

GE Healthcare
Life Sciences

IN Cell Analyzer 2200

Brighter, faster, better.



Precision engineered for speed and efficiency

Building on the extremely successful IN Cell Analyzer 2000, the updated IN Cell Analyzer 2200 delivers remarkable speed and sensitivity to give you higher throughput and efficiency while retaining the flexibility you expect from the IN Cell Analyzer system.

IN Cell Analyzer 2200 is a super-fast and sensitive widefield cell imaging system fine-tuned to the needs of the entire high-content imaging workflow. Designed to bring efficiency to your imaging so you can spend more time on your science, it delivers the flexibility to make both simple and complex high-throughput 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

Designed for flexibility

Configure IN Cell Analyzer 2200 to your specific needs. Choose from a wide range of optional modules and accessories to build the instrument you need now, or upgrade as your needs evolve.

The standard instrument includes:

- High-performance, scientific-grade, large field-of-view CMOS camera
- Seven-wavelength high-intensity, solid-state light source
- Software autofocus with static and adaptive modes
- Rapid and robust hardware autofocus (may be used in combination with the software autofocus)
- Image restoration options for image quality optimization
- Selected polychroics, filters, and objectives
- Automated objective, correction collar, and polychroic changing

Optional modules and accessories include:

- Environmental control chamber for humidified CO₂
- Liquid handling for assay automation
- Transmitted light imaging module
- Temperature control from ambient to 42°C
- Slide imaging module
- Additional 3-D image restoration options
- FRET imaging module (enables imaging of common fluorescent proteins [including CFP and YFP] individually or as a FRET pair)
- A wide range of additional objectives (2× to 60×) including high numerical aperture (NA) options (up to 0.95 NA)

Super-fast, high-quality cell imaging

IN Cell Analyzer 2200 can image a two-color 96-well plate assay in under 2.5 minutes and a one-color 1536 well plate in under 20 minutes*. This speed is achieved through a highly optimized optical system which includes a bright solid-state light source and a scientific-grade CMOS camera. The light source reduces exposure times and maximizes speed while the camera delivers high-quality images and a wide dynamic range. Confocal-like images can also be obtained using the rapid image restoration options in the control software.

- Bright solid-state light source
- Scientific-grade CMOS camera
- Efficient, optimized XY stage
- Highly efficient control software

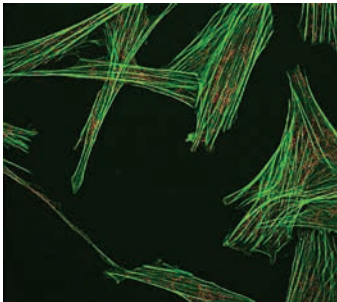


Fig 1. FluoCells™ prepared slide #6 (F36925) muntjac skin fibroblast cells. Filamentous actin labeled with Alexa Fluor™ 488 phalloidin, mitochondria labeled with an anti-OxPhos Complex V inhibitor protein mouse monoclonal antibody in conjunction with Alexa Fluor 555 goat anti-mouse IgG. Imaged using a 60× 0.7NA objective.

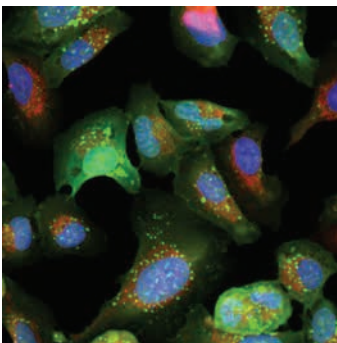


Fig 2. U-2OS cells labeled using EGFP-2x FYVE Assay, Hoechst™ 33342, and EGFP MitoTracker™ Deep Red 633, and imaged with 60× 0.7 NA objective on a 96-well glass Whatman plate.

*Assays conditions:
96-well Greiner µClear™ plate, two-color assay, 100ms exposure, acquisition duration: 109 seconds
1536-well PNC foci, one-color assay, 35ms exposure, acquisition duration: 1140 seconds

High-performance optical system

Bright, solid-state illumination

A seven-wavelength solid-state light source and liquid light guide enable you to image dim samples efficiently and reduce exposure times for your everyday studies. Delivering optimized bright and even illumination for increased sensitivity and faster imaging, the light source is highly stable, quiet to run, and has a longer lifespan than many other types of light source, lowering the overall cost of maintenance.

- Bright, efficient, and even illumination
- Increased sensitivity
- Reduced exposure times for faster imaging
- Instant on/off operation with extended lifetime of up to 10 000h

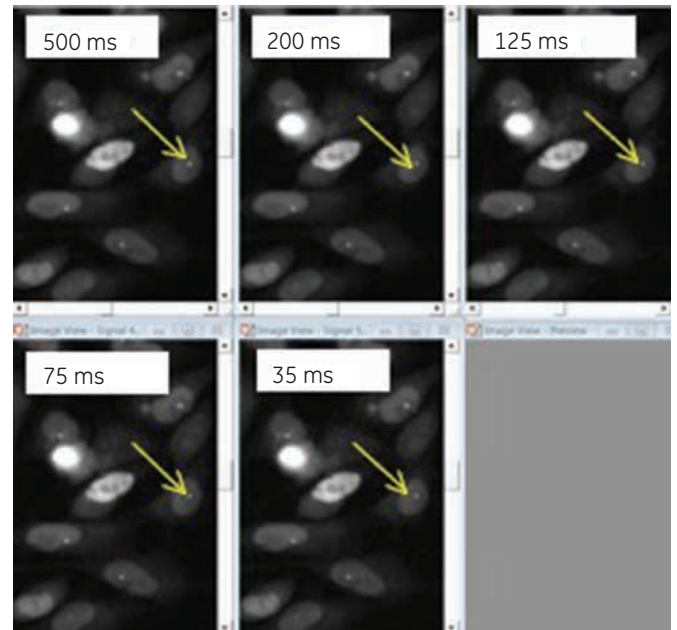


Fig 3. Measurement of nuclear GFP foci, which are clearly identified even in the lowest exposure image used. (Assay plate supplied by NIH Chemical Genomics Center, USA)

Scientific-grade CMOS camera

Obtain robust and reliable analysis results for a range of applications with a 5.5Mp scientific-grade 16-bit CMOS camera. High-sensitivity, superior image quality, and a wide dynamic range combine to deliver better resolution of dim objects, less artifacts and distortion, and improved segmentation and resolution of cellular features.

- Large field-of-view
- High sensitivity
- 5× less noise compared with industry-standard cooled CCDs
- Wider dynamic range than scientific CCDs
- Faster frame rates than scientific CCDs

Smart design features for simplified imaging

Get started quickly and minimize setup time with intuitive and easy-to-use tools. Incorporating many features that simplify the imaging process for different sample types and enable a wide range of applications, IN Cell Analyzer 2200 helps you spend your time where it matters most—on your research.

These features include:

- Preview Scan
- Review Scan
- Manual Microscope mode
- Whole-well imaging function
- Online cell counting
- Interactive features to aid imaging non-standard formats
- Automated setup components
- Slide imaging made easy
- Flexible transmitted light imaging

Preview Scan

Find regions of interest in a well, on a slide, or a whole plate more quickly so you can identify your optimum field-of-view more rapidly.

- Quickly preview a selected area of your sample at any magnification to identify your region of interest before starting an acquisition run.
- The region of interest can be any size from a portion of a well or an entire plate or slide, simply zoom in and out to define the size of the field-of-view and drag it to the position of interest.
- Avoid imaging unwanted areas to significantly increase speed and find tissue samples simply and easily.

Review Scan

Automatically find wells of interest in a plate assay and save time by re-scanning only the wells you want.

- Set up an acquisition run to scan your plate
- Assess the features you are looking for
- Automatically re-image only those wells that qualify with a new set of acquisition parameters, such as at a higher magnification or using different excitation and emission filters

Automatically re-imaging only those wells of interest reduces overall data acquisition time, simplifies your workflow, reduces memory usage and makes it easier to find wells of interest without any subjective decision making.

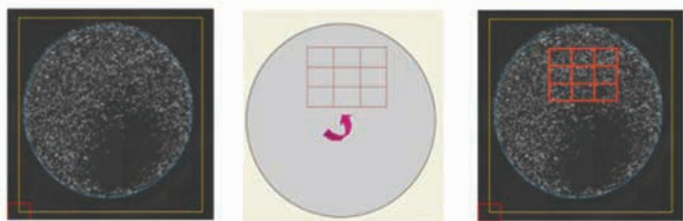


Fig 4. Visualize cell distribution and define the position of interest (e.g., to avoid artifacts such as patches devoid of cells).

Manual Microscope mode

Obtain instantaneous visual feedback on results allowing you to easily control and adjust the imaging conditions to suit your needs.

- Work with your image at full size and resolution
- Easily zoom in and out to assess the biology
- Readily call up image properties
- Manually adjust settings through the user interface (e.g., filters, objectives, z-height) and assess effects in real time

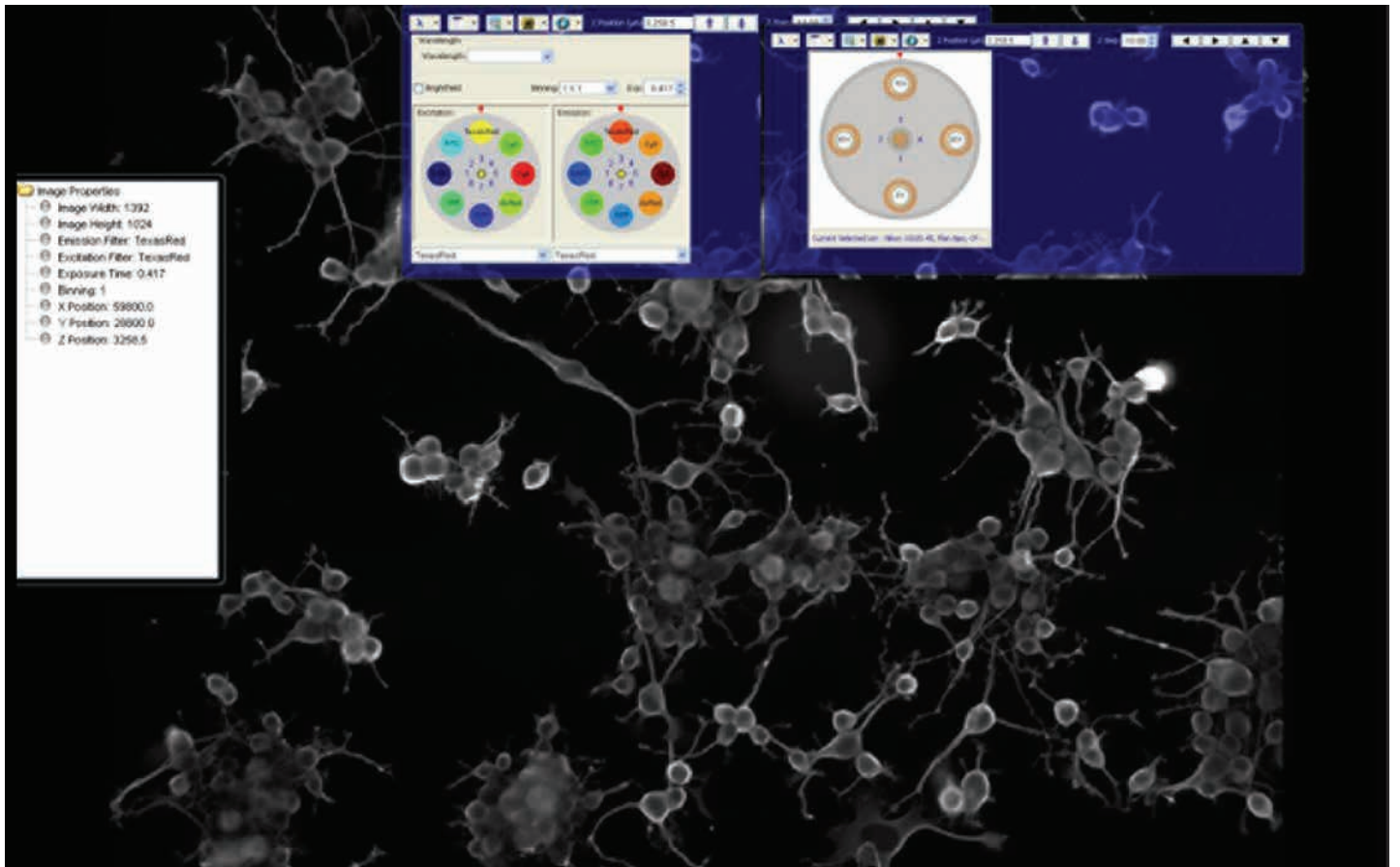


Fig 5. Imaging properties can be easily viewed and the conditions adjusted using Manual Microscope mode.

Whole-well imaging

Rapidly capture all of your biology in an entire well with a single image (96-well and 384-well plates) using a combination of low-magnification objectives and scientific-grade CMOS camera. In cases where cells are unevenly distributed or differentially affected by test treatments, collecting data from every cell in the well can provide more robust statistical results. Whole-well imaging also enables imaging of large tissue sections, whole organisms, extended structures, organs, and other gross morphological features in their entirety with no risk of image stitching artifacts.

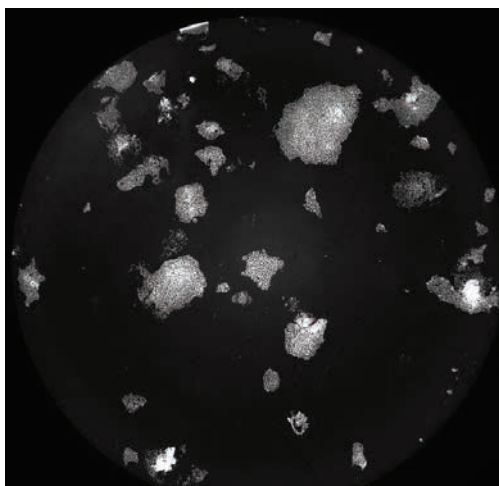


Fig 6. Stem cell colonies whole-well image. Imaged on a 96-well plate using a 2× 0.1 NA objective.

Online cell counting

Reduce acquisition time by ensuring sufficient cells are acquired rather than total cells. On the fly cell counting ensures you acquire only the number of images required to achieve a user-defined threshold.

Interactive tools for imaging non-standard formats

- **Adjustable well grid alignment** enables you to define the four corners of the imaging field to manipulate or fine-tune the well grid alignment, facilitating scanning custom plates, high-density plates, and arrays which may not be perfectly aligned.
- **Adjustable laser autofocus** increases flexibility and enables you to identify potential issues before they affect your imaging. This feature also helps identify differences between existing plate maps and actual bottom thickness and optimizes the plate or slide map to prevent autofocus errors.

Automated components for simple user setup

Adjust objectives, correction collars, filters, and polychroics through the software interface so there is no requirement for manual intervention—reducing the risk of errors and malfunction while saving time.

Slide imaging

Use Preview Scan to quickly locate your region of interest prior to acquisition of images of tissues and samples on slides at a higher magnification. An intuitive graphical user interface and smart software autofocus simplify the workflow and significantly shorten run times.

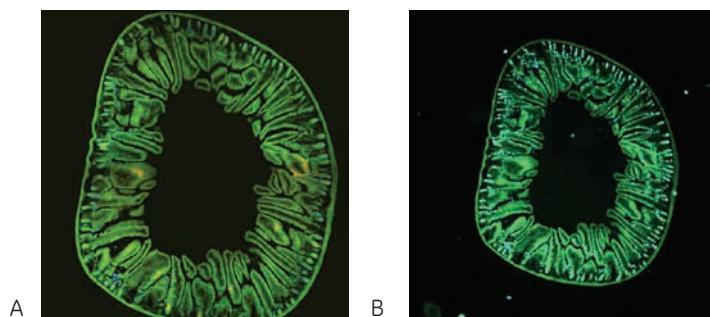


Fig 7. FluoCells prepared slide #3 (F24630) of mouse kidney. (A) Image acquired at 10× (0.45 NA) and stitched from four separate fields (three-color fused). (B) Image acquired at 4× as single image field (4× 0.2 NA objective) (DAPI and Alexa 488 fused).

Image restoration options for different sample requirements

A choice of six imaging modes helps you get the most quantitatively accurate images for your sample type. Image restoration options are capable of removing noise, increasing contrast, and improving resolution in both the lateral (X-Y) and axial (Z) dimensions.

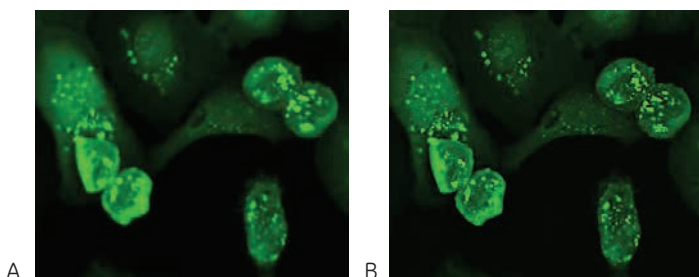


Fig 8. (A) eGFP image acquired with 2-D acquisition (standard mode), (B) Sharpened eGFP image acquired with 2.5D deconvolution.

Suitable for use with dim samples

Unlike confocal technologies that reject out-of-focus light, image restoration (deconvolution) of widefield images makes maximum use of signal from dim samples by using all of the captured light to restore the image.

Quantitative results

IN Cell Analyzer 2200 image restoration algorithms use a model of the actual optical configuration specified in your acquisition protocol to sharpen images. This produces quantitatively accurate results on a par with those obtained using confocal methods.

Suitable for use with high NA objectives

Z-axis projection combined with deconvolution provides a virtually extended depth-of-field for increased lateral resolution without missing features that fall above or below the focal plane. This mode is particularly advantageous when working with high NA (typically high magnification) lenses that capture only a very thin optical section, which might not include all the features of interest.

Flexible 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 2200 simplifies the process, offering a range of modes to ensure you have the flexibility to get high-quality images from your samples.

Choose from:

- Brightfield
- Differential interference contrast (DIC)
- Phase-contrast

High-quality 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 fluorescence channels in the standard IN Cell Investigator software.

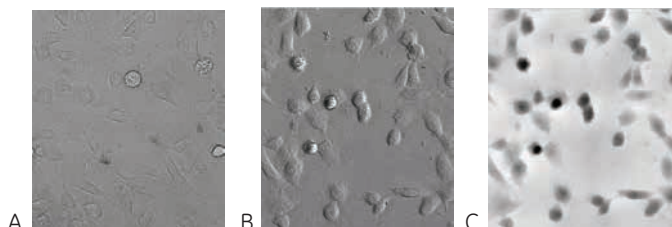


Fig 9. (A) Brightfield, (B) DIC, and (C) Phase contrast images.

Transforming images into knowledge

Generating high-quality images is the first step on the road to discovery through HCA but the insights that HCA delivers are realized through exacting and accurate data analysis. Easy-to-use, flexible analysis and visualization tools are key to unlocking the full potential that HCA offers.

IN Cell Investigator: Intuitive. Adaptive. Powerful.

IN Cell Investigator is designed to provide a comprehensive package of image analysis tools for a broad range of imaging experiments, suitable for users with basic to advanced knowledge of cellular image analysis — all in a single package.



Intuitive Level 1:

An ideal starting point for cell analysis.

Simplifies cell analysis by providing ready to use, preconfigured analysis tools suitable for a broad range of applications. With a few simple steps even novice users can run an analysis protocol in seconds.

Adaptive Level 2:

Structured and guided, for more advanced applications. Guides the user through a selection of more advanced image analysis options in a simple and structured way (e.g., by the use of drop down menus). Provides access to over 100 cellular measures plus a selection of powerful filtering tools for subpopulation analysis.

Powerful Level 3:

Define your own analysis routines for unique assays. Highly flexible and advanced segmentation and image processing options enable complex or unique assays to be analyzed by creating custom routines to measure almost any assay type.

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.

A range of automation options

IN Cell Analyzer 2200 has been specifically designed to be compatible with a wide range of automation options for high-content assays. Robots purchased as an option with the instrument are supported by a full integration program. Alternatively, the instrument may be interfaced with your own automation solutions.

For more information on IN Cell Investigator, IN Cell Miner HCM, and automation options, visit www.gelifesciences.com/incell

One instrument to meet all your needs

The features and functions of IN Cell Analyzer 2200 provide the performance you need to tackle a wide variety of screening and research applications.

Faster, more efficient screening and assay development

IN Cell Analyzer 2200 offers high-speed imaging at an affordable price. The speed delivers increased throughput for compounds and assays but also increases read accuracy between wells (especially in high-density formats such as 1536 wells) for improved data quality. Suitable for a wide range of assay types, including:

- Compound screening
- Predictive toxicology
- RNAi screening
- Lead optimization
- Slide-based arrays (e.g., tissue microarrays, siRNAs)
- Phenotypic profiling in screens requiring resolution of subcellular features
- Rapid imaging of low abundance probes and weak fluorescent sensors
- Micronuclei screening
- Wash-free assays
- Live-cell and kinetic assays

Get a greater return on investment from your core facility

High-speed flexible imaging allows you to keep your high-content service running efficiently even when you have a diverse range of needs. With the ability to run more assays per day and the ease-of-use features that mean samples can be processed efficiently and with minimal intervention, you can maximize output without compromising the quality of your results.

With a choice of analysis software to suit basic and advanced users and features that enable a wide variety of sample types, IN Cell Analyzer 2200 addresses the assays you need to run now and gives you the capability to meet your future needs.

- Suitable for screening and research applications
- Runs with minimal user intervention
- Ease-of-use features for simple assay setup
- Analysis software that addresses the needs of both novice and advanced users
- Enables a wide range of assay and sample types



Spend more time on your research, less time on your instrument

IN Cell Analyzer 2200 delivers high-quality imaging results and high-quality data in a highly efficient way leaving you with more time to do your research. With features that enable rapid sample location and assay setup for a wide variety of sample types, and the speed and sensitivity to image dim samples quickly, even novice users will value the efficiencies that the instrument delivers to a wide range of research requirements.

- Easily image substructures, cells, tissues, and small organisms
- Protein localization and trafficking
- Functional studies
- Antibody characterization
- Neurite outgrowth and neuronal function
- Cell phenotype profiling
- Nuclear substructure analysis
- Organelle morphology studies
- Microtubule analysis
- Mitotic structure analysis and cell cycle studies
- Cell adhesion and migration assays
- Heat-shock studies
- Time-course analysis and kinetic assays
- Temperature-sensitive mutations
- Stem cell analysis

Ordering information

Instruments	Code number
IN Cell Analyzer 2200 Imaging System 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, 2-D deconvolution software, computer, monitor, keyboard, and mouse. (6.5 x 6.5 μm pixel size)	29-0278-86
IN Cell Analyzer 2× 0.1 NA Objective Lens	28-9534-76
IN Cell Analyzer 4× 0.2 NA Objective Lens	28-9534-77
IN Cell Analyzer 20× 0.75 NA Objective Lens	28-9534-78
IN Cell Analyzer ASAC 40× 0.6 NA Lens	29-0518-71
IN Cell Analyzer ASAC 40× 0.95 NA Lens	29-0518-76
IN Cell Analyzer ASAC 60× 0.7 NA Lens	29-0518-73
IN Cell Analyzer ASAC 60× 0.95 NA Lens	29-0518-77
IN Cell Analyzer ASAC 100× 0.9 Lens	29-0518-75
IN Cell Analyzer 3-D Deconvolution Software	28-9534-86
IN Cell Analyzer Transmitted Light Module	28-9534-87
IN Cell Analyzer Slide Handling Module (2)	28-9544-75
IN Cell Analyzer 2200 Polychroic FRET Module	29-0332-42
N Cell Analyzer Live Cell Package A Includes: Temperature Control and Environmental Control Modules	28-9542-08
IN Cell Analyzer Live Cell Package B Includes: Temperature Control and Liquid Handling Modules	28-9798-63
IN Cell Analyzer Live Cell Package C Includes: Temperature Control, Liquid Handling, and Environmental Control Modules	28-9798-74
IN Cell Investigator, single seat license	28-4089-71
IN Cell Miner HCM, single academic use	28-9624-55
IN Cell Miner HCM, single commercial use	28-9624-56

Impressively fast for cell analysis — let us prove it to you

IN Cell Analyzer 2200 is a super-fast, widefield cell imaging system that delivers the speed and flexibility to make high-throughput, high-content assays an everyday reality. 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

www.gelifesciences.com/incell

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imagination at work