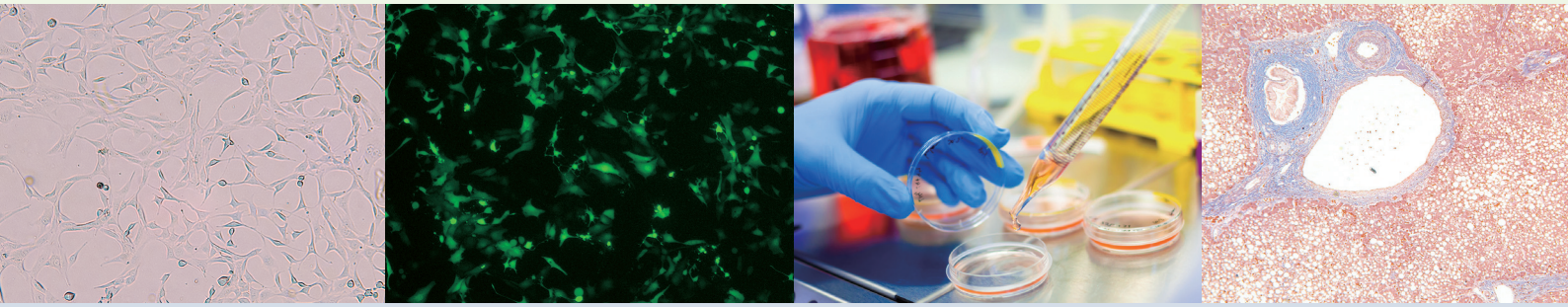
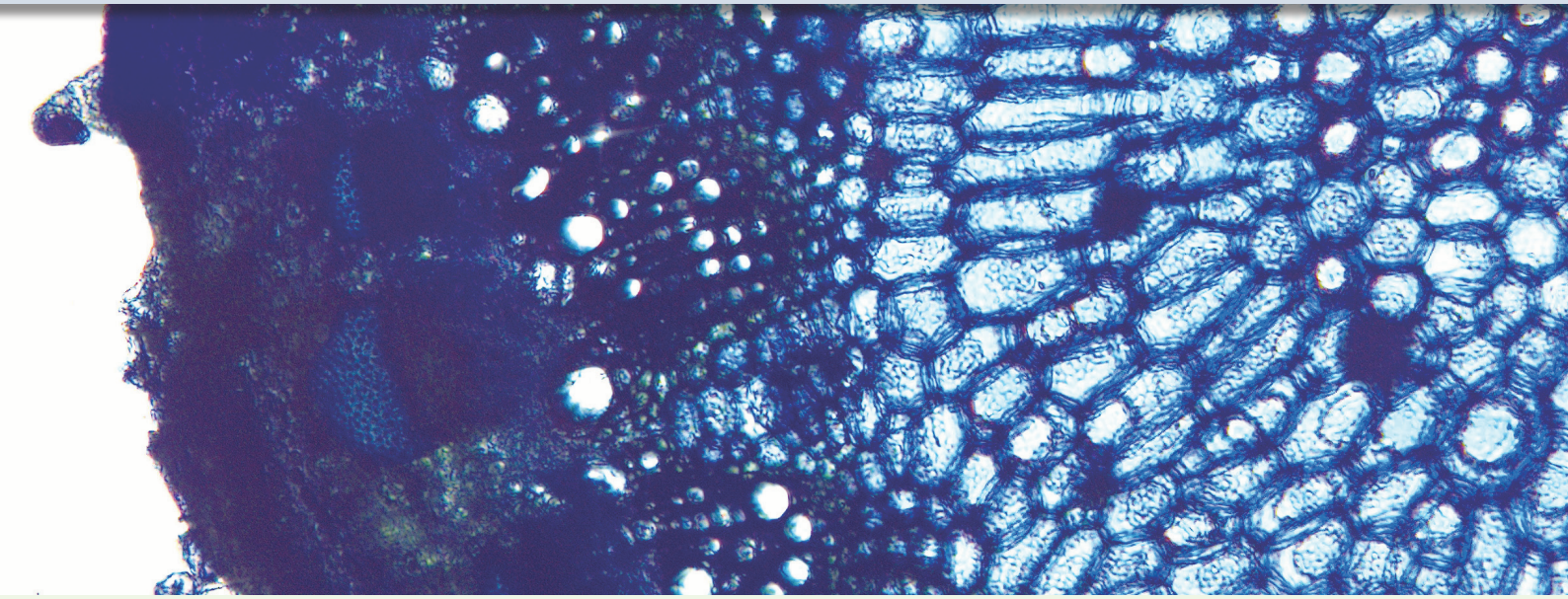


WSL-1850 CytoWatcher II

Compact Live Cell Imaging System



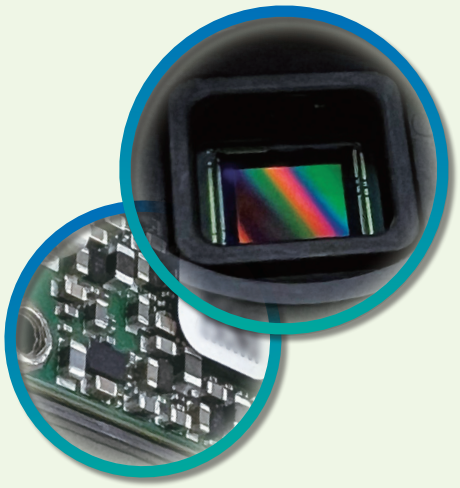
CytoWatcher II is a digital microscope that allows you to image living cells and tissues over long periods of time without damaging them. The space-saving and power-saving design allows it to fit compactly inside a CO_2 incubator, minimizing the impact on the environmental temperature. It is compatible with not only bright field imaging but also fluorescence imaging, and the color imaging with excellent reproducibility is suitable for observing tissue sections and biological tissues.

ATTO
SupportingLifeResearch

Digital microscope ideal for live cell imaging

1 5 million pixel color CMOS sensor that captures cell dynamics

The CMOS image sensor used in CytoWatcher II has improved performance compared to conventional sensors, and is now able to take clearer images than ever before. The sensor's light-receiving area uses a back-illuminated structure and a light-shielding structure, and the pixel size (area) has been increased by 1.6 times, improving sensitivity and saturation characteristics and suppressing noise. In addition, it uses a global shutter method (a sensor method that captures the entire subject at the same time and then outputs it), so even if you take an image of a fast-moving subject, the image will not be distorted and high-precision images that are accurate to the actual situation can be obtained. The resolution remains at 5 million pixels, but the increased pixel size makes it possible to capture a wider area of images. This makes it easier to find and focus on your subject. Operability has been improved and clearer images can now be obtained.

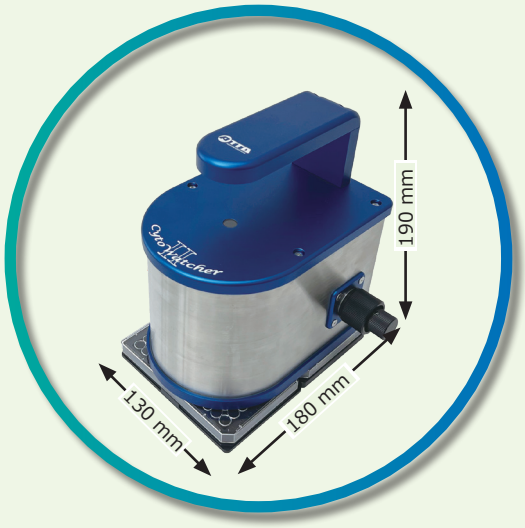


2 Imaging while installed inside the CO_2 incubator

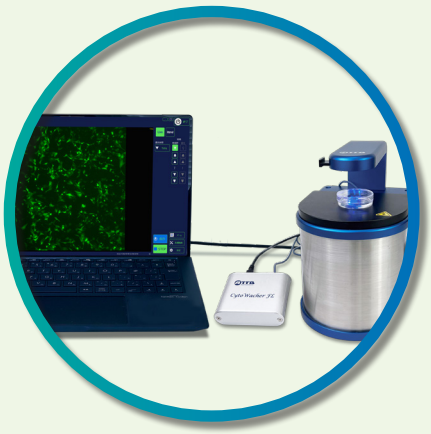
CytoWatcher Ⅱ has a moisture-resistant structure, so you can perform time-lapse imaging for a long period time even if it is installed in a CO_2 incubator, which has a high humidity environment of over 95%. It uses a sensor that does not require cooling even inside the incubator, and has a power-saving design that consumes almost no power by switching to standby mode when not capturing. Only when capturing is the device activated, the light turns on, the camera turns on, and the image is taken. It does not become a source of unnecessary heat and minimizes the impact on the environmental temperature. Multiple devices can be installed within the incubator. Of course, even with the device inside, it does not interfere with normal cell culture environment.

3 Space-saving installation area of B6 size

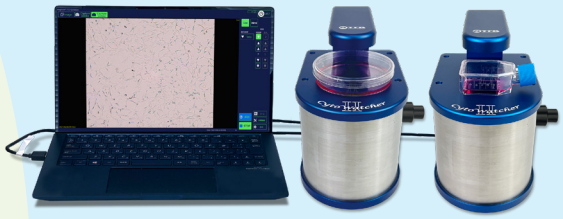
CytoWatcher Ⅱ is a space-saving B6 size instrument with an installation area equivalent to two 96-well plates. It is short and very compact, so it does not take up much space even when installed inside a CO_2 incubator. Although it has a compact body, the stage area is large, and 10 cm dishes, T-75 flasks, and 96-well plates can also be used. It is easy to carry and can be moved and used in various locations. Of course, it is also suitable for use in limited spaces such as clean benches.



4 Just connect to the USB terminal of your PC

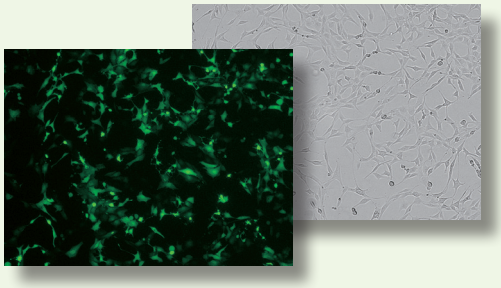


When CytoWatcher Ⅱ is connected to a Windows PC using a USB 3.0 cable, Power is supplied and operation can be controlled using the dedicated operation software “ImageSaver T” . Fluorescent light sources can also be used by simply connecting them to the USB terminal. After adjusting the focus and determining the observation area on the Live imaging screen, preparations are complete. All you have to do is click the start button to start imaging. It is possible to connect two CytoWatcher Ⅱ to one PC and take images at the same timing under the same imaging conditions. This is a convenient function when performing experiments with multiple culture conditions or comparisons with controls.



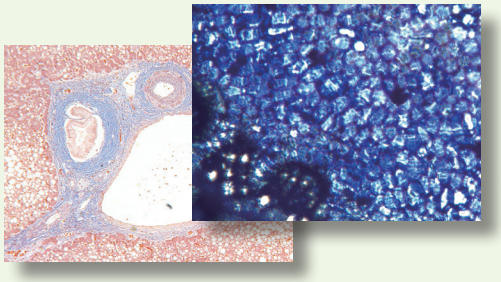
5 Compatible with fluorescence imaging inside living cells

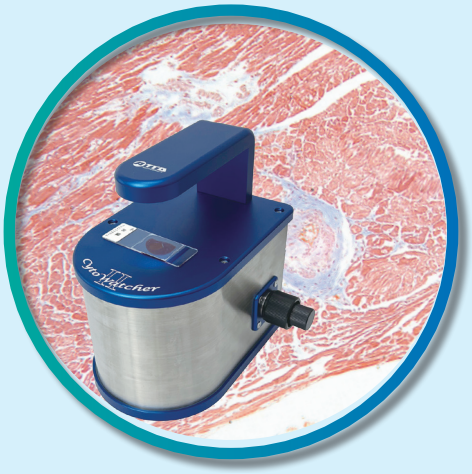
CytoWatcher Ⅱ FL is equipped with a blue LED light source (465 nm) for excitation, a short pass filter (480 nm) for the excitation light source, and a band pass filter (525/45 nm) for fluorescent imaging. Green fluorescence such as GFP in living cells can be taken images over time while they are still alive. Time-lapse imaging of bright field and fluorescence images of the same cell is also possible.



6 Color imaging with a wide view and high reproducibility

CytoWatcher Ⅱ has a wide view of 1.720 mm x 1.439 mm, making it suitable for observing tissues. Not only does it have a large field of view thanks to its low magnification lens, but it also has higher resolution than a stereo microscope, allowing you to capture precise images. The high-performance color CMOS sensor enables color photography with high reproducibility similar to the colors of actual tissues, such as animal tissue sections and plant tissues.





Easy time-lapse imaging with intuitive operation

WSL-1850
CytoWatcher II

Imaging window
There' s an objective lens under the window

white LED light source
(for bright field photography)
Turning on/off/light intensity controlled by PC

LED light source viewed from below

Focus adjustment handle
Adjust the focus by manually turning the handle, allowing for precise adjustments.

5 mega pixel color CMOS
4 x objective lenses (fixed)
Digital zoom (~16x)

Main body: Moisture-proof structure
Can be used in high humidity environments

WSL-1850-B
CytoWatcher II FL
Model compatible with fluorescence imaging

Filter holder
Equipped with an orange filter, which can be pulled out and used to reduce background during fluorescence photography.

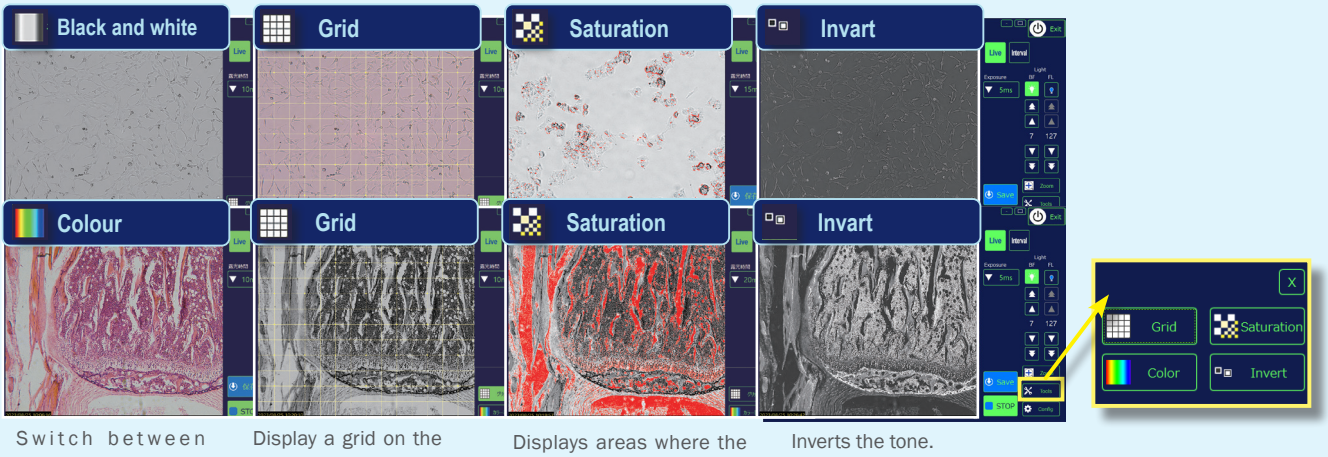
Control unit
Control unit for excitation LED

FLuorescent unit
Moisture-proof structure with built-in excitation LED light source, excitation filter, mirror, and fluorescence filter

Excitation light source: 465 nm
Excitation filter: 480 nm
Fluorescence filter: 525/45 nm

Display images clearly with various display settings

"Color/monochrome", "grid", "saturation detection", and "inversion" displays make it easier to see captured images. From the settings screen, you can adjust "color/white balance", "gain", "sharpness", etc.



Switch between color/monochrome.

Display a grid on the image.

Displays areas where the brightness is saturated in red.

Inverts the tone.

Easy-to-understand settings with a simple operation screen

CytoWatcher Ⅱ has two imaging modes: “Live imaging” and “Interval imaging”. After setting the cells, simply open the dedicated software “ImageSaver T” and start imaging.

Live imaging

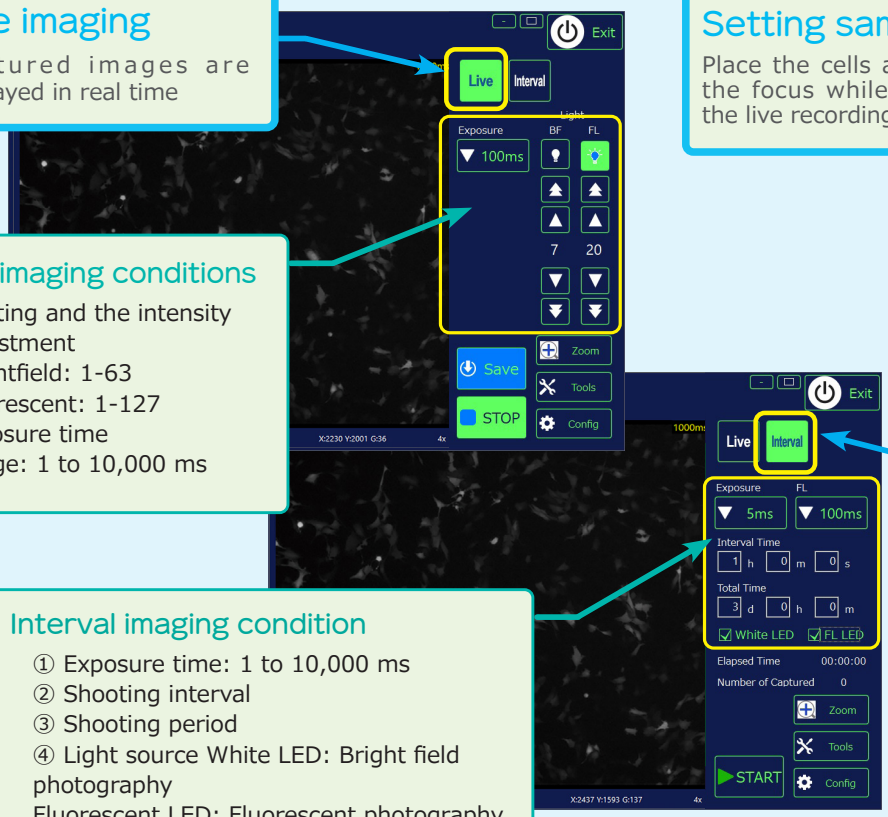
Captured images are displayed in real time

Setting sample

Place the cells and adjust the focus while watching the live recording

Live imaging conditions

Lighting and the intensity adjustment
Brightfield: 1-63
Fluorescent: 1-127
Exposure time
Range: 1 to 10,000 ms



Interval imasing

Automatically capture and save images at regular intervals

Interval imaging condition

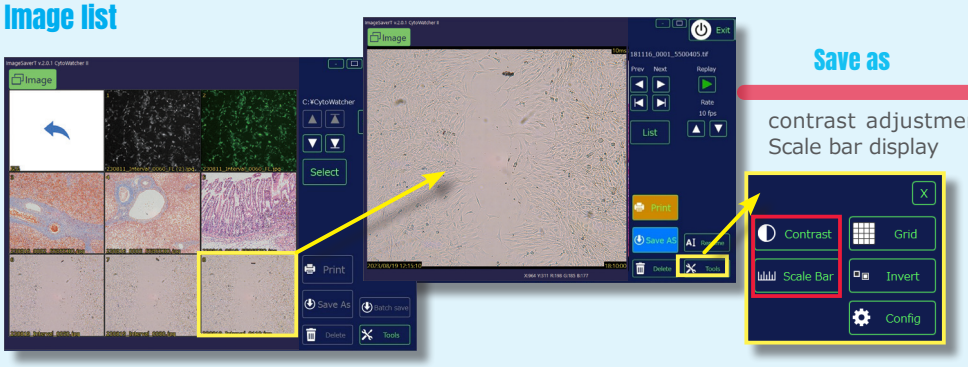
① Exposure time: 1 to 10,000 ms
② Shooting interval
③ Shooting period
④ Light source White LED: Bright field photography
Fluorescent LED: Fluorescent photography
(Simultaneous bright field and fluorescence imaging is also possible)

Export data to various storage formats

The list of saved images will be displayed as thumbnails. You can adjust “contrast”, “scale bar”, etc. and save it under a different name. There are three storage formats: 8bit TIFF/JPEG/BMP.

Image list

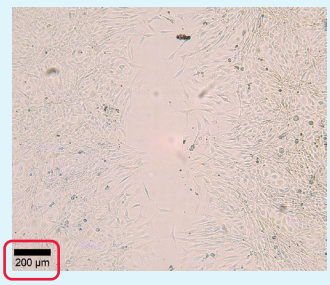
Contrast



Save as

contrast adjustment
Scale bar display

Save image



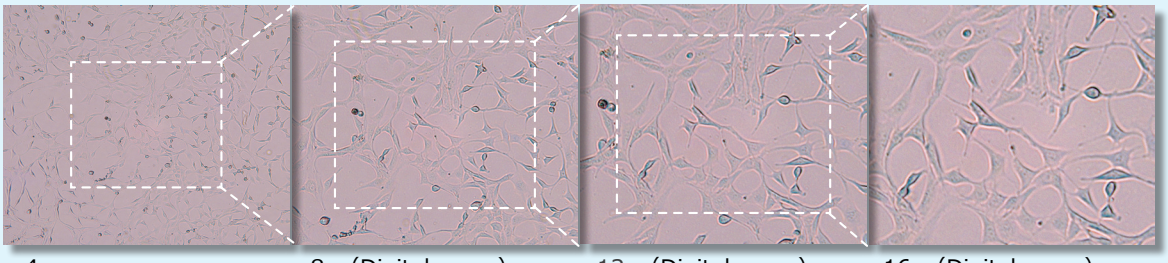
contrast adjustment
Scale bar display

Imaging for various purposes

Observation of fibroblasts

The figure below shows an image of NIH3T3 cells taken with CytoWatcher II in live imaging mode. The area enclosed in a square will be enlarged and displayed using digital zoom.

Condition
Exposure time: 10 ms
Lighting: White LED lighting
Container: φ35 mm dish

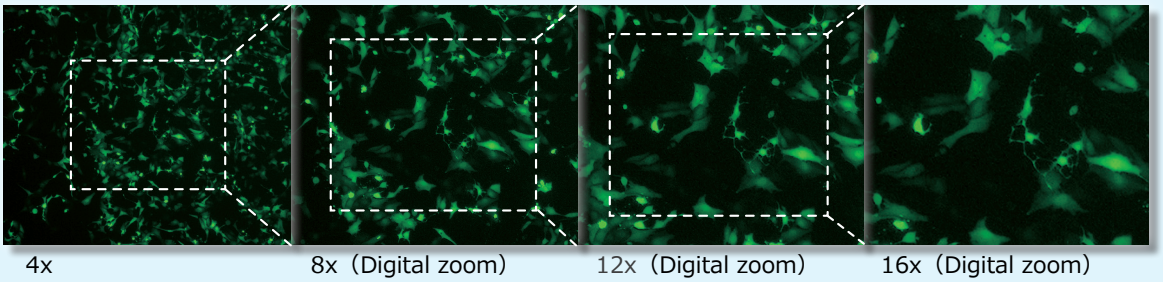


4x　8x（Digital zoom）　12x（Digital zoom）　16x（Digital zoom）

Fluorescence imaging of GFP-expressing cells

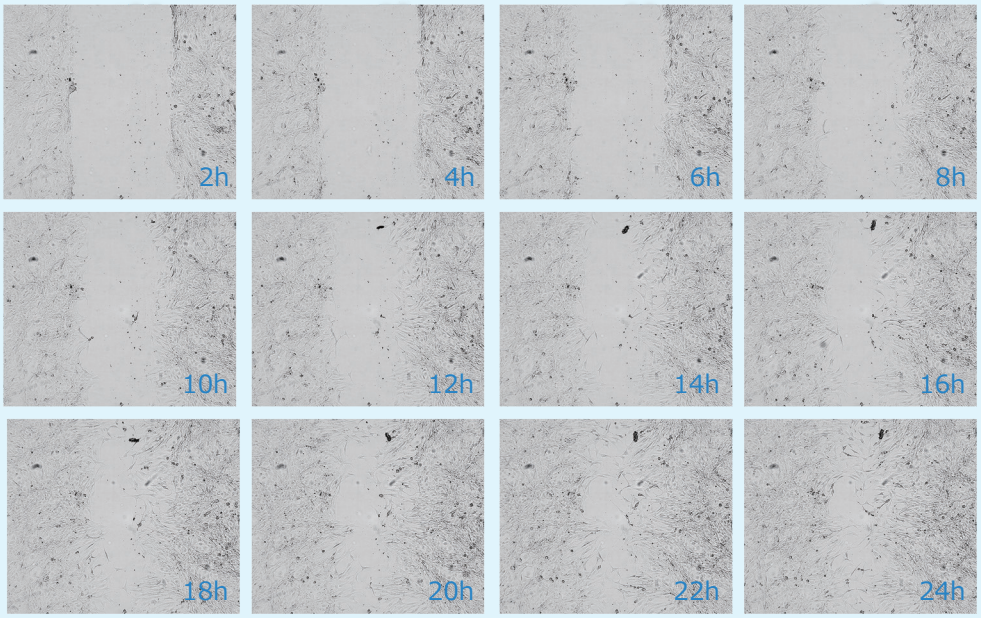
The figure below shows images taken with CytoWatcher II FL of NIH3T3 cells 20 hours after transfection of the EGFP expression vector. The area enclosed in a square will be enlarged using digital zoom. The same cells were also imaged using interval photography 18 to 30 hours after gene transfection. If you are interested in the video, please access it using the QR code.

Condition
Exposure time: 1 s
Interval: 20 min
Period: 2 day
Lighting: Exciting LED lighting
Container: φ35 mm dish



4x　8x（Digital zoom）　12x（Digital zoom）　16x（Digital zoom）

Wound healing assay



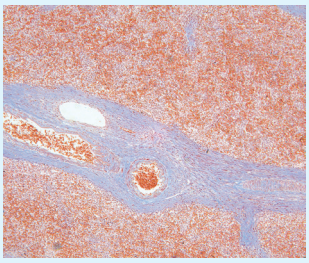
A scratch (wound) was created on confluent NIH3T3 cells using a chip, and the healing process was taken images at 10-minute intervals using CytoWatcher II. The image on the left shows images every 2 hours. You can observe the dynamic movement of cells. Please access the video using the QR code.

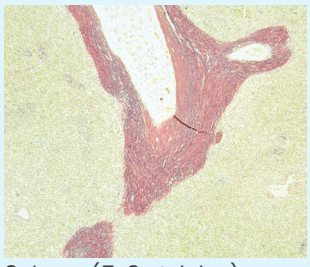
Condition
Exposure time: 10 ms
Interval: 10 min
Period: 1 day
Lighting: White LED lighting
Container: φ35 mm dish

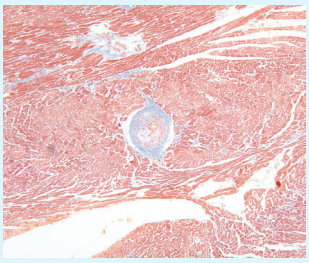
Tissue section stained image

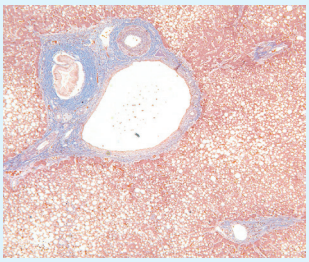
The figure below shows color images of various tissue sections taken using CytoWatcher II in live imaging mode. Color imaging with excellent reproducibility is also suitable for observing tissue sections.

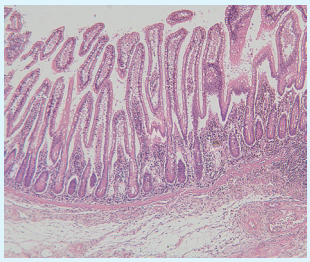
Condition
Exposure time: 10 ms
Lighting: White LED lighting
Slide glass

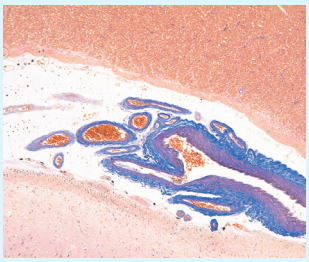

Spleen (Masson trichrome stain)


Spleen （EvG staining）


Heart (Masson trichrome stain)


Liver (Masson trichrome stain)


Intestine （HE staining）

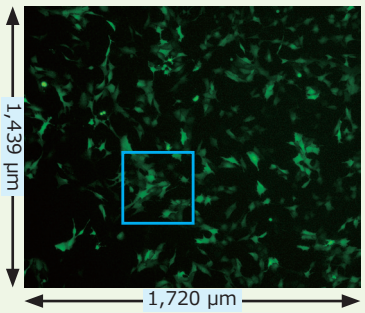

Basal ganglia (Masson trichrome staining)

This is different from conventional CytoWatcher

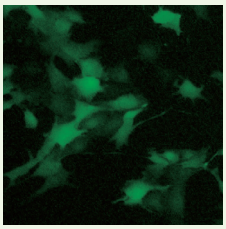
Expands the imaging area while maintaining the same resolution

The figure shows images of GFP-expressing NIH3T3 cells taken with CytoWatcher and CytoWatcher II (left: 4x) and an enlarged image of the boxed area (center). Bright field images are magnified images of different fields of the same cell, similar to fluorescent images (right). CytoWatcher Ⅱ has an expanded shooting area of 1.6 times compared to the previous CytoWatcher. The image resolution remains the same as the previous model, 5 million pixels, but the increased pixel size allows for better sensitivity.

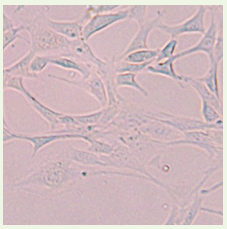
CytoWatcher II



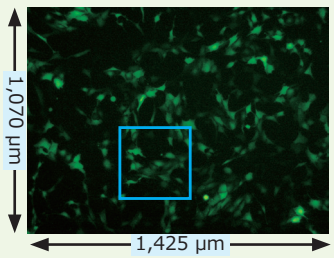
Fluorescent image

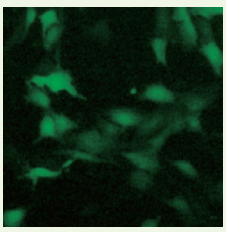


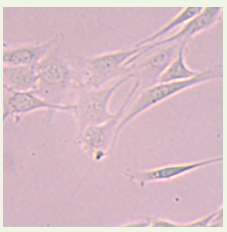
Bright field image



CytoWatcher







*Enlarged bright field image and fluorescent image are different fields of view.

Specification

Bright field imaging
WSL-1850 CytoWatcher II

Fluorescent/Bright field imaging
WSL-1850-B CytoWatcher II FL

Fluorescent
imaging unit

Model	WSL-1850 CytoWatcher Ⅱ	WSL-1850-B CytoWatcher Ⅱ FL
Camera	5 mega pixels / Color CMOS camera（Global shutter method）	
Resolution	2448 x 2048 pixels	
Magnification	4x（Digital zoom : ～ 16x）	
Field of view size	1.720 mm x 1.439 mm	
Focus	Manual (coarse/fine movement)	
Light source	White LED (trans-illumination)	White LED (trans-illumination) Side illuminating epi-blue LED (465 nm)
Filter	—	Excitation: 480 nm shortpass filter Emission: 525 / 45 nm bandpass filter
Moisture resistance	Available at 95%RH of humidity (Usable in CO2 incubator.)	
Software	ImageSaverTmageSaverT for Windows Capture mode: Live / Time-lapse Save format: 8bit TIFF / BMP / JPEG, Color / Monochrome	
Connection to PC	USB 3.0 × 1	USB 3.0 Type-A x1 and USB 2.0 (or 3.0) x1
OS	Windows 10 / 11（64/32bit）	
Language	Japanese/English　Switchabe with ImageSaverT software	
Size, Weight	130(W) x 180(D) x 190(H) mm, 2.5 kg	130(W) x 180(D) x 190(H) mm, 2.9 kg
Power source	USB feeding (bus power), DC5V, 7W	

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