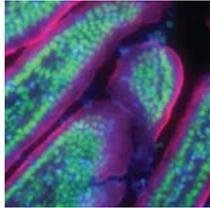
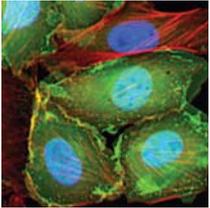


GE Healthcare

# IN Cell Analyzer 2000

Cell analysis just got easier





# Impressively enabling for cell analysis

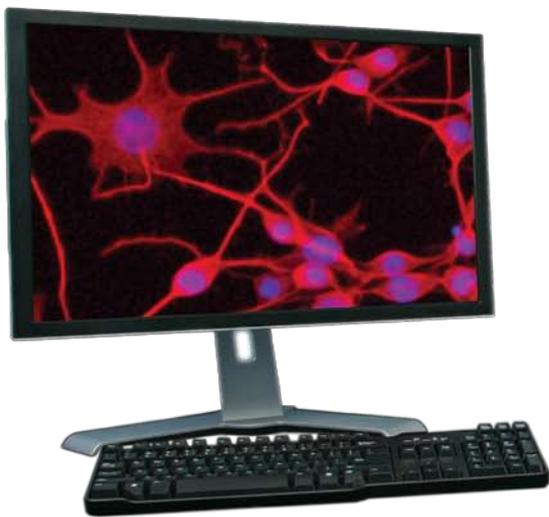
Developed with meticulous attention to the needs of the entire high-content imaging workflow, the IN Cell Analyzer 2000 makes even the most challenging high-content assays an everyday reality.

- From investigative microscopy to automated high-content screening
- From organelles to cells to tissues to whole organisms
- From fixed end-point assays to extended live-cell studies

High-performance hardware, state-of-the-art software, and expert instrument and applications support are harmonized to transform your cellular workflow.

System components have been subjected to rigorous accelerated lifetime testing using GE's Six Sigma performance guidelines to ensure reliability.

Behind the scenes, our team of dedicated experts is ready and willing to support you. Together with the security of Bio InSite™ remote support software, this customer focused approach underscores our commitment to help you get the most out of your cellular analysis.



IN Cell Analyzer 2000 high-content analysis system provides the performance you need when you need it. High-content analysis provides multiplexed, quantitative data based on automated cell imaging, allowing you to answer complex questions rapidly, in a true biological context

# Building on experience and excellence

## Designed with you in mind

IN Cell Analyzer 2000 can be configured to your specification through a range of optional modules and accessories, allowing you to build the instrument you need now, or upgrade as your needs evolve.

### The standard instrument includes:

- Software autofocus
- Hardware autofocus
- Image restoration options
- Selected polychroics, filters, and objectives
- Automated objective, correction collar and polychroic changing
- High performance CCD camera (1392 × 1040 pixels)

*See ordering information for more details.*

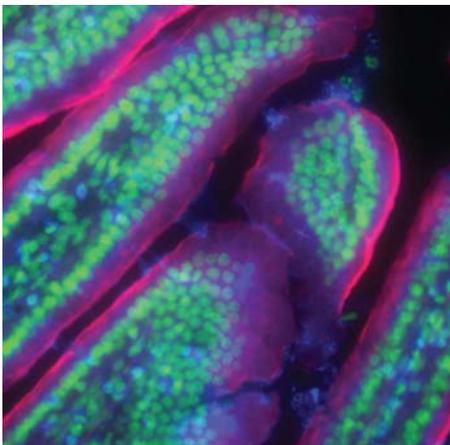
### Optional modules and accessories include:

- Environmental control
- Liquid handling
- Transmitted light imaging
- Temperature control
- Slide imaging
- Additional 3-D image restoration options
- Large chip CCD camera (2048 × 2048 pixels)
- A wide range of additional objectives (2× to 100×) including high numerical aperture (NA) options (up to 0.95 NA)

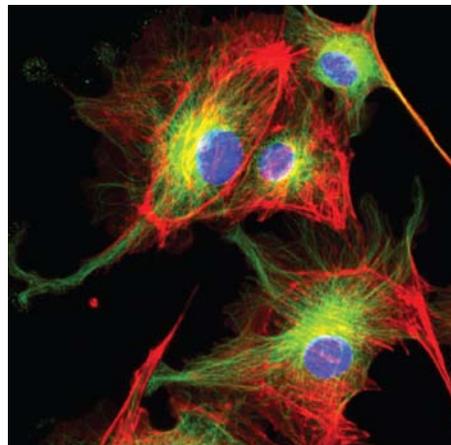
## High-speed without compromising imaging quality

IN Cell Analyzer 2000 delivers accurate, high-speed imaging through a combination of proprietary optics and fast hardware and software autofocus for screening applications. A bright light source

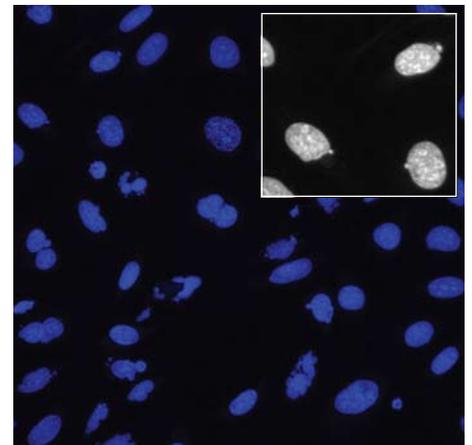
reduces exposure times to further maximize speed without compromising image quality and cell health. Confocal-like images can be obtained with the rapid image restoration options.



Mouse intestine tissue section (Invitrogen) acquired with the 40×/0.6 NA objective and the large chip CCD camera. Alexa Fluor™ 350 wheat germ agglutinin (blue) stains the mucus of goblet cells. Alexa Fluor 568 phalloidin (red) stains actin concentrated in the brush border. Nuclei are stained with SYTOX™ Green nucleic acid stain.



Bovine pulmonary artery cells stained for actin (red), tubulin (green) and nuclei (blue), and imaged with the 40×/0.6 NA objective.

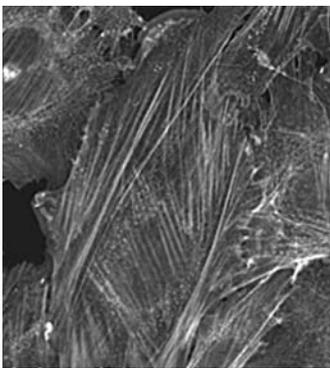


Micronuclei induced by etoposide treatment of a CHO-derived cell line. Cells are stained with Hoechst™ nuclear dye. Inset shows a close-up of three cells that have formed micronuclei. (20×/0.45NA objective).

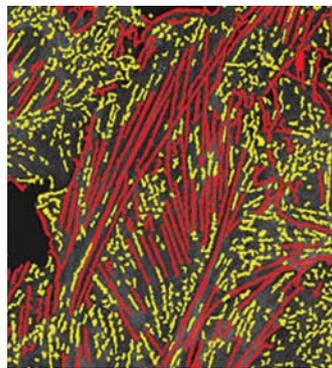
## Transforming images into data rapidly and easily

IN Cell Investigator combines the elements you need for analysis and interpretation into one powerful software package. Developed in collaboration with high-content users, IN Cell Investigator's multifunctional tools enable you to get started quickly, whatever your experience level with image analysis, and whatever your biological field of interest.

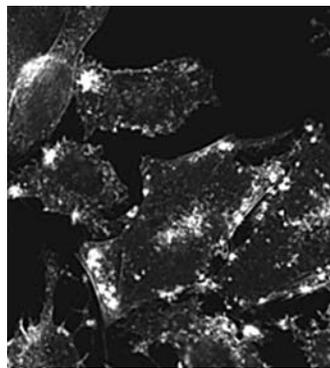
- **IN Cell Analysis Modules:** Ideal for the new user, a range of fully validated, multifunctional and ready-to-use analysis modules (including the Multi-target Analysis Module for enhanced user-definition).
- **IN Cell Developer Toolbox:** Ideal for unique or challenging assays, a flexible tool using interactive guides to create customized protocols for specific biologies without the need to understand programming or scripting.
- **Spotfire™ DecisionSite™:** An interactive visual analysis tool to simplify data interpretation.



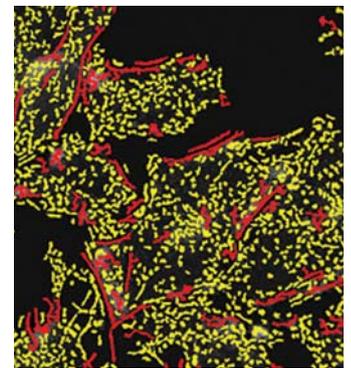
(a)



(b)



(c)



(d)

Images transformed into data with IN Cell Investigator. Quantitation of actin microfilaments in a CHO-derived cell line. Images acquired from cells that were either untreated (a), or treated with cytochalasin D (c). Colored bitmaps (b and d) show the results of feature identification following analysis of (a) and (c), respectively, with IN Cell Investigator software. Segmentation outlines are color-coded to identify actin fibers between 1 and 10 µm in length (yellow), and actin fibers > 10 µm in length (red). The results confirm that cytochalasin D treatment induces a significant decrease in actin fiber length.

## Managing the data mountain

IN Cell Miner HCM (high-content management) provides advanced content management for high-content applications, allowing you to manage huge amounts of complex image, analysis, and experimental data with ease.

Building on EMC Documentum™, the leading electronic content management software platform, IN Cell Miner HCM provides the performance, reliability, and scalability required to prevent data bottlenecks and enable an efficient workflow.

*For more information on IN Cell Investigator, IN Cell Miner HCM and automation options, visit [www.gelifesciences.com/incell](http://www.gelifesciences.com/incell)*

## A range of automation options

For automation of high-content assays, IN Cell Analyzer 2000 has been specifically designed to be compatible with a wide range of automation options. Robots purchased from us as an option with the instrument are supported by a full integration program. Alternatively, the instrument may be interfaced with your own solutions.

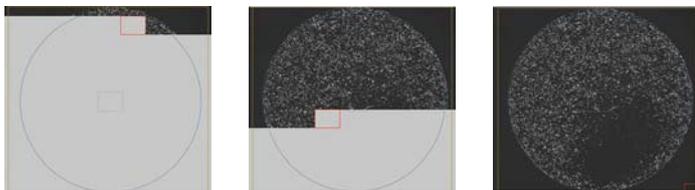
# Imaging feature highlights

IN Cell Analyzer 2000 builds on our extensive experience in cellular and subcellular imaging and analysis. As such, the instrument incorporates innovative features to help you gain insights and speed you never thought possible.

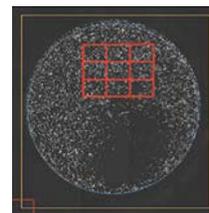
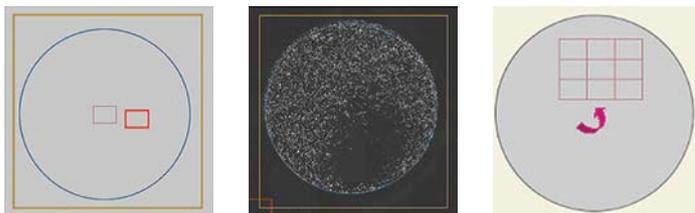
## Preview scan

This function allows you to quickly preview a selected area of your sample at any magnification before starting an acquisition run. By choosing the region of interest, you can avoid imaging unwanted areas and significantly increase speed. The region of

interest can be any size, from the entire plate or slide, the entire well, or a portion of a well: simply zoom in and out to identify the region of interest and optimize the imaging position by changing the position of the field-of-view.



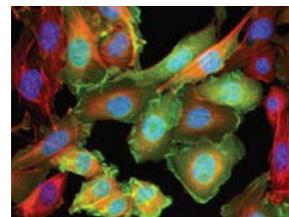
Preview scan of Hoechst 33342 stained nuclei in a neurite outgrowth assay at 10× magnification.



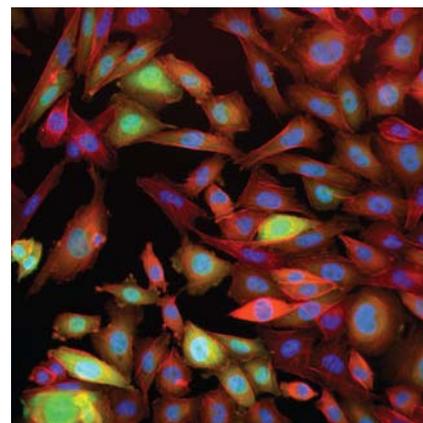
Preview scan quickly locates the region of interest and reveals the current field-of-view over area devoid of cells (a and b). It is easy to re-position the field of view to avoid artifacts or regions of non-uniform cell density (c and d) before acquiring images.

## High performance large chip CCD camera

An optional new large chip CCD camera (2048 × 2048 pixel array) enables superior optical zooming and captures approximately four-times the field-of-view compared with the standard chip camera. Coupled with a long-life widefield illumination source that is two-times brighter than a conventional xenon lamp, the large chip camera acquires high-quality images that are evenly illuminated across the entire field-of-view. With the large chip camera, you can capture many more cells in a single image, giving more statistically robust results in a single pass, as well as artifact-free detection and quantitation of large structures or rare events.



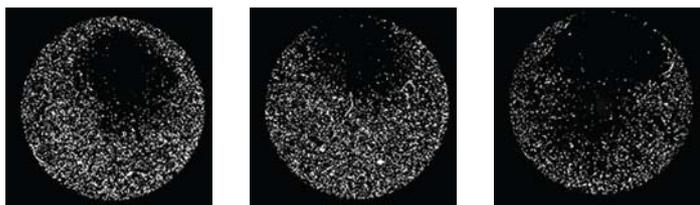
Standard chip camera: CoolSNAP ES2, 1.4 Mp camera captures 23 cells at 40× magnification



Large chip camera: CoolSNAP K4, a new 4.2 Mp camera, captures 95 cells at 40× and four times as much information improving productivity and throughput

## Whole-well imaging

The combination of a 2× objective and large chip CCD camera enables rapid capture of an entire well with a single image (96-well plate). In cases where cells are unevenly distributed or differentially affected by test treatments, collection of data from every cell in the well provides more robust statistical results.



Whole-well imaging also enables the user to image large tissue sections and whole organisms quickly without the need for image stitching. Extended structures, organs, and other gross morphological features can be analyzed in their entirety with no risk of stitching artifacts.

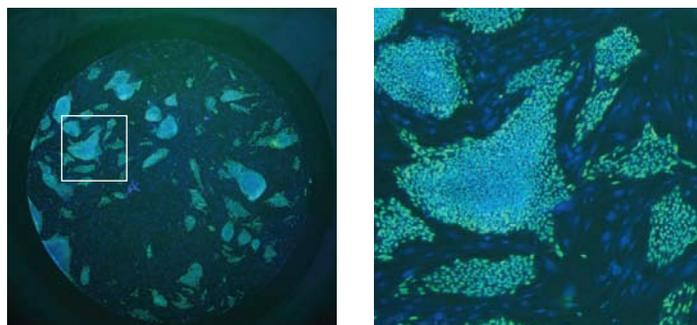


Capturing data from the entire population of a well ensures that rare events will not be missed – particularly valuable for applications such as lineage tracing, colony counting, and toxicity testing.

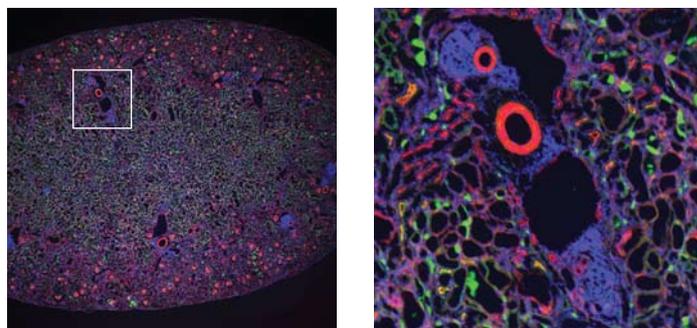


Zebra fish embryo\*.

\* Image on right captured with 2× objective and large chip CCD camera. This is only a portion of the entire image shown on the left.



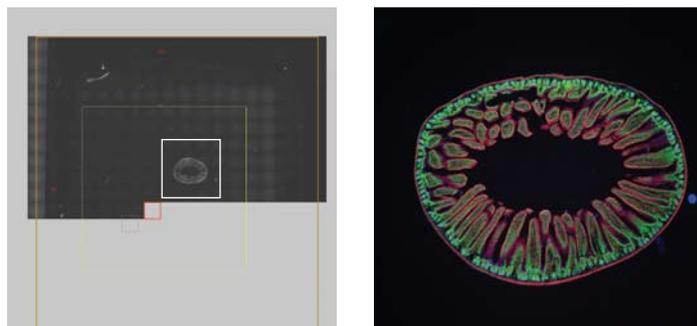
Stem cell colonies\*.



Mouse kidney section mounted on glass slide\*.

## Slide imaging

IN Cell Analyzer 2000 offers a simple and fast solution to acquisition of images from slides. An intuitive graphical user interface transforms the slide imaging workflow. The Preview scan mode helps you quickly locate the region of interest prior to acquisition at a higher magnification. Smart software autofocus significantly shortens run times and overlapping images can be stitched easily using IN Cell Investigator software. Slide imaging for high-content analysis is truly enabled.



The slide imaging workflow. Mouse intestine imaged at 4× following a rapid Preview scan

## Imaging modes

IN Cell Analyzer 2000 includes a choice of six imaging modes to ensure you get the most quantitatively accurate images possible from the system for your sample type. These image restoration options are capable of removing noise, increasing contrast, and improving resolution in both the lateral (X-Y) and axial (Z) dimensions.

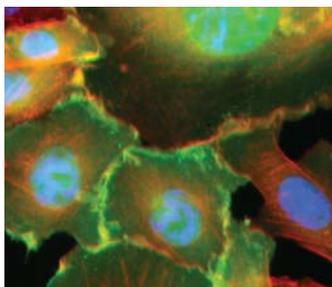


Image acquired without deconvolution

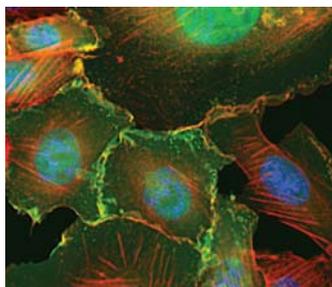


Image acquired with deconvolution

Image restoration improves resolution and contrast. Images of the AKT1-EGFP cell line stably expressing AKT1 fused upstream of EGFP (green), co-stained with Hoechst 33342 nuclear dye (blue) and Texas Red conjugated phalloidin (red) following treatment of the cells with IGF-1. Images acquired with the 40x/0.60 NA objective and the standard chip CCD camera.

Unlike confocal approaches, which discard light emanating from above and below the focal plane, image restoration (deconvolution) works to recover the original information, making maximum use of signal from dim samples. Image restoration is based on a realistic model of the lens system, and therefore provides more accurate results than image enhancement techniques like 'nearest neighbor de-blurring' and 'sharpening' provided by commercial image editing packages.

In addition, Z-axis projection provides a virtually extended depth-of-field to increase lateral resolution without missing features that fall above or below the focal plane. This is particularly useful when working with high magnification, high numerical aperture lenses, which provide very thin optical sections.

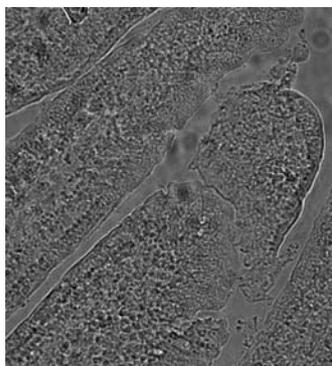
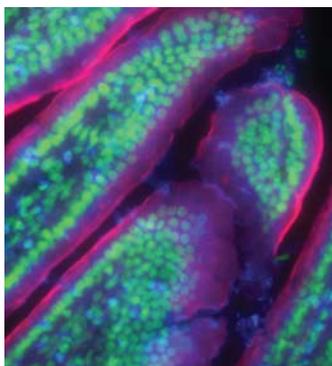
## Transmitted light imaging

Transmitted light imaging allows label-free monitoring of cell health, movement, morphology, and growth, and can be particularly beneficial for extended time-course studies where fluorescent markers could have a toxic effect. Whether you need images for analysis, or simply want to include them in a

publication, the IN Cell Analyzer 2000 simplifies the process, offering a range of modes to ensure you have the flexibility to get the highest quality images possible from your samples.

Choose from:

- Bright-field
- Differential interference contrast (DIC)
- Phase-contrast



Mouse intestine tissue section. Fluorescent (left-hand side) and transmitted light (right-hand side) images of the same field-of-view were acquired with a 40x/0.9 NA objective.

The high quality of transmitted light images, combined with advanced image analysis tools for segmentation, make label-free cell quantitation a reality. For added information and convenience, transmitted light images can also be analyzed in combination with images acquired in fluorescent channels in the standard IN Cell Investigator software.

# One instrument to meet all your needs

The designed-in features and functions ensure IN Cell Analyzer 2000 provides all the performance you need for your screening and research needs.

## Screening applications

Key function	System feature	Application examples
<b>Speed</b>	<ul style="list-style-type: none"><li>• Large chip CCD camera</li><li>• Bright optics with powerful light source</li><li>• Fast hardware autofocus</li><li>• Fast online sufficient cell count function</li><li>• Compatible with 384- and 1536-well plates</li><li>• Rapid slide imaging</li></ul>	<ul style="list-style-type: none"><li>• Compound screening</li><li>• Predictive toxicology</li><li>• RNAi screening</li><li>• Lead optimization</li><li>• Slide-based arrays (eg. tissue microarrays, siRNAs)</li></ul>
<b>Sensitivity and resolution</b>	<ul style="list-style-type: none"><li>• Bright optics with powerful light source</li><li>• High-performance CCD camera</li><li>• Wide range of objectives to suit sensitivity requirements of varied applications (2x to 100x with high NA options)</li><li>• Rapid image restoration options – higher contrast and improved resolution even with dim samples</li><li>• Z-axis projection and image restoration combine to provide virtually extended depth of field for high magnifications</li></ul>	<ul style="list-style-type: none"><li>• Phenotypic profiling in screens requiring resolution of subcellular features</li><li>• Rapid detection of low abundance probes and weak fluorescent sensors</li><li>• Micronuclei screening</li></ul>
<b>Reliability</b>	<ul style="list-style-type: none"><li>• Robust design and construction using Six Sigma principles for excellent build quality</li><li>• Stage accuracy and repeatability</li><li>• Rapid hardware and software autofocus ensure desired plane of interest is always in focus</li><li>• Online sufficient cell counting to rapidly secure statistically reliable data collection</li><li>• Large chip CCD camera maximizes data collection for statistically robust results</li></ul>	<ul style="list-style-type: none"><li>• Demanding screening applications with long run-times</li><li>• Shared facilities meeting the demands of multiple users or screening programs</li></ul>

## Research applications

Key function	System feature	Application examples
<b>Resolution and sensitivity</b>	<ul style="list-style-type: none"> <li>• High NA/high magnification objectives (eg. 100x/0.9 NA) provide thin optical section and maximum resolution in lateral and axial dimensions</li> <li>• Bright optics with powerful light source to detect low abundance probes and weak fluorescent sensors</li> <li>• Rapid image restoration options – higher contrast and improved resolution even with dim samples</li> <li>• Z-axis projection and image restoration combine to provide virtually extended depth of field for high magnifications</li> </ul>	<ul style="list-style-type: none"> <li>• Protein localization</li> <li>• Functional studies</li> <li>• Antibody characterization</li> <li>• Neurite outgrowth and neuronal function</li> <li>• Target identification</li> <li>• Phenotypic characterization of test compounds</li> </ul>
<b>Live-cell assays</b>	<ul style="list-style-type: none"> <li>• Variable temperature control (up to 42°C)</li> <li>• Environmental control module</li> <li>• Three transmitted light modes</li> <li>• Accurate X-Y staging – better cell tracking</li> <li>• Hardware optimized for optical performance-reduced exposure times</li> <li>• Cell tracking software</li> <li>• Fast hardware autofocus</li> </ul>	<ul style="list-style-type: none"> <li>• Insect cells</li> <li>• Heat-shock studies</li> <li>• Time-course analysis</li> <li>• Temperature-sensitive mutations</li> <li>• Cell migration</li> <li>• Cell lineage/cycle studies</li> <li>• Stem cells</li> <li>• Kinetic studies</li> <li>• Predictive toxicology</li> </ul>
<b>Rare event analysis</b>	<ul style="list-style-type: none"> <li>• Whole-well imaging using a large chip CCD camera and 2x objective</li> <li>• Preview scan – rapid location of region of interest</li> <li>• Image overlap for stitching</li> <li>• Compatible with all well densities from uni-well to 1536-well plates</li> </ul>	<ul style="list-style-type: none"> <li>• Stem cell assays</li> <li>• Spheroids</li> <li>• Colony assays</li> <li>• Small organisms</li> <li>• Tissue studies</li> <li>• Lineage analysis</li> </ul>
<b>3-D analysis</b>	<ul style="list-style-type: none"> <li>• Accurate Z-staging</li> <li>• Quantitatively accurate 3-D stacks with confocal-like image quality</li> <li>• Image restoration options for maximum resolution in lateral and axial dimensions</li> </ul>	<ul style="list-style-type: none"> <li>• Spheroids</li> <li>• Tissue sections</li> <li>• Small organisms (eg. zebrafish, <i>C. elegans</i>, <i>Xenopus</i> oocytes)</li> <li>• Stacks suitable for 3-D volume rendering and reconstruction of organelles, tissues etc</li> </ul>
<b>Slide imaging</b>	<ul style="list-style-type: none"> <li>• Intuitive graphical user interface transforms workflow</li> <li>• Preview scan mode – rapid location of region of interest</li> <li>• Smart software autofocus algorithm for accuracy and exceptional speed</li> <li>• Automated objective changing</li> <li>• Image stitching</li> </ul>	<ul style="list-style-type: none"> <li>• Investigative microscopy</li> <li>• Small organisms</li> <li>• Cell arrays</li> <li>• Tissue arrays</li> </ul>

# Ordering information

Instruments	Order Code	Modules and accessories	Order Code
<b>IN Cell Analyzer 2000, standard chip CCD camera (1040 × 1392 square pixels, 6.4 μm × 6.4 μm pixel size)</b> Includes: hardware autofocus, software autofocus, 10× 0.45 NA objective, 20× 0.45 NA objective with automated spherical aberration collar (ASAC) correction, standard polychroics, filter set, 2D deconvolution software, computer, monitor, keyboard, and mouse	28-9534-63	IN Cell Analyzer 2000 2× 0.1 NA Objective Lens	28-9534-76
		IN Cell Analyzer 2000 4× 0.2 NA Objective Lens	28-9534-77
		IN Cell Analyzer 2000 20× 0.75 NA Objective Lens	28-9534-78
		IN Cell Analyzer 2000 ASAC 40× 0.6 NA Lens	28-9534-79
		IN Cell Analyzer 2000 ASAC 40× 0.95 NA Lens	28-9534-80
		IN Cell Analyzer 2000 ASAC 60× 0.7 NA Lens	28-9534-81
		IN Cell Analyzer 2000 ASAC 60× 0.95 NA Lens	28-9534-82
		IN Cell Analyzer 2000 ASAC 100× 0.9 NA Lens	28-9534-83
		IN Cell Analyzer 2000 3-D Deconvolution Software	28-9534-86
		IN Cell Analyzer 2000 Transmitted Light Module	28-9534-87
		IN Cell Analyzer 2000 Slide Handling Module (2)	28-9544-75
		<b>IN Cell Analyzer 2000 Live Cell Package A</b> Includes: Temperature Control and Environmental Control Modules	28-9542-08
		<b>IN Cell Analyzer 2000 Live Cell Package B</b> Includes: Temperature Control and Liquid Handling Modules	28-9542-17
		<b>IN Cell Analyzer 2000 Live Cell Package C</b> Includes: Temperature Control, Liquid Handling, and Environmental Control Modules	28-9542-18
		IN Cell Investigator, single seat license	28-4089-71
		IN Cell Miner HCM, academic use includes 3 client and 1 server licenses	28-9342-29
		IN Cell Miner HCM, commercial use includes 5 client and 1 server licenses	28-9342-30

A polychroic that enables imaging of common fluorescent proteins (including CFP and YFP) individually or as a FRET pair is also available. Please inquire for details

# Impressively enabling for cell analysis – let us prove it to you

IN Cell Analyzer 2000 delivers the high-performance hardware, state-of-the-art software, and expert support you need to transform your cellular workflow. But don't just take our word for it – contact us now to learn more about just how easy your cell analysis could be.

For local office contact information, visit:  
[www.gelifesciences.com/contact](http://www.gelifesciences.com/contact)

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imagination at work