Supercharge Your Cell Research
Agilent cell analysis portfolio
Shorten the Path to Your Next Life-Changing Breakthrough

Advances in cell imaging, real-time cell analysis, and flow cytometry are rewriting the rules in the race against disease. But to take full advantage of these technologies, your lab must maximize workflow efficiency and produce robust data. The right partner can help your lab accelerate discoveries.

**Improve our world through more effective treatments and a higher quality of life**


Cell analysis can help you understand, predict, and influence the factors that determine cell health, proliferation, function, and death. But conducting numerous investigations and compiling multiple data sets is complicated, and can tax the resources of any lab.

You can simplify and enhance your workflows—while enabling both beginners and experts to generate meaningful insights—by partnering with Agilent.

### Applications and industries

- **Cancer biology.** Investigate dynamic cancer cell strategies with innovative cell analysis technologies.
- **Cell biology.** Optimize cell culture workflows and assays and perform robust quantitative analysis.
- **Cell health and viability.** Measure biological processes such as proliferation, apoptosis, and cytotoxicity.
- **Cell metabolism.** Analyze key indicators of healthy cell function and predict cellular performance for in vitro disease models.
- **Cell migration and invasion.** Measure chemotaxis, as well as cell migration and invasion in real time.
- **Cell signaling.** Identify biochemical targets and develop therapeutic strategies.
- **Drug discovery and development.** Expand your drug pipeline with cell-based assays.
- **Histology and whole-organism imaging.** Deliver deeper insight into diverse sample types.
- **Immunology.** Understand the function and activity of immune cells and gain deeper insight into the mechanisms behind diseases and infections.
- **Immuno-oncology.** Assess real-time cell function, phenotype, and fate to develop therapies that harness the immune system to attack cancer cells.
- **Microbiology.** Quantify microbial growth, perform multiparametric profiling of microbial cultures, and detect microbial contamination.
- **Molecular biology and biochemical.** Achieve robust results for ELISA, nucleic acid and protein quantification, and enzyme kinetics.
- **Stem cell biology.** Acquire mechanistic insights into disease and test the liability and effectiveness of new drugs.
- **Toxicology research.** Directly measure genotoxicity, mitochondrial toxicity, cytotoxicity, and cardiotoxicity with high specificity and sensitivity.
- **Virology.** Gain insights into virus-host cell interactions using robust cell analysis.
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Agilent Seahorse XF analyzers

Transform your measurement of energy metabolism

To fully understand what drives cell phenotype and function, you must consider the influences of energy metabolism.

Examining energy metabolism has led to new insights into biological function. In fact, some of the decade’s most significant discoveries have hinged upon elucidating the role of energy metabolism in cellular processes.

Seahorse XF analyzers enable robust measurements of mitochondrial activity, glycolysis, and ATP production rates in a microplate format. Capabilities include:

- Automatic calculation of oxygen consumption and proton efflux rates
- Label-free detection of discrete bioenergetic changes to live cells—in real time
- Compatibility with both adherent and suspension cells, as well as isolated mitochondria
- Instrument-controlled gentle mixing, measuring, and compound injections
- High sensitivity for analyzing as few as 5,000 cells per well
- Temperature controlled to maintain cell health and kinetics

Seahorse XF imaging and normalization system

By integrating cell count normalization into Wave software, this turnkey solution improves data interpretation and makes your XF analysis more successful than ever.

www.agilent.com/lifesciences/normalization
Deepen your insights into cell function with Agilent Seahorse XF assay kits

Core assays for therapeutic discovery and research

**XF Real-Time ATP Rate Assay kit**
- Assess metabolic phenotype changes.
- Define pathway liabilities.
- Screen metabolic modulators.

**XF Cell Mito Stress Test kit**
- Get a complete mitochondrial respiration profile with multiparametric output.

**XF Glycolytic Rate Assay kit**
- Quantify glycolytic activity in real time.
- Reveal insights not evident with an end-point lactate accumulation assay.

**Customized assay for cell therapy development**

**XF T Cell Metabolic Profiling Assay kit**
- Reveal T cell metabolic signatures that are critical for antitumor activities.

**Turnkey solution for preclinical safety studies**

**XF Mito Tox Assay kit**
- Identify mitochondrial toxicity with high sensitivity, specificity, and a simplified assay protocol.

Learn more about live cell metabolic analysis, visit [www.agilent.com/lifesciences/discoverxf](http://www.agilent.com/lifesciences/discoverxf)
Agilent xCELLigence RTCA

Label-free real-time cell analysis

Discover what you’ve been missing between endpoints. The Agilent xCELLigence real-time cell analyzer (RTCA) harnesses impedance-based biosensor technology to continuously monitor cell health, behavior, and function with high accuracy, sensitivity, and reproducibility. All without the use of labels and in real time.

Simply robust and powerful

The xCELLigence portfolio offers 9 different configurations with a range of throughputs (16-, 48-, 96- or 384-well formats) and functionalities. Perform quantitative monitoring of cardiomyocyte beating (milliseconds), receptor signaling (minutes), cell migration and invasion (hours), and cell growth and killing kinetics (hours/days) in real time without the use of labels. Experience robust assays, from discovery and process development to manufacturing quality control.

Control unit with state-of-the-art RTCA software

- Simple assay setup
- Streamlined real-time data acquisition and analysis
- Powerful immunotherapy analysis tools
- Support for 21 CFR Part 11 compliance

xCELLigence RTCA analyzer

- Processing data in real time
- Validated performance

RTCA ePlate

- Biocompatible biosensor ePlate
- Glass or PET substrate
- Compatible with co-culture device

xCELLigence RTCA station

- Interfacing with biosensor ePlate
- High temporal resolution (seconds)
- Independent cradles for multiple users
- Designed for culture incubator
Explore a wide range of applications
- Cell migration and invasion
- Compound-mediated cytotoxicity
- Virus-mediated cytopathogenicity
- Immune cell killing and potency
- Functional monitoring of GPCR signaling
- Cell adhesion and spreading
- Cell proliferation and differentiation
- Barrier function disruption and recovery
- Continuous quality control of cells

Agilent xCELLigence RTCA eSight
Get two instruments and twice the results from one powerful system
The xCELLigence RTCA eSight provides a simple, automated workflow that generates crucial data around the clock—all within your incubator. With real-time live cell analysis, and the combination of impedance (label-free) and imaging (brightfield, red, green, and blue fluorescent channels), you can easily monitor and quantify kinetic cellular data over the course of seconds, hours, or days. Five cradles, supporting up to 96-well capability, ensure that the experience is multi-user friendly while securing a high-throughput, information-rich, and efficient workflow.

Multiplex impedance-based data with live cell imaging for increased confidence
xCELLigence RTCA eSight adds live cell imaging for increased confidence in your cell analysis and conclusions. Go a step further in your research and easily monitor and quantify assays spanning immune cell activation, proliferation, clustering, potency, target cell killing, as well as viral CPE and drug discovery. Uncover unique drug mechanisms of action and cellular phenomena by multiplexing with both impedance and imaging—all in the same well.
Capture precious cellular and biological events as they happen, and never miss a crucial time point again.

Explore real-time cell analysis at www.agilent.com/lifesciences/xcelligence-rtca
Agilent BioTek BioSpa live cell analysis system

Multiplate processing with walkaway convenience

The Agilent BioTek BioSpa live cell analysis system lets you process up to eight vessels for hours, days, or weeks at a time. Onboard atmospheric controls enable kinetic reading and image processing on a laboratory benchtop. You can also perform live cell imaging, including liquid handling under sterile conditions, by placing the system into a laminar flow hood.

Live cell imaging
Agilent BioTek Cytation C10 confocal imager, and other Cytation cell imagers are easily integrated with BioSpa, enabling automated live cell workflows in multiple vessels.

Flexible sample processing
The BioSpa allows you to run reading, imaging, and liquid handling applications with up to eight different vessels at once.

Onboard environmental controls
Atmospheric controls—including temperature, CO₂/O₂, and humidity—let you perform reading and imaging applications on your benchtop with no additional incubator.

Automated processing
Schedule and begin your protocols simultaneously or independently using BioSpa software. Each step is tracked, and alerts notify you when samples have been processed.
Automate live cell workflows

BioSpa integration with BioTek liquid handlers and imagers creates an automated system for long- and short-term live cell assays. Gen5 software provides the data capture and analysis for imaging operations.

3D cell structure details are captured with the z-stacking and z-projection features in Gen5.

Gen5 tools like nuclear and cytoplasmic masking define regions of interest for detailed analysis.

Gen5 offers advanced analysis including spot counting, auto ROI, object tracking, and scratch wound healing.

Featured technologies

The Cytation product line offers a range of microscopy and imaging capabilities, including upright and inverted microscopes, confocal and widefield imaging, plus multimode plate reading.

The BioSpa live cell analysis system fits compactly in a laminar flow hood, enabling long-term kinetic live cell assays under sterile conditions.

Related instruments and accessories

BioSpa integrates with several Agilent BioTek instruments to enable a variety of automated workflows. Key components of a system can include:

- **Cytation C10/7/5/1 cell imaging multimode readers**
  - Confocal and widefield automated imagers and plate readers

- **Synergy Neo2 hybrid multimode reader**
  - Fast, accurate multimode plate reading, up to 1536 wells

- **MultiFlo FX multimode dispenser**
  - Automates liquid handling steps with peristaltic and syringe pump delivery

- **405 TS washer**
  - Rapid 96- and 384-well plate washing

- **EL406 washer dispenser**
  - Multifunctional liquid handling

Learn more about applications enabled with the BioSpa live cell analysis system at [www.agilent.com/lifesciences/biotek-biospa](http://www.agilent.com/lifesciences/biotek-biospa)
Agilent BioTek cell imagers and microscopes

Bring your science to life

Capture spectacular images, z-stacks, montages, and time-lapse sequences using different vessels, including Agilent cell culture and imaging microplates. These instruments support a wide range of microscopy workflows, including live cell kinetics.

**Open design**
- Easy access to samples
- Integrated microfluidic devices

**Environmental controls**
- Incubation and CO₂/O₂ control support live cell imaging

**Spinning disk confocal**
- Improved ability to penetrate thick biology

**Rapid event imaging**
- Capture fast cellular reactions, e.g., calcium flux assays

**Imaging modes**
- Label-free transmitted light imaging
- Widefield fluorescence

**Modularity**
- Confocal and widefield imaging
- Multimode plate reading

Cytation cell imaging multimode readers

The Cytation line offers a broad range of imaging modes, plus multimode reading across many application areas and budgets.
Capture with confidence
Execute a wide range of widefield and confocal imaging applications including live- and fixed-cell biologies.

Analyze with certainty
Use Gen5 to analyze and obtain a wealth of data on a population, single cell, or subcellular level.

Process and optimize images
Image-processing tools provided by Gen5 software improve your final results, delivering publication-quality images.

Publish without external software
Automatically create scatterplots, histograms, and IC_{50}/EC_{50} curves from generated data.

Featured technologies
The wide field of view camera provides fast imaging. Tissue sections on slides (below left) and in microplates (right) can be imaged from low to high magnification.

The BioTek proprietary laser autofocus offers speed, excellent reproducibility, and accuracy, while preventing phototoxicity and photobleaching.

Related instruments and accessories
Enhance the live cell imaging and microscopy capabilities of Agilent BioTek instruments with an extensive range of objectives, filters, and peripherals, including those featured here.

Explore the entire Agilent BioTek imaging and microscopy instrument portfolio at www.agilent.com/lifesciences/biotek-imaging
Agilent BioTek liquid handling and automation

Save time, space, and money

Why use multiple instruments for washing and reagent dispensing? With their small footprint, Agilent BioTek washers, dispensers, and combination washer dispensers are the ultimate in modularity. These affordable, compact instruments are designed to offer the best performance, low maintenance, ease of use, and powerful functionality.

Automate seamlessly

The Agilent BioTek BioStack is compact and versatile, with rapid plate exchange to increase throughput. BioStack enables automated workflows in microplates and slides.

No-contact reagent dispensing

Add up to two peristaltic pumps and two dual-syringe pumps to the plate washer to dispense up to six reagents on a single instrument.

Plate washing

The dual-action manifold allows separate control of aspirate and dispense tube positions for optimized 96- and 384-well plate washing.
Modularity enables application versatility

Agilent BioTek liquid handling and automation instruments are designed for ultimate versatility, with modules that enable expanded applications as your research needs change. The wide range of applications includes:

- Immunocytochemistry
- Magnetic bead assays
- Automated media exchange for 3D cell structures
- High-content screening
- Cell seeding
- ELISA

Related instruments and accessories

Agilent BioTek liquid handlers integrate with Agilent BioTek BioSpa and microplate imagers and readers to enable fully automated live cell workflows.

Featured technologies

The Agilent BioTek Ultrasonic Advantage feature of the 406 FX washer dispenser automatically maintains clog-free dispense and aspirate tubes.

The Agilent BenchCel integrates with several Agilent BioTek instruments to create an automated ELISA workstation.

The Agilent BioTek MultiFlo FX offers automated media exchange (AMX) technology to provide gentle media exchange for cells and spheroids.


See the complete portfolio of Agilent BioTek liquid handling products at www.agilent.com/lifesciences/biotek-automation
Agilent BioTek microplate readers

Experience ultimate flexibility and performance

Configurable Agilent BioTek microplate readers offer a range of modules, options, and accessories to address low, medium, and ultrahigh throughput applications. Absorbance readers deliver excellent performance and functionality from basic ELISA to advanced detection chemistries. Multimode readers support monochromator-based, filter-based, and combination methods—enabling detection of UV-Vis absorbance, luminescence, fluorescence, fluorescence polarization, time-resolved fluorescence (TRF), FRET, and Alphascreen assays.

Dual PMT detectors
For assays that require fast ratiometric measurements.

Variable bandwidth detection
For increased sensitivity and specificity of multiple fluorescence signals.

Two lasers
For TRF and Alphascreen assays that require increased sensitivity and fast reading speeds.
Modular detection covers multiple applications

The modular and upgradable BioTek multimode readers offer expanded capabilities as your research needs change. The applications for these readers are broad-ranging and include:

- High-throughput screening
- Biomarker assays
- Nucleic acid quantification
- Protein quantification
- Rapid kinetics
- ELISA
- HTRF
- Microbial growth assays
- Alphascreen assays
- FRET

Applications in 6- to 1536-well microplates are accommodated, depending on the selected microplate reader.

Agilent BioTek Gen6 data analysis software—with many pre-programmed assays—makes plate setup, reading, and analysis seamless and efficient, so you can move on with your research.

Featured technologies

Synergy Neo2 has dual PMTs, enabling rapid, simultaneous measurements for FP, FRET, and TR-FRET assays.

The combination of filters and monochromators in Synergy H1 and Synergy Neo2 provides flexibility and performance.

Related instruments and accessories

The Agilent BioTek Take3 plates enable micro-volume nucleic acid measurements in the Epoch and Synergy microplate readers.

The reagent injector for Synergy Neo2 and Synergy H1 has straight tips for vigorous inject/read assays, or angled tips for gentle dispensing to cell layers.

Agilent NovoCyte flow cytometers

Find answers to your flow cytometry frustrations

Built on a proven platform, NovoCyte Penteon, NovoCyte Quanteon, and NovoCyte Advanteon flow cytometers deliver expanded capabilities that accommodate today’s sophisticated, multicolor flow cytometry assays.

Put more flow into your flow cytometry with features like these:

– High-sensitivity and resolution
– Smart-design functionalities and walkaway convenience
– Automation-ready capabilities for high-throughput needs
– Wide, seven-log dynamic range that eliminates the need for routine detector adjustments
– Side-scatter resolution of 100 nm, which allows for small particle detection
– Exceptional fluidic stability and precision volumetric measurement for absolute counts in every sample

Easy startup and shut down

Quick startup with automated fluidic rinsing takes only minutes to prepare the instrument for your daily use. Push of a button automatic shutdown thoroughly cleans the instrument at the end of the day.

Hassle-free fluidics

Electronically monitored valves and sensors allow for automatic clog detection and recovery. Choose from up to 30 independent fluorescence channels using 1-5 lasers.

Continuous quality control

Quickly run daily QC, automatically generate comprehensive QC reports, and conveniently track performance over time with Levey-Jennings plots.

Continuously monitors fluid levels

A fluidic station will sense low sheath fluid or high waste and eliminate the need for manual inspection.
Flow cytometry doesn’t have to be complicated

Instrument clogging. Endless detector setting adjustments. Different software programs for acquisition and data analysis. If you use flow cytometry to analyze cell characteristics, then you’ve probably dealt with all of these hassles and more. But here’s the good news: NovoCyte flow cytometers put your flow frustrations to rest.

- **Begin—and end—you day with ease.** It takes just minutes to prepare the cytometer for use, and prescheduled shutdown includes an automatic deep cleaning.
- **Keep clogs at bay.** Electronically monitored valves and sensors allow for automatic clog detection and recovery.
- **Reduce the need for manual inspections.** The cytometer automatically detects low fluid or high waste.
- **Maintain quality.** An automatic QC test monitors instrument performance.
- **Intuitive and easy-to-use software.** No steep learning curve to focus on data generation.

Streamline your sample acquisition, data analysis, and reporting. The latest edition of our industry-leading NovoExpress software provides an exceptional user experience.

Get flowing with Agilent NovoCyte flow cytometers, visit [www.agilent.com/lifesciences/novocyte](http://www.agilent.com/lifesciences/novocyte)
Agilent microplates

Meeting the needs of today’s cell analysis procedures

Today’s cell analysis workflows incorporate multiple steps and components, including test molecule storage, sample purification, dilution and transfer of assay components, and analysis of each final test condition. The Agilent portfolio of reagent reservoirs, storage/assay plates, filter bottom microplates, and imaging microplates provide the solutions you need to perform each portion of your assay procedure.

Compound library storage

Store compound libraries and large numbers of biological samples safely and efficiently. All storage plates are sealable and automation friendly.

www.agilent.com/microplates/storage_plates

Assay component dilution and transfer

Perform serial dilutions for IC$_{50}$/EC$_{50}$ evaluations. Easily hold cells, media, and assay reagents before transferring with manual or automated pipetting.

www.agilent.com/microplates/reservoirs

Filter-based assay performance

Customize filter-based applications by optimizing sample preparation and final yield output.

www.agilent.com/microplates/filter_plates

Image-based cellular analysis

High-quality transmitted light and fluorescence imaging is possible using clear or black-walled microplates with coverslip bottom thickness in 96- or 384-well formats.

www.agilent.com/microplates/imaging_plates

Custom solutions

Your application is unique. While there are plenty of standard microplate options to choose from, the right microplate for your needs could be a variation of an existing product or a completely new design. Learn more about our custom solutions.

www.agilent.com/microplates/custom_plates
Move your science forward, faster

Where can you find the support, services, and expertise that will give you the confidence to pursue deeper insights into diseases and their potential therapies? Look no further than Agilent. Our broad, multidisciplinary community puts your mission-critical goals at the center of everything we do.

Agilent CrossLab services for cell analysis

Unplanned instrument downtime can waste precious samples and set your research back weeks or months. Control costs and power your workflow productivity by partnering with Agilent CrossLab services. Together, we can help you maximize uptime through predictive diagnostics, control service costs, and produce publication-ready data. View or download the brochure at [www.agilent.com/lifesciences/cell-analysis-crosslab](http://www.agilent.com/lifesciences/cell-analysis-crosslab)

An extensive support network

Scientific achievement depends upon the union of experimental design, instrumentation, and analysis. Agilent field application scientists (FAS) provide unparalleled support, and can assist you with experimental planning and assay optimization. From predemonstration through ownership, our FAS team is focused on your research goals and ideas. Learn more about Agilent FAS at [www.agilent.com/lifesciences/fasteam](http://www.agilent.com/lifesciences/fasteam)

Compliance services

Data integrity requirements are more stringent than ever, and regulatory audits are growing more frequent by the day. As leaders with a long history of working with regulated laboratories, Agilent recognizes how this changing landscape impacts you. That's why we developed systems, software, and services that work together to help you handle these challenges with confidence.
**Agilent Value Promise**

We guarantee you at least 10 years of instrument use from your date of purchase. Otherwise, we will credit you with the residual value of the system toward an upgraded model.

Learn more:
www.agilent.com/lifesciences/cellanalysis

Find a local Agilent customer center in your country:
www.agilent.com/chem/contactus

USA and Canada:
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agilentinquiries@agilent.com

Worldwide technical support:
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