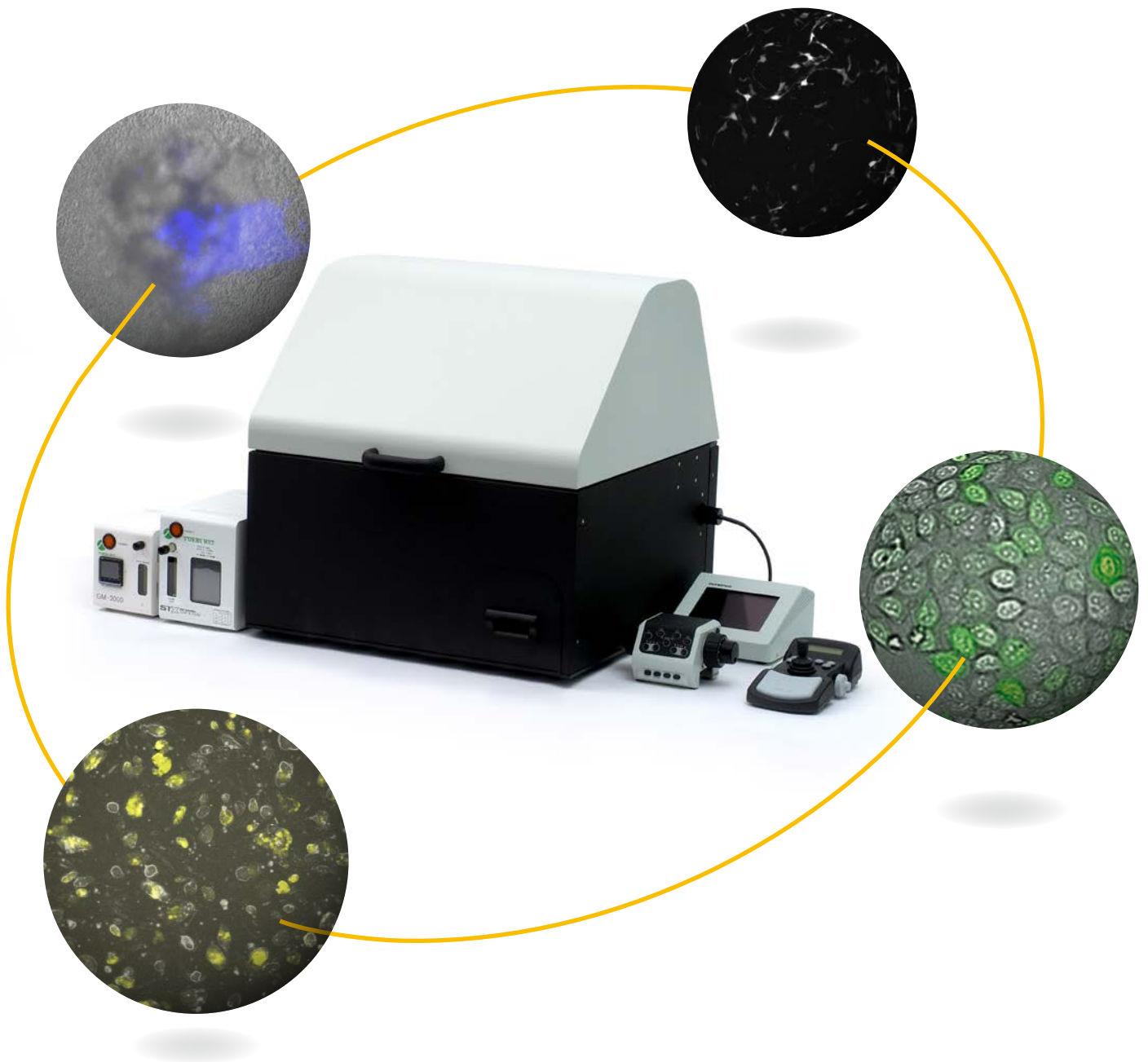
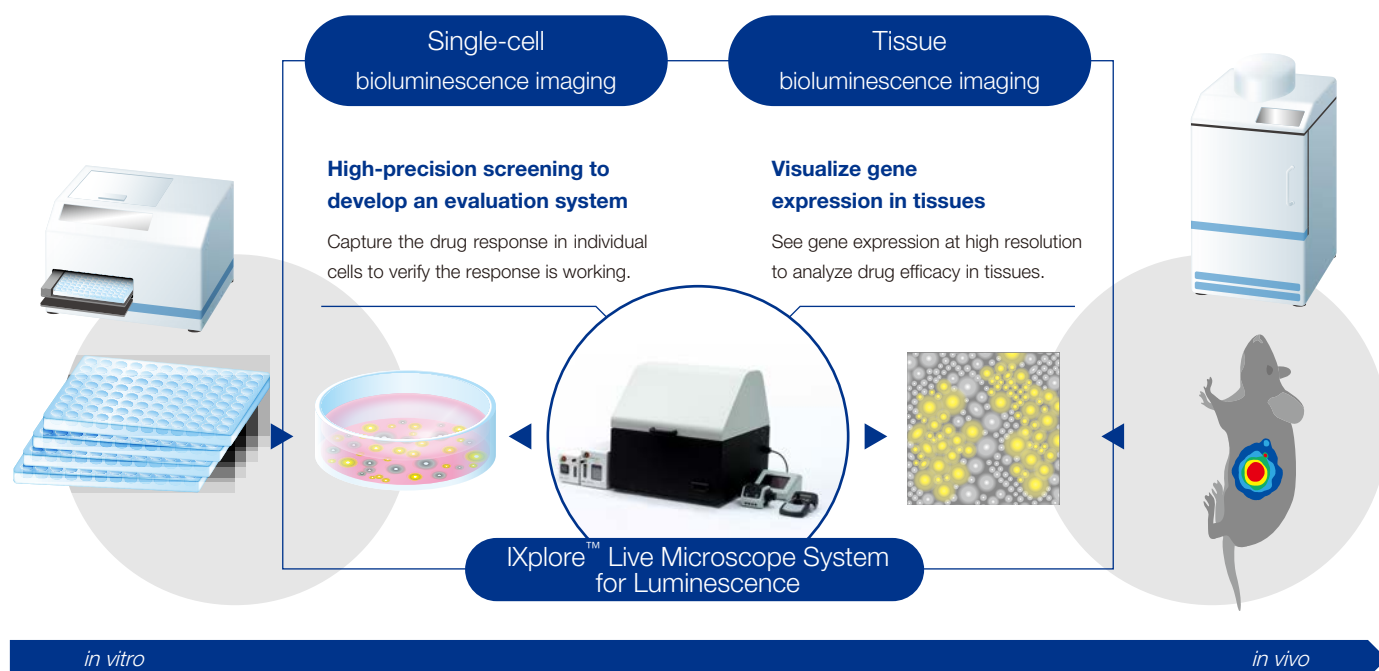


Expand Your Imaging Possibilities with Bioluminescence



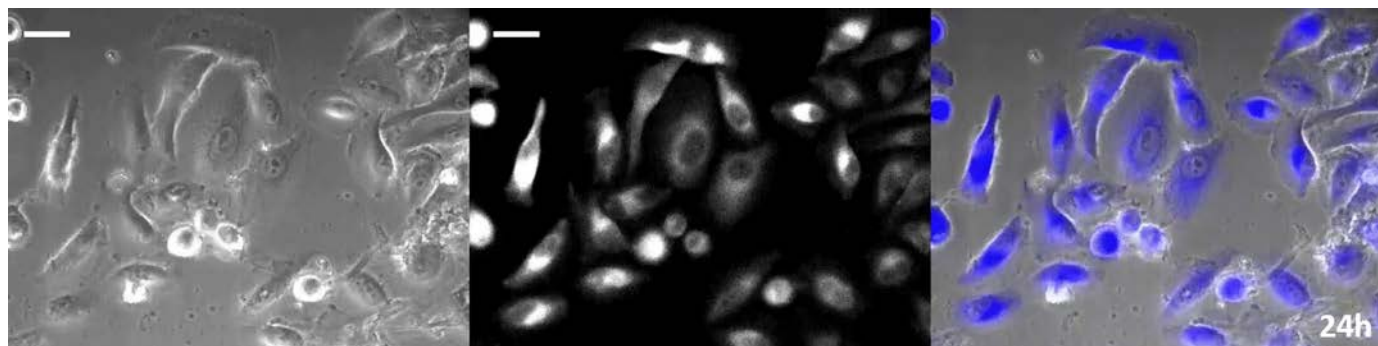
Evaluate Your Experiment with Bioluminescence Imaging

Bioluminescence imaging at the single-cell level enables you to validate preliminary evaluations of luminescence assays using a plate reader, as well as clarify the cause of unexpected results during the experiment. Our IXplore™ Live microscope system for luminescence is optimized for both single-cell and tissue bioluminescence imaging. The microscope comes with the necessary hardware to begin your bioluminescence experiments immediately in a stable, controlled environment.



Stable and Long Time-Lapse Imaging Using an On-Stage Incubation System

An on-stage incubation system provides the proper environment for long time-lapse experiments of live cells and tissues. The system controls the temperature, CO₂, and other environmental conditions to maintain the health of your samples. Bioluminescence imaging does not require excitation light like fluorescence, minimizing phototoxicity and making it ideal for stable, long-term observation of living cells.

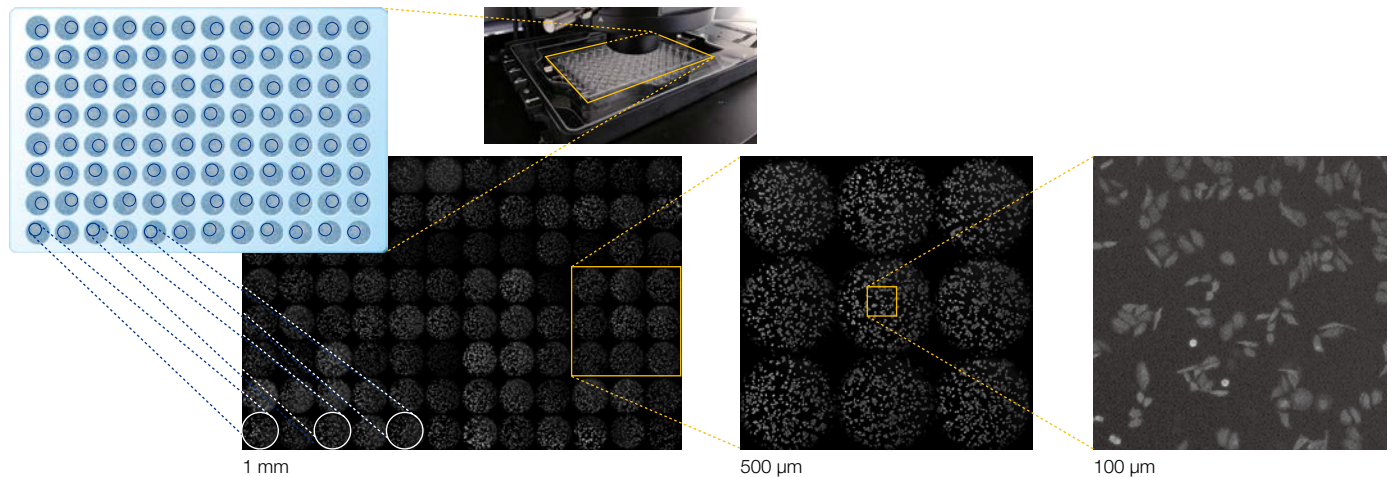


Long-term observation using an on-stage incubator (24 hours: phase contrast / luminescence / merge).
Sample: HeLa cells expressing yellow-enhanced Nano-Lantern (35 mm glass-bottom dish).

Data courtesy of Takeharu Nagai, Mitsuru Hattori, Department of Biomolecular Science and Engineering, Sanken, Osaka University.

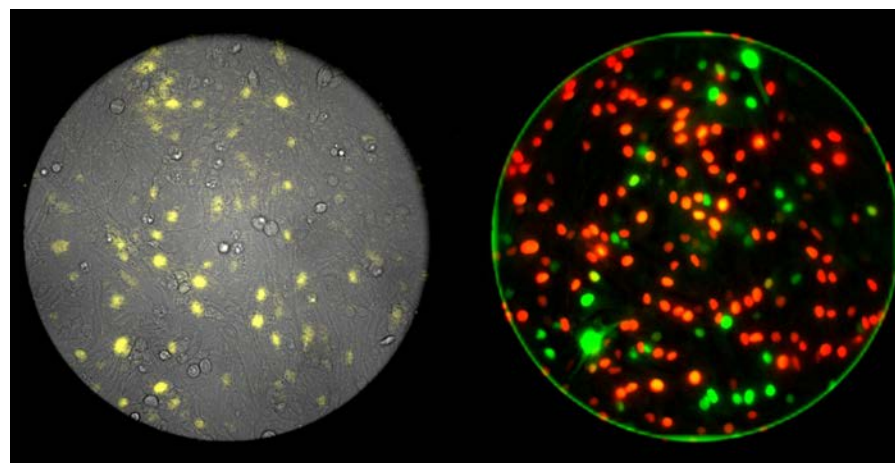
Observing Multiple Samples in a Microplate Using a Motorized Stage

Acquire microplate images automatically over long time-lapse experiments at a resolution that can identify cells. cellSens™ imaging software and a motorized stage enable the system to memorize the XY position of each well, making it easy to capture images of all wells.



Sample: HeLa cells expressing yellow-enhanced Nano-Lantern. Data courtesy of Takeharu Nagai, Mitsuru Hattori, Department of Biomolecular Science and Engineering, Sanken, Osaka University.

Combine Fluorescence, Bioluminescence, and Contrast Techniques



Combine observation methods to see changes at both the cell and gene level at the same time. For instance, observe Ascl1 gene expression during the cell cycle in the self-replication process of neural stem cells. By using a fluorescent ubiquitination-based cell cycle indicator (Fucci), the system enables you to visualize the fluctuations of Ascl1 gene expression in each cell cycle stage.

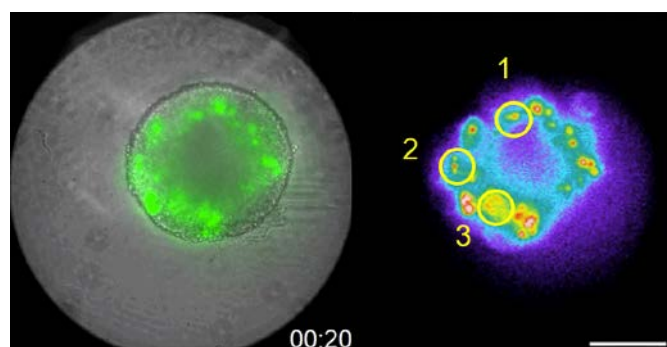
Three-channel single-cell resolution imaging with fluorescence (right; red/green), bioluminescence (left; yellow), and phase contrast (left; grayscale). Data courtesy of Itaru Imayoshi, Research Center for Dynamic Living Systems, Graduate School of Biostudies, Kyoto University; Akihiro Isomura, Ryoichiro Kageyama, Institute for Virus Research, Kyoto University.

Reference: Science. 2013 Dec 6;342(6163):1203-8. doi: 10.1126/science.1242366.

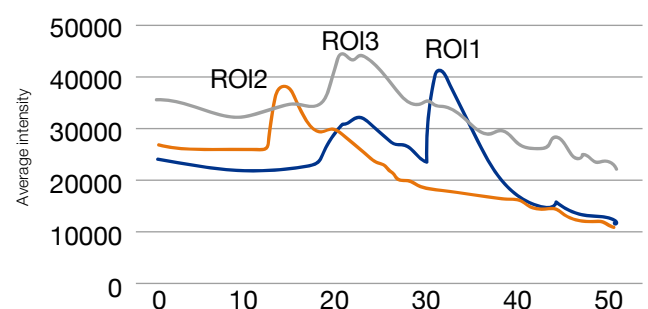
Drug Response Imaging for Efficacy Assessment

The activity of G protein-coupled receptors (GPCRs)—a commonly studied drug target—can be measured using the calcium concentration in a spheroid. High-content screening and analysis using a microplate enables you to analyze changes in concentration and environment conditions, as well as the library of drug candidates.

A stable incubation system lets you observe morphological differentiations in cells and the response to a drug over longer periods of time. Bioluminescence has a better signal-to-noise (SNR) ratio compared to fluorescence, so you can detect even minute responses.



Calcium concentration fluctuation measurement via histamine stimulation in a spheroid.

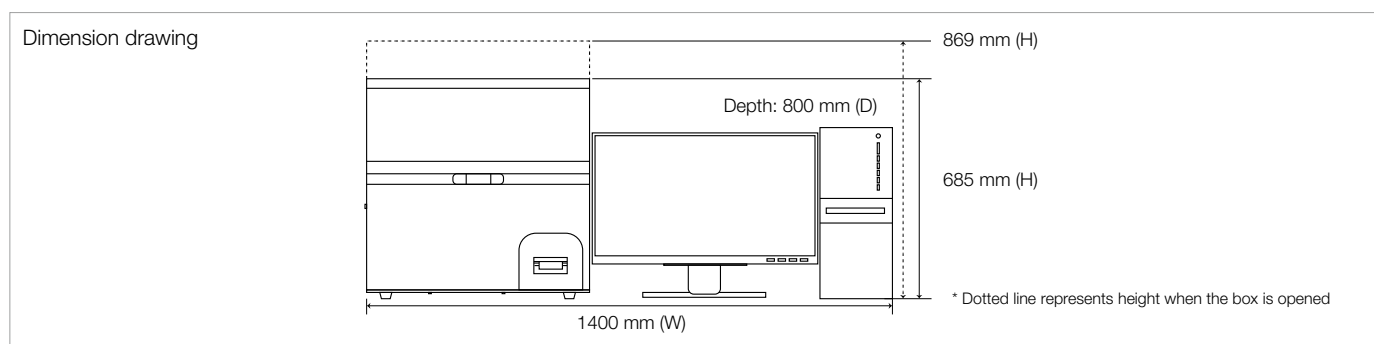


The chart shows the measurements for three regions of interest (ROIs).

IXplore™ Live for Luminescence Specifications

Frame (IX83 Inverted Research Microscope)		Frame	IX83P2ZF—2 Deck
		Nosepiece	Motorized 6-position
		Focusing	Stroke: 10.5 mm, Minimum increment: 0.01 μ m, Maximum nosepiece movement speed: 3 mm/s
Observation Methods			Bioluminescence, fluorescence, phase contrast, brightfield
Epi-Fluorescence Illumination			U-LGPS, LED light source
Transmitted Illumination			High color reproductive LED light source
Motorized Fluorescent Mirror Unit Turret			Motorized 8-position with built-in shutter
Motorized Long Working Distance Condenser	Working Distance and NA		WD: 27 mm, NA: 0.55
	Condenser Turret		3 positions for ϕ 30 mm and 4 positions for ϕ 38 mm
Objective Lenses			UIS2
Imaging Software			cellSens™ Dimension
PC			Microsoft Windows 10 Pro (64-bit)
XY Stage	IX3-SVR - Manual	Olympus	X: 114 mm, Y: 75 mm
	H117P1XD* - Motorized	Prior	X: 114 mm, Y: 75 mm without encoder
High-Sensitivity Camera	iXon Ultra* 888/897	Andor	EMCCD
	ImagEM X2*	Hamamatsu Photonics	EMCCD
Stage-Top Incubator	STXF-IXLM-SET*	Tokai Hit	
Gas Mixer	GM-3000*	Tokai Hit	
Darkroom Box	IX83-LMB-D2*	Tokai Hit	

※ External Products



This system has been developed in collaboration with Prof. Takeharu Nagai, Sanken, Osaka University, Tokai Hit Co. Ltd. and Olympus Corporation. This project was funded by Japan Science and Technology Agency.

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