GE Healthcare
Life Sciences

Cell analysis redefined

Cell analysis redefined

IN Cell Analyzer 6000 high-content analysis system

IN Cell Analyzer 6000 is a super-sensitive high performance, laser-based confocal imaging platform designed for the most demanding high-content assays and screens. Featuring a novel and proprietary optical system that incorporates an iris-like variable aperture design and next-generation sCMOS technology, IN Cell Analyzer 6000 enables you to optimize for speed and image quality in challenging and variable assays.

Proprietary optical system

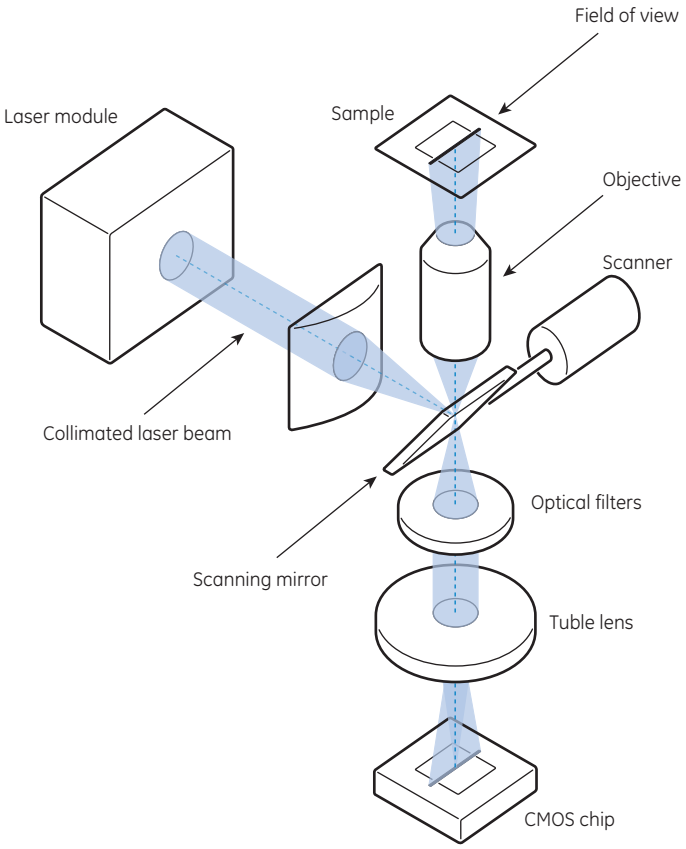
Inspired by the iris mechanism of the eye, the proprietary optical system of IN Cell Analyzer 6000 delivers a new level of control for image acquisition to maximize performance across a broad range of imaging conditions.

- Use in open aperture mode to maximize speed
- Use in full confocal mode for efficient background rejection
- Select any aperture setting between 1 and 3 AU to suit your specific biology
- Optimize the degree of confocality required for each channel of your assay with the simple click of a mouse

Use of a fixed aperture in the light path to reject out-of-plane light that does not contribute to image quality has been the conventional strategy for achieving confocality for many years. While conventional confocal technology is optimal when using high-power objectives, lower and mid-power objectives are typically used for everyday cellular assays. The variable aperture design of the IN Cell Analyzer 6000 optical system enables flexibility across a range of objectives, delivering the benefits of confocal technology across a broad spectrum of high-content challenges.

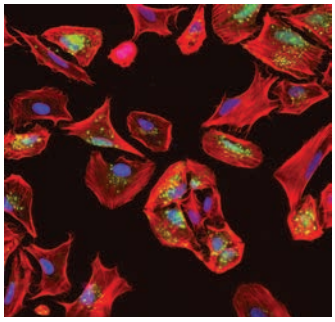
Optical engine: Principle of operation

Enabled by the use of a next-generation sCMOS detector and laser line-scanning technology, the optical system selectively sensitizes a defined region of the detector surface to stringently control the capture of reflected photons that compose the image. Hardware-based confocal systems have aperture geometries defined by the physical dimensions of the light path, while the optical system of IN Cell Analyzer 6000 enables the aperture width to be configured between 1 and 3 AU.

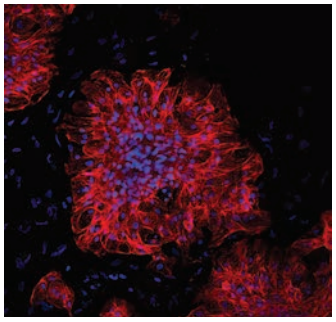


Fully adjustable imaging

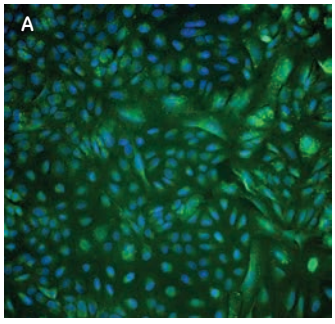
Settings may be adjusted along the widefield to confocal spectrum for each channel of an assay, maximizing user control of speed and image quality to suit each assay.

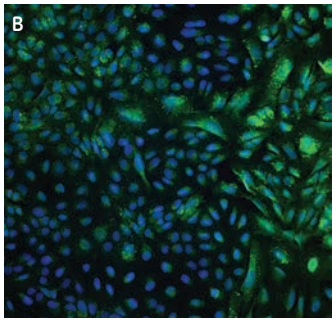


Open aperture imaging: Non confocal setting used to image EGFP-2× FYVE cell line. (Hoechst™ 33342 nuclei stain and Texas Red™ phalloidin staining).



Confocal imaging for thick and 3D samples: Middle section of 60-µm thick sample of Cytiva™ Cardiomyocytes, stained with Cy™5 labeled anti-troponin I and Hoechst 33342.





Selectable aperture imaging for cells in medium with strong fluorescent background: EGFP-2× FYVE cell line with Hoechst 33342-nuclear stain and free FITC in media. **(A)** Field-of-view captured in non-confocal (open aperture) mode and **(B)** Same field-of-view captured using confocal mode, with reduced background.

Throughput without compromise

IN Cell Analyzer 6000 is also designed to enable increased assay throughput through a range of features.

- Configurable confocality to balance speed and image quality to specific requirements.
- A 5.5 Mp large field-of-view sCMOS camera, almost 4× larger than traditional 1.4 Mp CCD cameras, so fewer images need to be acquired to capture statistically robust data, saving time.
- A high-sensitivity next-generation sCMOS detector chip, with typically 5× less noise than traditional 1.4 Mp CCD cameras, delivers increased sensitivity and reduces exposure times.
- Fast, precision stages that reduce non-imaging time.

Configure your system

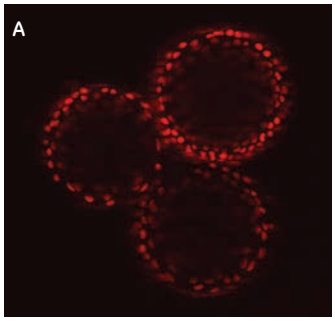
IN Cell Analyzer 6000 can be configured to your specific needs by choosing from a range of optional features:

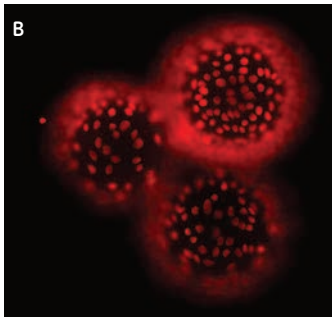
- Environmental control
- Temperature control
- Liquid handling
- Slide imaging
- Transmitted light imaging (brightfield, DIC, and phase contrast)

Extending the reach of high-throughput imaging

IN Cell Analyzer 6000 extends the reach of automated imaging into samples and assays that are typically challenging to perform in a high-throughput format.

- **Flexible imaging for multiplexed assays:** Multiplexed assays that encompass multiple signals of different intensity can be managed comprehensively for both signal quality and throughput. Optimal imaging conditions can be selected for each individual signal, enabling capture of all the assay biology.
- **Sensitivity for imaging dim assays:** The use of a highly sensitive, low-noise sCMOS-based camera coupled with laser-based illumination provides tremendous sensitivity to weak signals. This generates high-quality data from signals that would typically be lost in the noise.
- **Versatility for a range of sample types:** Whether imaging 3D biological structures, low-abundance endogenous biomolecules, or co-localized proteins of interest, IN Cell Analyzer 6000 delivers the control and performance to adapt assays more typically associated with low-throughput confocal microscopy to a high-throughput format.





3D sectioning of Cy5 labeled CHO cells on Cytodex™ beads at 40× magnification imaged using **(A)** confocal or **(B)** widefield modes.

Image acquisition flexibility

IN Cell Analyzer 6000 includes a series of user-friendly image acquisition features that improve workflow and make image acquisition simpler.

- **Preview scan:** Quickly preview your sample at any magnification before starting an acquisition run. This avoids the need to image unwanted areas and can significantly increase speed.
- **Manual microscope mode:** A smooth transition from manual microscopy to automated, high-content analysis, for easy optimization of imaging conditions.
- **Whole-well imaging:** Rapid capture of an entire well with a single image (96-well plate) for imaging whole wells, large tissue sections, small organisms, and rare events.
- **Review scan intelligent scanning feature.** A faster way to automatically collect and analyze images by re-directing imaging to only qualifying wells at a higher magnification using the specific parameters you are looking for.
- **High-density plate/array scanning:** Fine-tune the well grid alignment to facilitate scanning custom plates and arrays that might be warped or not perfectly aligned.
- **Easy optimization of the laser autofocus:** This enables you to identify differences between existing plate-maps and actual bottom thickness then adjust the maps to prevent autofocus failure.

Technical information

Optical system	Proprietary epi-fluorescence based line scanning confocal system. Allows image acquisition in confocal, open aperture, and transmitted light modes.
Camera	sCMOS 5.5 Mp camera (2560 × 2160 pixels) Field-of-view at 10×: 2.78 mm^2 Cooling: 5°C Pixel size: 6.5 µm
Light sources	Four lasers (405, 488, 561, and 642 nm) LED for transmitted light imaging
Imaging modes	Line confocal (confocal aperture adjustable from 1 to 3 AU) Open aperture (widefield) Transmitted light (brightfield, DIC, and phase contrast imaging)
Objectives	Supplied with 10×/0.45 and 20×/0.45 Other objectives available: 2×/0.1, 4×/0.20, 40×/0.60, 60×/0.95, 100×/0.9
Objective changer and spherical aberration adjustment	Automated
Filter selection	Four laser blocking filters Up to eight emission filters

Focus	Contrast-based software autofocus Laser confocal hardware autofocus Z stage resolution: 25 nm
Plate positioning	500 nm resolution
Plate compatibility	Compatible with 6-, 12-, 24-, 48-, 96-, 384-, and 1536-well microplates
Slide compatibility	1 × 3 in. standard microscope slide
Image acquisition features	Preview scan capability Whole-well imaging capability Manual microscope mode
Optional hardware modules	Environmental control Slide handling Temperature control Liquid handling Transmitted light imaging (brightfield, DIC, and phase contrast imaging)
Computer	Windows® XP professional workstation
Dimensions	645 × 1140 × 605 mm (dwh) Weight: 50 kg
Software compatibility	IN Cell Investigator IN Cell Miner HCM
Automation options	Compatible with commercially available laboratory automation systems

Ordering information

Product	Code number
IN Cell Analyzer 6000	
IN Cell Analyzer 6000 Imaging System	29-0433-23
IN Cell Analyzer Environmental Control Module	28-9534-85
IN Cell Analyzer Liquid Handling Module	28-9798-62
IN Cell Analyzer Temperature Control Module	28-9534-73
IN Cell Analyzer Transmitted Light Module	28-9534-87
IN Cell Analyzer 6000 Slide Handling Module	28-9544-75
IN Cell Investigator Image Analysis Software, single seat license	28-4089-71
IN Cell Analyzer 6000 Live Cell Package C (includes Temperature Control, Liquid Handling, and Environmental Control Modules)	28-9798-74

For local office contact information, visit:
www.gelifesciences.com/contact

www.gelifesciences.com/incell

GE Healthcare UK Ltd
Amersham Place, Little Chalfont
Buckinghamshire
HP7 9NA, UK

imagination at work

GE, imagination at work, and GE monogram are trademarks of General Electric Company. Cy, Cytiva and Cytodex are trademarks of GE Healthcare Companies.

Hoechst is a trademark of Hoechst GmbH Corporation, Texas Red is a trademark of Life Technologies. Windows is a registered trademark of Microsoft Corporation.

© 2011–2013 General Electric Company—All rights reserved. First published March 2011.

IN Cell Analyzer 6000 is for research use only. Not for use in diagnostic procedures.

GE Healthcare Bio-Sciences AB, Björkgatan 30, SE-751 84 Uppsala, Sweden.

GE Healthcare Bio-Sciences Corp, 800 Centennial Avenue, P.O. Box 1327, Piscataway, NJ 08855-1327, USA

GE Healthcare Europe GmbH, Munzinger Strasse 5, D-79111 Freiburg, Germany

GE Healthcare Japan Corporation, Sanken Bldg. 3-25-1, Hyakunincho, Shinjuku-ku, Tokyo 169-0073, Japan

28-9940-45 AD 04/2013