Agilent BioTek Cytation 7 Cell Imaging Multimode Reader

The most comprehensive Agilent BioTek cell imaging multimode reader

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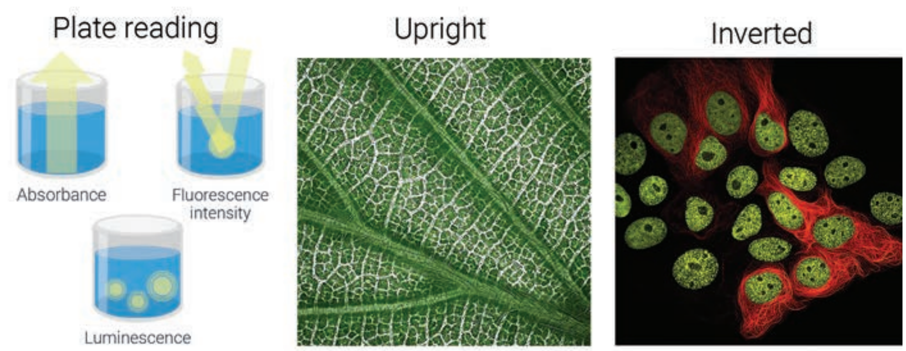
The Agilent BioTek Cytation 7 cell imaging multimode reader is the most comprehensive imaging plate reader, with both inverted and upright microscopy enabling a wide range of applications, all in a compact and easy-to-use instrument.

Cytation 7 shown with CO_2/O_2 gas controller and dual-reagent injector.

Multimode plate reader with sophisticated imaging



Cytation 7 expands the legacy of the Agilent BioTek Cytation cell imaging multimode readers by combining upright and inverted microscopy with conventional multimode microplate reading. Cytation 7 includes both upright and inverted microscopy optics, which opens up a wide range of cellular and reflected-light applications that cannot be performed on a standard plate reader. Information on cell morphology, localization of signal, cell count, object identification, and quantification can be obtained using the imaging modes of the Cytation 7. The monochromator plate reader optics enables all standard plate-reader assays.

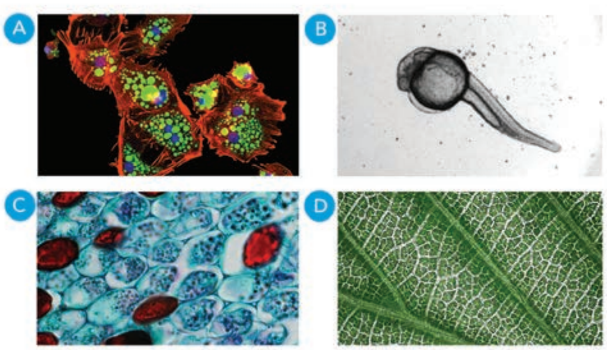
"Cytation 7 is incredibly easy and quick to use after initial setup. Installation of microscope lens and fluorescence cubes was very easy and straightforward, especially with the guide provided by the customer support team. The Cytation 7 yields consistent results and wonderful images."

– **Brian Freidhof,**
University of Arizona

- 3D cell culture
- Nucleic acid quantification
- Live-cell imaging
- Biochemical assays
- Label-free cell counting
- Histology
- Calcium flux
- Apoptosis and necrosis
- Cell migration and invasion
- Cell proliferation
- Cell viability and toxicity
- Confluence
- Fast kinetics
- Genotoxicity
- Immunofluorescence
- Microbiology
- Phenotypic assays
- Stem cell differentiation
- Transfection efficiency
- Whole-organism imaging
- Normalization
- Phagocytosis
- Signal transduction
- Translocation

Ready for any assay

With its combination of flexible plate reading and advanced microscopy modes, Cytation 7 is truly ready for any assay that needs high-quality imaging or multimode detection, or both - from a single, compact platform



A. Fluorescence, **B.** Brightfield
C. Color brightfield, **D.** Upright reflected brightfield

Environmental control

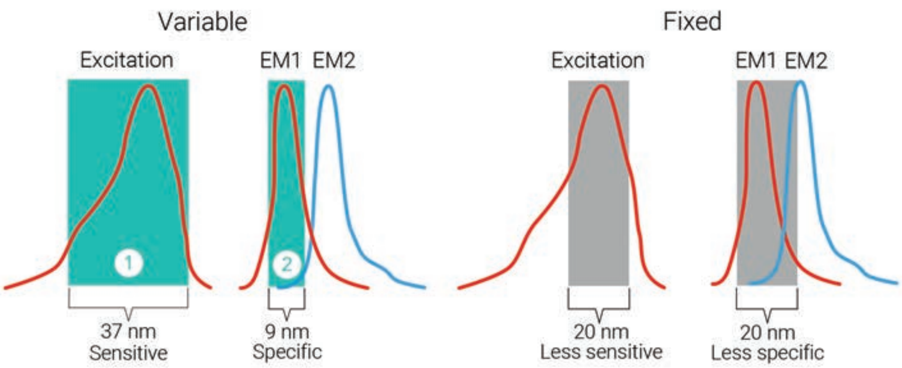
Comprehensive imaging solution

The inverted microscopy module of the Cytation 7 supports fluorescence, brightfield, and color brightfield from 1.25x to 60x to analyze both large objects and intracellular details. The upright, reflected-light imaging module enables a broad range of applications, such as ELISpot, colony counting, material inspection, and much more.

Flexible hardware: Six-objective turret, 1.25x to 60x, 20+ colors available, wide field of view (WFOV) camera.

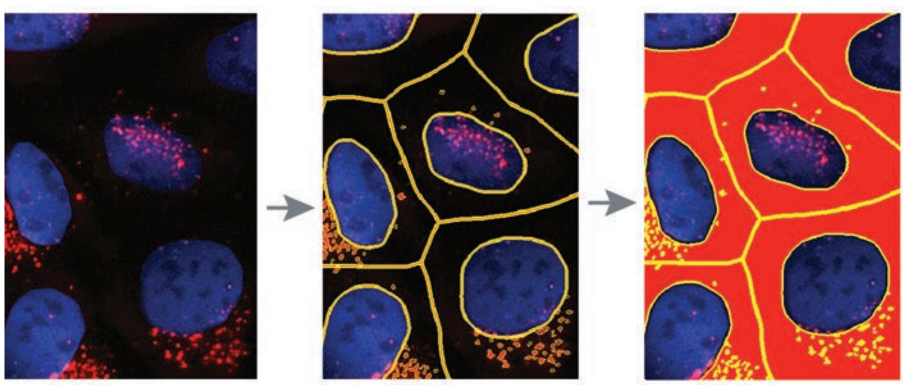
Full automation: Automated stage, autofocus, automated turret.

Live-cell imaging: Temperature and gas (CO_2 and O_2) control for time-lapse live-cell imaging.



Variable bandwidth for sensitivity and specificity

The plate reader optics of Cytation 7 use a quad monochromator design with variable bandwidth. The bandwidth can be set anywhere between 9 and 50 nm in 1 nm increments. Large bandwidth settings provide increased sensitivity and lower limits of detection. Small bandwidth settings provide increased specificity when multiple signals are present, which reduces signal crosstalk and enhances assay performance.

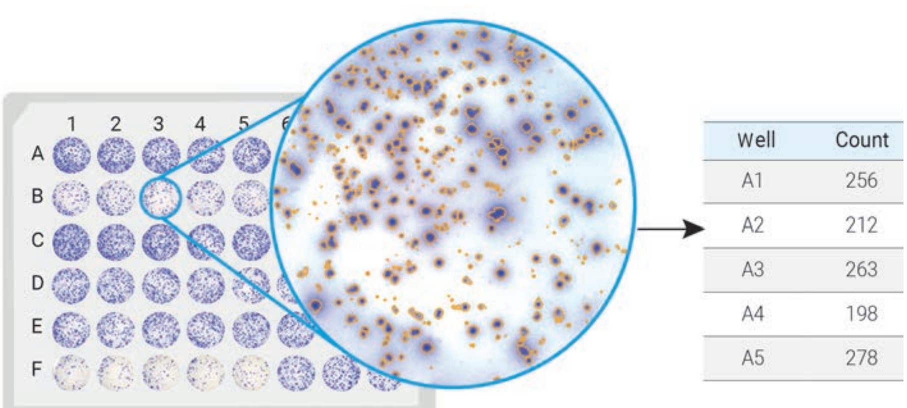


Powerful image processing and analysis

No need to process and analyze images one by one on a dedicated computer. In Gen5, preprogram your analysis tasks and walk away.

Image processing: stitching, z-projection, deconvolution, digital phase contrast

Image analysis: cell count, confluence, cytoplasm analysis, intracellular analysis, subpopulation analysis, signal translocation, and much more.

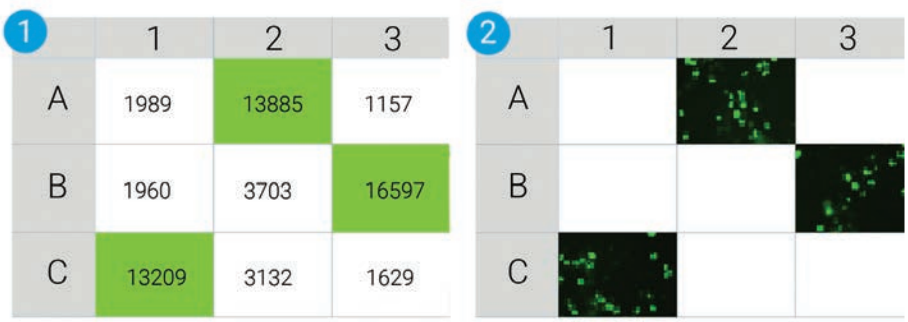


ELISpot imaging

The upright imaging module of the Cytation 7 can be used to automate assays such as ELISpot, in which cell secretions are rendered visible through the use of a colorimetric reaction. Cytation 7 fully automates image acquisition, processing, image analysis, and object count.

Cytation 7

Cytation 7 brings an advanced level of automated microscopy plus multimode detection into one platform. This system, driven by Agilent BioTek Gen5 microplate reader and imager software, enables myriad applications in imaging and biochemical research workflows.



Hit picking–multimode detection and imaging saves time and data storage

(1) Plate reader quickly identifies GFP-positive wells.

(2) Only GFP-positive wells are imaged, saving both time and computer memory.

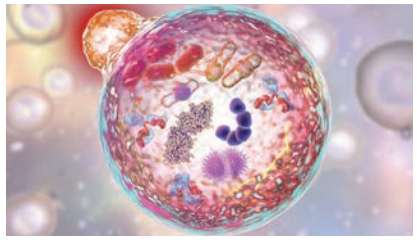
Microvolume analysis with the Take3 microvolume plate

Enable microvolume analysis with the Cytation 7 using the Agilent BioTek Take3 microvolume plate. Measure up to 16 or 48 samples in one run and save time compared to using single-sample devices. Gen5 microplate reader and imager software has customizable protocols for ssDNA, dsDNA, RNA, and protein quantification in 2 µL.

Applications

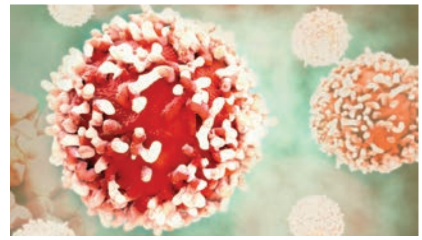
Cancer Biology

Cell imaging multimode readers and automated microscopes support cancer biology research with integrated solutions for measuring cell health and proliferation, migration, and metabolism in real time.



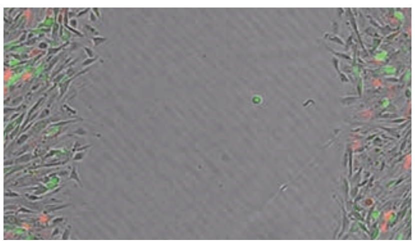
Cell Biology

Agilent BioTek offers imaging workflow solutions to improve your cell biology applications, optimize cell culture workflows, and perform robust quantitative analysis.



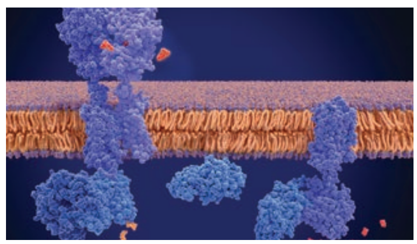
Cell Health & Viability

Automated solutions for measuring cell proliferation and cell health—including real-time quantification of treatment-induced cytotoxicity, apoptosis and necrosis, and cell stress.



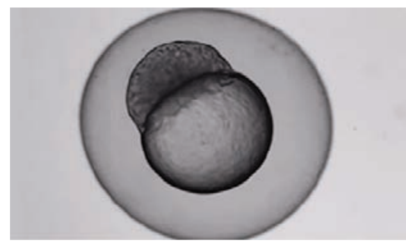
Cell Migration and Invasion

Powerful turnkey solutions for measuring chemotaxis and cell migration and invasion in real time, including automated 2D and 3D imaging-based formats.



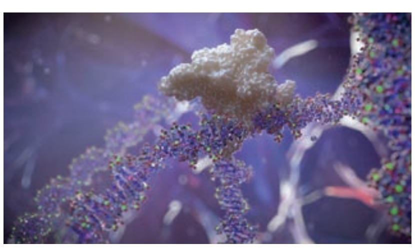
Cell Signaling

Powerful application solutions for cell signaling studies, including sensitive detection of receptor–ligand interactions, and real-time characterization of both rapid and long-term cellular responses.



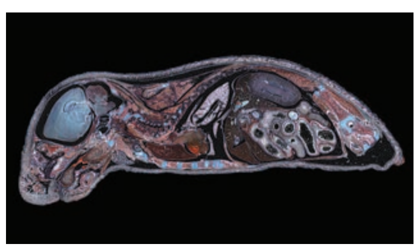
Developmental Biology

Automated imaging-based applications for developmental biology research that support whole-organism studies with integrated environmental controls and powerful widefield and confocal modes.



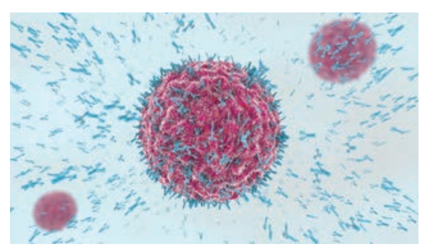
Drug Discovery & Development

Explore the Agilent BioTek portfolio of applications that deliver robust, high-throughput solutions for drug discovery and development studies and measuring toxicity.



Histology and Whole-Organism Imaging

Powerful imaging tools and analysis workflows to support a full range of histology and whole-organism imaging applications.

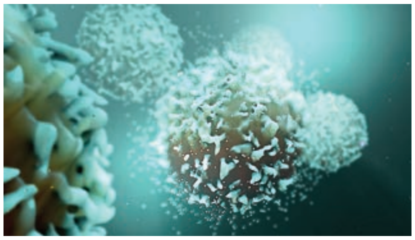


Immunology

Agilent BioTek provides a powerful suite of imaging and microscopy workflows that deliver deeper insight into immune cell fate, behavior, and fitness.

Visit the Applications pages on agilent.com for more information.

Applications



Immuno-Oncology

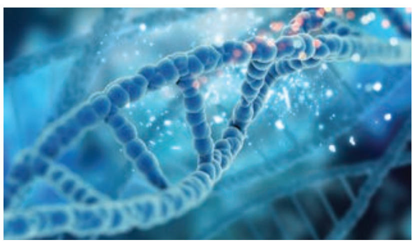
Application workflows powering our rapidly expanding understanding of the immune system's role in cancer processes and harnessing these discoveries to drive new therapeutic developments.

Microbiology

Applications for quantifying microbial growth, multiparametric profiling of microbial cultures, and detecting microbial contamination.

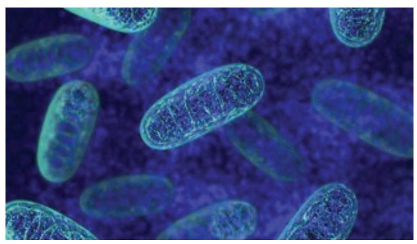
Neurobiology Research

Agilent BioTek cell imaging multimode readers and Gen5 software provide the necessary, powerful tools to enable a range of imaging applications to support neurobiology research.



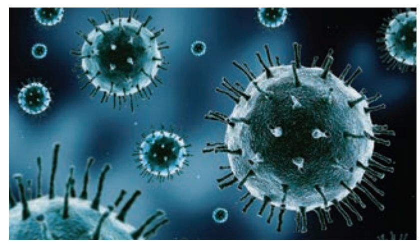
Molecular Biology & Biochemical

Agilent BioTek Cytation cell imaging multimode readers deliver robust results for a broad range of applications, including ELISA, nucleic acid and protein quantification, and enzyme kinetics.



Toxicology Research

Agilent Cell Analysis solutions provide direct measurements of toxicity, including genotoxicity, mitochondrial toxicity, cytotoxicity, and cardiotoxicity, with high specificity and sensitivity.



Virology

Diverse cell-based applications for virus research and drug discovery, including viral titer assays and quantifying cellular host response, that support real-time analysis and high-throughput studies.

Visit the Applications pages on agilent.com for more information.

Peripherals

BioSpa 8 automated incubator

The environmental controls and labware handling capabilities of the BioSpa 8 integrate with Cytation 7 to facilitate long-term live-cell kinetic imaging processes for up to eight microplates and other labware.

BioStack microplate stacker

The BioStack microplate stacker manages up to 50 microplates for automated imaging or multimode operations, including de and relidding of microplates used with cell-based assays.

Peripherals

CO_2/O_2 controller

The compact gas controller maintains control of CO_2 and O_2 levels in the Cytation 7 to support live-cell assays.

Dual-reagent injector

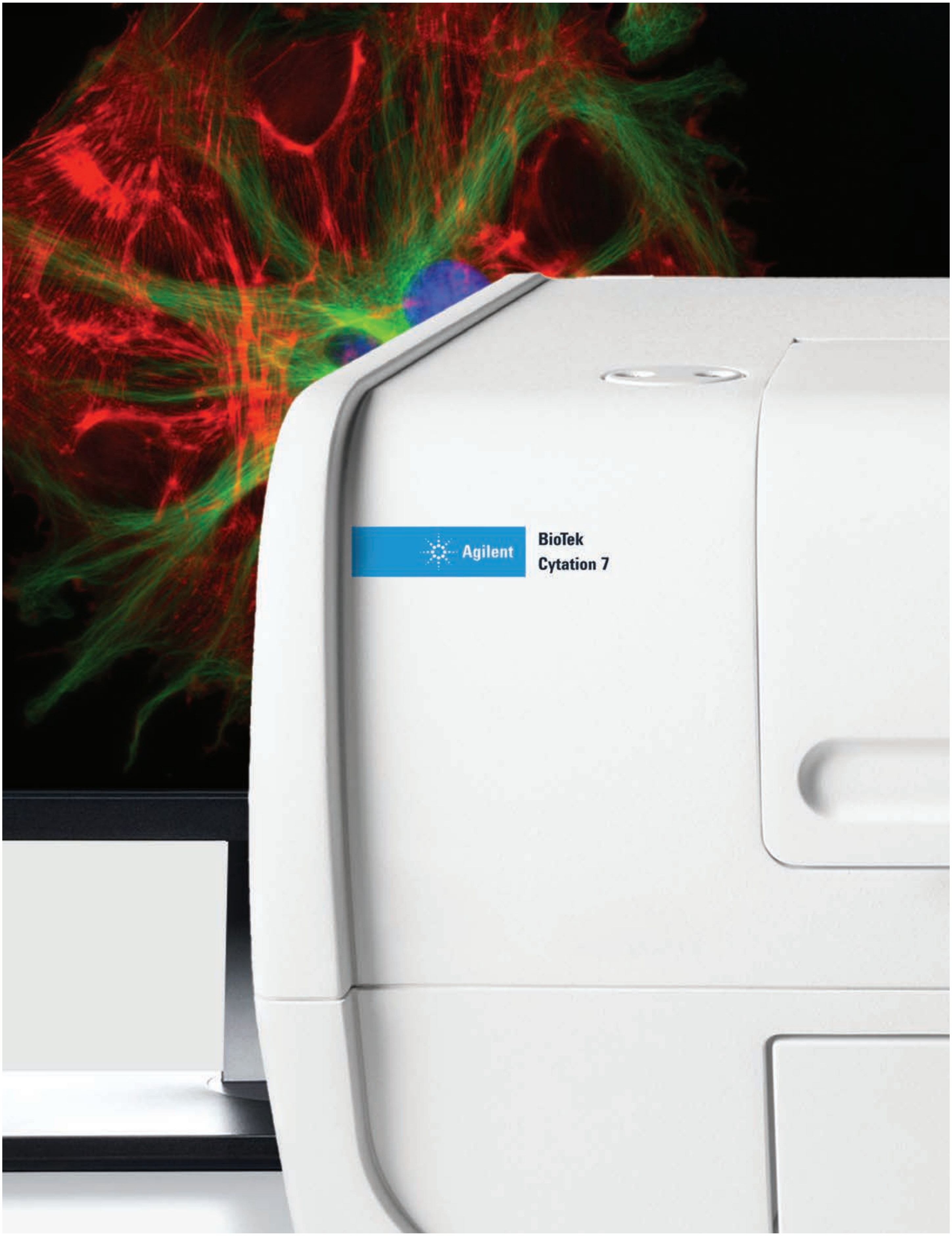
The dual-reagent injector module enables fast inject/read processes. Angled injector tips protect cell monolayers from shear stress during injection.

Peltier cooling module

The Peltier cooling module cools the interior of the Cytation 7 after incubated processes, enabling efficient switching between multiple applications without unwanted temperature influences. The cooling module maintains environmental stability, allowing less than a 1 °C rise in ambient temperature, regardless of external and internal temperature fluctuation.

Take3 microvolume plate

Measure up to sixteen or forty-eight 2 µL samples at a time with the Take3 and Take3 Trio microvolume plates used with Cytation 7. Microvolume nucleic acid and protein quantification are fast and easy.


Agilent
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Cytation 7

Agilent BioTek Cytation 7

Technical Details

General	
Microplate Types	Imaging: 6- to 1,536-well plates Multimode detection: 6- to 384-well plates
Other Labware Supported	Microscope slides, Petri and cell culture dishes, cell culture flasks (T25), counting chambers (hemocytometer), Take3 microvolume plates
Environmental Controls	Temperature control to 45 °C CO_2/O_2 controller Peltier cooling module
Shaking	Linear, orbital, double-orbital with user-selectable amplitude
Autofocus Methods	Image-based and laser autofocus
Software	Gen5 microplate reader and imager software (included) Optional software and modules: Gen5 Image+: Image analysis Gen5 Image Prime: Advanced image analysis Gen5 Secure, Gen5 Secure Image+, Gen5 Secure Image Prime: Enables 21 CFR Part 11 compliance Neurite outgrowth, AutoROI module, spot counting module, object tracking module, and Scratch Assay app
Modularity and Configurability	Cytation 7 can include inverted and upright, or upright only, microscopes, with or without multimode detection Modules can be added as laboratory needs change
Automation Compatibility	Agilent BioTek BioStack, BioSpa 8, Agilent BenchCel, and third-party automation products
Inverted Microscope	
Imaging Modes	Fluorescence, color brightfield, user-selectable/high-contrast brightfield
Imaging Methods	Single color, multicolor, time lapse, montage, Z-stacking, Z-stack montage
Camera	Wide field of view (WFOV) monochrome camera
Light Source	Long-life LEDs
Objectives/Capacity	1.25x to 60x air/six-position automated turret
Imaging Filter Cubes Available	More than 20 filter/LED cubes available
Imaging Filter Cubes Capacity	Four user-replaceable fluorescence cubes plus brightfield
Upright Microscope	
Imaging Modes	Reflected- and transmitted-light microscopy
Camera	(WFOV) color camera
Lenses	Finder scope, 2x, 4x, and 8x magnification
Multimode Detection	
Detection Modes	UV-Vis absorbance, fluorescence intensity, luminescence
Reading Methods	End point, kinetic, spectral scanning, well-area scanning
Physical Characteristics	
Dimensions	46.9 x 68.6 x 50.8 cm (18.5 H x 27 W x 20 D in)
Weight	53.3 kg (122 lb)

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