

Automated Pick and Collection Tool of Cell Colonies

CELL PICKER



Pickup and Remove Cell Colonies with Complete Freedom



Anyone Can Perform the Pickup Process with Confidence

The process of picking up and removing cell colonies using a pipetter has been automated.

Automation stabilizes the pipetter suction speed and other details that differ between operators.

Simplifies Procedures

Everything from collection of cell colonies to seeding can be implemented with the easy-to-operate software.

The process proceeds smoothly because users can perform observations and record during the pickup process.

Small, Space-Saving Design

The small footprint allows the instrument to be added to laboratories or clean benches where space is limited.

You can watch the
CELL PICKER moving
in the video.



Software Supports Efficient Procedures

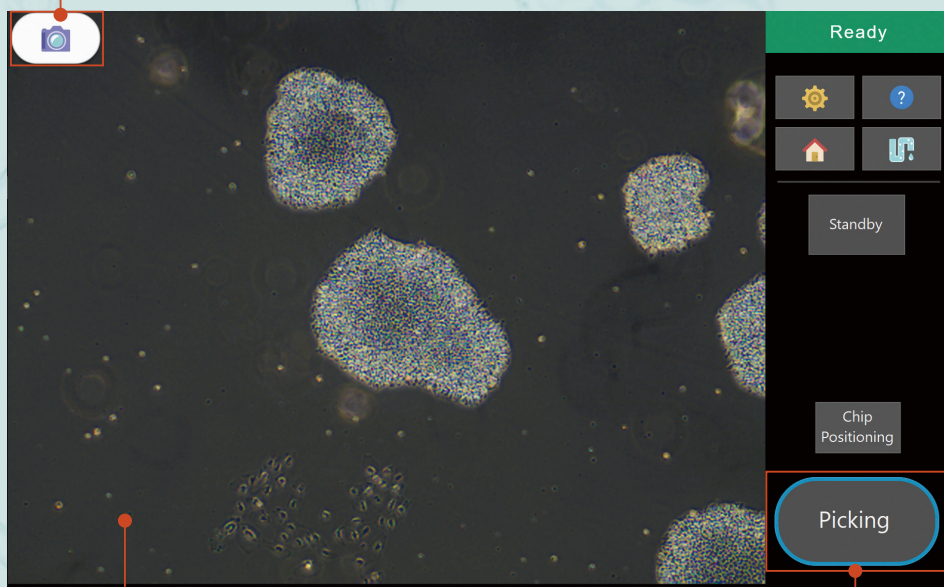
CELL PICKER is operated using special software.

Observation of cells, image recording, and the cell pickup operation are performed from a single window.

Recording

Automatically record images

Images can be captured automatically before and after cell pickup.
Images can also be captured at any time.



Software Main Window

Observation

Microscope images are enlarged for display

The microscope images are displayed in real time.
The user can observe the cells and reliably check on the status of collection.

Operations

Easily implement the pickup process

This part controls the operation of the CELL PICKER.
The buttons that can be selected become enabled step by step for straightforward operation.

Anyone Can Perform the Pickup Process with Confidence

Do you have problems with the troublesome and unstable procedures lurking in the pickup process?

CELL PICKER automates the cell collection, seeding, and pipette tip replacement. This stabilizes the operations of picking up and removing cell colonies, processes that typically rely on an operator's skill. Special software allows the process to proceed with ease.

Manual Operation

Preparation

The user searches under the microscope for the cell colonies to collect, and then marks them with a pen.



- ✗ Marking the back of the container while looking through the microscope is difficult.
- ✗ Capturing images one after the other is difficult.

Collecting cell colonies and seeding in a new incubator

The user operates the pipetter under the microscope, repeatedly picking up the marked colonies while replacing the pipette tip for each colony.

Observation



- ✗ Working while looking through a microscope for an extended time leads to fatigue.

CELL PICKER

Preparation

Select the conditions (method).



Configurable Conditions:

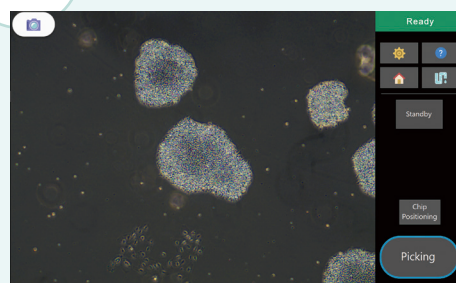
- mode
- check after scraping
- discharging position
- pipetting
- take images

(For details, see page 6)

Collecting cell colonies and seeding in a new incubator

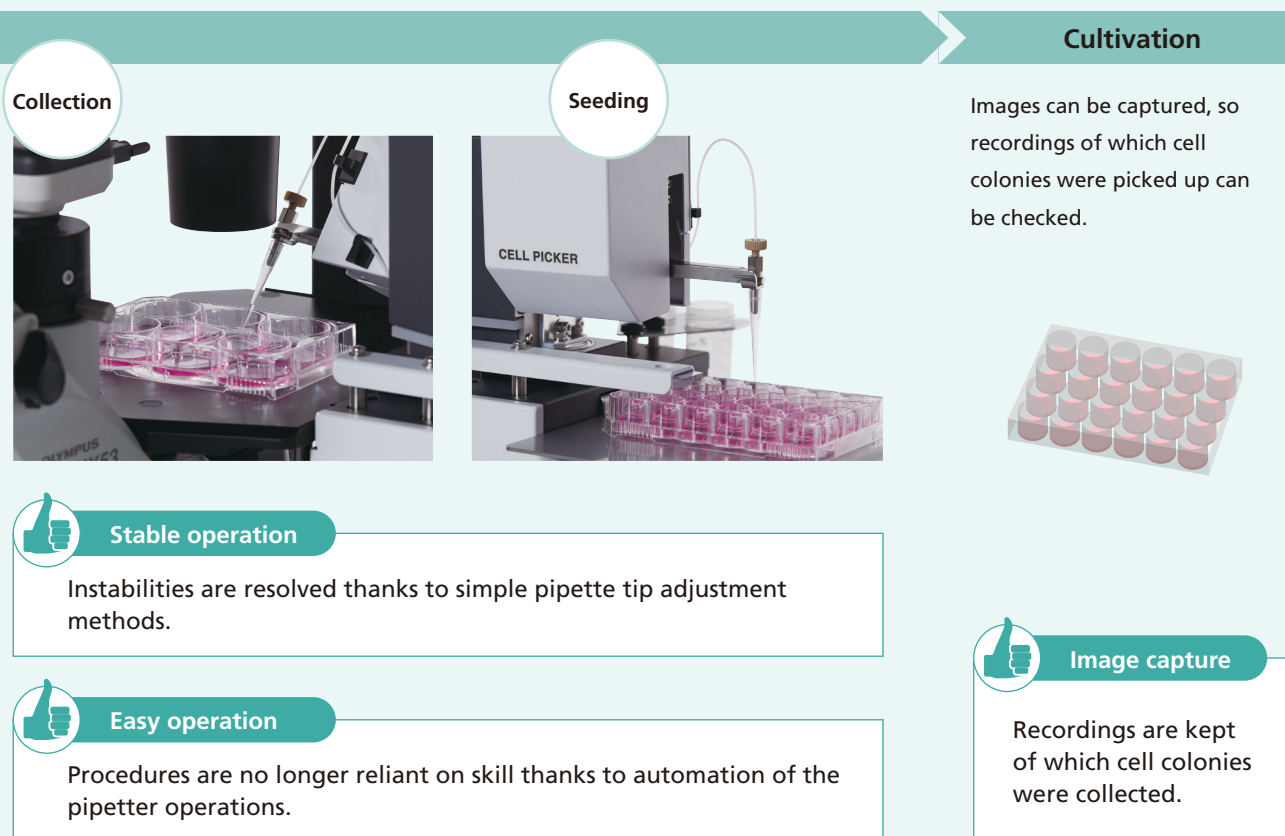
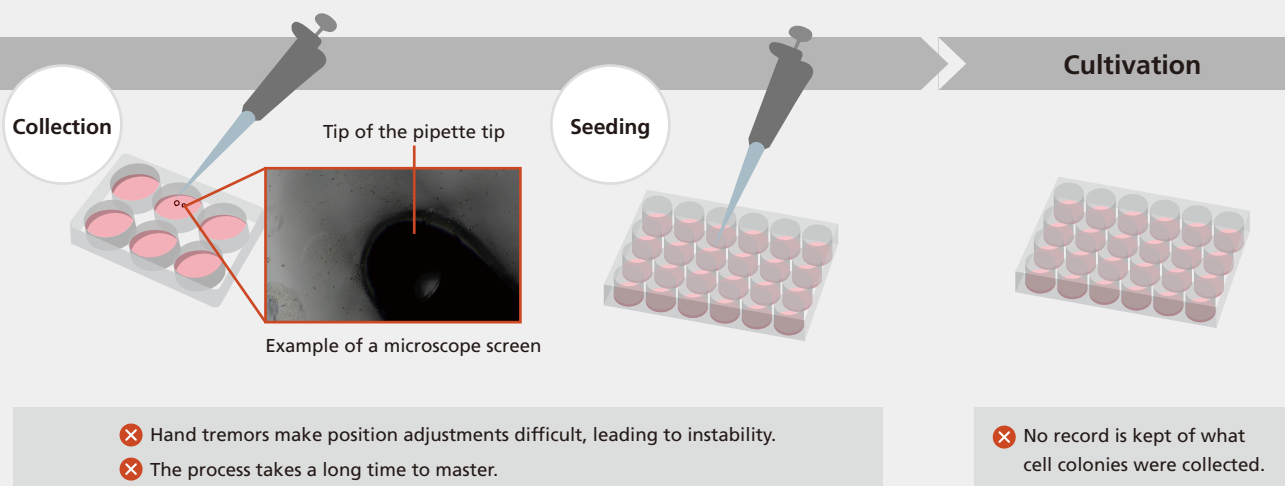
Through the software, finds the cell colonies, records them, and picks them up repeatedly. Cell collection, seeding, and pipette tip acement are automated.

Observation



Simpler process

Burden on the operator is reduced by the monitor window display.



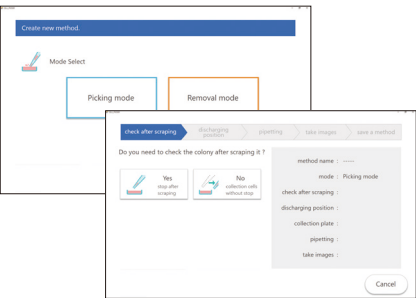
Special Software

CELL PICKER operates by pre-configuring operational conditions by method.

A method is configured for each cell type and user, so the pickup process can be implemented in the same way regardless of who is doing it.

Method Settings

CELL PICKER can be pre-configured. Up to 10 methods can be saved.

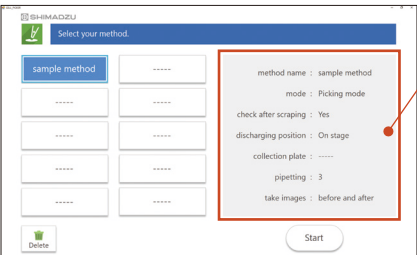


Method Settings Window

Item	Selections and Details
Mode	Picking mode: Collecting and seeding cell colonies Removal mode: Sucking up and disposing of cell colonies
Check after scraping	ON: After collection, the seeding operation is performed without stopping. OFF: After collection, the instrument pauses.
Dispensing position	Select whether to seed within or outside of the microscope's field of view.
Pipetting	Select 1, 2, or 3 cycles of solution discharge and intake after seeding.
Take images	For the automatic image capture setting, select either [before and after], [after collection only], or [no automatic image capture].

Method Selection

The user can select the optimal saved method.



Method Selection Window

Method Details Display

The user can check the method settings details.

Cellular Observation and CELL PICKER Operation

Observation of cells, image recording, and operation of CELL PICKER are performed from the main window.

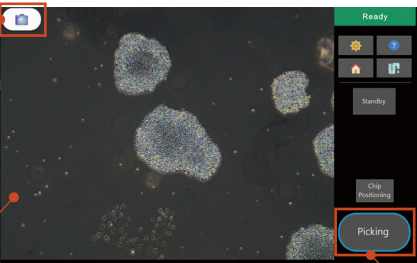
Capture Button

Cellular images can be captured.

[Storage Folder] Date of operation
[Image Name] S/N_Date_Time
Example: 001_20190303_1330.jpg

Microscope Image Display

The microscope images are displayed in a large window.
The user can observe the cells and check on the status of collection.



Main Window

CELL PICKER Control

The buttons that can be selected become enabled step by step for easy, straightforward operations.

Example of CELL PICKER Application

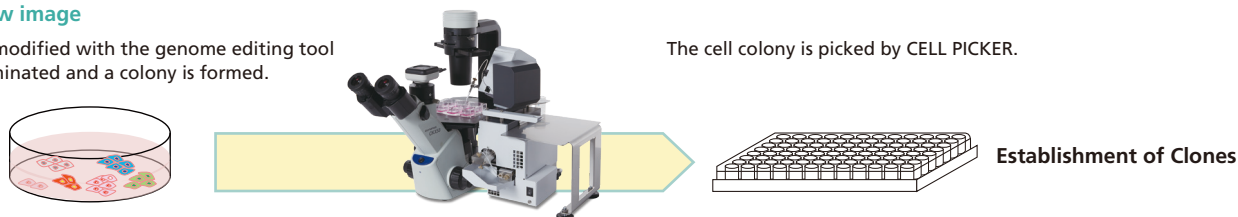
Cloning of Genome Edited Cells via the Cell Colony Separation Method

After genome editing, the cell colonies are picked up and a clone of the target cells is obtained. Presented here is an example of picking HCT 116 cell line, a representative cell type used for genome editing. HCT 116 cells seeded in a 6 wellplate were picked with CELL PICKER and cultured for 6 days to confirm proliferation.

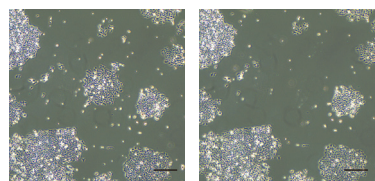
Workflow image

The cells modified with the genome editing tool are disseminated and a colony is formed.

The cell colony is picked by CELL PICKER.



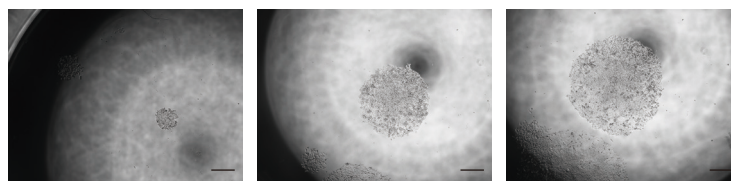
Before and After Cell Pickup



Before Cell Pickup

After Cell Pickup

Cell Proliferation After Cell Pickup



Day1

Day4

Day5

Scale Bar: 200 μ m

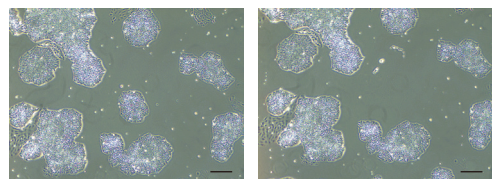
Cell Pickup During the Establishment of an iPS Cell Strain

CELL PICKER is used in the process of picking up the colony formed after the initialized genes are introduced.

In this case, picking up the iPS cell strain colony (strain 1231A3) maintained in culture is implemented with CELL PICKER. The cells were cultivated for 6 days after the cell pickup process. They were then immobilized, and immunostaining was performed.

Expression of the undifferentiated markers Oct3/4 and Tra-1-60 was confirmed. In this way, the iPS cell colony picked up using CELL PICKER was maintained in an undifferentiated state and could evidently be cultured continuously.

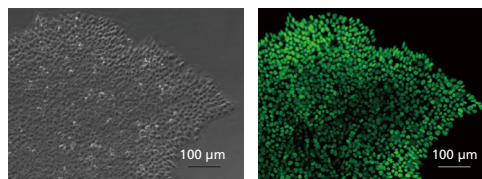
Before and After Cell Pickup



Before Cell Pickup

After Cell Pickup

Results of Immunostaining



Phase Contrast Microscope

Oct3/4

Scale Bar: 200 μ m

Optional Items

CELL PICKER Only Desktop Clean Bench

Special clean bench that can be loaded on a laboratory desk.

- Ideal size for CELL PICKER.
- Utilize CELL PICKER easily due to adoption of a slide table.
- Fun Filter Unit maintains cleanliness when opening the front shutter.



Specifications

Size	: Outside Diameter W740 mm × D650 mm × H890 mm Inside W690 mm × D520 mm × H605 mm
Air flow system	: Vertical air flow system
Room cleanliness	: ISO Class 4
Elements of dust-collecting	: Pre-filter + HEPA filter
Air flow	: 6.4 m ³ / min ± 20%
Power Supply	: 65 W
Weight	: Approximately 75 Kg
Note	: Slide table, Internal plug × 4

CELL PICKER

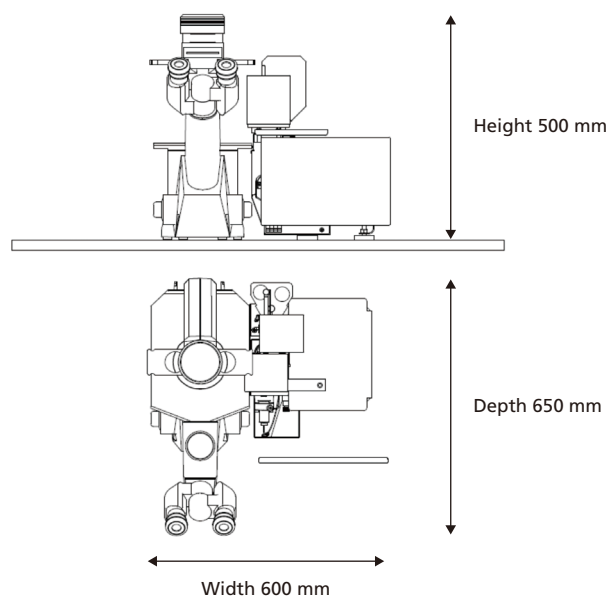
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Specifications

Item	Specifications	
Recommended Microscope*	Olympus CKX53, Shimadzu Rika AE2000	
Recommended Incubator	Cultivation Plates (6-Well)	Falcon S/N: 353046 IWAKI S/N: 3810-006
	Culture Dish (6 cm)	Falcon S/N: 353002 IWAKI S/N: 3010-060
	Culture Dish (10 cm)	Falcon S/N: 353003 IWAKI S/N: 3020-100
Recommended Pipette Tip	QSP Model TW 110-96 RNS-Q	
Suction amount	Approx.10 μ L (Picking mode)	
Weight	CELL PICKER main unit: Approx.7.5 kg	
	Seeding stage: Approx.1 kg	
Size	W280 mm \times D350 mm \times H400 mm	
Power Supply	100 V AC, Frequency: 50/60 Hz, Power consumption: 75 W	
Environment	Operating temperature: 10 to 35 $^{\circ}$ C	
	Operating humidity: 20 to 85 %RH	

*Other microscopes can be accommodated with a special adapter. Contact Shimadzu for details.

Example of installation



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