Complete Spheroid Specimen Preparation Kit (Paraffin Embedding Kits)
CuPS Array Embedding Cassettes and Minimizer Set	2520-20	Embedding Cassettes: 10 pieces, Gel Minimizer: 2 pieces included
CuPS Array 3 types of base sets	2520-30	Three Types of Base Cassettes for Spheroid Specimen Preparation

Culture Medium Perfusion and Input/Output System

Culture Medium Perfusion and Input/Output System

In the body, each organ functions independently yet cooperatively through blood and lymphatic fluid. Proteins and other signaling molecules secreted by organ cells, such as exosomes, interact with each other in a unidirectional or bidirectional manner via blood and lymphatic fluid. By simplifying these models, we can analyze the processes occurring in the body.

simplified analysis



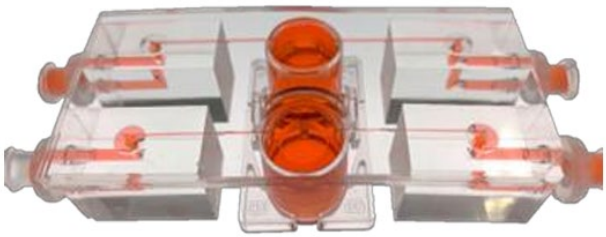
By simplifying the relationships between organs, it becomes possible to analyze their interactions.

Culture Medium Perfusion and Input/Output System

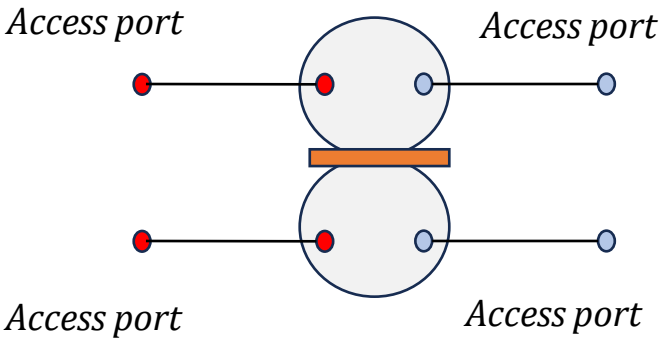
One-way co-culture

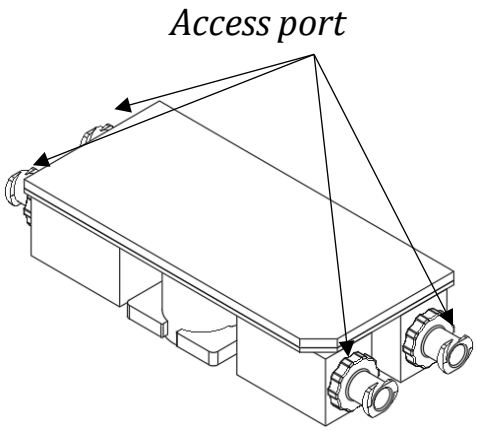
Entry Model

Product No.2514-02



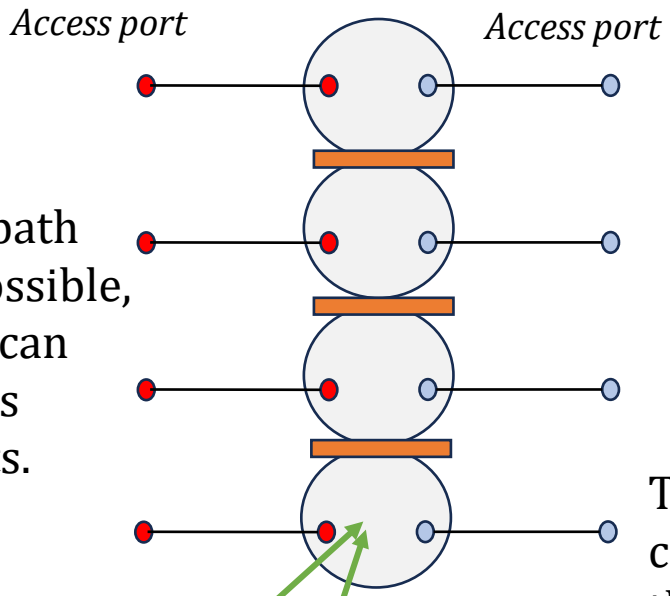
There are four access ports, allowing for flexible flow patterns and air venting. Can also be used for adding chemicals.





Culture Medium Perfusion and Input/Output System

The entry-level model can be combined with multiple units.
Multiple combinations are possible, ranging from 2 to 6 units



Flexible flow path selection is possible, and the ports can also be used as sampling ports.

The product can be connected to increase the number as desired.

1.0mm type *0.5mm type*

CuPS for spheroid formation can also be used in combination.

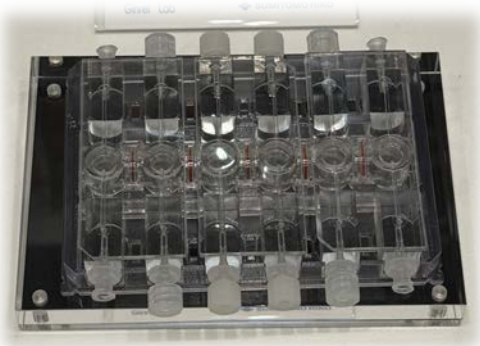
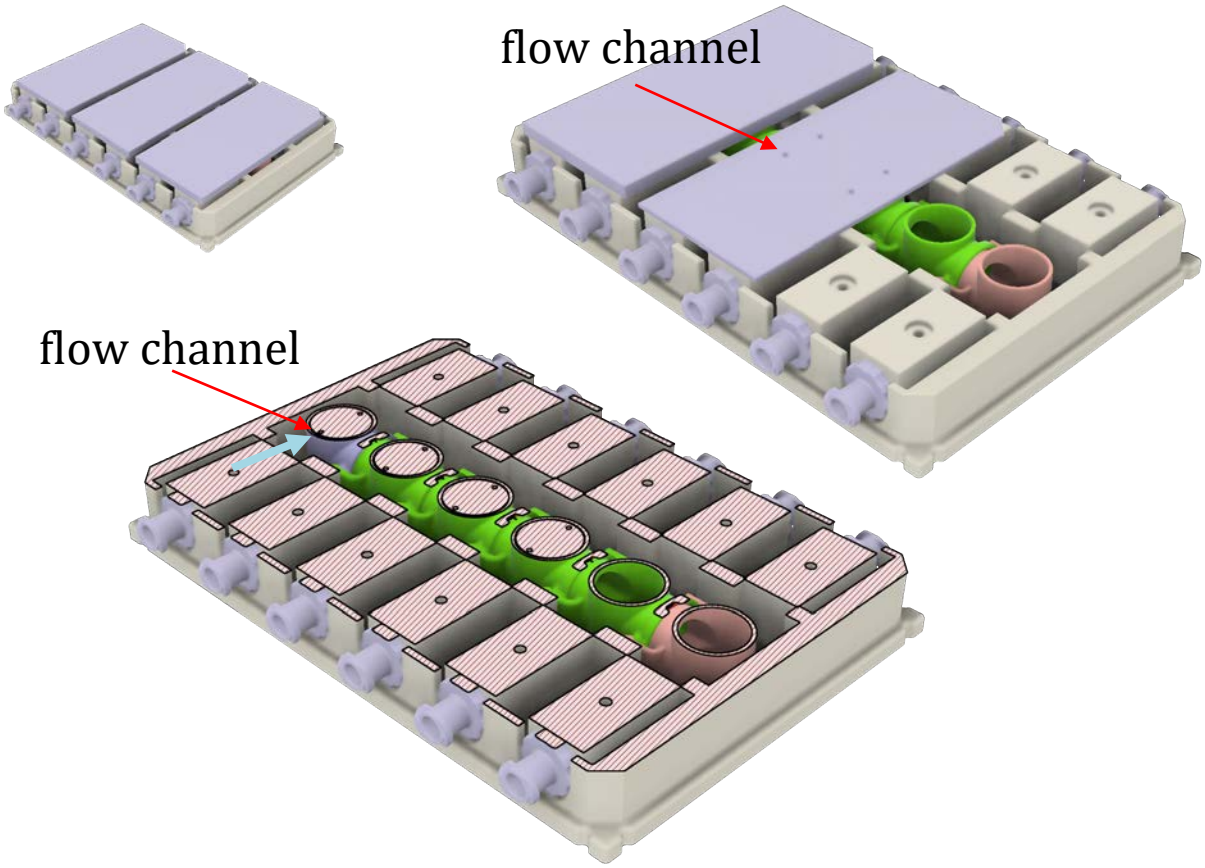


Photo of 6 connected products

Culture Medium Perfusion and Input/Output System

One-way co-culture

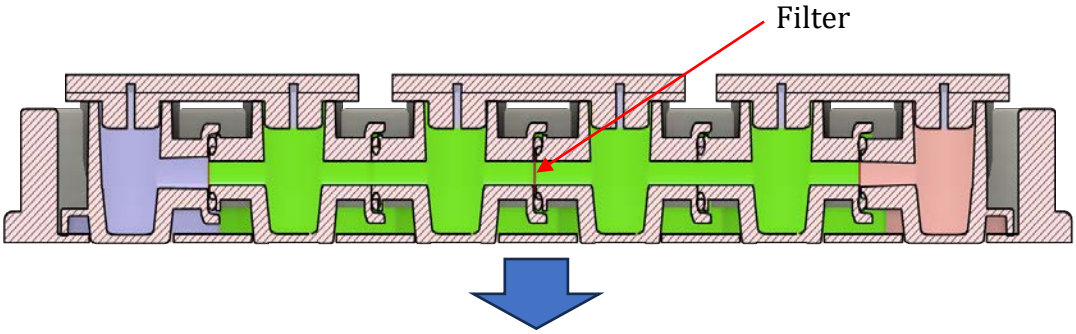
Entry Model



cross-sectional view

Culture Medium Perfusion and Input/Output System

Customizable!



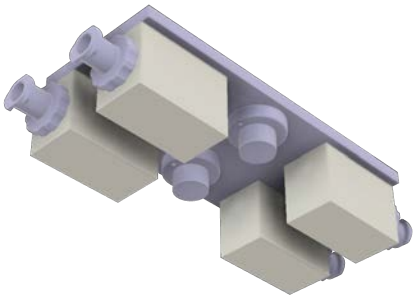
The multi-connectivity of the container itself and the freedom to design flow paths enable a variety of flow path designs, such as serial and parallel.

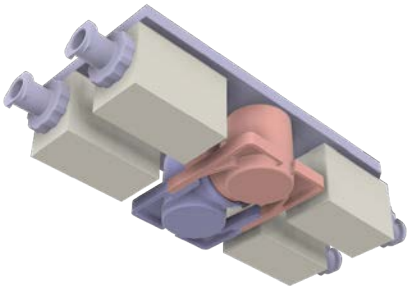
The flow path layers can be customized. Please contact us if you are considering customization.

Flow path customization is available from Sumitomo Riko Co., Ltd.

Contact : info@ginreilab.com

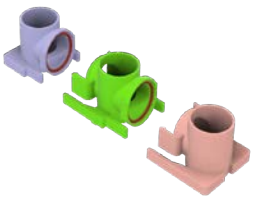
Culture Medium Perfusion and Input/Output System





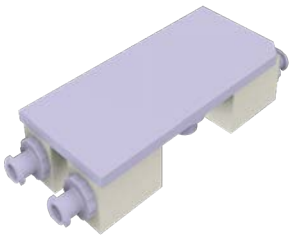
Adapter 2596-18

\+



Co-Culter Plate

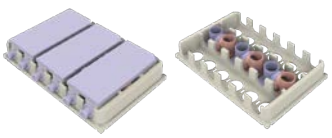
\+

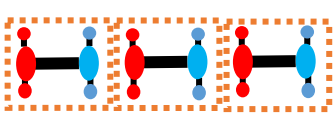


Entry Model

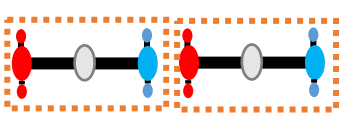
Various combinations are possible.

2 connected x3

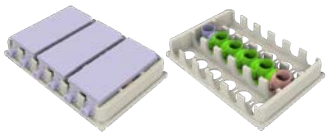


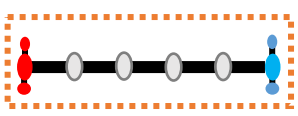


3 connected

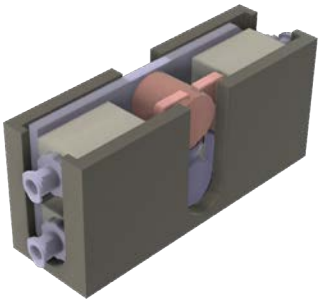


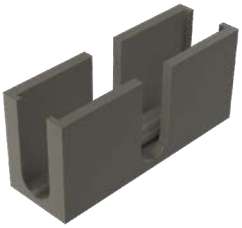
6 connected x1





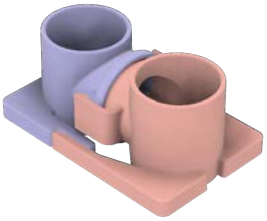
Entry Model Vertical Adapter





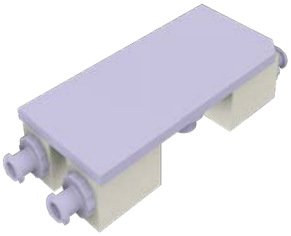
Adapter 2514-80

+



Co-Culter Plate

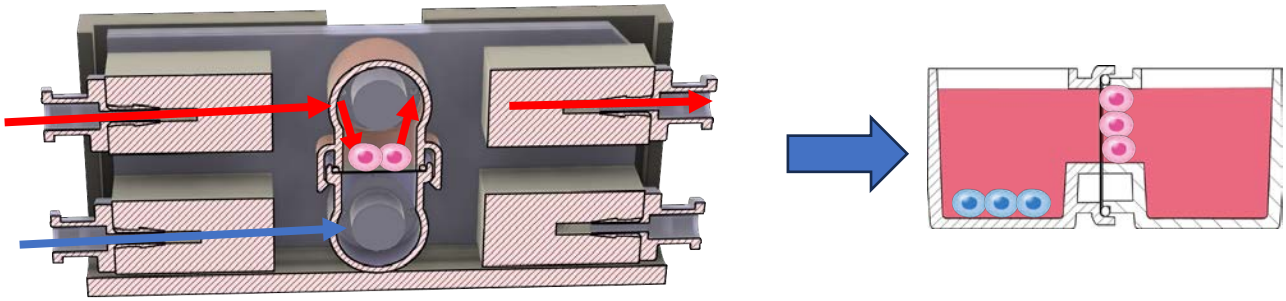
+



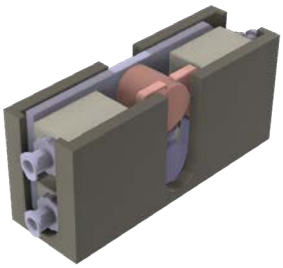
Entry Model

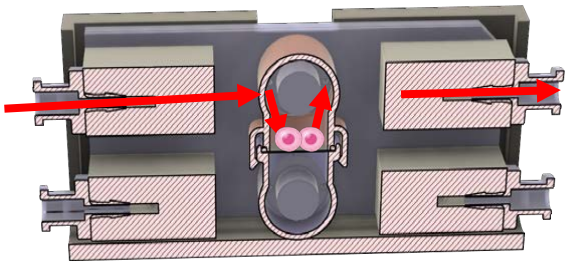
BBB model, small intestine-liver model, etc. are possible. Cells can be easily cultured on filters.

Example: Use a vertical unit to culture cells on a filter for a certain period of time. Then, turn the unit horizontally and seed the remaining wells with cells on the bottom surface.



Entry Model Vertical Adapter

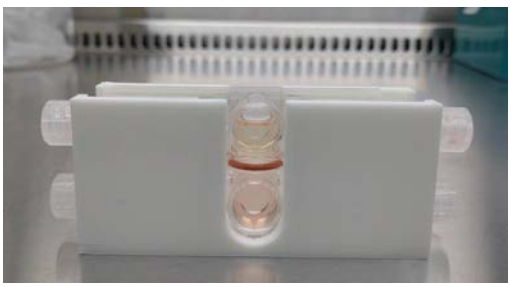




Culture progress on filter by vertical placement

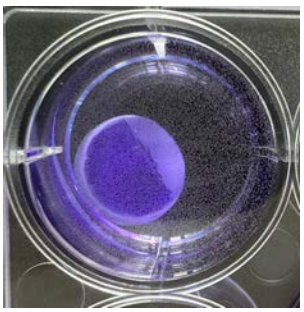
Day 0

Day 3

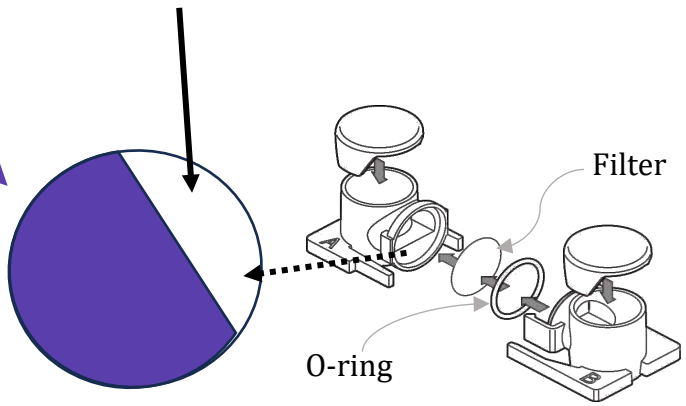


Crystal Violet Staining

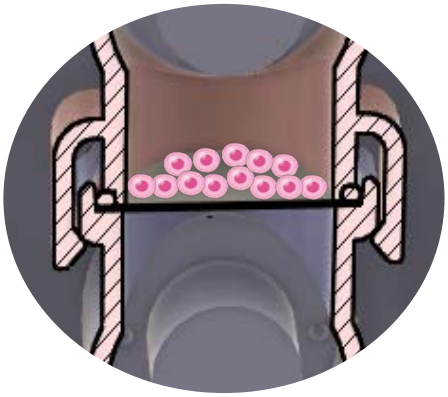
Cell clusters on a filter stained with crystal violet



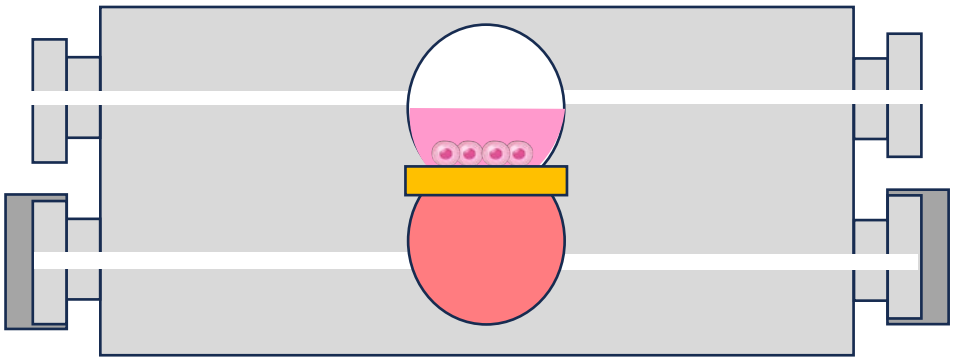
No cell adhesion due to pressure on the container

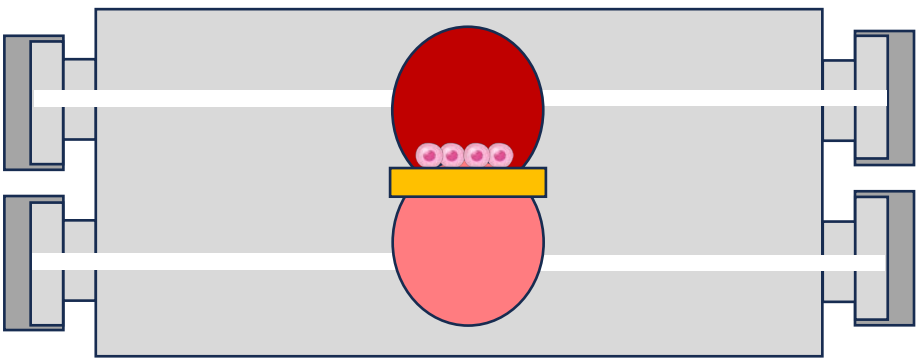


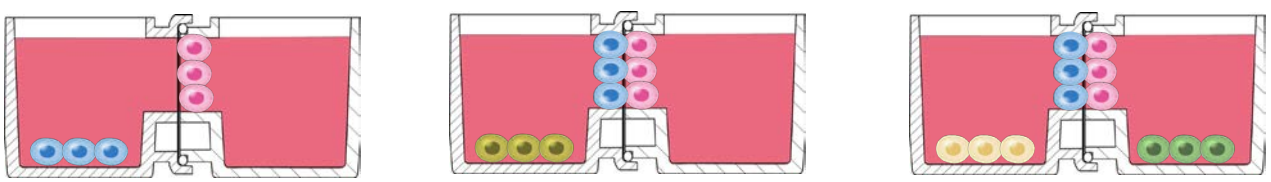
Entry Model Vertical Adapter



Cell Culture on filter by vertical placement



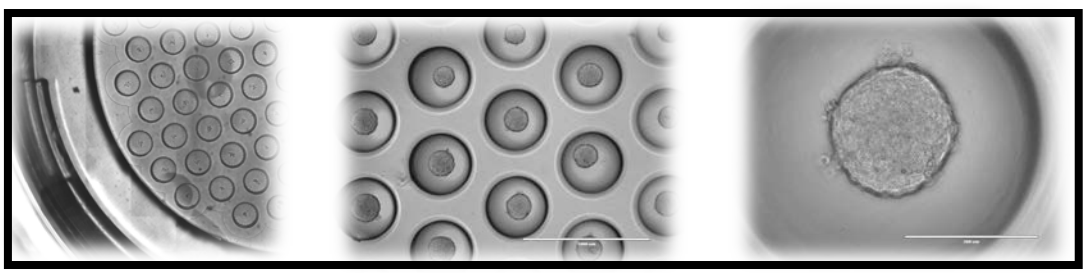




Culture Medium Perfusion and Input/Output System

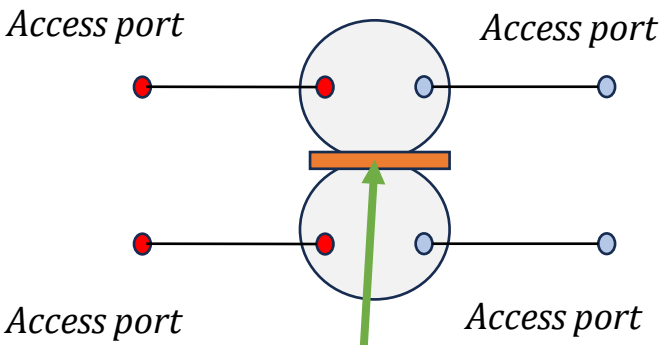
Our products can be observed with most microscopes. Currently, each company is creating a format for our products.

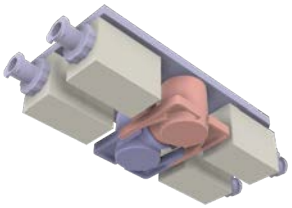
For example, the Evident CM30 has a format file for GL adapters.

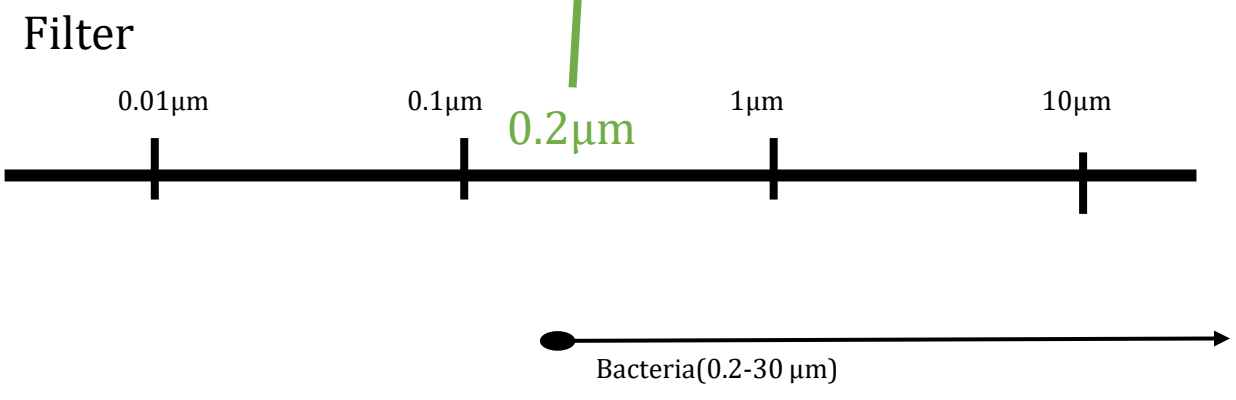


Bacterial co-culture system

The entry-level model can also be used as a tool for bacterial co-culture.
By using a 0.2 μm filter for bacteria, bacteria cannot pass through, but it is possible to confirm the effects of substances secreted by bacteria. Since it is a closed system, it has the characteristic of low bacterial contamination. Bacteria can be injected, sampled, and drugs can be administered through the access port.







Product Lineup

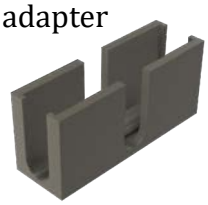
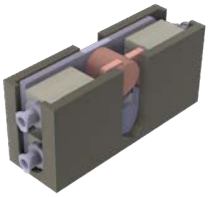
Perfusion culture Entry Model

The entry model is a series that enables easy culture medium perfusion in the NICO-1(UniWells) series. It can be connected to the NICO-C(UniWells-C). Adapters for Entry models and vertical adapters are available.

Product name	Product Number	Product Details
Entry Models	2514-02	Entry Model
In-Out Adaptor	2514-02ADAP	In-Out Adaptor (with vertical adaptor)
Bacterial Models	2514-02F02	Entry Model with Filter 0.2 μm pore 50sheets included

Product Lineup

Entry Model Adaptor

Product name	Product Number	Product Details
Adaptor for Entry Model	2596-18	
Vertica Stacking Adaptor for Entry Model	2596-18S	Coming Soon
Entry Model Adapter for electric pumps	Coming Soon	Coming Soon
Vertical adapter for entry models	2514-80	adapter  *Entry model is not included
Entry models with Vertical adapter	2514-82	 Entry model is included

ALL Products Lineup

Product name	Product Number	Product Type
Horizontal co-culture container (ICCP, UniWells, NICO-1)	2501-02	Container
Multi-connection parts (ICCP-C, UniWells-C, NICO-C)	2504-02	Container
96-well size adapter, 4-row type	2596-02	Adapter
96-well size adapter, 3-row type	2596-18	Adapter
CuPS Standard Set	2520-157	Container
fitting rod Stainless	2520-007	Tool
fitting rod PLA	2520-008	Tool
CuPS Φ1.0	2520-100	Container
CuPS Φ0.5	2520-050	Container
CuPS Array kit All in one kit	2520-02	Tool
CuPS Array Embedding Cap Set, 10pieces	2520-20	Tool
CuPS Array 3 types of base sets	2520-30	Tool
CuPS Array Adapter for glass containers	Coming soon	Tool
Entry Models	2514-02	Container
Entry Models with Vertical adaputor	2514-82	Container
Vertical adapter for entry models	2514-80	Adapter
In-Out Adaptor	2514-02FW	Tool
Bacterial Models	2514-02F02	Container
Adaptor for Entry Model	2596-18	Adapter
Vertica Stacking Adaptor for Entry Model	2596-18S	Adapter
Entry Model Adapter for electric pumps	Coming Soon	Adapter

Distributors information

NICO-1・UniWells・ICCP・Pair-N-Share Tandem Co-Culture Wells & Plates are all the same product. Brand names vary depending on the retailer. All Ginrei Lab's products are available from the following companies. Please contact them with the model number or product overview.

Uniwells Brand

Fujifilm Wako Pure Chemical Corporation
https://labchem-wako.fujifilm.com/us/category/01324.html

ICCP Brand

Xceltis (Germany & EU)
http://www.xceltis.de/

Pair-N-Share Tandem Co-Culture Wells & Plates Brand

BulldogBio (USA and Canada)
https://www.bulldog-bio.com/product/pair-n-share-tandem-cell-culture-wells/

ICCP Brand

PhileKorea (Korea)
https://philekorea.kr/default/

NICO-1 Brand

AR Brown co.,ltd (Japan)
https://arb-ls.com/products/nico-1/

Ginrei Lab

Collaborating company on the development of products and spheroid products

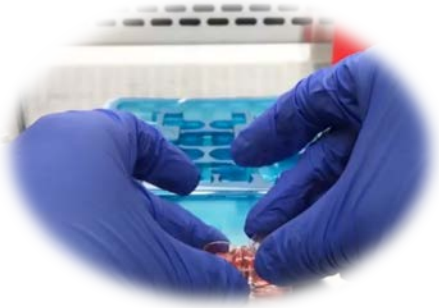
Entry model system・CuPS™

Sumitomo Riko Co., Ltd.

Ginrei Lab

Cell culture innovation

https://ginreilab.com/



ginreilab