

Connectable peristaltic pump-cassettes without tools

# Micro tube-pump systems



Winner of an award in Japan



## Micro actuator x Fluid control

Powered by Micro gear technology



## Provide flexibility for your needs

### Antibacterial resistance

Minimal contamination risk:  
Autoclavable and disposable  
Pump cassette

### Laboratory scale

Available in CO<sub>2</sub> incubator  
due to its small size and  
light weight

### Precision fluid control

Variable flow rate pump.  
Flow range: 0.1 to 2,000  
μL/min

# What is Micro tube-pump systems ?

Icomes lab Co., Ltd is one of leading suppliers of life-Science and medical pump. Micro Tube-pump systems provide flexibility base on your needs and requirements. In addition, it allow to customize for varius purpose with abundant option parts.

## System Components



### Customizable depending on your needs

The pump systems can be customized as your needs, Just switch variable parts.

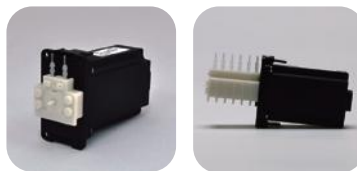


Tray for For microfluidics option

### Various pump lineup

Variable flow-rate is Flow-range 0.1 to 2,000  $\mu\text{L}/\text{min}$ . Connectable up to 6 pump cassettes with nub-Bricks Feature.

Note that the number of cassette varies depending on flow rate.



### Sterilizable pump-cassette

Pump cassette is autoclavable and disposable. Minimize contamination risks.

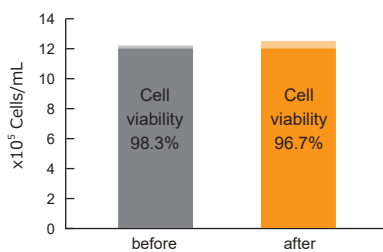
Note that no tools required for installation and removal



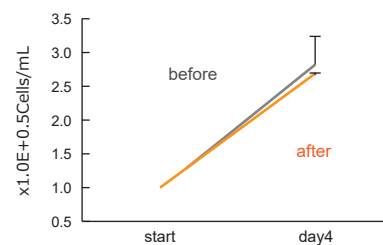
## Effects on cells: Can transport cell suspensions

### Experimental conditons

Cell line : NIH/3T3 (passage 3)  
 Medium : DMEM  
 (10% FBS, 1%Penicillin / Streptomycin)  
 Flow rate : 2mL/min  
 Infusion volume : 1mL

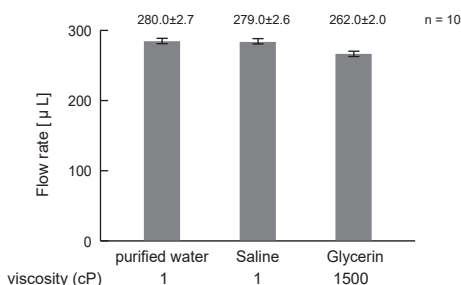


Impact of pumping fluid on Cell viability



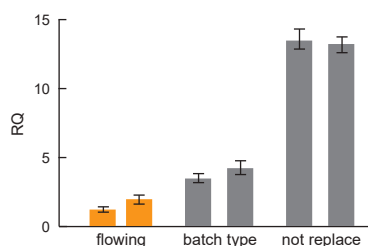
Effect on proliferative ability

## Viscosity: Can transport high viscosity fluid



- Measured value of flow rate when flude is sent at a flow rate of 280  $\mu\text{L} / \text{min}$ .
- A flude with a viscosity 300 times higher than that of blood (about 4 cP) can be sent.

## Stress: Reduced stress on cells during medium exchange



- Human fetal-derived hepatocytes (293T)
- Culture for 3 days

Reference : R.Yasuda *et al.*, "Cell stress reduction by a novel perfusion - culture system using commercial culture dish", Appl Sci, 10, 95, 2020.

**Perfusion culture for Regenerative medical research**

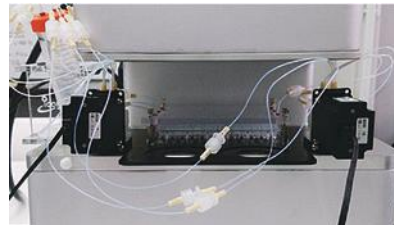
Connected with Perfusion attachments (iP-TEC Perfusion attachment, Sanplatech Co., Ltd.)



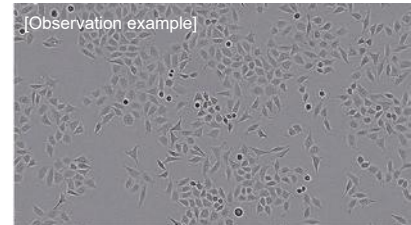
iP-TEC Perfusion attachment can perfuse individual culture wells by single driving unit with 6 pump cassettes and observe through a microscope.

**Time-lapse imaging for drug susceptibility assay**

Setup on the stage of a time-lapse imaging system ( BioStudio-T, Nikon Engineering Co., Ltd. )



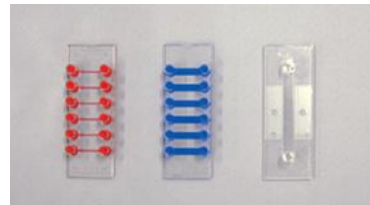
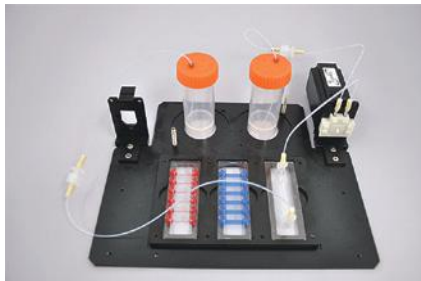
BioStudio-T and pump system allow for installation in various incubators.



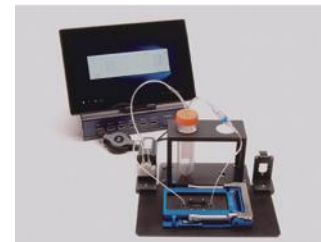
Cell line : HeLa S3  
Objective: CFI Plan Fluor DL 4x  
Camera : 131 mega-pixels, monochromatic  
Expose : 9 msec  
Enhance/gain : auto

**Micro physiological system (microfluidic cell culture)**

Connected with Microfluidic tip ( $\mu$ -slide, ibidi Co., Ltd.)



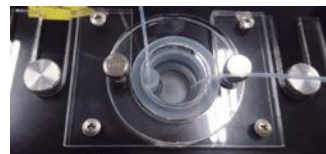
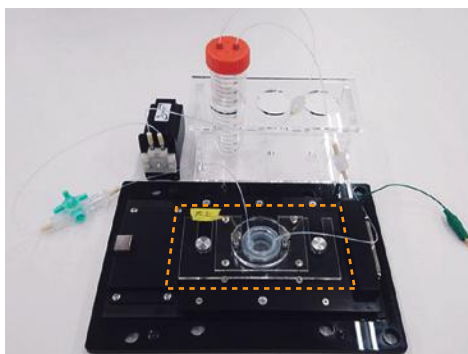
$\mu$ -slide, ibidi Co., Ltd.



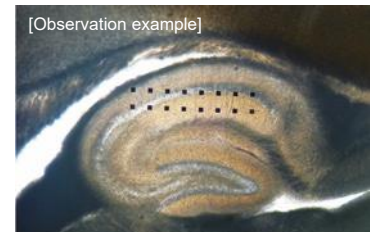
Example of connection with Kyodo International "Chip Holder"

**Extracellular potential recording system**

Connected with extracellular potential recording system(MED64 system, Alpha MED Scientific Inc.)



Connected with Perfusion attachments (iP-TEC Perfusion attachment, Sanplatech Co., Ltd.)



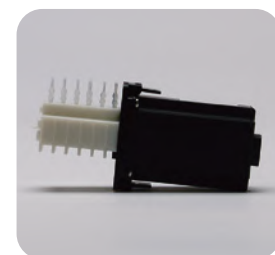
Mouse brain slice on MED64 system

## Basic specification

|                   |   |
|-------------------|---|
| Product name      | Micro tube-pump systems   |
| Model number      | MTIC05-01   |
| Price             | Open price  |
| Dimensions        | Controller W200 x D160 x H41 mm, Base-unit (with driving-units) W205 x D192 x H53 mm  |
| Serilization      | Only base-unit is autoclavable  |
| System components | Controller (1), Driving-unit (2), MicroUSB cable (2), Base-unit (1), miniUSB cable (1), AC adapter (1)<br>Note that need to prepare a Windows PC.   |
| Options           | <ul style="list-style-type: none"> <li>• Conical tube rack (50mL Size)</li> <li>• Terasaki Holder (Φ35mm Petri Dish Holder, Φ60mm Petri Dish Holder)</li> <li>• Driving-unit ((Maximum 6 driving-units can be connected to controller)</li> <li>• Pump cassette (Consumable)</li> </ul> |

| Model number of drive unit | Flow range (μL/min) | Number of pump cassettes |
|----------------------------|---------------------|--------------------------|
| MTIC06-100-01              | 75 ~ 2000           | 1 unit                   |
| MTIC06-200-01              | 5.0 ~ 300           | 4 units                  |
| MTIC06-300-01              | 2.5 ~ 100           | 6 units                  |
| MTIC06-400-01              | 0.5 ~ 50            | 6 imits                  |
| MTIC06-500-01              | 0.1 ~ 4.0           | 6 units                  |

Connectable up to 6 pump-cassettes



## Disposable casset specification

|                    |                                    |
|--------------------|------------------------------------|
| Model number       | MTIC01                             |
| Dimensions         | W30 X D11 X H36mm                  |
| Discharg pressure  | Max. 100kPa                        |
| Serilization       | Electron beam sterilization        |
| Life cycle         | The total fluid be sent : up to 5L |
| Mounting           | Brick-Stud structure fitting type  |
| Flow rate accuracy | ± 10%                              |

Adaptable tube Inner Φ0.8 to Φ2.5 mm

Pump cassette



Note that the design specifications of our products are subject to change without prior notice, For inquiries, please contact the company.

### ■ Manufacturer



**Icomes Lab Co., Ltd.**

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