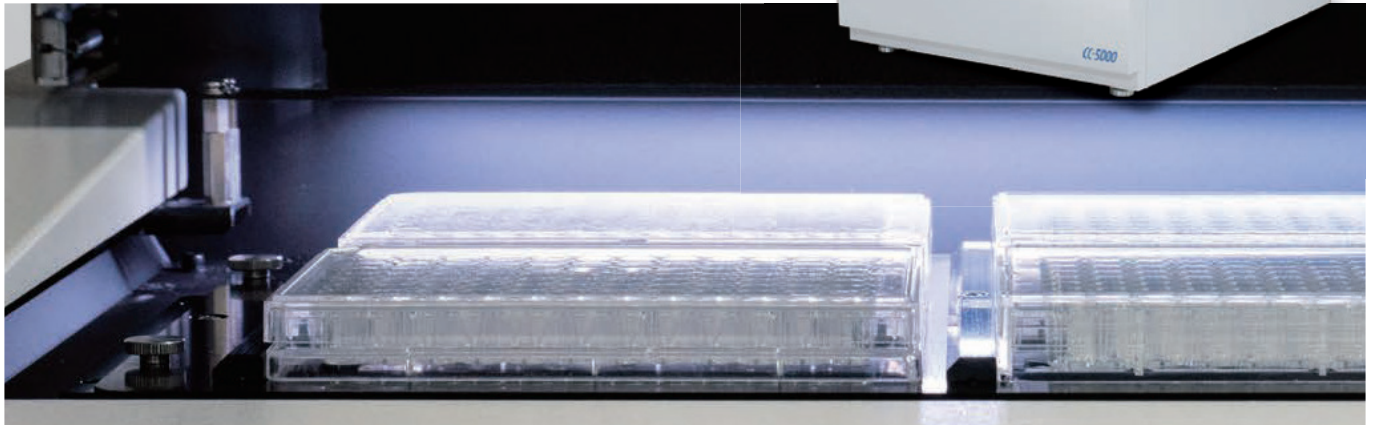
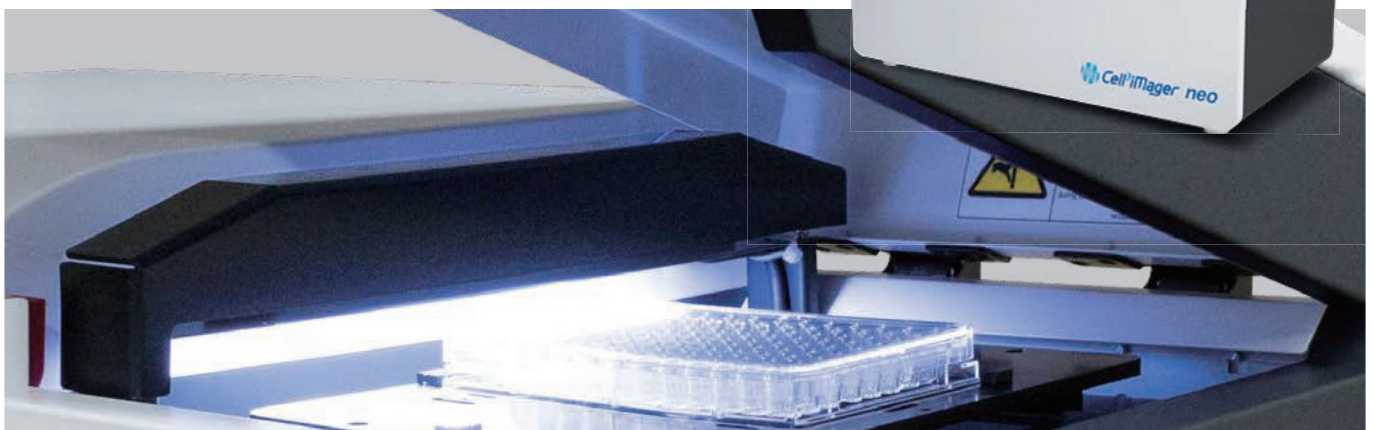


Cell³iMager and Cell³iMager neo

 **Cell³iMager**



 **Cell³iMager neo**



High-throughput brightfield scanners for fast, label-free profiling of 3D spheroids

- Escape throughput and speed limitations in phenotypic assessment of 3D tumor spheroid size and morphology
- Only cost effective, non-invasive solution for kinetic growth profiling of 3D tumor spheroids
- Comprehensive 3D image analysis package with built-in compatibility for all major 3D cell culture platforms

Cell³iMager and Cell³iMager neo

Fast, label-free spheroid imaging

The SCREEN Cell³iMager is a simple, high-throughput, brightfield imager designed specifically to simplify and accelerate quantitative and qualitative measurement of 3D spheroids. This unique LED-based imaging system allows the user to identify and measure single or multiple spheroids per well in a microplate rapidly and automatically. The companion 3D optimized analysis software allows faster image capture, measurement and data analysis, and is compatible with all major 3D cell culture platforms, including the InSphero GravityPLUS™ Hanging Drop System and GravityTRAP™ ULA Plates. To fit varying throughput needs and budgets, the imager is available in two models: the compact, single-plate Cell³iMager Neo (CC-3000) and the four-plate Cell³iMager (CC-5000).

Applications

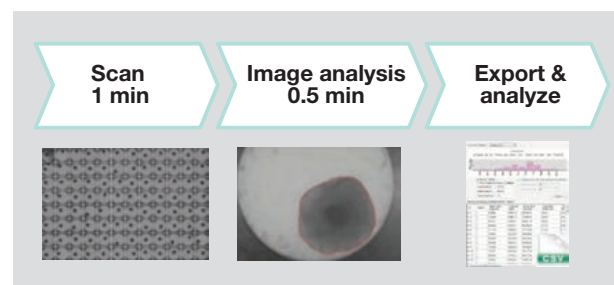
- Phenotypic drug discovery
- Drug sensitivity testing
- Combinatorial drug testing
- Co-culture: loss of spheroid volume
- Drug-target discovery and validation
- Quality control of 3D microtissues

“The SCREEN Cell³iMager has become an important part of our MCTS studies, expediting data acquisition and analysis of tumor spheroids over time in a label-free assay setup. The utility of any instrument is partly dependent upon the quality of its support and maintenance, which have been conducted promptly and professionally since purchasing our imager.”

– **Geoffrey Bartholomeusz, Ph.D.**,
University of Texas MD Anderson
Cancer Center, Houston, TX, USA

High-resolution spheroid scanning meets high-throughput demands

Cell³iMager provide precise and fast analytical tools to overcome the throughput and speed limitations of existing automated microscopes or high content imaging systems for simple assessment of spheroid size. These brightfield imagers provide high-resolution scanning (200 dpi to 9600 dpi) without compromising scan time, thus minimizing ‘out of incubator’ time and disruption of spheroid growth. Typical scan times at various resolutions for 96-well and 384-well plates are indicated in the table below. Just scan, measure, and begin analyzing 96 spheroids in <2 minutes.



- **Rapid scan time** (96-well plate in <1 minute) increases throughput (30 x 384-well plates/hour vs 2.5 plates/hour with conventional systems)
- **Built-in plate definitions** for all major hanging drop, ULA, and micropatterned 3D cell culture platforms (6-, 12-, 24-, 48-, 96-, 384-well)

Cell³iMager scanning speeds

Resolution	96-well	384-well
2400 dpi	54 sec	2 min
4800 dpi	2 min	8 min
9600 dpi	4 min	16 min

More 3D InSight™

Application note:

Growth and morphological profiling of 3D tumor spheroids



Size and morphology are important determinants to evaluate the biological behavior of 3D spheroids, particularly in development of anti-cancer drugs, where monitoring cell growth is a particularly critical endpoint. For more information, please contact us by phone call or email.
Call: +81-75-931-7824
Email: screen_lifescience@emis.screen.co.jp

Cell³iMager and Cell³iMager neo

Label-free detection enables faster processing with fewer processes

Although adaptable to higher throughput plate readers, biochemical assays that monitor viability (e.g., ATP content) can effectively correlate to spheroid size, but are often lytic or otherwise destructive in nature, requiring multiple replicates to be run for longitudinal studies. Label-free measurement of changes in 3D microtissue size and morphology with rapid brightfield imaging enables efficient assessment of phenotypic endpoints without disrupting microtissue growth, and can be used to focus selection of therapeutic targets and treatment strategies before costly and tedious testing in animal models.

- *Non-lytic, continuous assessment of spheroid growth conserves precious cellular material, reduces reagent use and saves handling time*

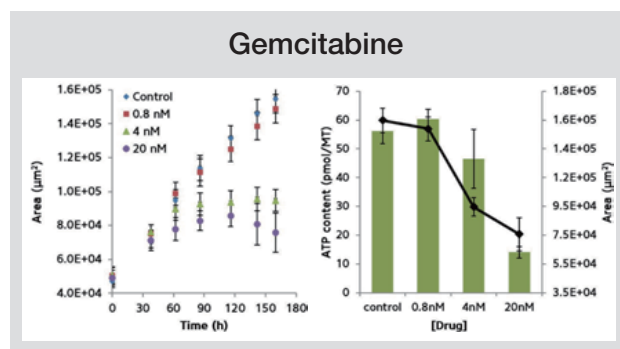
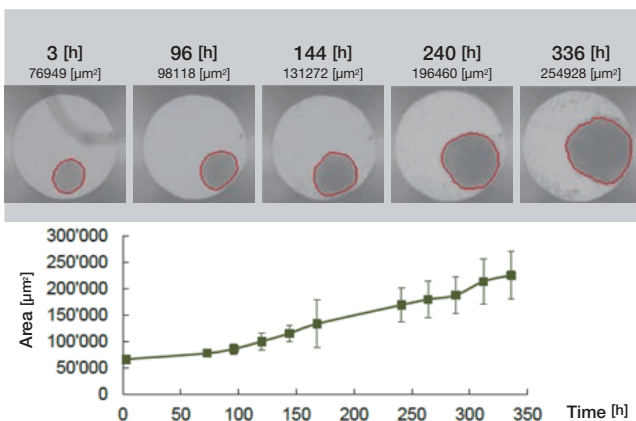
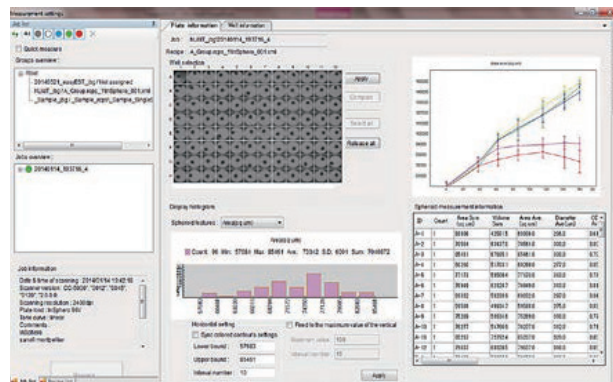


Figure 1. Drug sensitivity of HCT116 spheroids (human colon carcinoma cell line) produced using the GravityPLUS™ Hanging Drop System to the cytostatic drug Gemcitabine was tested in a time-course study, with spheroid size assessed daily for 1 week using the Cell³iMager. Gemcitabine inhibited growth at concentrations of 4 nM and higher, as displayed by plotting spheroid area in µm² over time (left). Comparison of day 7 spheroid area (black line, right) to total cellular ATP levels (green bars) using CellTiter-Glo® Cell Viability Assay (Promega) at day 7 following treatment indicates spheroid size correlates closely with this lytic biochemical assay, while significantly reducing number of spheroids used and sample processing time.

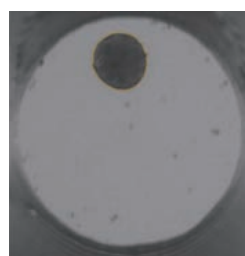


Intelligent 3D software handles complex and routine 3D workflows

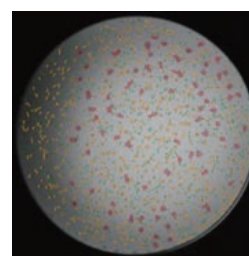
Fast, high-resolution brightfield optics and image capture are only half of the Cell³iMager package. Scanning more plates faster means more data to analyze, and the Cell³iMager's intelligent software provides the power needed to keep up.



- Supports basic (single-time point) and timecourse dose-response analysis, as well as a multi-planar (focus bracketing) scanning option to use with hydrogel-embedded spheroids
- 30+ adjustable parameters for optimizing object identification, live/dead discrimination (e.g., bubbles, fibers, debris), compensate for edge of well shadows and distortion, and reduction of background noise
- Automatically identifies and measures microtissues in single spheroid per well or multiple spheroids per well formats



Single spheroid/well



Multiple spheroid/well



Cell³iMager and Cell³iMager neo

Cell³iMager features and specifications:

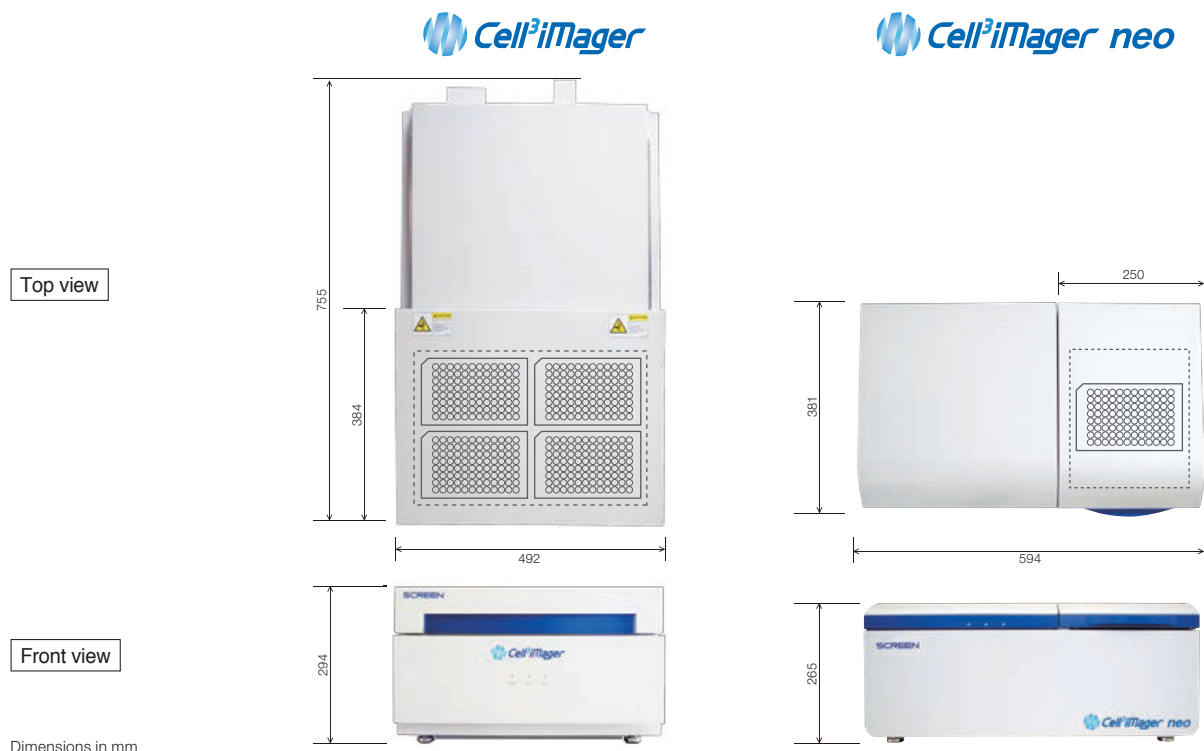
Scanning and imaging

- Wide range of pre-defined plate maps and optimal focal plane heights available for cell major 3D cell culture platforms
- Selectable scanning resolution from 9600 dpi (2.6 um/pixel) down to 200 dpi
- Scan plates quickly and analyze data later at your convenience
- Adjustable tone curve compensation for colored medium
- Auto-focus, fixed focus, and multi-planar options

Image analysis

- Determination of spheroid number, size, and growth kinetics
- Analysis of single/multi-spheroids per well
- Intelligent object identification to discriminate spheroids from fibers, debris, and bubbles
- 30+ adjustable parameters for efficient profiling of spheroid growth and morphology
- Focus bracketing option enables high quality analysis of spheroids in hanging-drops or embedded in hydrogel systems
- Automatic cell morphological classification (ACMC) option provides 'intelligent' automatic classification of live and dead spheroids, using logic derived from a user-defined reference set of live/dead spheroids
- Auto-generated growth curves and histograms, with simple raw data export capability for further analysis

Space requirements * The illustration of well plates is a setting image



The data shown here is as of September, 2017. Specifications and design of the unit are subject to change for improvement.