LIVE CREATIVE INNOVATIVE
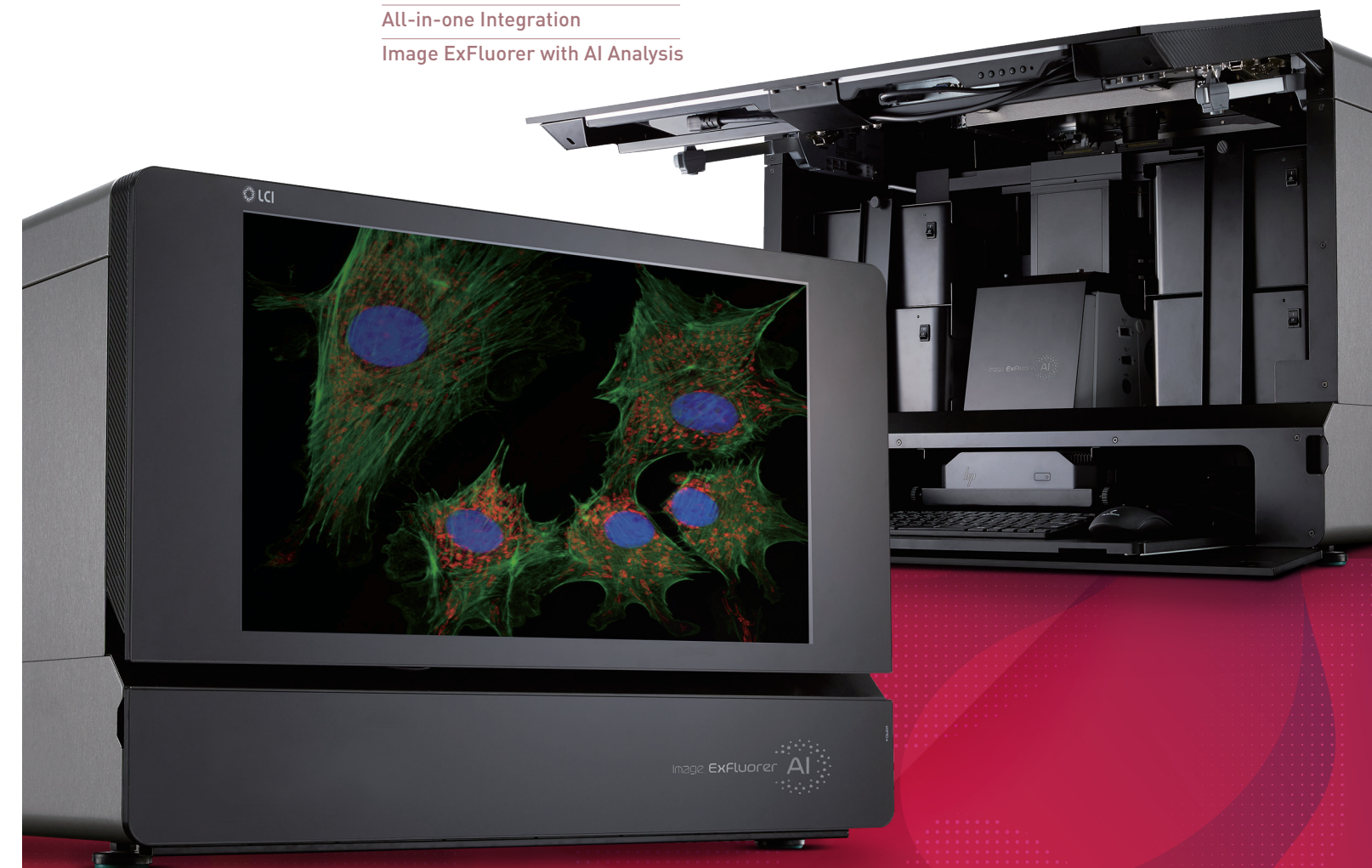
Image **ExFluorer AI**

High-contents Live Cell Imaging System

Live Cell Imaging System

All-in-one Integration

Image ExFluorer with AI Analysis

LCI
Live Cell Instrument

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LCI
Live Cell Instrument

High-contents
Live Cell Imaging System

The Image ExFluorer is a turnkey solution for live cell imaging and analysis platform that enables to observe cellular dynamics over the time with fluorescent microscope & flexible functions.

The advanced level of automated microscopy with high-end components are equipped in Image ExFluorer. The featured options and modules provide flexible scalability to help your research needs with wide range of filters and objectives in fluorescence, brightfield, color brightfield, and phase contracts imaging channels for maximum applications.

Integrated environmental control system allows successful live cell imaging with mimic physiological environment including containment of CO_2, O_2, and humidity by control and monitoring.

The Image ExFluorer with high-contents imaging and analytical tools are highly tailorable and making it easy to evolve your system alongside your research quick and effortless.
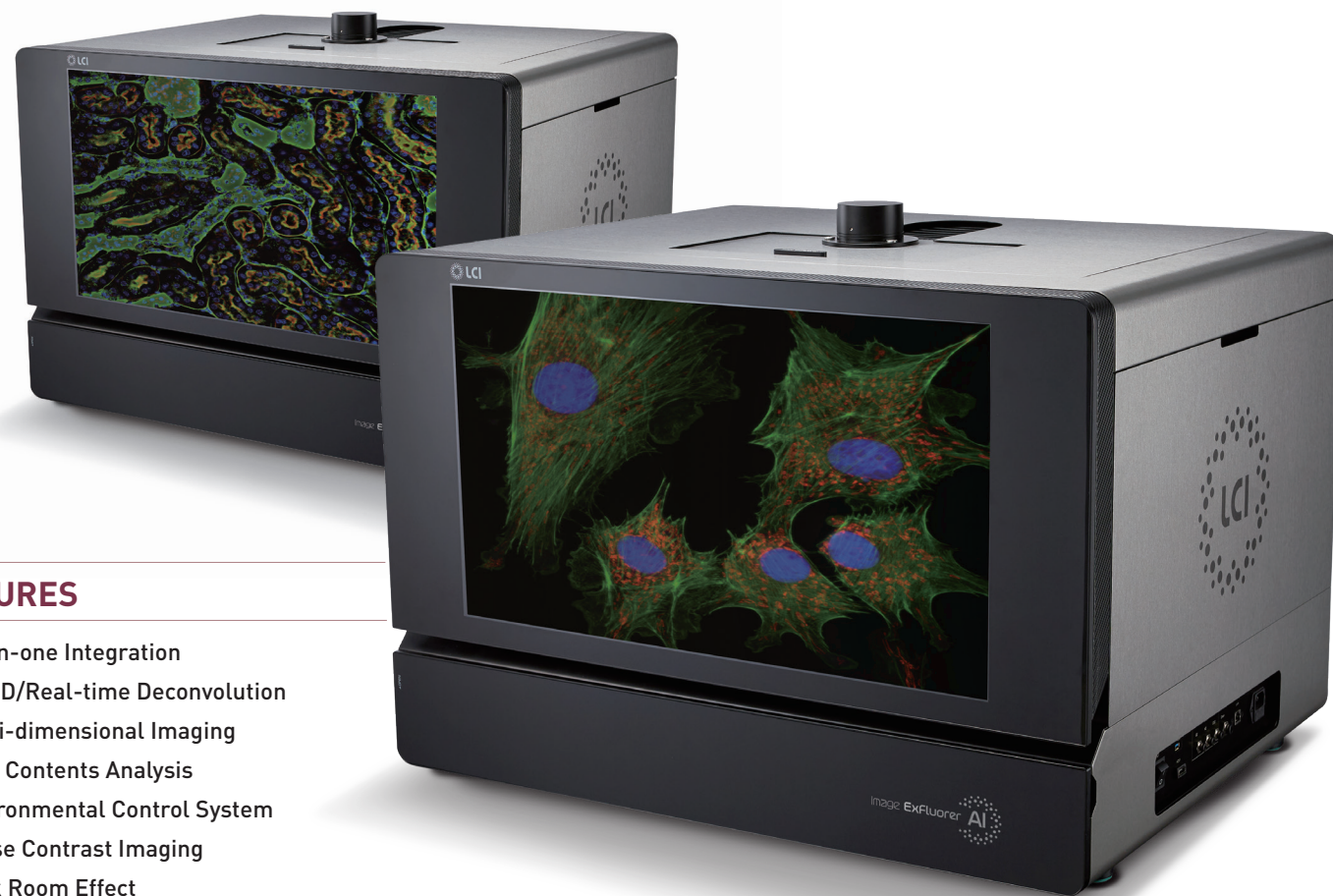
FEATURES

1. All-in-one Integration
2. 2D/3D/Real-time Deconvolution
3. Multi-dimensional Imaging
4. High Contents Analysis
5. Environmental Control System
6. Phase Contrast Imaging
7. Dark Room Effect
8. Measure Glutathione Levels in Living Cells (Optional)
9. AI Image Analysis (Optional)

01

All-in-one Integration

Designed all-in-one integrated system allows researchers to save space as well as handsfree from set-up of a microscope and incubation system.

Microscope   Humidity control

All in one

Incubator

Cumputer
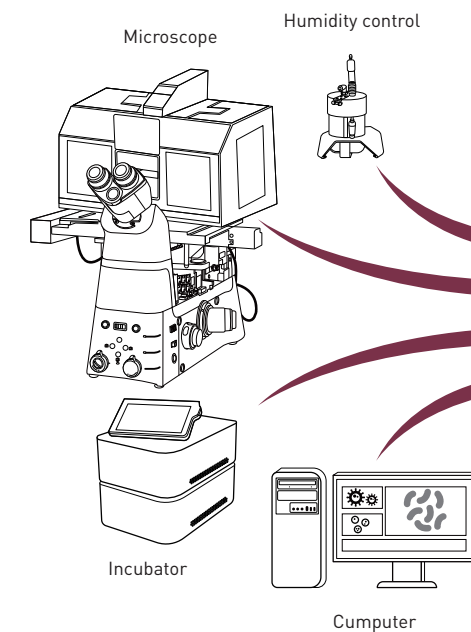
02

2D/3D/Real-time Deconvolution

It offers your 2D/3D/Real-time fluorescence image more vivid and detailed from haze and out-of-focus background. Its integrated GPU system can support reliable & fast process with computational deconvolution process.

Before   After   Before   After
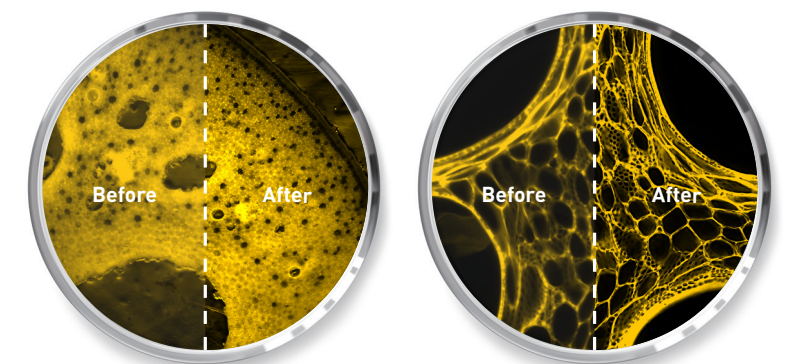
03

Multi-dimensional Imaging

The Image ExFluorer captures time-lapse, multi-point Z-stack, and multi-color image with fully automated multi-dimensional fluorescence imaging
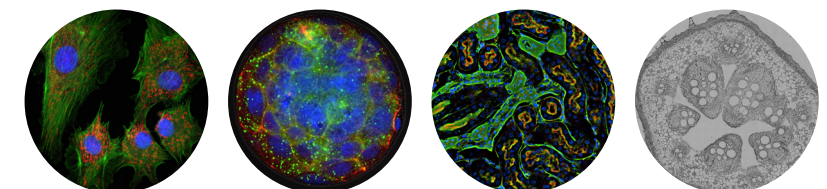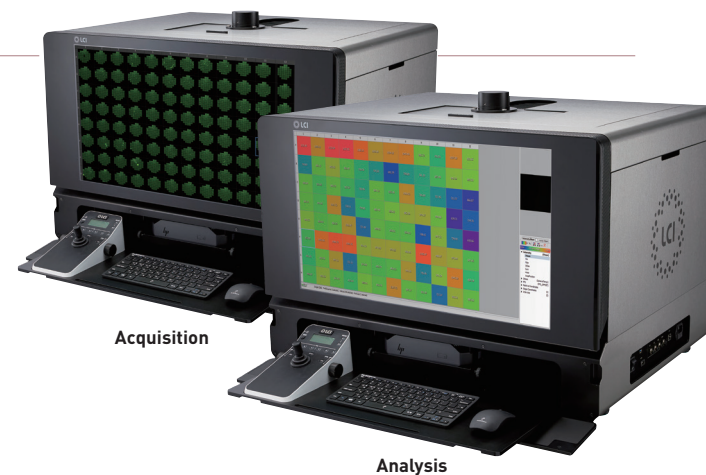
04

High-contents Analysis

The Image ExFluorer takes abundant data and perform high throughput assay combined with automated hardware and acquisition & analysis software. It is compatible with various types of multi-well plates (6, 12, 24, 48, 96, 384, 1536 well) under autofocusing and real-time focus correction

Acquisition

Analysis

05

Environmental Control System

Integrated incubator system in the Image ExFluorer provides precise control of CO_2, O_2, and humidity for long-term live cell imaging.

3hr   **8hr**   **15hr**   **30hr**

06

Phase Contrast Imaging

The Image ExFluorer enables user to analyze living cell's natural state without stained or fixed enhancing contrast and observe dynamic of biological process with record function.

Bright Field ▶ Phase Contrast

07

Dark Room Effect

The Image ExFluorer provides perfectly enclosed darkroom by blocking out the ambient light, leading to prevent a blurry image collected from a fluorescent microscope.

08

### Measure Glutathione Levels in Living Cells (Optional)

The Image ExFluorer provides measuring & monitoring the glutathione levels in living cell, which helps users to select a high-quality cell for research for cell quality such as cell-based therapies and a wide-range of biomedical applications.

Also, it dedicates to development of: Cellular therapy, Cell cultivation, Cell quality measurement kit, Exosome manufacturer, Stem cell culture

Raw Data ▶ Data with technology applied
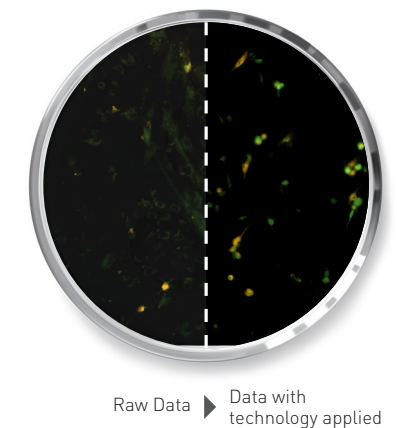
## 09

AI Image Analysis (Optional)
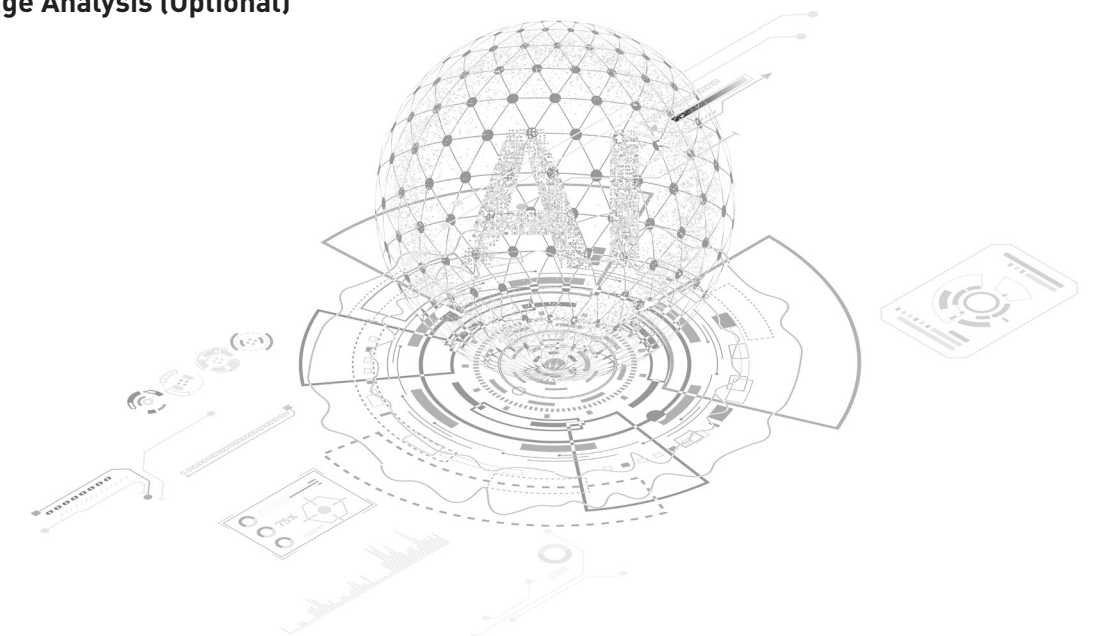
Image ExFluorer
with AI Analysis

Biologists are increasingly seeking an advanced techniques to perform live-cell imaging experiments. In respond to the growing demand, Image ExFluorer proposes AI technology that facilitates data analysis for researchers at the forefront of the bio industry.

The powerful combination of Image ExFluorer and AI analytical software aid to provide researchers with customized solutions and convenience to address your tough tasks in less time.

Thanks to AI analysis, it enables to capture fine details of a variety of cellular assays with flexible fluorescent microscopy. It recovers contrast to signal-to-noise for comprehensive cell reignition and improve data accuracy by leveraging AI training.

Our systems for high-contents imaging and analytical tools are highly tailorable and making it easy to evolve your system alongside your research quick and effortless.

FEATURES

1 Clarify AI
2 Segment AI
3 Predict AI
4 Restore AI
5 General Analysis 3 (GA3)
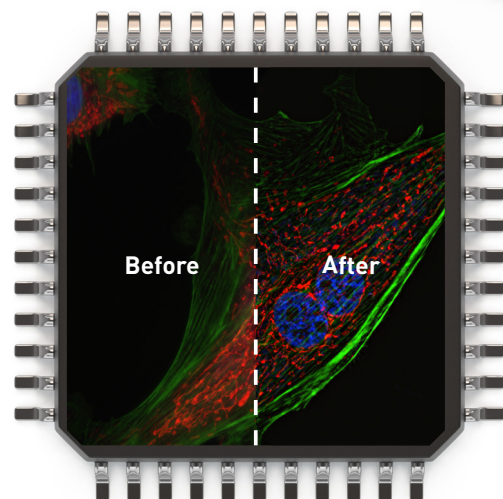
01

Clarify AI

Remove blur from the existing wild-field microscopes to implement the shape of real cells through a pre-trained algorithm by Clarify AI.

The module recognizes fluorescence signal emitted from out-of-focus planes and can computationally remove this haze component from the image automatically.

Before **After**
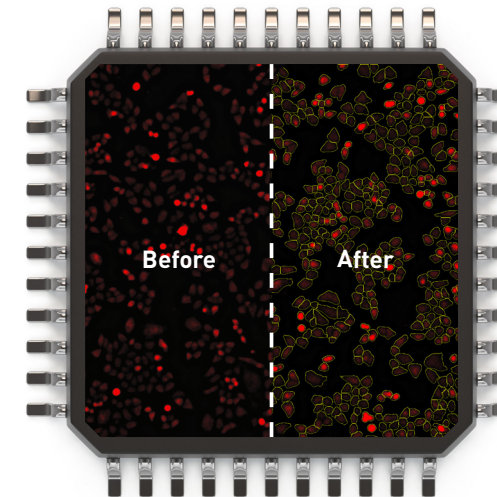
02

Segment AI

It is difficult to define the cell areas by conventional method if there is not much difference between the cell and background signal.

By utilizing Segment AI, the network can learn and apply segmentation to similar images which helps to accurately set up the cell region through various criteria.

Before **After**

03

Predict AI

By learning the certain patterns in two different channels; Brightfield and Fluorescent image, the network can be trained to predict the fluorescent channel by only brightfield image is acquired. This predicted channel by Predict AI enables cell counting or segmentation without stained or harmful light excitation.
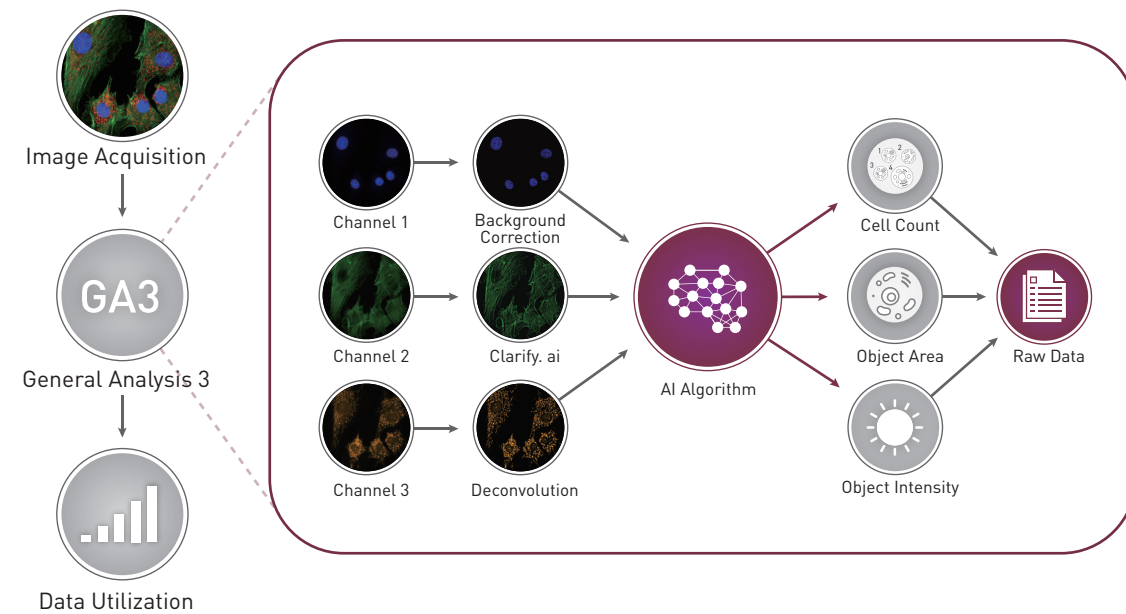
Train **Predict**
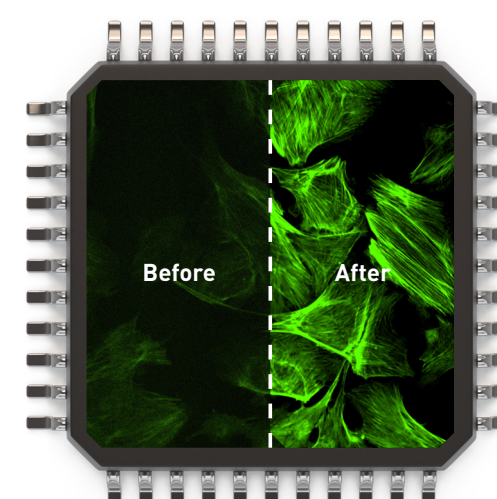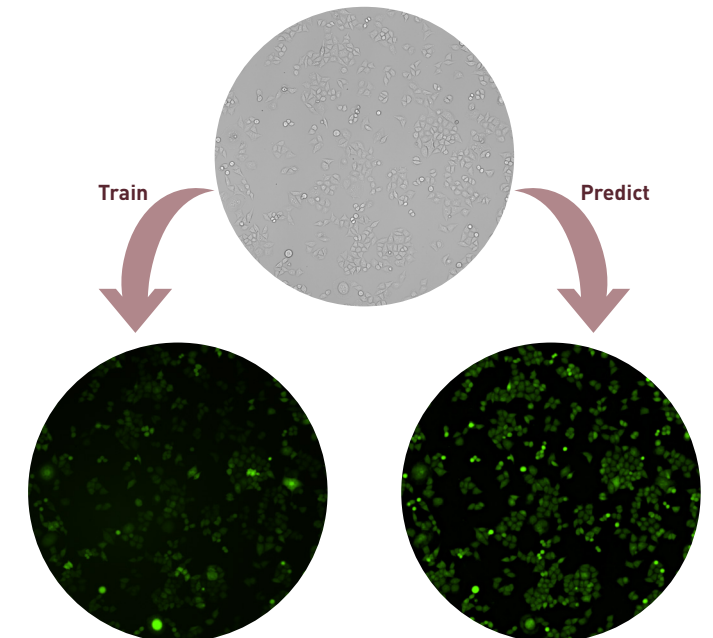
04

Restore AI

Some fluorescent samples express a low signal that is difficult to visualize or segment.

By Restore AI, the network can be trained to restore the details for some underexposed sensitive samples without photobleached or photodamage.

Before **After**

05

General Analysis 3 (GA3)

GA3 creates a playground for integrated process from imaging to analysis and data management. Users can build algorithms that fit their user objectivity by linking desired functions to the image. Through these tasks, a number of images can be performed in an integrated manner according to the specified algorithm.

Image Acquisition

GA3

General Analysis 3

Data Utilization

Channel 1 → Background Correction
Channel 2 → Clarify. ai
Channel 3 → Deconvolution
AI Algorithm
Cell Count
Object Area
Object Intensity
Raw Data

APPLICATION

- Cell counting
- Cell viability
- 3D Cell culture
- Wound healing
- Cytotoxicity
- Neurite outgrowth /process extension
- Signal transduction
- Label-free live cell assay
- Angiogenesis
- Colocalization
- Live cell imaging
- Cell proliferation
- Cell migration and invasion
- Cell culture QC
- Mitosis
- Mitochondrial localization
- Stem cell differentiation
- Phagocytosis assay
- Label free cell counting
- Budding yeast screening

GALLERY
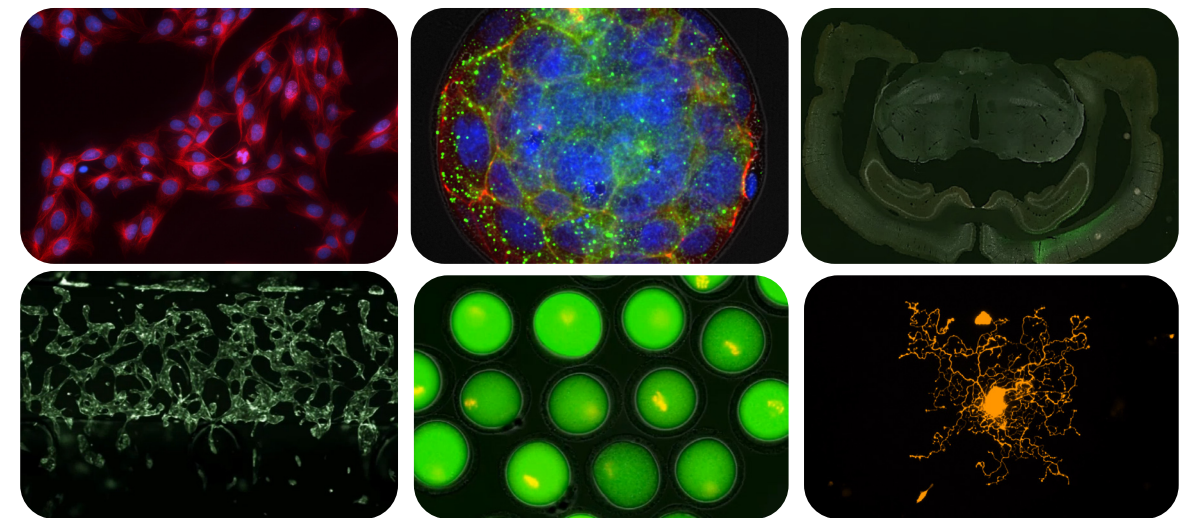
INTEGRATION

High-end components

Scientific-grade sCMOS Camera
LED Controller
Fully Automated Stage Microscopy
Temperature Controller
HP Mini Workstation

Stage-top Incubator
Gas Controller
High NA Objectives
Microscopy Controller
Anti-vibration Platform

Customize your cell imaging needs

01

Objective lens selection

6- position automated objective changer

There are 6 possibilities of position of object

02

LED filter selection

6- position automated filter cube changer or Dye selection chart insert

Motorized epi-filter has motorized shutter and 6-position for filter cube. DAPI, GFP, TRITC is included as standard, and more filters are selectable

Specification

Epi-fluorescence	⊘
Transmitted light	⊘
Phase-contrast	⊘
Imaging camera	5.5MP sCMOS
Objective changer	6-position changer
Filter changer	6-position changer
Autofocus	Image Autofocus+NIR LED source
Plate support	Up to 1536
Light source	White LED > 60,000
Environmental control	⊘
Customization	⊘
AI analysis	⊘ (optional)

Technical Specification

Microscope	Imaging Mode	Epi-Fluorescence, Transmitted light(Simple bright-field), Phase-contrast
	Imaging Application	Fluorescence Imaging, High-Contents Screening, Live-Cell Imaging, 2D/3D/Real-time Deconvolution, Multi-dimensional Imaging (X, Y, Z, T, λ) • Time-lapse • Multi-color • Multi-position • Mosaic(Stitching, Montage) for large field of view
	Objective Lens	PlanApo λ 2 10X(NA0.45), 20X(NA0.75), 40X(NA0.95), 4X(NA0.20), 60xH(NA1.40), 100xH(NA1.45) CFI Plan Fluor DLL 10X(NA0.30), 20X(NA0.50) (with 6-position motorized nosepiece)
	Illumination Source	Epi-Fluorescence: 385mm, High-power White LED/Bright-field, White LED
	Autofocus	Image based Autofocus,
		Real-time focus correction by NIR sensing (PFS)
	Fluorescence Channels	DAPI, GFP, TRITC, CFP, YFP, Cy5 (with 6-position motorized filter cube)
sCMOS Camera	Imaging Camera	5.5MP(2560X2160 pixels), 16-bit gray scale, 0.9 E-read noise
	Pixel Size	6.5x6.5µm²
	Frame Rate	40fps@Full resolution/100fps@2x2 Binning
	Binning Factor	2x2, 3x3, 4x4, 8x8
Incubator System	Imaging Chamber	Multi-well Plate(up to 1536), 35/50/60mm Culture Dish, Chambered Slide glass, Chambered Coverslip etc.
	Temperature Control Range	Ambient +3°C~40°C
	Gas Control Range	CO_2: 0~20%, O_2: 0~99%
	Humidity Control Range	Incubator inside controlled by up to 80~90% relative humidity
PC	Display & PC	27" FHD monitor/ Win10/ i5 8th-gen/ 256GB SSD/ 2TB HDD/ GPU
Etc.	Ambient Operating Temperature	20°C~30°C(68°F~86°F)
	Dimensions	32in x 25in x 22in(WxDxH)/80cm x 63cm x 57cm(WxDxH)
	Weight	120kg

※ The optical parts in Image ExFluorer are sourced from Nikon Instruments

＊ End-user can select other obj. lens for specific imaging application.