

Specifications

Product name (Code)	Cell3iMager duos2(CC-8300)
Channel	Bright field / Color bright field / Fluorescence
Bright field light source	White LED strobes
Camera	CMOS 4.2 megapixel color
Lenses	Original hypercentric lens (High-speed mode) Original telecentric lens (High-quality mode)
Resolution	4.0μm (High-speed mode) / 0.8μm (High-quality mode)
Auto focus	HW: Laser real-time autofocus SW: Image contrast software autofocus
Image output	24bit color (8bit×3)
Multicolor	3 fluorescence wavelengths
Fluorescent filter cube	DAPI, GFP, Cy3, Texas Red, Cy5
Internal temperature	35°C±2°C automatic adjustment, during the power is on
Placement environment	Room temperature 18-28°C, humidity 80% or less, no condensation
Transport conditions	Packaged: 0-55°C, humidity 80% or less, no condensation
Culture container	6・12・24・48・96・384 microwell plate (Compatible with almost all SBS standard plates) 35・60・100mm dish, slide glass (Optional adaptor required)
Power supply	AC100-240V / 250VA
Size and Weight	W677xD580xH550 mm / 111 kg
Software	Dedicated Cell3iMager software, includes as standard

Designated computer with guaranteed operation  
HP Z4 G4 workstation, OS: Windows 10

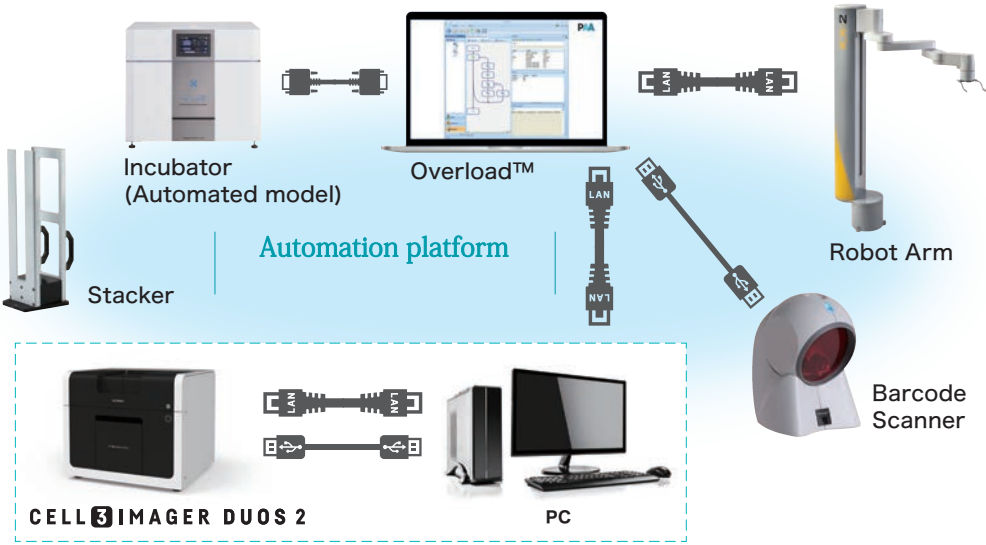
Options

- 35mm dish adaptor
- 60mm dish adaptor
- 100mm dish adaptor
- Slide glass adaptor
- Fluorescent filter cube DAPI
- Fluorescent filter cube GFP
- Fluorescent filter cube Cy3
- Fluorescent filter cube Texas Red
- Fluorescent filter cube Cy5
- Computer, display, keyboard and mouse
- Cell3iMager Analysis software (when adding a PC)
- Microscope Image Import and Analysis Option
- Multi Object Analysis Plug-In
- Neurite Measurement Plug-In
- Deep Learning Plug-In
- Deep Learning Training-tool



Automation (Optional)

SCREEN offers customized solution:  
Integration of Cell3iMager with external devices such as, Barcode scanner, Robotic arm for plate handling (ability to carry out high throughput screening operations), plate stacker and incubator offers complete drug discovery solution. In addition: Automated image analysis of data acquired from upto 200 plates can be automatically processed per day, therefore, simplify the complicated workflow. Please feel free to contact us for more details for customized solutions. We are highly experienced in integrating our imagers with Overload™ and Assay Manager™ provided by PAA in the UK.



The data shown here is as of September, 2020. Specifications and design of the unit are subject to change for improvement.

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SCREEN

Innovation for a Sustainable World



High-throughput Imager for Quantitative Analysis cells cultured in 2D and 3D environment

CELL 3 IMAGER DUOS 2

Bovine pulmonary artery endothelial cells

Sympathetic nervous

Intestinal epithelial organoid

**Fixed stage design** enables static imaging of culture plates

Supports wide range imaging of cells cultured in 2D to **Suspension cultures**

Originally designed lens and illumination system with strength in depth of field and image processing technology. A versatile imaging system that enables

Easy and Accurate Imaging and Analysis of Organoids and Spheroids as big as 1mM

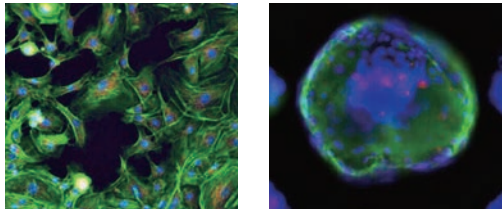
Unique technology enables Cell3iMager duos2 perform label-free quantification of cells and spheroids using various end point measurement assays

Application Examples			
Cell Morphology	Cell Migration (Scratch Assay)	Stem Cell Marker Analysis	Foci & Plaque Counting
Cell Proliferation	3D Organoid/Spheroid Morphology	Cell Body/Neurite Analysis	Fluorescence Titer Quantification
Cell Viability	Drug Screening 2D & 3D Cell Based Drug Efficacy	Evaluation of Anti-Angiogenics	Transfection/Transduction Efficiency
Growth Inhibition	Drug Activity and Profiling (2D & 3D Spheroid)	Apoptosis Assays	CRISPR Fluorescent Reporter Monitoring
Cell/Colony Count	Growth Rate Monitoring (2D & 3D Spheroid Assays)	Hepatotoxicity Assays	Nuclear Translocation
Multiplexassays: LIVE/DEAD Cytotoxicity	Colony Formation Assay		Reporter Gene Assays
Single Cell Detection	iPS Cell Line Generation		Immuno-Cyto Chemistry
Routine Quality Monitoring	iPS Cell Characterization		DNA Synthesis
Cell Adhesion/Extension	iPS Cell Differentiation		Biomarker Quantification
Single Cell Cloning	Embryoid Body Morphology		Cell Cycle & Mitosis
Hybridoma Cell Culture			



Multicolor Fluorescence Imaging

Cell3iMager duos2 is a multicolor fluorescence imaging system. Up to 3 colors of LED fluorescent filters can be mounted for multicolored imaging, DUOS can perform automated imaging using Bright field and 3 colors of fluorescence



Bovine pulmonary artery endothelial cells

Intestinal epithelial organoid

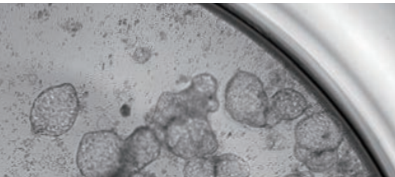
5 types of Fluorescent filter cube lineup				
Fluorescent filter cube	Excitation wavelength (nm)	Dichroic (nm)	Fluorescence wavelength (nm)	Reagent examples
DAPI	377/50	409	447/60	DAPI, Hoechst
GFP	472/30	495	520/35	GFP, EGFP, FITC, AlexaFluor®488
Cy3	531/40	562	593/40	Cy3, DsRed, PI
Texas Red	562/40	593	624/40	Texas Red, AlexaFluor®568, AlexaFluor®594
Cy5	628/40	660	692/40	Cy5, AlexaFluor®647, AlexaFluor®660

High-quality mode and High-speed mode Scan 96 wells in less than 60 seconds

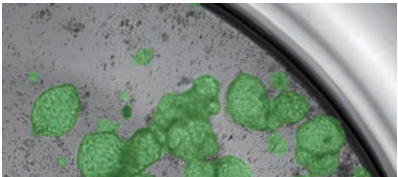
Equipped with two types of lenses, High-quality mode (resolution: 0.8 μm) and High-speed mode (resolution: 4 μm). A variety of endpoint measurements can be conducted, including single-cell cloning, colony formation in adherent cultures, and quantification of spheroid and organoid growth. In High-speed mode, the entire 96-well plate is imaged in less than 60 seconds, and the analysis is completed in about 30 seconds. (For a 384-well plate, imaging is less than 70 seconds)

Reduced Meniscus

The in-house developed hypercentric and telecentric lenses enable uniform and high-quality imaging of whole-well, and accurate quantification of cells growing at the edges of the wells.



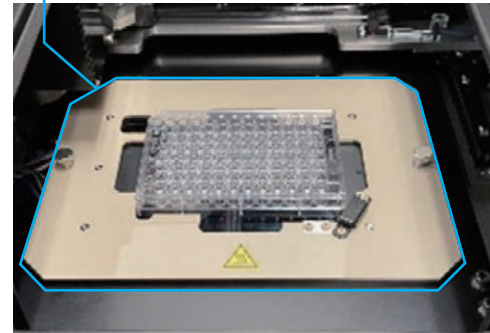
Intestinal epithelial organoid (BF)



Intestinal epithelial organoid (Segmented area)

3D Cultured Cell Imaging (Gel culture / Suspension culture)

Fixed stage design for static imaging of culture plates



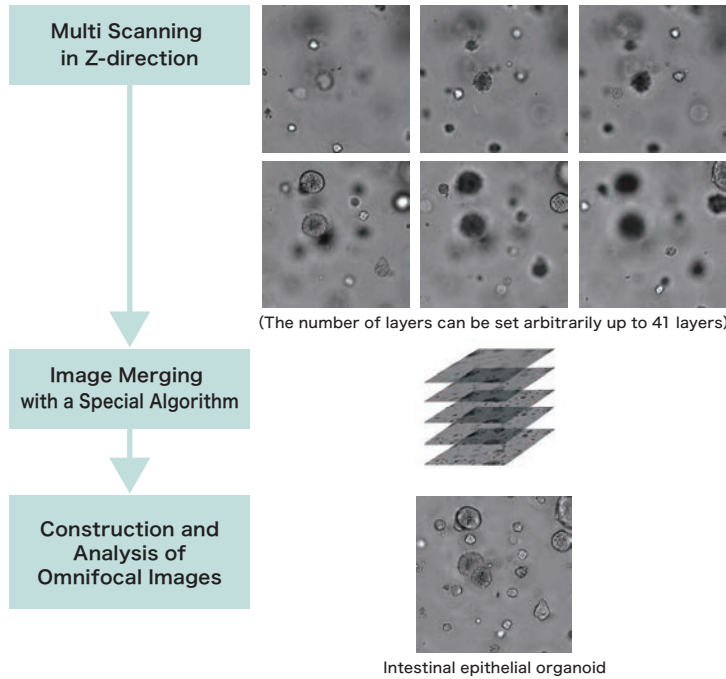
Since the microwell plate does not move laterally during imaging, therefore, the sample does not sway> This unique design helps accurate imaging and quantitative analysis not only of cells/spheroids in gel culture but also suspension culture

In addition, it is equipped with a uniquely designed lens and lighting with a deep depth of field that is ideal for 3D cultured cell imaging. Samples that are thick in the Z-axis direction, such as organoids and spheroids, can be imaged (Depth in the Z direction: up to 2 mm).

Z-stacking and Focus synthesis

Objects scattered in the Z-axis direction are automatically imaged while changing the focal position. Focus synthesis is performed using the image processing technology\* developed by SCREEN.

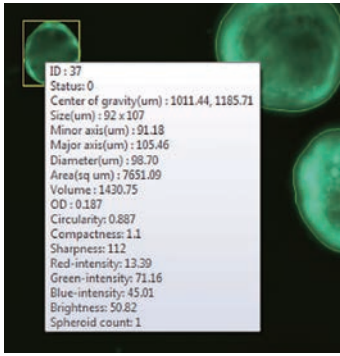
\*Patent pending



(The number of layers can be set arbitrarily up to 41 layers)

Intestinal epithelial organoid

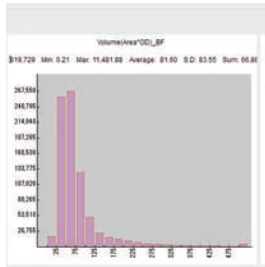
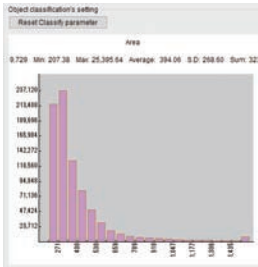
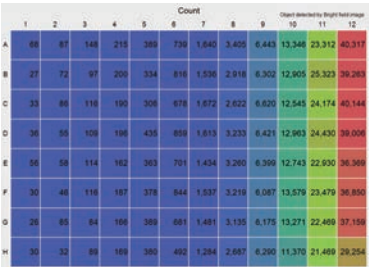
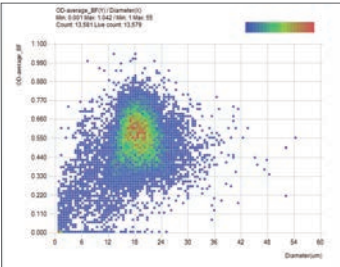
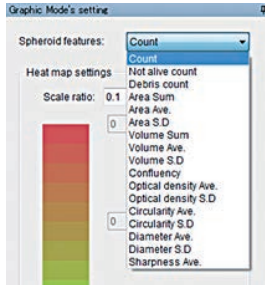
Dedicated Software with versatile functions is included as standard



Left-click on an object to see various endpoint analysis parameters such as diameter, area, pseudo-volume, roundness, edge sharpness, and brightness.

Various endpoints can be measured using a range of analysis parameters

- ☐ Count — Cell / Colony / Live or others / Debris
- ☐ Confluency — Sum, Ave, S.D
- ☐ Area — Sum, Ave, S.D
- ☐ Volume\* — Sum, Ave, S.D\*OD times area
- ☐ Perimeter — Sum, Ave, S.D
- ☐ Intensity — Sum, Ave, S.D
- ☐ OD — Sum, Ave, S.D
- ☐ RGB Intensity — Sum, Ave, S.D
- ☐ Diameter — Ave, S.D
- ☐ Circularity — Ave, S.D
- ☐ Non-Uniformity — Ave, S.D
- ☐ Aspect Ratio — Ave, S.D
- ☐ Edge Sharpness — Ave, S.D



Various Analysis Options

Microscope Image Import and Analysis Option

Quantify objects imaged by third party imaging devices

Deep Learning Training-tool

A tool for customers to create their own Deep Learning model files

Deep Learning Plug-In

AI technology enables advanced and accurate bright-field analysis

Neurite Measurement Plug-In

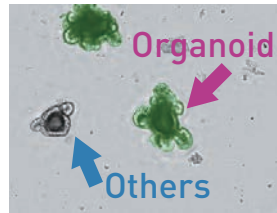
The number of nerve cells and neurite length can be counted separately

Multi Object Analysis Plug-In

Measurement results of multiple objects can be displayed at once

Deep Learning Plug-In

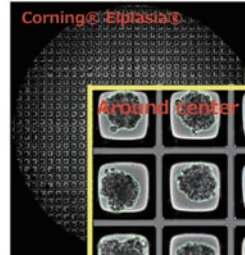
Analysis example 1



Segmentation and quantification of organoids grown above the reference value

Image courtesy of : Prof. Yun Chen, Far Eastern Memorial Hospital, TW

Analysis example 2



Quantitative analysis of spheroids cultured in Microwells. Accurately quantify samples at the dark well edges as well as in the bright center.

Neurite Measurement Plug-In

Cell body area sum and Neurite length

