CELENA® X

HIGH CONTENT IMAGING SYSTEM

*CONVERTING
PIXELS
INTO DATA*

**THE COMPLETE SOLUTION
TO HIGH CONTENT IMAGING
AND ANALYSIS**

THE CELENA® X
# HIGH CONTENT IMAGING SYSTEM

Say hello to the all-new CELENA® X High Content Imaging System, the most affordable solution for rapid high content image acquisition and analysis. Customizable imaging protocols, image-based and laser autofocusing modules, and a motorized XYZ stage simplify well plate imaging and slide scanning. Powerful and flexible software allows you to set up advanced image analysis sequences that can be used to quantitatively analyze numerous cellular features for the simplest fixed cell assays to more complicated, time-lapse live cell assays. With the power to capture and quantify cellular information in both fixed and live cells, the CELENA®X is a valuable tool for life science research as well as drug discovery and development.
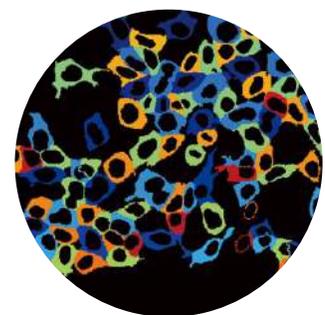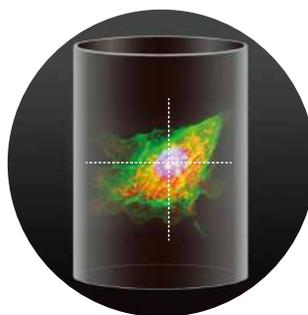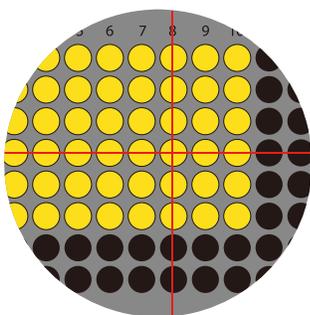
Image acquisition > **Image analysis** > **Data analysis**

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AUTOMATED KINETIC LIVE CELL ASSAYS

The CELENA®X is a fully automated digital imaging system that makes it easy to set up a time lapse imaging sequence for lengthy cell-based assays. Compatible with onstage incubation systems, a wide variety of experiments in physiological and non-physiological conditions can be performed and captured. The fully automated system will automatically focus in on and capture each specified field in each specified well with the preset imaging conditions.

EXPLORE AND ANALYZE

CELENA®X Explorer is the intuitive and easy-to-use interface for the sophisticated CELENA®X. Even scientists new to imaging can set up automated high-content imaging experiments with ease. Images can be processed and analyzed using CELENA®X Cell Analyzer software to produce statistically robust data.

DIGITAL HIGH CONTENT IMAGING AT ITS FINEST
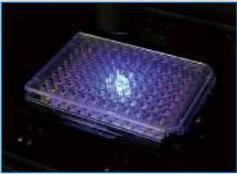
Fully automated plate and slide imaging

- Ideal for kinetic live cell assays, fixed cell assays, and slide scanning
- Motorized XYZ stage, filter cube stage, and objective turret

Interchangeable filter cubes and objectives

- Hard-coated LED fluorescence filters
- Compatible with Olympus and Zeiss objectives
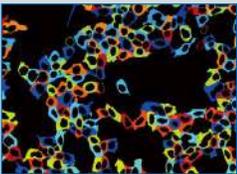
Powerful, easy-to-use user interface

- Simple setup of acquisition channels and parameters
- Seamless integration of imaging and data analysis processes
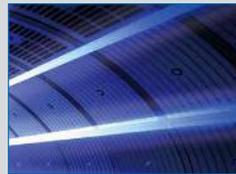
Laser autofocus

- Rapid and reproducible focusing
- Minimized phototoxicity and photobleaching
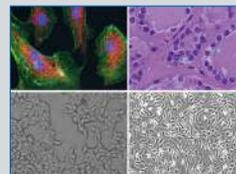
Versatile imaging modes

- Four-channel fluorescence, brightfield, color brightfield, and phase contrast imaging
- Z-stack and time lapse capabilities

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RELEVENT AND REPRODUCIBLE HIGH CONTENT ANALYSIS WITH CELENA® X CELL ANALYZER

With the CELENA®X, image capture and analysis are integrated seamlessly. The powerful and flexible CELENA®X Cell Analyzer allows for the creation and customization of workflows that can be used for the simplest fixed cell assays to more complicated kinetic live cell assays. Cell Analyzer also provides tools to edit and annotate images as well as create videos.
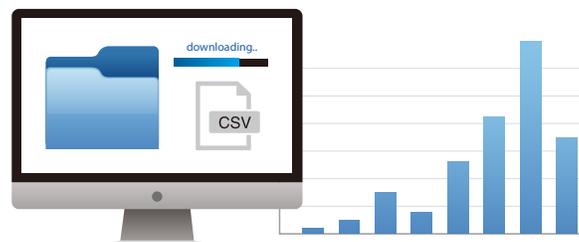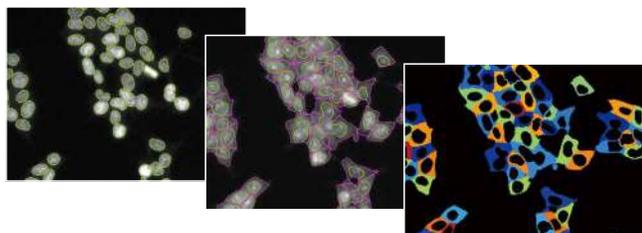
Image analysis
Image processing, object identification, measurements

Data analysis
Analyzed images, result files, graphs (coming soon)

CREATE YOUR OWN HIGH CONTENT ANALYSIS WORKFLOWS

Using Cell Analyzer, users can create an image analysis pipeline, which is a sequence of modules that each perform a specific image processing task. This allows the quantitative analysis of multiple cellular features from biological images. Modules can be mixed, matched, and adjusted to measure phenotypes of interest objectively, quantitatively, and reproducibly. Once a pipeline has been established, it can be used to analyze subsequent projects.

QUANTIFY CELLULAR PHENOTYPES ANYWHERE

Go straight from imaging to analysis on the CELENA® X or analyze your data at your desk. CELENA®X Cell Analyzer can be installed onto and used on a remote PC for your convenience.

Control   0.05 µg   0.10 µg   0.20 µg   0.50 µg
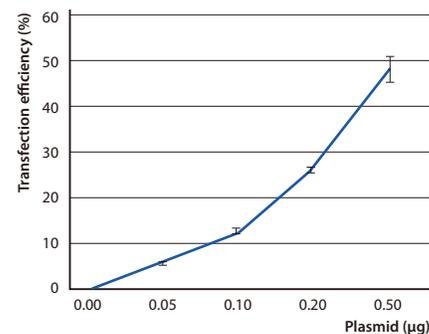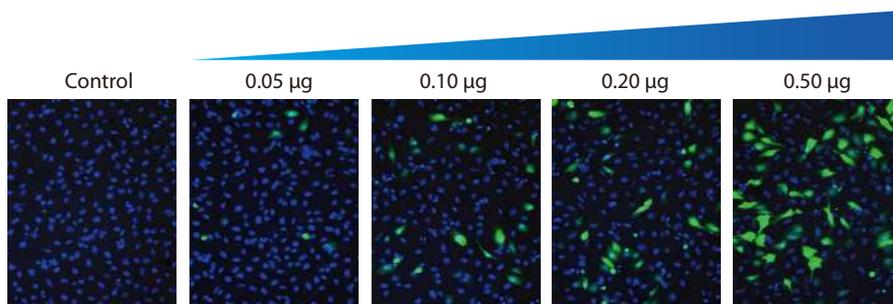
Quantifying the effects of plasmid concentration on transfection efficiency with the CELENA® X.

HeLa cells were transfected with varying concentrations of the GFP-Q103-Htt plasmid (0.05, 0.10, 0.20, and 0.50 µg/well of a 96-well plate), stained with DAPI, and imaged 16 hours post-transfection. CELENA® X Cell Analyzer makes it easy for scientists to analyze transfection efficiency.

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WORKFLOW-BASED USER INTERFACE MAKES IT EASY TO PUT TOGETHER ANALYSIS MODULES FOR HIGH CONTENT ANALYSIS.
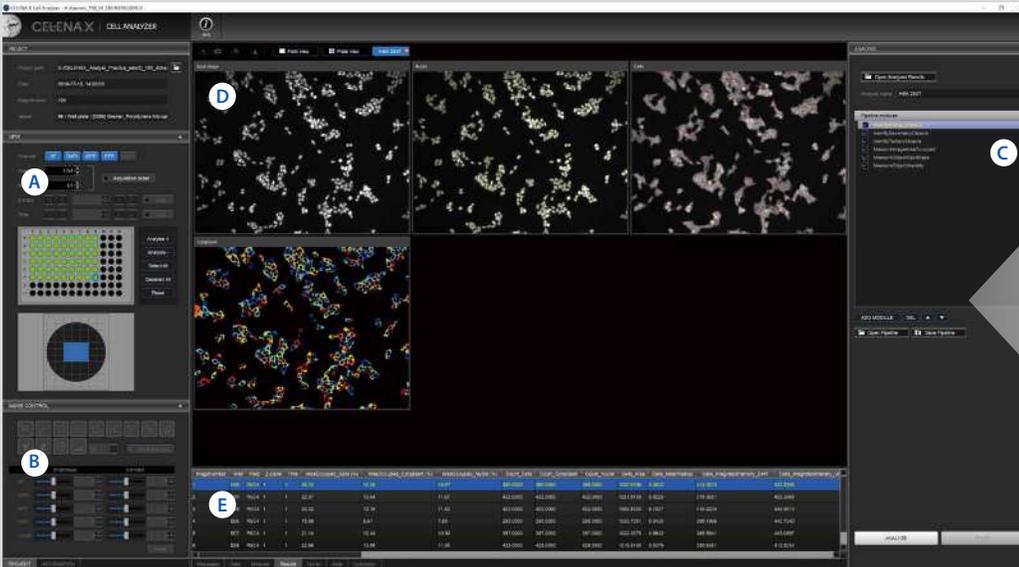
(A) Simple vessel navigation

(B) Annotation and measurement tools

(C) Intuitive image analysis pipeline creation

(D) Analyzed images

(E) Results

ABUNDANT APPLICATIONS

Apoptosis	Cell growth/proliferation	Co-localization	Immunofluorescence
Autophagy	Cell migration	Confluency	NF-κB translocation
Cell cycle	Cell morphology	Cytotoxicity	Organoid/spheroid morphology
Cell counting	Cell viability/toxicity	Histology	Transfection efficiency
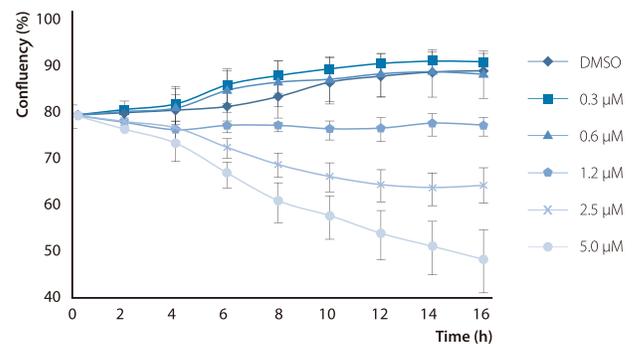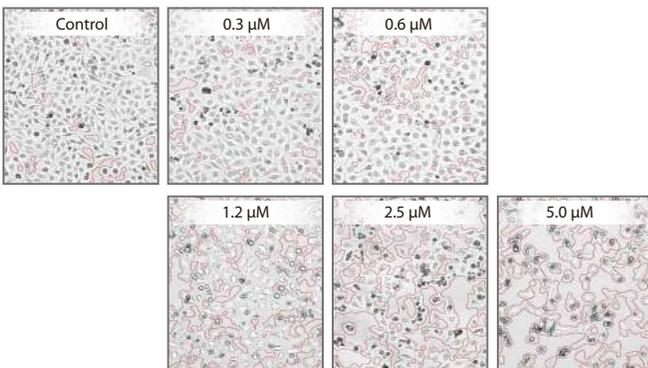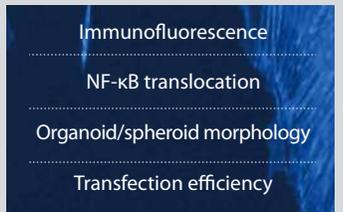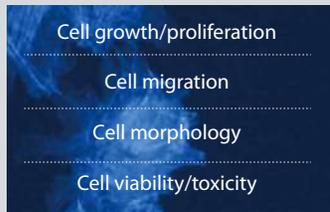
Evaluating the cytotoxic effects of Camptothecin on HeLa cells with the CELENA® X.

Confluent HeLa cells were treated with varying doses of Camptothecin (CPT) at 2 hour intervals for 6 hours and subsequently imaged to determine how CPT concentration affects cell viability. CELENA®X Cell Analyzer was used to measure the confluency of cells in a multi-well plate in a rapid, reproducible, and quantifiable manner.

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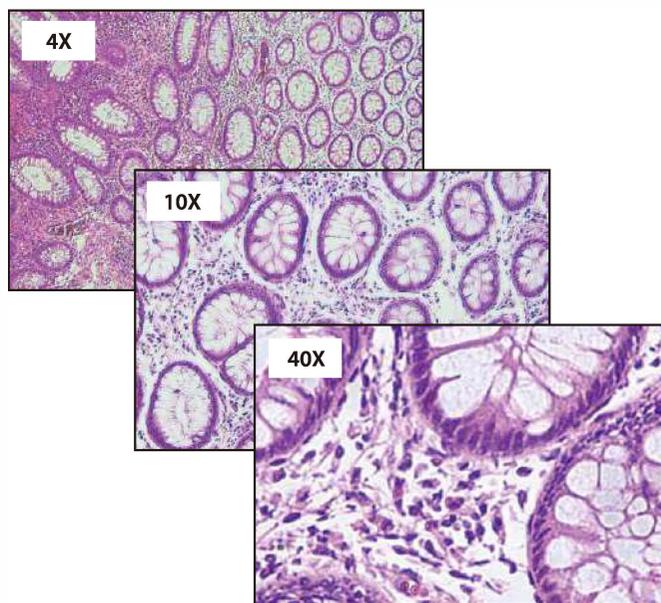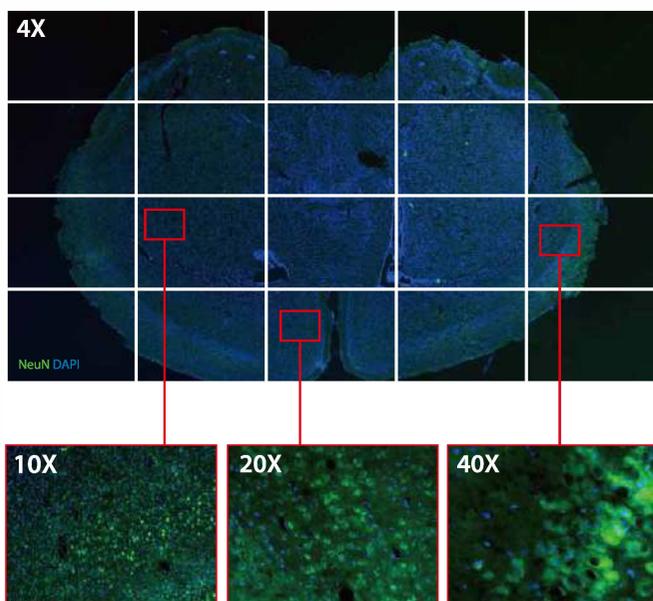
Distribution of mature neurons in an adult mouse brain imaged with the CELENA® X.

A coronal section (20 µm) of an 8-week old mouse brain was immunostained with anti-NeuN and counterstained with DAPI. The motorized XYZ stage and fully automated autofocus simplifies the rapid, high-resolution imaging of large specimens.

Histopathological evaluation of an untreated glioblastoma multiforme (GBM) biopsy specimen with the CELENA® X.

Sections from the tumor were stained with hematoxylin and eosin (H&E) to assess tumor cellularity. The dual camera module with high sensitivity monochrome and color digital cameras enable high-resolution imaging of fluorescence and colorimetrically-stained samples.

Operated with high-quality Olympus objectives

High resolution fluorescence

Cat #	Objective	NA	WD (mm)	Correction (mm)
I10030	UPLFLN 4X	0.13	17	-
I10031	UPLFLN 10	0.3	10	-
I10034	LUCPLFLN 20X	0.45	6.6-7.8	0-2
I10035	LUCPLFLN 40X	0.6	2.7-4.0	0-2

Fluorescence and phase contrast

Cat #	Objective	NA	WD (mm)	Correction (mm)
I10038	UPLFLN 4XPH	0.13	17	-
I10039	UPLFLN 10X2PH	0.3	10	1
I10042	LUCPLFLN 20XPH	0.45	6.6-7.8	0-2
I10043	LUCPLFLN 40XPH	0.6	3.0-4.2	0-2

Low and high magnification

Cat #	Objective	NA	WD (mm)	Correction (mm)
I10046	PLAPON 1.25X	0.04	5	-
I10047	PLAPON 2X	0.08	6.2	-
I10050	UPLSAPO 60XO	1.35	0.15	0.17
I10051	UPLSAPO 100XO	1.4	0.13	0.17

Illuminated by hard-coated LED fluorescence filter cubes

Cat #	Filter cube	Excitation (nm)	Emission (nm)
I10130	DAPI	395/25	460/50
I10131	EGFP	470/30	530/50
I10132	RFP	530/40	605/55
I10133	mCherry	580/25	645/75
I10134	ECFP	436/20	480/40
I10135	EYFP	500/20	535/30
I10136	DSRed	530/40	620/60
I10137	Cy5	620/60	700/75
I10138	Cy7	710/75	810/90
I10139	Cy3/TRITC Long Pass	530/40	570lp
I10140	GFP Long Pass	470/40	500lp
I10141	Cy5 Long Pass	620/60	665lp
I10142	Custom	-	-

Accessories

CX31002	CELENA® X Cell Analyzer Verification Key
I10410	Joystick
I10411	Microscope Calibration Slide #1

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VERSATILE AND CUSTOMIZABLE FOR YOUR CELL IMAGING NEEDS

CX30000

CELENA® X High Content Imaging System

- CELENA® X Controller
- External PC
- Microplate Holder
- CELENA® X Cell Analyzer Verification Key
- Universal Vessel Holder
- Single Slide Holder

Camera
- ☐ CX30200 Monochrome Camera Module
- ☐ CX30201 Dual Camera Module

Condenser
- ☐ CX30300 Phase Condenser
- ☐ CX30301 Brightfield Condenser

AF module
- ☐ CX30400 Image-based AF
- ☐ CX30401 Laser AF Module

SPECIFICATIONS

Supported labware	Slides, multi-well plates (6 to 1536 wells), petri dishes, culture flasks
Imaging modes	4-channel fluorescence, brightfield, phase contrast, color brightfield
Light source	High-power LED filter cubes with adjustable intensity (>50,000 hours per filter cube)
Filter cube stage	Motorized; 4 interchangeable fluorescence filter cubes and 1 brightfield filter cube
Available filters	DAPI, EGFP, RFP, mCherry, ECFP, EYFP, DSRed, Cy5, Cy7, Cy3/TRITC Long Pass, GFP Long Pass, Cy5 Long Pass, custom filters
Objective turret	Motorized; 5 interchangeable objectives
Compatible objectives	1.25-100X; Olympus, Zeiss, and Logos Biosystems objectives
Condenser	Motorized; basic or phase contrast
	Basic: 60 mm LWD condenser, 4 positions
	Phase contrast: 60 mm LWD condenser, 4 positions with 3 phase annuli
Camera	Monochrome: CMOS, 1.92 MP
	(optional) Color: CMOS, 1.92 MP
Image outputs	Monochrome: 16-bit (12-bit dynamic range) TIF, PNG, or JPG
	Color: 24-bit colorTIF, PNG, or JPG
	Movies: MP4
Autofocus method	Image-based autofocus
	(optional) Laser autofocus
Stage	Motorized X/Y-stage (120 mm x 80 mm); motorized Z-stage (10 mm)
Stage control	CELENA® X Explorer
	(optional) Joystick
Computer	External PC
Monitor	27" 4K UHD monitor
Software	User interface: CELENA® X Explorer
	Analysis: CELENA® X Cell Analyzer
Power	100-240 VAC, 250 W, 50/60 Hz
Dimensions	Main body: 39 x 46 x 50 cm (15.4 x 18.1 x 19.7 in)
	Controller: 17 x 30 x 23 cm (6.7 x 11.8 x 9.1 in)
Weight	Main body: 33 kg (72.8 lbs)
	Controller: 7 kg (15.4 lbs)

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